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The Need for and Improvement of Budgetary Planning in a Multinational Corporation

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SUMMARY

The aim of this research is to improve the planning methodology of Dunlop via an analysis of their annual planning system. This was approached via an investigation of how the plans were developed; extensive interviews, which analysed divisional attitudes and approaches to planning; an analysis of forecast accuracy; and participation in the planning system itself.

These investigations revealed certain deficiencies in the operating of the system. In particular, little evidence of formal planning could be found, and some divisions were reacting ex post to the market, rather than planning ex ante. The resulting plans tended to lack resilience and were generally unrealistic, partly because of imposed targets. Similarly, because the links between the elements of the system were often inefficient, previously agreed strategies were not always implemented.

The analysis of forecast accuracy in the plans revealed divisions to be poor at most aspects of forecasting. Simple naive models often outperformed divisional forecasts, and much of the error was attributed to systematic, and therefore eliminable factors.

These analyses suggested the need for a new system which is proposed in the form of Budgetary Planning. This system involves conceptual changes within the current planning framework. Such changes aim to revise tactical planning in order to meet the needs placed on it by, in particular, strategic planning.

Budgetary Planning is an innovation in terms of the current planning literature. It is a total system of annual planning aimed at implementing and controlling the iteratively agreed strategies within the current environment. This is achieved by the generation of tactical alternatives, variable funding and concentration of forecast credibility, all of which aid both the realism and the resilience of planning.

STRATEGIC PLANNING: TACTICAL PLANNING: FORECAST ACCURACY:

PLANNING SYSTEMS.

The Need for and Improvement of Budgetary Planning in a
Multinational Corporation

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Preface

There are so many people and organisations to whom I owe a substantial debt of thanks. The Interdisciplinary Higher Degrees Scheme offered me the opportunity of studying for a doctorate while working in industry. Dunlop Holdings Limited employed me during this period and provided both the problem and my salary. The Science Research Council also contributed a research award.

Dr. J.L. Markham, my industrial supervisor and Dunlop divisional manager, taught me so much and was a guiding light in my work. Sincere thanks must also go to Mr. J.E. Smith who guided and inspired much of the research as well as offered the benefit of his substantial business expertise. Additionally, Mr. M.K. Hussey gave considerable assistance on all matters relating to the general direction of the project, particularly the variance analysis. Similarly, Mr. A.J. Bennett, Dr. I.T. Robertson, and Dr. A.J. Cochran helped with many aspects of the project and assisted in overcoming many of the administrative problems.

Within Dunlop, I am indebted to Mr. P.M. Rossiter and Mr. F.J. Usher who initially conceived the project and helped guide it on its way. Thanks must also go to all at Dunlop who gave their time so generously and showed so much interest in the research.

A final word of thanks to Christine O'Brien who, despite all my grumblings, typed this thesis so efficiently.

GLOSSARY

- E.R.D. - Economic Research Department.
- Gap Analysis - The difference between a momentum projection and a strategic objective.
- Goals - Specific targets to be attained within a specified period of time and to which specific responsibilities are attached.
- Group - Refers to Dunlop UK as a whole.
- Management Committee - The top divisional management body. Although the size and shape of this Committee varies from division to division it would probably include: Divisional Director, Chief Accountant, Marketing Manager, Technical Manager, Production Manager and Personnel Manager.
- Margin - The ratio of historical profit before interest and tax to historical turnover.
- Momentum Projection - The projection of a variable taking into account known factors but not including any strategic influence.
- Naive Model - Refers to a simple forecasting model which is used as a base point for accuracy comparisons. Two models are used: NM1 - a same rate of change extrapolation on the previous year; and NM2 - a same level of change extrapolation.
- Objectives - The primary aims of an operating unit as described in their Strategic Plan.
- Permanent Optimism - Unproven theory that management find it easier to perceive beneficial probabilities than adverse probabilities.
- Return - The ratio of historical profit before interest and tax to historical net funds employed.

Theil's Coefficient
and Decomposition

- A relative measure of accuracy which standardises for the inherent variability in the series by comparing against a "no-change" model. The measure can be broken down so the systematic elements can be separated from the unsystematic elements.

Trading group

- A collection of divisions operating in similar product markets. For the sake of simplicity, two single-division groups have been included in other groups: I.S.C. is included in Consumer Group; and Fire Armour is included in Industrial Group.

Turnover

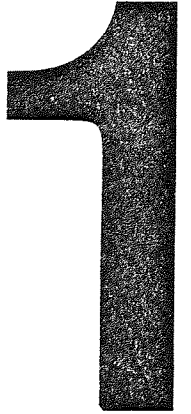
- Total net historically based sales for a division including export and inter-company sales (both of which usually represent only a small percentage of the total).

Variance

- Refers to the discrepancy between actual and forecast values and is synonymous with the term error.

To

S.B., J.L.M. and J.E.S.



INTRODUCTION AND REVIEW OF THE RESEARCH

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1.1 The Research Environment

1.1.1 Interdisciplinary Higher Degrees Scheme

This doctoral thesis was undertaken within the Interdisciplinary Higher Degrees Scheme (I.H.D.) at Aston University. The Scheme was established (via requests from The Science Research Council) in response to the claim by the Swann Report (1968) concerning the narrowness and unsuitability to industry of traditional research.

I.H.D. has primarily two aims. Firstly, to attract graduates who would normally continue in academic research into industrial careers. And secondly, to promote collaboration between different disciplines towards the goal of solving a practical, industrially based project.

The aim of I.H.D. research is to achieve a solution to a problem which either has been implemented, or is so structured that it could be implemented. In other words, the objective is to produce "practical" working solutions to "real" industrial problems. The Scheme also has several subsidiary objectives. These include: to produce research which adds to the existing body of knowledge in that particular field, and to train the graduate in a discipline or disciplines different from that encountered at first degree level (Cochran, 1979).

Members of the Scheme are normally employed by the collaborating organisation and carry out the research largely within the organisation's environment. In the case of this research, the author was employed in the Corporate Planning Department of Dunlop Holdings Limited as a Planning Research Officer.

1.1.2 Dunlop

(i) Historical background

Dunlop is a multinational, technologically based decentralised company, initially established in 1889, and now employing over 81,000 people worldwide. The majority of the business is concerned with the rubber industry and specifically tyres, which accounted for 54% of the almost £1.4 billion turnover achieved in 1980.

The product range is extremely large and includes many automotive products, general rubber goods, footwear, hose, belting, adhesives, foam, aerospace products, specialised engineered products, plus a wide range of sports goods. Recently, Dunlop has become increasingly involved in turn-key projects where technological packages, in terms of "know-how", are sold primarily to developing countries.

The company exports to every major world market (£149 million in 1980) and has manufacturing units in 23 countries, although the bulk of the business is still concentrated in Western Europe. In 1968, Dunlop acquired George Angus and Company Limited which added to the product range and increased both exports and overseas manufacturing of the Group. This was further increased by the "Union" with Pirelli S.p.A. and Société Internationale Pirelli S.p.A., whereby large minority interests were acquired in each other. The Union never resulted in a full merger and was mutually disbanded in April 1981.

(ii) Organisational Structure

Dunlop has a decentralised divisional/company structure with General Managers having responsibility over a clearly defined product/geographical area.

These divisions/companies are divided into groups, each with their own trading group board. This, essentially McKinsey inspired decentralisation,¹ was specifically designed to maximise the autonomy given to the divisions.

Figure 1.1 shows the organisational chart for Dunlop UK with 23 divisions being encompassed in four trading groups (Tyres; Engineering; Industrial; and Consumer, the latter being made up of Dunlopillo, Footwear and Semtex). The Overseas Group, Far East, USA and part of Tyres Europe make up the non-UK Group.

In 1980, the largest UK division had a turnover in excess of £120 million and the smallest had a turnover of less than £1 million. A description of which divisions belong to which trading group can be found in Appendix A1.

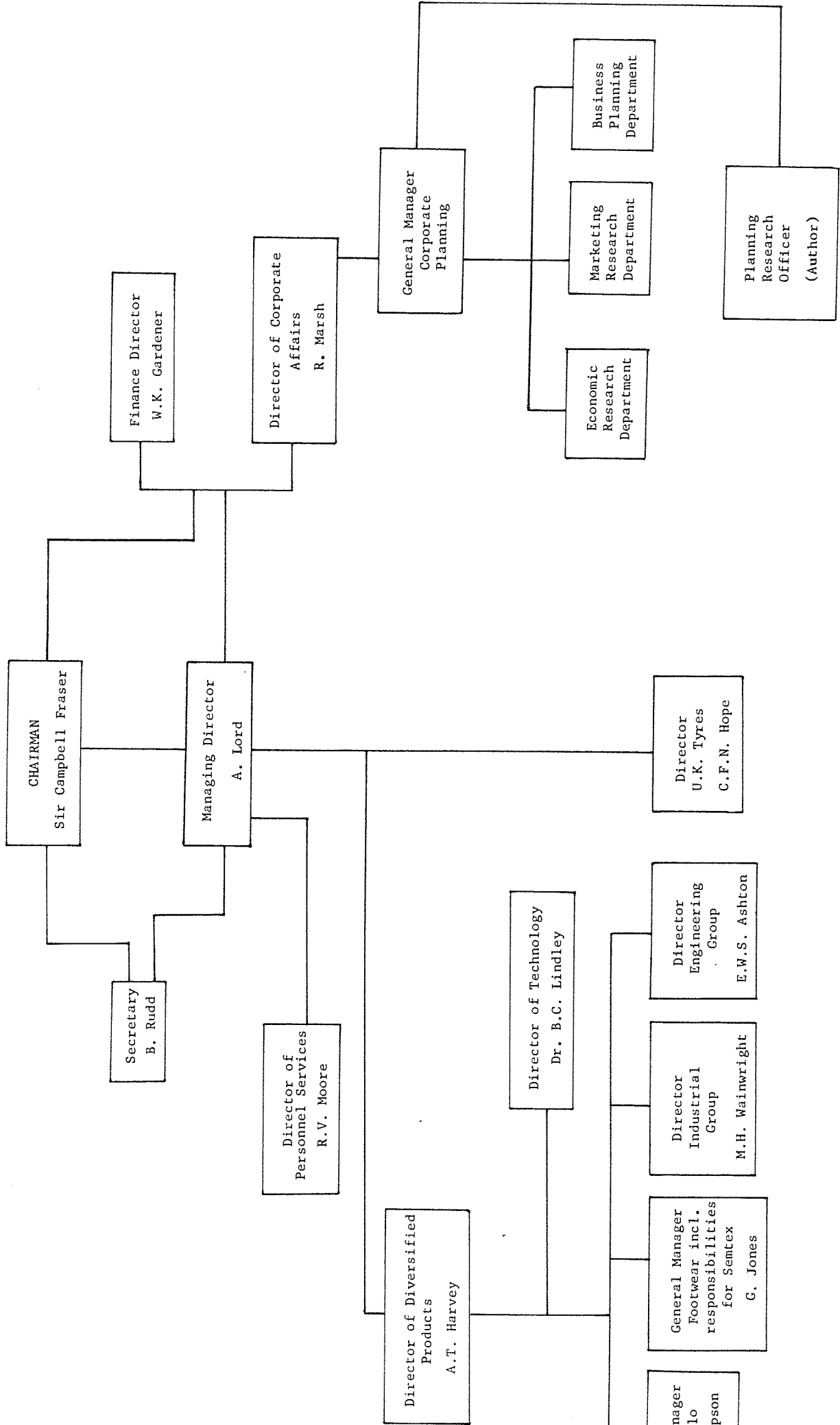
Head Office is the focal point for centralised activities such as Corporate Finance and Treasury, Corporate Planning, Central Personnel, Group Management Services, Licensing and Central Purchasing. These departments deal with liquidity, gearing, fund raising, divestments, acquisitions, dividend policy, industrial relations and so on. Each trading group also has some centralised personnel, and in the past this has often included a Strategic Planning Officer.

1.2 Nature of the Research

The approach adopted in this research has much in common with action research (Appendix A2). Dunlop initially proposed a project, structured in broad terms, concerned with the Management Planning System and, specifically, the variances in the forecasts which that System produced. From this point, the problem, and to some extent the solution, were jointly determined by the author and Dunlop Management.

FIGURE 1.1

ORGANISATIONAL STRUCTURE OF DUNLOP U.K. AND THE POSITION OF THE AUTHOR IN THE HIERARCHY



1.3 The Problem Defined

Initially the problem was loosely defined. Corporate Planning surmised that the Planning System was not operating efficiently, primarily because of recurrent variances in the Management Plan (Corporate Planning, 7.1.75). The initial research, therefore, attempted to trace these variances back to their root causes, but the data base was not sufficiently sound to enable worthwhile analysis. The research then shifted to an analysis of the Planning System itself, this being the source of the forecasts and, therefore, the possible source of the variances.

In planning terms, the Plan is merely the pinnacle of the System. Many authors (for example, Ackoff, 1970, p.15) have suggested that the value of planning lies in the system of development rather than in the Plan itself. Similarly, the quantified aspects of the Plan are merely convenient monetary expressions of the planning system. To suggest therefore that an analysis of variance would reveal its root causes would be naive. Such analysis may point the way to better or worse planning, in the broadest terms, but would probably not isolate causal factors. For this, the research must turn to the M-Plan development system and even the planning system as a whole.

In the broadest terms, the research could be defined as follows:

an analysis of various aspects of the planning system, and specifically the M-Plan System, in order to use the findings in such a way as to "improve planning methodology" (Rossiter, 1977).

The concept of the research then is based on the idea of "meta-planning", which, according to Emshoff (1978), suggests that the planning process itself needs to be planned.

1.4 Approach to the Research

Various approaches were taken in order to achieve this overall aim of improving the planning methodology. These included:

1. Participation in the planning process in general as a member of Corporate Planning.
2. Drawing on the literature in this area.
3. Analysing the variance in the forecasts of Management Plan.
4. Analysing, in detail, the approach taken by one division to Management Plan development.
5. Analysing the attitudes and philosophies of divisions towards the Management Plan System in general.
6. The production of recommendations for improvements in this area.

How this research was structured, in terms of data collection and analysis in Dunlop, is shown in figure 1.2.

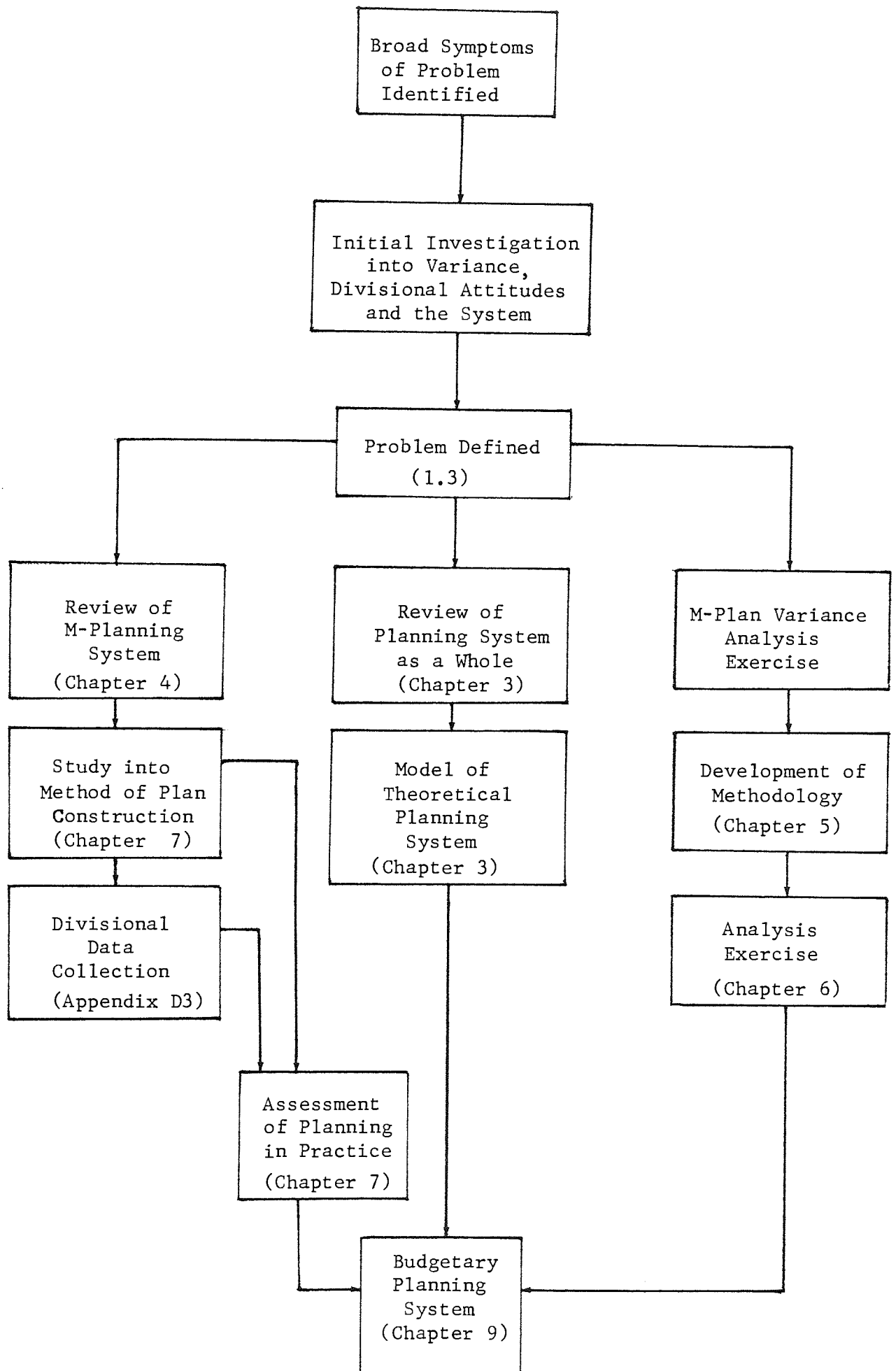
One method of appraising a planning system is to participate in that system (participation observation - Appendix A2). The author participated in one aspect of Dunlop's Planning System - the work of the Corporate Planning Department, which allowed the System to be viewed from a central standpoint. It also allowed some appreciation of what type and degree of planning was required by the Centre. Indeed, although considerable contact was made with the divisions, the research was essentially tackled from a central viewpoint.

The research was initially approached by an analysis of the variance in the Plans, which led to two conclusions. Firstly, because of insufficient usable data, this research could do little more than catalogue the error and its various elements. Secondly, it revealed that there was considerable scope for improvement in accuracy, and suggested that the Planning System itself was operating inefficiently.

Although forecasts in the Plan are merely quantitative representations of the division's aspirations, when compared with actual outcomes, they do give some indication of the Plan's effectiveness. Similarly, the financial projections are an extremely important aspect of Dunlop's Planning System, and are a major input into the resource allocation process, both at Head Office and divisional level. It is for this reason that some assessment of the forecast accuracy is required if optimal resource allocation and planning is to take place.

Figure 1.2

STRUCTURE OF THE RESEARCH



In order to appreciate how divisions actually develop their Plans, (as opposed to how the Centre believes the Plans are developed), it is necessary to follow the entire Plan development process in some detail. From there, and with a general model of Plan development and interviews with individual divisions, it is possible to see in which ways divisional planning varies. Also, and more importantly, such a model is of great assistance in collecting divisional attitudes and philosophies towards the planning system in general.

The aim of such divisional analysis is two-fold. Firstly, it helps to develop a picture of how divisions go about their planning, thus permitting the identification of techniques employed by divisions which might be used to improve the planning system as a whole. Secondly, it allows divisions to express how they see various aspects of the System, as well as giving them the opportunity to express their ideas on what changes to the System might be beneficial.

1.5 Structure of the Thesis

Figure 1.3. outlines the structure of the thesis.

This chapter has so far described the research environment and defined the aims and approach to the research; it now continues with a review of the thesis. This will describe the extent to which the aims have been fulfilled; the use that can and has been made of the research; the possible developments of the findings; and the relationship the research has to the body of literature in this area.

The literature is dealt with in the thesis as and when required. Chapter 2 gives a reasonably comprehensive review of general planning topics and considers whether planning is a worthwhile pursuit. Chapter 5 concentrates on the relevant variance analysis literature, while other relevant literature can be located by means of figure 1.4, which may also be of use to those who wish to do more selective reading.

Figure 1.3

THE THESIS STRUCTURE

PROBLEM AND SOLUTION

CONCEPTUAL BACKGROUND
AND LITERATURE REVIEWS

ANALYSIS

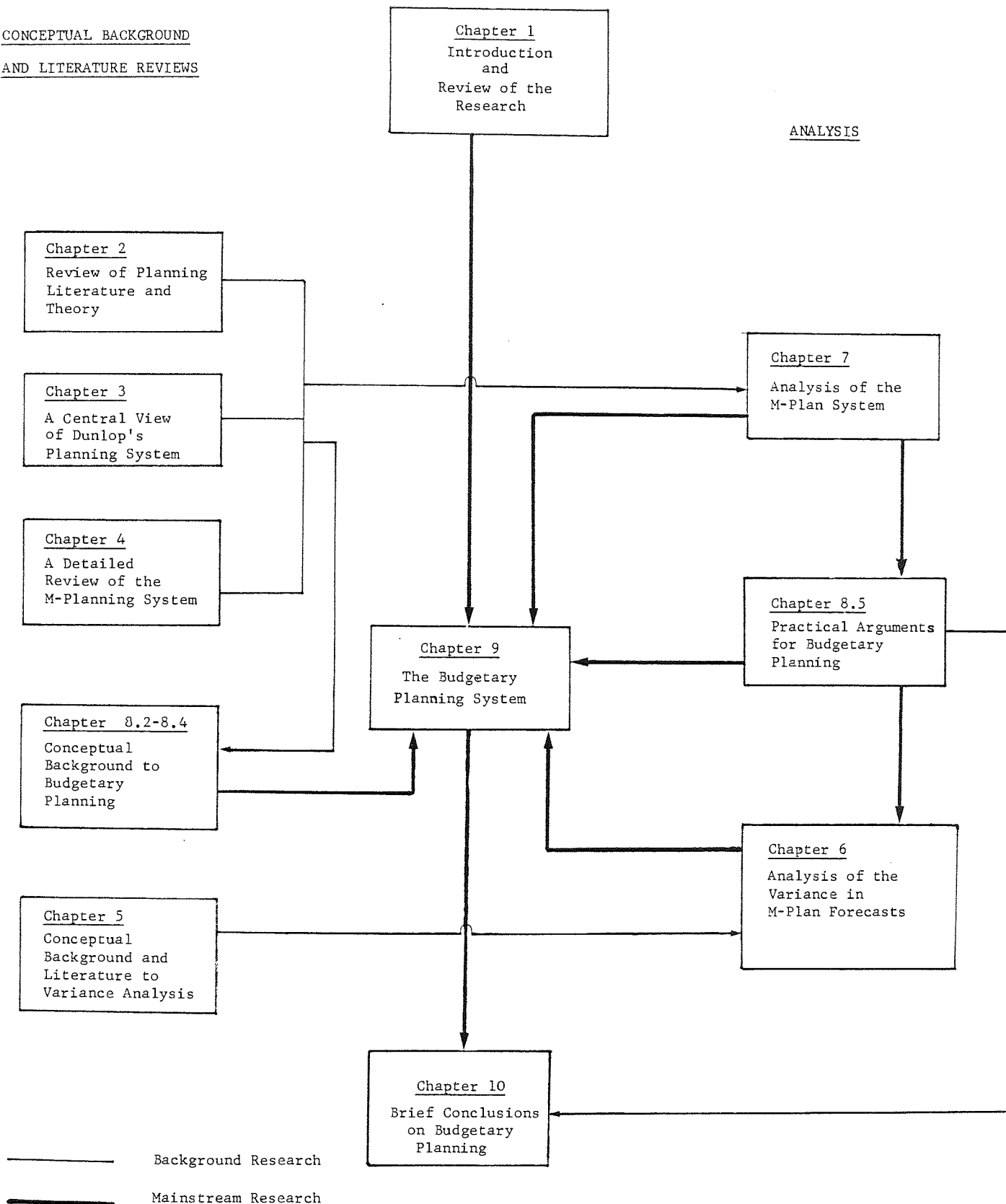
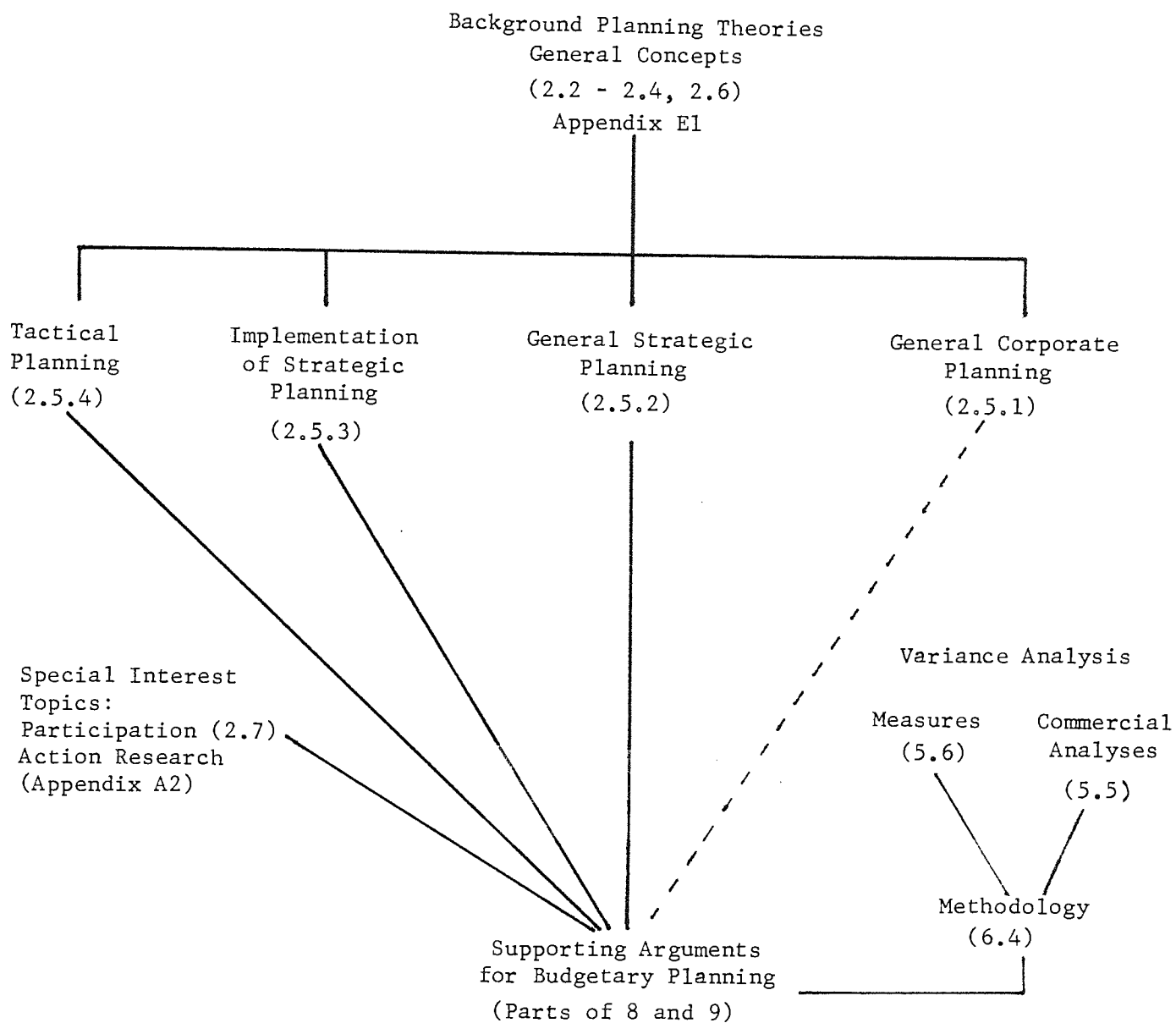


Figure 1.4

Schema of the Literature Review in the Thesis



Chapter 3 discusses the Planning System in Dunlop, including the basic philosophy surrounding its approaches. It also outlines the individual types of Plans and the linkages in the System. Chapter 4 expands on one aspect of this System, that is the Management Plan, and describes in some detail its function, development, how it is controlled and how it relates to other aspects of the System.

The subsequent three chapters refer to the analysis of this System. Chapter 5 and 6 describe the variance analysis undertaken on the M-Plan forecasts, with the former chapter describing the background literature and methodological measures. Chapter 6 is a detailed analysis of the variances discovered in turnover (similar analyses can be found for margin and return in Appendices C4 and C5 respectively). It also includes an attempt to isolate causal factors influencing the variables. The findings of this chapter link into the proposed System of planning by providing techniques for use within the System.

Chapter 7 is split into two sections; the first part describes an in-depth analysis of Plan development at one division, while the second part is an analysis of divisional philosophies and attitudes towards many key aspects of the M-Plan System. This section represents the data collected during a large number of in-depth divisional and central interviews, and allows the author to point towards the shortcomings and inconsistencies of the Management Planning System.

Chapter 8 introduces the concept of Budgetary Planning. It describes the novel aspects of a Budgetary Planning System, as well as the organisational framework and modifications required to other systems for the proposals to work effectively. The chapter concludes with a fairly simplistic summary of the practical arguments for Budgetary Planning. These arguments are drawn from the evidence and inferences obtained from the analysis sections.

Chapter 9 is the discussion of the proposed system of annual planning, called A Budgetary Planning and Control System. The System draws heavily on the analysis sections and includes its own references to the literature, where applicable.

The final chapter makes some brief concluding points on Budgetary Planning, and in particular it outlines the possible problems of implementing and operating the System. It also includes a summary table which aims to describe how Budgetary Planning overcomes the problems revealed by the analysis.

Finally it should be noted that efforts have been made to remove data which is particularly confidential or sensitive. This has largely been achieved by disguising the data in such a way as not to detract from its value.

1.6 Review of the Research

1.6.1 Research achievements

The aim of the research can be reiterated as follows:

Overall aim: To improve planning methodology, specifically by an analysis of the Management Planning System.

Subsidiary objectives:

To produce a comprehensive analysis of the present Management Planning System, specifically in the following areas:

- (a) the methods of Plan construction
- (b) the divisional and central attitudes and philosophies towards the System
- (c) the variance in the forecasts in the Plans
- (d) the interrelationships of the M-Plan and other parts of the Planning System.

This analysis was used to produce recommendations for an improved system of tactical planning.

Discussions with management involved in planning, involvement in the System, and examination of the variances present, all point to their being scope for improvement to the System. In considering possible improvements to the M-Plan System, it is inadequate to merely examine the M-Plan itself, which is part of a much larger system and should therefore not be viewed in isolation. However, research of this kind will always be incomplete, as planning is holistic. As such it is not possible to break in at one point in the System in order to make improvements, and then expect the rest of the System to be unaffected. The research thus aims to take a much broader view of the planning system and its interrelationships.

The objective of the research was not to get involved in a "witch hunt" about why some divisions were better planners than others. The variables which affect such a study make conclusions of this type difficult to draw in any case. Rather it attempted to canvass opinions, extract obvious logical improvements for the planning system, and get a feel for the reality of planning in Dunlop.

The analysis of divisional attitudes and philosophies towards the System indicated that there were fundamental inconsistencies between how the System operated in practice and how the Centre believed it to operate. The first achievement of the research then, was simply to describe how the System was operating, and to show that this was not in accordance with either the literature, or the way in which it was designed and thought to operate. In particular, evidence was provided that many of the System's assumptions simply did not hold. For example, the idea that divisions plan to achieve a profit objective within a funds allocation or that they use an M-Plan to implement a strategy, are generally incorrect. On the basis of this, recommendations were made in the form of specific guidelines which detailed a methodology to overcome these problems. This evidence also outlined the general philosophies and attitudes towards planning and planning systems which was of great help in determining what types of improvements were practically possible.

The second thrust of the research was in the area of forecast accuracy, and a methodology for analysing variance in commercial forecasts was developed. This involved relatively innovatory use of certain variance techniques, and produced substantial evidence that systematic errors in the planning system were attributed to inefficient forecasting techniques.

The final achievement of the research has been the development of the Budgetary Planning and Control System. This is aimed at improving planning methodology by, inter alia, providing a logical system of planning which gives cohesion to its various elements and offers a reasonably detailed, flexible system for annual planning.

As many of the proposals have not yet been implemented, it is difficult to ascertain the degree to which the initial aims of the research have been fulfilled. The main aim of the research, "to improve planning methodology", has to some degree been achieved. The M-Plan System did not operate in a logical manner and many flaws have been identified. In order to improve this situation, a revised System was constructed which brought a degree of cohesion to the planning system and developed, among other things, systems for strategic implementation. This last point, as far as the author is aware, is relatively novel, as neither the system designers nor the literature in general offer a comprehensive methodology for implementation. Indeed, in Dunlop the M-Plan System actually created certain barriers to implementation. These barriers have largely been removed in the proposals.

In the achievement of the aim of the overall project, certain subsidiary objectives have also been achieved. A comprehensive analysis has been made of: the method of Plan construction; the divisional attitudes toward the System; and the variance present in the end result. The latter objective has resulted in the production of a methodology for interpreting the variance in the Plan, as well as suggestions as to how the results of the analysis might be used to improve the use of the forecasts in decision making processes.

1.6.2 The Use of the Research

One of the major uses of this research is in the field of "meta-planning", that is to say planning for planning. The proposed System requires a substantial change both in systems and attitudes of management. In a large organisation, such as Dunlop, fundamental changes take considerable time to implement and normally have to be made on a "step by step" basis. Similarly, it is dysfunctional to implement a System which is beyond the resources available to put it into action.

The Budgetary Planning and Control System represents the objective towards which Corporate Planning should aim to move Dunlop's Planning System. However, for it to be implemented even on a "step by step" basis it needs to be supported by a comprehensive manual, based on chapter 9 of the thesis, and the concept needs to be "sold" both to divisional and central management, by a central planning team.

Parts of the research have already resulted in specific changes in the System. For example, the economic guidelines are displayed in the manner proposed, and a system of Planning Consultancy Teams (9.3.2), was implemented in early 1980. Similarly, the guidelines for Plan reviews (Appendix F2) have been used in two planning cycles now, and the guidelines for the 1981 - 5 strategies were designed such that they were compatible with many of the concepts in Budgetary Planning.

In terms of the uses of these findings at the Centre, the research provides a more effective Annual Planning System which can be confidently used for financial planning purposes. It also allows the Centre to develop a contract, in terms of an agreed Plan, with the divisions and commit funds to a strategy which will be implemented. The proposed System also greatly assists in the interpretation of the resulting Plans. For

example, it is of great help to know whether a division views the Plan as merely a Head Office document or whether it is viewed as being central to the division's own planning and control systems. Likewise, whether predictions are viewed as forecasts or targets is critical to the way they are interpreted at the Centre. Attitudes such as these have been well catalogued within the research.

The extent to which the recommendations are implemented rests heavily on the resource commitment that Dunlop's Main Board is willing to make to planning. In the last year, in line with Dunlop's financial difficulties, Corporate Planning Department has been reduced by something of the order of 40%. Such a reduction, in such a small department, has a great effect on the extent to which major changes in direction are likely to occur. Appendix F1 contains a report which was aimed at producing top management commitment to planning at a time when more "hand to mouth" type management was deemed necessary. Without this commitment from the top, Budgetary Planning will remain an unimplemented long term objective.

Although the findings of this research must be viewed within the context of Dunlop, many of the findings are applicable to other organisations. The research was conducted in an organisation that contained numerous divisions of various sizes, with different marketing and capital structures and organisational styles. If for no other reason, the research is of interest to other organisations because it is a practical solution to a real problem in planning. It therefore contributes to the volume of planning knowledge.

Recent research, including the evidence presented here, has suggested that in many organisations there are fundamental weaknesses in the system of integrating plans. There is, therefore, a definite demand for some form of relatively detailed planning system which gives cohesion to various aspects of that system. The proposed System provides this in the form of a methodology of tactical planning.

Many of the systems and sub-systems suggested by this research also have general applicability. For example, there is an increasing awareness of the failure of forecasting systems to produce a reasonable degree of accuracy (cf Appendix A3). Likewise, the failure of this system affects other systems by, for example, distorting information for funding decisions of large organisations and eventually leading to sub-optimal resource allocations.

All of the sub-systems in Budgetary Planning are structured in a form of recommendations for Dunlop. Because of the disparate nature of Dunlop divisions, these recommendations are extremely flexible and could easily be implemented within most medium to large size organisations.

1.6.3 Relationship of the Research to the Literature

Recent planning literature has tended to concentrate on strategic and corporate planning techniques, accepting that the already well developed budgetary side of planning would come to the aid of these "new" systems for implementation purposes. As far as the author is aware, the literature has largely ignored the new requirements the developments in planning have placed on tactical planning systems. Indeed, the literature generally accepts as given the links between the various aspects of the planning system. The techniques described here aim to bridge this gap.

The Budgetary Planning System tries to strengthen the existing structure of the Plans and their linkages, without demanding radical changes within the Plans themselves. Only recently has any research appeared to suggest that the linkage between different Plans is ineffective. The research is thus relatively novel in this aspect. Similarly, the author was unable to find any comparable research into methods of central funds allocations when variance is a major problem in the forecasts.

The section on variances offers some innovatory applications and analysis. This is perhaps because few researchers have had access to such a detailed and confidential data base. Other studies concerned with commercial forecasts have generally been restricted to relatively simple techniques and have not, as here, tried to decompose the error to discover if it has any systematic elements. The development of a comprehensive methodology to examine error is also, to the author's knowledge, an innovation.

Finally, the research also adds to the growing body of case studies of business planning systems. The majority of these studies have been executed by outsiders to the organisations, and thus are often somewhat limited in their analysis. This particular study was undertaken by someone who was part of the company and therefore may represent a certain advancement in terms of the literature. The majority of studies attempted in this area are concerned with the whole planning system or with corporate/strategic planning. Some contribution therefore has been made to the literature by studying Budgetary Planning in relation to other aspects of the System.

1.6.4 Development of the Findings

By necessity, research into planning, which can involve most aspects of the management, generally touches on a number of areas in which worthwhile development could take place. Indeed, it would be easy to generate a long list of potentially fruitful areas of research which could be pursued from this analysis. Certain areas, however, do stand out as being particularly important in terms of the successful application of Budgetary Planning, as well as offering innovatory research possibilities.

The Plan itself represents the apex of the Planning System, and the narrative sections are a tangible manifestation of the future oriented decision making process of management. As such they give an insight into the Plan development, and specifically the thinking processes of planning management.

The literature argues in favour of some process of differentiation between good and bad planning, presumably by some top management vetting of the Plan. At present, this tends to be a relatively subjective task, indeed the author made some preliminary attempts to objectify this process in Dunlop by the introduction of specific vetting guidelines (Appendix F2). It is possible that some form of Content Analysis (cf, for example, Holsti, 1969) of the narrative schedules would be of help in their interpretation, and this could be used for the vetting process before resource commitment.

The advent of computerised Plan development has had a significant impact on how Plans are and can be developed. However, this new technique has generally been "tacked on" to existing planning systems, in order to make them more efficient. To some extent this is true of the proposals in this research. Because the systems are generally developed before the computerised ability, the potential that this technology can bring to planning is not fully realised. Research needs to be done on developing a planning system specifically around highly developed computerised facility so that the whole system can maximise the opportunities that such facilities can offer. Many individual areas of computerisation within planning systems have been well documented, but little research has been done on a totally integrated planning system, which is developed from fundamental principles with computer technology as the central focus of the system.

Finally, some expansion of the findings of the variance analysis may also prove to be a fruitful area of future research. This research has only scratched the surface of the topic. In particular, there is much scope for relating these findings to causational factors. For example, it would be of great value to discover precisely why some divisions are

consistently better forecasters than others. It should be noted, however, that the methodological problems of such an exercise, given the limited number of relevant data points generally available, are enormous.

The above offers only a brief sample of possible useful future research in this area. Many more exist, and all have the characteristic of being real problems presently experienced by management.

2

REVIEW OF PLANNING LITERATURE

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2.1 Chapter Review

This chapter aims to outline a few pertinent concepts in the "textbook" approach to planning. It does not attempt to get deeply embroiled in the planning literature, which has been adequately summarised elsewhere,¹ rather it aims to identify a few concepts which are of value to this research.

The chapter begins with a broad examination of the philosophies of planning which will be used as a frame of reference for later chapters. Various levels of planning, from corporate to operational, are then discussed in order to help isolate key types of planning. Some attempt is also made to determine what effective planning is, so as to define the goal for which we should strive. The chapter concludes with a brief discussion of one important input into the planning system - participation.

2.2 The Concept of Planning

To answer the question "what is planning?" is not an easy task. Different authors and organisations have their own individual definitions, and as planning is such a multi-faceted concept, nearly all of them add something to our understanding of planning. Table 2.1 aims to outline a few of these definitions.

Fayol, as early as 1916 introduced the concept of planning as a management task, and described it as "thinking in the future". This links in with the much later definition by Ackoff (1970, p.2) of "anticipatory decision making". Ackoff's definition proposes that there are some decisions to be taken and thus implicitly suggests that alternatives exist. Kelly (1977) defined planning as:

1. For example, see de Smit and Rade (1980) or Hussey (1979).

TABLE 2.1

PLANNING DEFINITIONS¹

- (1) Planning is the integral process of preparing and formulating future decisions.
- (2) Corporate planning is a formal, systematic management process, organised by responsibility, time and information, in order to ensure that operational planning, project planning and strategic planning are regularly carried out, so that top management can influence and control the future of the undertaking.
- (3) Planning is the design of a desired future and the specification for effective ways by which this future can be attained.
- (4) Planning comprises the formulation of objectives and monitoring measures in consultation with management.
- (5) Planning entails the preparation and taking of decisions.
- (6) Planning researches the possible consequences of decisions taken and to be taken (consequence thinking).
- (7) Planning is concerned with a system (a coherent set) of decisions. It has to co-ordinate different sub-processes in space and in time. Planning also means re-allocating positions of political power and material resources.
- (8) Planning is the shaping of a (future) situation for which desires must be made explicit and aims set, and the problems thereby formulated.
- (9) Planning is not aligned to solving sub-problems but to reducing these as a coherent whole.
- (10) Planning is designing intervening actions (strategies plus main implementation methods).
- (11) Planning is a learning process. We learn by evaluating implemented plans and the consequences of implementation.
- (12) Planning also means the adjustment of plans, redirecting implementation action on the basis of the (continuous) evaluation obtained and modifying the way in which plans are made. Planning is therefore an adaptive process.
- (13) Planning is the process of making plans.
- (14) Planning is decision-making.
- (15) Planning is complementary to problem-solving.
- (16) Planning is concerned with systems of problems ('messes' or 'wicked problems' or 'problematique').
- (17) Planning is a continuous process of decision-making with regard to a coherent set (a system) of decisions.

1. From de Smit and Rade, 1980.

"an analytical process which encompasses an assessment of the future, the determination of desired objectives in the context of that future, the development of alternative courses of action to achieve such objectives, and the selection of the course of action from among these alternatives".

This development of alternative courses of action is the very crux of planning, for if no alternative exists the future is predetermined (or inevitable) and thus no choice exists. Planning then becomes merely a matter of trend projection. As Goetz (1949) suggested

"a planning problem arises, when an alternative course of action is discovered".

Thus, without alternatives there is little or no need for planning. Dyson and Foster (1980) isolated the generation of alternatives as one of the key criteria in effective strategic planning. Many other authors (see for example Koontz and O'Donnell, 1959) have stressed the search for and the evaluation of, alternatives in their systems of planning.

The search amongst alternatives is also mentioned in Hausler's (1968) definition of planning

"planning is thus:

1. a preview of future fields of action, a search for order and goals in the future, in particular a search for fields of performance for the future mobilization of resources, and
2. methodological preparation for action, including development of strategies or guidelines for future action".

This definition stresses a second important aspect of planning and that is the resulting action. Plans should be the forerunner to action and change, for without it planning merely becomes an academic exercise. However, plans are not blueprints for action but are rather some general clarification of the direction and the goals of the company. According to Higgins (1976), it answers the question "why are we on this course to this goal?" rather than predicting the exact state of the organisation at the end of the planning period.

Various basic philosophical views have arisen about planning over recent years. For example, according to Ackoff (1970), planning is a matter of probabilities and specifically a matter of different levels of uncertainty requiring different types of planning. Firstly, there are virtually certain events (for example, the approximate size of the population next year); this type of uncertainty requires "commitment planning". Secondly, there are things which although not certain, reasonable guesses can be made as to their probabilities (for example, the size of the cost increases next year); such uncertainty requires what Ackoff calls "contingency planning". Finally, there are things which cannot be planned, for example political catastrophies and technological breakthroughs.¹ As you cannot forecast these things, "planning responsiveness is required", that is structuring the organisation so it can respond quickly to such events.

Ackoff (1974) later categorised planning attitudes into:

1. Reactive - always looking at the past, characterised by the motto "the good old days".
2. Inactive - largely conservative, aiming for stability and achievability. "The organisation behaves like a sponge, and is about as active." This approach is analogous to an earlier category of planning mentioned by Ackoff (1970, p.15) called satisficing. This is where a plan is produced which is acceptable rather than optimal.
3. Preactive - forecasting the future and preparing for it, is characterised by the belief that there is nothing the individual can do to alter that future. This is analogous to Ackoff's earlier passive adaption (1970, p.15).

1. These are two examples cited by Ackoff. It is interesting that he should pick these two as, in fact, some would argue that these could be broadly forecast and planned. Catastrophy theory is a rapidly growing mathematical technique and technological forecasting is something which is developing better techniques.

4. Pro-active - as with preactive, there is a general dissatisfaction with the past and present in this type of planning, but the philosophy believes the future is the result of decisions and consequent actions taken by people. Their motto is "make it happen". This approach believes the value of planning lies in the process of development, rather than the plans themselves. Again, it is analogous to his earlier active adaption (1970, p.15).

A similar, but simpler split in conceptual terms is proposed by Welsch (1969). He suggests two philosophies: The Market Theory and The Planning and Control Theory, which represent two extremes of the planning spectrum. The Market Theory, like the preactive approach, suggests that management is solely at the whim of the prevailing environment and managerial competence is displayed by their ability to correctly read this environment. If it is forecast correctly, then the decision to be made is obvious as no alternative exists (thus the search for an alternative would be a pointless exercise). Alternatively, the Planning and Control Theory, like the proactive approach, rests on the concept that the future of the firm can be manipulated, and thus both planning and control becomes feasible. The competence of management in this Theory, is measured by their ability to produce action plans which manipulate the firm's internal environment to act towards its external environment.

According to Welsch, the Market Theory is based on reactive (ex post) decisions, "management reads the events that are happening to them". Whereas the Planning and Control Theory uses

"dynamic (ex ante) decisions: management anticipates the future event and plans accordingly".

Research by Karger and Malik (1975) suggests that the majority of managers tend toward the Market Theory.

"Planning is universally given and recognised as the first function of management. Yet, managers do not universally plan in a formal manner, most merely react to problems.

Similar conclusions were arrived at by Channon (1973).

Ideally, management should be moving towards the Planning and Control Theory, thus giving them some control over their destiny. In practice, however, the external environment is often so dominant that management operate somewhere between the two extremes. Thus a firm would plan on the assumption that although the future has a degree of uncertainty about it, decisions can often be taken to fundamentally alter it.

The time horizon of planning, and the environment in general, has a lot to do with exactly where a firm finds itself between these extremes. In the very short term a division may be subject to violent fluctuations in the environment. Over the longer term, these fluctuations may be reduced and a trend becomes visible.

Further insight into the basic concepts of planning is given by Taylor (1976) in his excellent article "New Dimensions in Corporate Planning". In this article he outlines several different viewpoints on planning which can be adequately summarised by Table 2.2.

2.2.1 The Relationship between Planning and Control

Taylor's first category of planning is perhaps the most common and possibly the most important form of planning. Fayol (1946) suggests that the management process includes "planning, organisation, command, co-ordination and control", and hence established what is regarded as perhaps the second element of the planning system, control.

The control process is essentially an extension of the planning process, as Koontz and O'Donnell (1964) put it,

"Controls must be based on plans, and that the clearer, more complete and more integrated plans are, the more effective controls can be" (p.640).

The link between planning and control is therefore inextricable

"For any planning system to exist, a planning control system must exist...." (Higgins, 1980 p.3).

TABLE 2.2¹

Taylor's Dimensions of Planning

1. Planning as a Central Control System

This view has its origins in systems thinking and cybernetics, which suggests that management should have a comprehensive planning and information system covering the total enterprise. It is the most commonly held idea of planning and has proved a most useful contribution to management, but research indicates that this approach to planning is likely to fail if used alone.

2. Planning as a Framework for Innovation

A second and complementary view of planning is that the plan should serve as a stimulus for local initiative and a process through which the staff of an organisation should organise its 'self-renewal' in terms of new products, new markets and staff development - in fact the progressive adaptation of the organisation to a rapidly changing environment.

3. Planning as a Social Learning Process

A third view of planning is that management should use the process as a means of learning about the environment and the system which they are managing. Behavioural scientists in particular have pointed out that there are no ready-made solutions to hand, and that the only means of coping with change is to move forward a step at a time accepting that mistakes will be made, looking for marginal improvements rather than comprehensive solutions. This 'consensus' model of planning is being used very effectively in hospitals, boards of education, and other fields where there are no clear lines of command.

4. Planning as a Political Process

Much of the early writing on planning was politically naive. In the past 5 years however governments, unions and social action groups have challenged the legitimacy of management. In Europe, particularly, Corporate Planning has come to be viewed as an inter-organisational process involving government and unions, i.e. through industrial democracy and 'planning agreements' between large companies and central governments. Within organisations, too, the political struggles have been more clearly identified and researched.

5. Planning as a Conflict of Values

Much of planning is 'instrumental' i.e. concerned with devising feasible strategies and efficient methods for accomplishing the present objectives of existing institutions.

Another 'school of thought' takes the view that planning should be more concerned with re-examining the goals and purposes of enterprises - to achieve a better match with the aspiration of employees and the expectations of society at large.

They also argue that plannings in both public and private organisations should be involved increasingly in 'creatively' forecasting the future shape of major socio-technical systems.

1. From Taylor 1976.

It is far too easy to drift aimlessly from good plans. Control is the process by which a regular check on progress is achieved. The system of control contains three interrelated elements, reporting of the results; the analysis of the results; and the remedial action. The reporting of the results is largely a matter of individual preference as far as style goes, as it should be compatible with the division's management information systems. A report format for a firm in the construction industry, therefore, would be inappropriate for a firm in a manufacturing industry. However, the report should provide management with:

"not only budgeted costs, actual costs and variations, but also some means of deciding whether or not to investigate the variation." (Henderson and Copeland, 1965).

The analysis of the results is a matter for skill and judgement. The objective of control is not merely to produce evidence of deviation, but to discover the root cause, such that correction can be made. Analysts should seek out relationships that are thought to hold. For example, negative variances in sales should generally be mirrored by negative variances in the cost of sales. If these logical relationships fail to hold, then a reason for that being the case should be found.

The ability to discover causes for variances relies heavily on management who are at the operational end. The accountant can rarely do more than report variances; the actual analysis is a matter for those who are responsible for control. Once the interpretation stage has been completed and explanations have been sought, the next stage should be to take the appropriate retrospective action. Such action is not aimed at improving the past but the future. As Morris (1968) stated:

"corrective action is a futuristic concept. Action cannot be taken to alter what has happened in the past, it can only be concerned with what will happen in the future."

This part of the process is the control stage proper. Analysis does not control anything, only action on the part of management controls.

2.2.2 The Use of Control Data

All that has been said so far on control, assumes that management understand and make use of the data with which the control system provides them. Dew and Gee (1970) analysed the use that management made of control data and concluded that in many cases it was not used at all. They suggested that the more experience management had with the budgets, the more use they would make of the information. Those with little experience would still make extensive use of the information, but only if accountants acted as interpreters.

They also found that participation and consultation in the budget setting process was important in determining the use made of them. However, the most important criterion seems to be the degree of top management follow-up present. Thus line managers who knew their top management was likely to carry out investigations, were more likely to make use of the information. In conclusion, Dew and Gee suggested that the actual system was less important than educating management to use the information. This suggests that the designers of control systems should concern themselves more with the human aspects of control rather than with the accounting technicalities.

2.2.3 The Manipulation of Control Data

Further evidence of the importance of the human aspects of the control system is found in the existence of the manipulation of control data. Hofstede (1968) quotes Jasinsky (1956) who gives examples of distortion and manipulating of measurement in control systems. He concludes that

"people are always smarter than the system and if the system is functioning in such a way that it pays to make the figure "look right" instead of doing something about the underlying causes, this is what will happen". (p.212)

Similarly, Likert (1962) (as quoted by Miles and Vergin, 1966) suggests that

"if management demands an exact level of performance, its tends to get it - even if it means the preparation and distribution of "phoney" performance figures."

Such occurrences led Hofstede (1968) to suggest

"data for the determination of pay are basically unfit for efficiency measurement". (p.213)

2.2.4 The Conflict Between Planning and Control

The fact that control systems are, either explicitly or implicitly, used for motivational purposes, means that there may be some conflict with the planning functions of plans. For financial and operational planning purposes, a forecast should represent the most likely outcome; whereas for control purposes, a motivationally stretching target (which may be considerably above expected achievements) is often required. Such a target is not fully compatible with financial and operational planning requirements.

This conflict has been recognised by several authors. For example, Stedry (1960), in reference to budgets, said their prime objective

"is to increase long term profit at the fastest possible rate; however a second goal of the budget is to facilitate the organisational co-ordination by providing an accurate forecast for future results. An ideal budget system would consist of a mechanism to increase profit and another to facilitate co-ordination by accurately forecasting results".

This concept of two mechanisms, one for motivation and one for planning, was further expanded by Morris (1968). He claimed that the concept of budgetary control was obsolete, and the crux of the solution is to set the optimum figure for each purpose. Sizer (1969, pp.223-226) was also concerned with whether individual budgets represent management's best estimates of what is needed to maximise profit, in other words to optimise the whole organisation, or are they individual targets set for motivational control purposes.

"A good plan does not necessarily yield a good control, and, likewise a budget which reflects attainable standards will probably not result in a good plan, that is, one that is designed to optimise the whole It would appear that one set of budgets cannot combine successfully both roles, i.e. planning and control." (p.225)

Sizer suggests establishing planning budgets which would not be concerned with responsibility boundaries, but would look across departments in an effort to optimise the whole. He sees these planning budgets flowing from a highly sophisticated computer based model of the firm. In turn, the planning budgets would be translated into control budgets for individuals. Although Sizer is not specific on how this would be achieved, he did indicate that in order to ensure that every optimising action by an individual is an optimal action for the firm as a whole, it would be necessary to vary attainment levels among the budgets.

Machin and Wilson (1979) and Machin (1977) believed that the fundamental reason for the failure of planning to be implemented and to be operated successfully

"is because of a lack of a conceptual basis for integrating planning and control" (1979)

They proposed an appealing, though somewhat radical, solution called the Expectations Approach. This approach aims to successfully integrate into one data base the function of planning and control. It is based on explicit expectations about requirements for one individual or group by another. Similarly, each individual or group explicitly states their perception of the requirements others hold of them. Each expectation is written down covering the content and quality of what is required, the quantity required and the time when it is required.

Appealing though this system is, the time required to develop the vast amounts of data would almost double the time required to develop the plans or expectations, in comparison to a traditional system. This makes such an approach prohibitively expensive.

The problem has however been tackled in less radical ways by various other methods. Tull (1967) reported one company making

"a pessimistic and an optimistic forecast, the pessimistic forecast was given to the Finance Department for financial planning and the optimistic finance was given to the Marketing Department for sales planning."

This is an attempt to utilise the "permanent optimism" found in many business forecasts (5.4.1). It is not difficult to imagine a system using one of Tull's predictions for planning and one for control. Such a system would differ from Morris's two predictions, as they only represent a range around a single forecast.

Perhaps the simplest solution to this problem is the use of contingencies. This involves top management setting targets (although often the optimism of lower management may cater for this) which are used as control mechanisms in the operating divisions. Top management then scale these figures down, either by "gut-feel" or by analysis of past data, such that financial planning can be done on a "realistic" basis.

2.3 The Need for Planning

Having outlined the basic concepts of planning and control, it is natural to ask "where is the need for it?"

The major reason why firms need to plan is because the future will, in some way, be different from the present, and management should prepare for this change. The rate of change has undoubtedly increased over recent years. The first fifteen years after the war were characterised by a high growth rate and declining costs. This picture has changed significantly, particularly in the 1970s, with the rapid growth of Western economies became a thing of the past. Some authors have suggested that when forecasting becomes impossible planning is invalidated.¹ However, to confuse forecasts with plans is a misnomer.

1. An interesting series of contributions in this area was made in the "Society of Long Range Planning Newsletter", May/July 1980, under the heading "What is the role of the planner, when people believe forecasting is impossible?".

Forecasting is merely a tool used in planning. Forecasts need not be correct, they only have to be sufficiently accurate to obtain the right decision. Planning is essential because of the existence of alternatives, and as uncertainty increases so do the number of alternatives, hence the demand for planning increases.

A further demand for planning comes from the increasing complexity of organisations. Not only are there multi-national, multi-divisional organisations, but also conglomerates with a large diversity of products and markets. This has led to decentralisation of organisations and increased autonomy of the operating units. In turn, this has led to an increased demand for comprehensive planning in order to allow some form of Management by Exception Principle (Anthony, 1956,p.277) to operate. Under such a system, divisions produce detailed plans of their future intentions which, subject to approval and satisfactory implementation, they are allowed to operate with total autonomy. Similarly, the rapid expansion of the scale of business has led to increased pressures in day to day management. In such a situation, planning, even in the short term, becomes a secondary function. This may in turn lead to crisis management, thus producing a vicious circle. A formal approach to planning forces management to consider longer term problems before they occur and thus they are considerably better prepared to overcome them. Nuttal (1978) uses the concept of the organisation "moving from one identifiable state to another". Thus planning forces management to make explicit where they are going and thus allows them to know when they have got there, or by how much they have deviated.

2.4 Quantification of the Benefits of Planning

In an effort to justify the need for planning, several authors have attempted to quantify the benefits planning can bring. These analyses have come across many problems. Planning is only one of a host of factors influencing the success of the company, and as planning varies in quality, it is impossible to say conclusively that firms with formal planning systems do better than those without.

When discussing organisational structures, H.A. Simon et al (1954) suggested

"to try and measure directly the effect of organisation on profit would be like trying to measure the effect of a Minnesota spring shower on the flow of water over Niagara Falls".

Exactly the same could be said about planning. However, although planning may not always be essential to the survival of the firm, it is essential to its effectiveness. There is therefore some merit in these investigations.

Unfortunately, the investigations have been far from conclusive. This may, in part, be due to the arbitrary classification of planners and non-planners (Leontiades and Tezel, 1980). Studies by Thune and House (1970), Ansoff et al (1971), Herold (1972) all found evidence to support the theorists that formal planners out perform non-formal planners in performance terms. Thune and House in their research of matched companies claimed that informal planners did not out perform formal planners in any one of five key business parameters. Similarly, they found evidence that companies performance during their post-planning days out performed their preplanning days.

However, later research tended to show the converse. Kudla (1978) found no significant difference on shareholder return between planners and non-planners. Similarly, Leontiades and Tezel (1980) concluded

"Our research fails to support the contention that formal planners outperform informal planners".

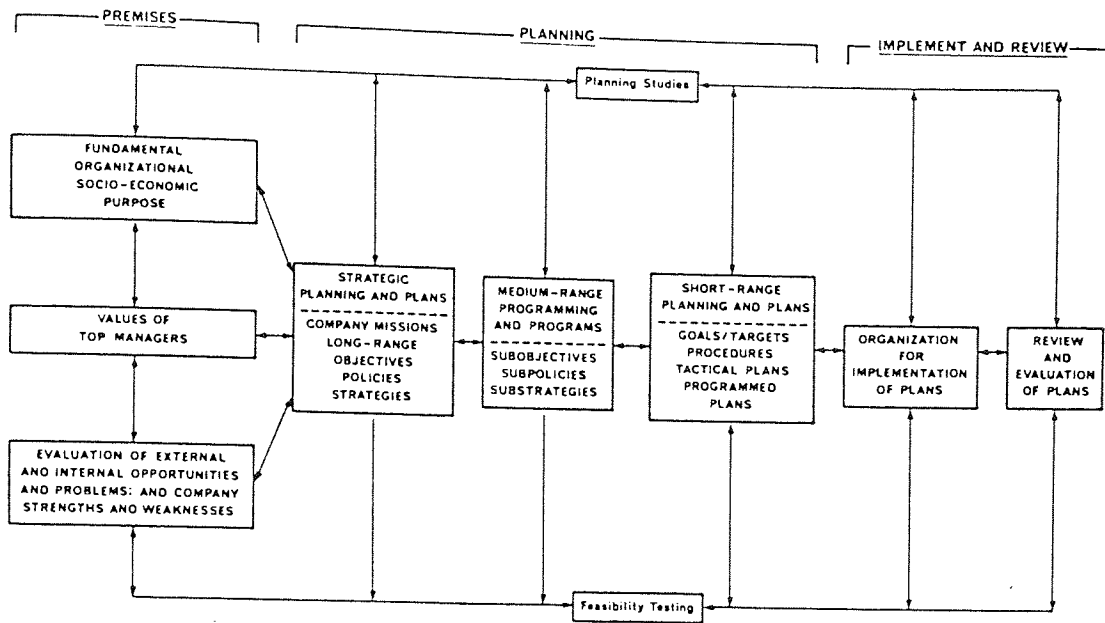
Bearing in mind Simon's warning above, this contradiction in the findings is not entirely surprising. Also, the fact that some researchers have failed to find a correlation between some measure of success and formal planning should not "necessarily reflect negatively on the importance of the planning process" (Leontiades and Tezel).

2.5 The Structure of Planning

Many different types of planning systems exist, largely because of the vastly different forms of organisational structure which can be found. Figure 2.1 outlines the Steiner (1969) model of a planning system which O'Connor (1976), in his study of 83 US companies, found most businesses followed.

Figure 2.1

Steiner's System of Planning

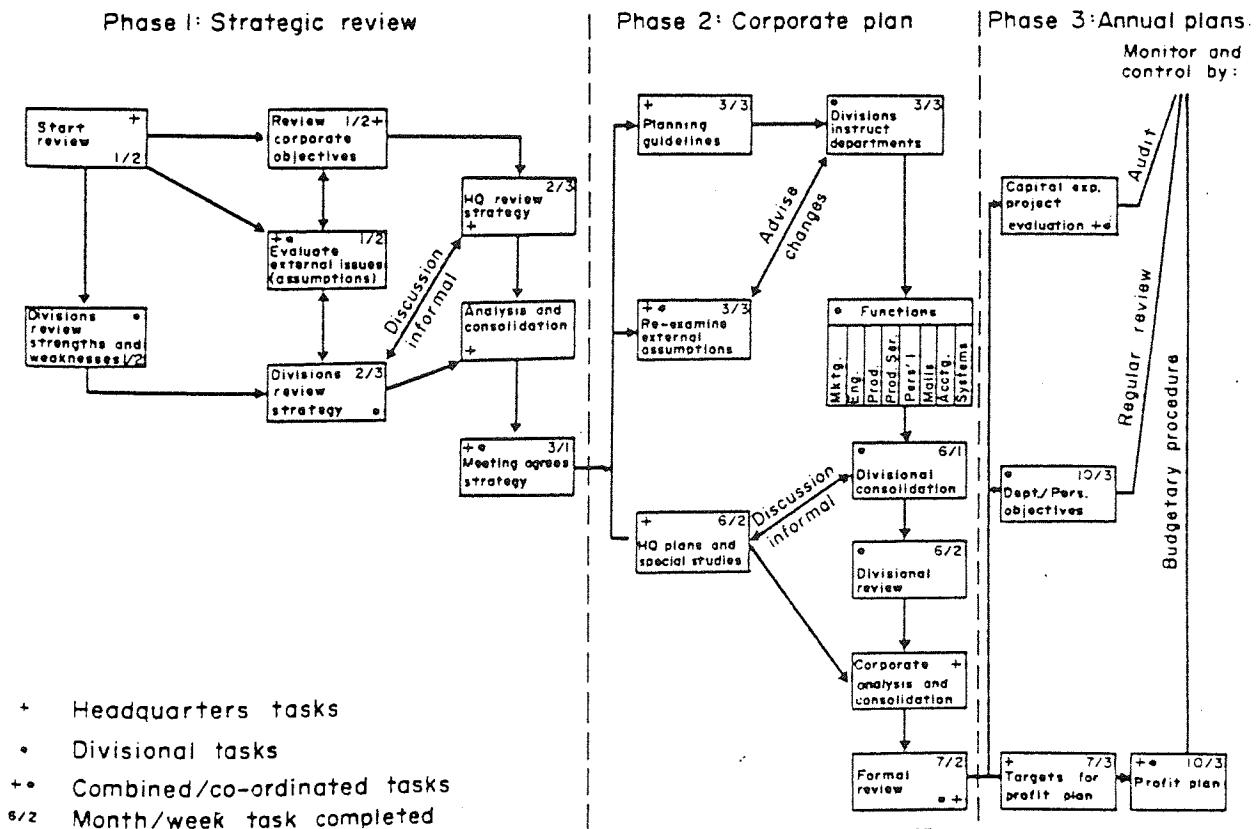


(From Steiner, 1969, p.33)

In the UK, one approach to a comprehensive planning system is given by Hussey and Young (1977) at Rolls Royce Motors (Figure 2.2).

Figure 2.2

Planning at Rolls Royce Motors



(From Hussey and Young, 1977)

For our purposes it is perhaps easiest to examine planning via four separate, but highly related forms of plans and planning: 1. Corporate, 2. Strategic, 3. Tactical, 4. Operational. Each of these relate to a different level of decision making and, in one way or another, they cover all aspects of planning.

Corporate planning is traditionally associated with total resource allocation throughout the whole organisation. Strategic planning is closely inter-twined with corporate planning, but with a large multi-divisional organisation it is common to find individual divisions producing their own strategies. Strategic planning is normally concerned with the division's critical interactions with their environment and with major decisions. Tactical and operational planning both relate to resource conversion, with tactical planning taking an overall view dealing with several processes and relating them to each other, whereas operational planning deals with the "nitty gritty" planning of daily operations.

2.5.1 Corporate Planning

A vast amount of literature has been published on the concept of corporate planning.¹ For this reason anything more than a brief resume is outside the scope of this research. The object here is merely to stress one or two important concepts of relevance to our particular purpose.

Corporate planning is a relatively new concept which has developed rapidly over the last fifteen years (Taylor and Irving, 1976). In a sample taken by Higgins and Finn (1977), eighty percent of UK companies were found to practice corporate planning. But this may include a multitude of approaches. According to Hussey and Langham (1979), corporate planning

"has been seen as extended budgeting; a systems approach; part of a quantification approach, heavily dependant on computer models and optimising techniques; a socio-economic activity; and a human behavioural activity". (p.24)

1. See for example Ackoff (1970), Taylor (1976), Hussey (1979) or Argenti (1974).

As they point out, there is something of value in each of these approaches, and the secret of success is to use them all in order to develop an integrated approach which draws on each.

The fact that corporate planning is multi-faceted is not entirely surprising. Essentially it is a holistic approach, a total system involving all planning levels integrated under one banner. This is stressed in Hussey's (1978) admirable definition of corporate planning which suggests it is

"a comprehensive future-oriented, continuous process of management, which is implemented within a formal framework. It is responsive to change in the external environment. It is concerned with both strategic and operational planning, and through the participation of relevant members of the organisation, develops plans and actions at appropriate levels in the organisation. It incorporates monitoring and control mechanisms and is concerned with both the short and the long term".

Thus corporate planning is a completely integrated system. It includes strategic planning and the means to control corporate and strategic decisions through effective short term planning. Similarly, participation is seen as an essential aspect of corporate planning.

The relationship between corporate decision making within corporate planning, and the system required to implement and monitor those decisions, in terms of a lower level planning system, has been further emphasised by Drucker (1973). He defined corporate long range planning as:

"a continuous process of making entrepreneurial decisions systematically and with the best possible knowledge of the futurity; organising systematically the effort needed to carry out these decisions and measuring the results against expectations through organised systematic feedback".

This definition rightly emphasises that corporate planning is not dealing with future decisions, but with the "futurity" of present decisions.

One important branch of corporate planning relates to the development of the corporate plan. This is essentially a statement of a company's long term strategic objectives and selected strategies (from various alternatives) to achieve these objectives (Taylor 1977, p.301).

A large diversified organisation may have two top levels of plans - corporate and strategic, both achieving relatively the same aims but at a different decision making level. Much of the discussion in the next section on strategic planning is therefore of direct relevance to the development of a corporate plan.

2.5.2 Strategic Planning

A host of relatively similar definitions exist for strategic planning. Ansoff (1968, p.94) supplied a useful definition. He thought strategy achieved three things, 1. it provides a broad concept of the firm's business, 2. it sets forth specific guidelines by which it can conduct its search and 3. it supplements the firm's objectives with decision rules which narrow the firm's selection process to the most attractive opportunities.

McCarthy et al (1975) believed that although this definition stressed the employment of strategy to achieve objectives, it separated the two components. They preferred the definition by Schendel and Hatten (1972)

"Strategy is defined as the basic goals and objectives of the organisation, the major programmes of actions chosen to reach these goals and objectives, and the major pattern of resource allocation used to relate the organisation to its environment".

In this definition, both the objective and the means to achieve it are encompassed under the one heading of strategy. It is this author's belief that this is a correct interpretation.

Typically, most authors confine themselves to discussing two types of planning: strategic and tactical. The distinction between the two, which is often fine and always relative, is discussed in Appendix E1. As a generalisation, strategic planning is normally concerned with the longer term decisions which affect the whole organisation, rather than small parts of it. They can also be short term, but are always characterised by a breaking away from the momentum business.

In historical terms, strategic planning was a development from long term planning, which merely projected the future on little more than a trend basis. Strategic planning, however, attempts to determine the future, and therefore starts with an objective and subsequently analyses the environment. The definition by Schendel and Hatten is thus correct in stressing the use of resources to "relate" the organisation to its environment.

Analysis by Gluck et al (1980) of 120 mainly industrially based companies in seven countries, abstracted some common patterns in strategic planning. Essentially, they were able to isolate four main phases of planning development and these are worth describing so as to get an idea of the width of strategic planning.

Phase One - Basic Financial Planning

In this approach strategies may exist, but they are not formalised. It relies heavily on the Chief Executive Officer being fully aware of both external forces and the internal environment now and in the future. Thus, it can only be operated successfully within an uncomplicated organisation. The aim of this approach is to meet the budget.

Phase 2 - Forecast-Based Forecasting

This is the long range planning or extended budgeting referred to earlier. It is a process of extending trend lines and is often routine. Its aim is to predict the future, as in Ackoff's preactive planning (2.2).

Phase 3 - External-Oriented Planning

With the rapidity of change and the growing uncertainty, planners moved away from the forecast based system (which had failed to meet the challenge) in order to try to understand the cause of changes. This approach uses more advanced techniques, for example, matrix portfolio analysis, and by aiming to strengthen competitive advantage, it tries to move the firm towards a more attractive long term sector. This approach may utilise strategic business units (SBU's)¹, but the key to this is the evaluation of strategic alternatives. This approach aims to get management thinking strategically.

Phase 4 - Strategic Management

This approach joins strategic planning and management into one process by linking strategic planning to operational decision making. This is achieved by:

1. Having a planning framework which cuts across organisational boundaries and even extends the SBU concept, facilitating strategic decision making about customer groups and resources.
2. Having a planning process which stimulates entrepreneurial thinking by trying to force strategic insight and not being tied to a planning calendar.
3. Having a corporate value system which reinforces the manager's commitment to the company's strategy.

Teamwork, commitment to implementation, open communication and a belief that the future can be created, are all exceedingly important factors in this phase of planning according to Gluck.

1. These are organisational entities which are large and homogeneous enough to exercise effective control over most factors affecting their business (manipulation).

Ansoff (1977) innovated the concept of strategic management. He believes that for major new strategies to be adopted significant changes in the organisation are needed. These may include: management attitudes, skills and resources, informational systems, organisational structures and incentives. The aim is not to stop the strategic decision making process once the plans are formulated, but to extend it into strategic action. The statement of editorial policy for the Strategic Management Journal (1980) gives an excellent description of how strategic management differs from strategic planning and one area in which it concentrates is the separation of strategic and operational management.

"Sequential separation of decisions from implementation is a theoretical convenience, which may or may not be appropriate for a particular strategic action, and further even when a decision and action are clearly sequential, the implementability of a decision frequently affects the choice as well as the behaviour which proceeds the choice."

The importance of this statement is that strategic management is concerned with strategic action rather than merely developing a strategic plan. As suggested earlier (2.2), plans without action are merely academic.

Strategic planning has increasingly come under investigation as it has metamorphosed. Channon (1973) researched into the strategy and structure of British industry and concluded that strategic changes had not been the result of planning, but of external changes. He, somewhat disparagingly points out

"they had not created the strategic opportunities by scanning their environment and adjusting to it, but had belatedly responded in order to survive". (p.226)

The apparent failure of strategic planning was further investigated by Allen (1980), who aimed to see if strategic planning systems and skills had developed sufficiently to deal with the real management

challenges which presently exist. Allen believes that as the complexity of an organisation grows, the more it needs to upgrade its planning strengths. These planning strengths should, according to Allen, develop in line with two factors:

1. Complexity, including size, diversification, international scope and technological intensity.
2. Planning capabilities including commitment, skills, motivation and the degree of strategic implementation.

He isolates four levels of planning development which are not radically dissimilar to those described by Gluck et al (1980) earlier. However, the fourth level is termed "multi-level planning" and is described by Allen (1979) as a method of dialogue between the plans at each level to ensure a co-ordinated fit.

"It is no longer a planning classroom where businesses bring their homework to be checked; it is no longer a bank where businesses come in to bid for resources by having the glossiest books and slides. Instead, the planning system reaches a level of maturity where each level performs a planning assignment that is complementary to the others."

All this is perhaps somewhat of a "romantic" viewpoint, but the author believes there is considerable merit in a system which stresses some form of planning dialogue and the integration of complementary plans.

In his research, Allen examined 145 companies by using four measures of complexity and performance. He categorised these companies in order to examine the effect of strategic planning and analysed the results into four stages of planning: clarity of corporate direction; strength of business planning; corporate review and integration of plans; and linkage of plans with operations. Some of the findings are presented in Table 2.3.

Table 2.3 Allen's Research into Strategic Planning

CORPORATE REVIEW AND INTEGRATION OF PLANS		
	<u>Relative Strength/Weakness</u>	
Review of Plans for Analytical Consistency	+4	Adequate
Review of Plans to Pinpoint Strategic Issues	-5	
Review of Plans for Fit with Corporate Strategy	-8	Weak
Support of New Business Development	-9	
Review of Strategic Resource Expenditures	-23	
Integration of Acquisition/ Dispositions	-23	Very Weak
Feedback on Business Objectives/ Strategy	-24	
Trade-offs between Short and Long Term Results	-38	
International Integration of Plans	-43	Extremely Weak
Methodology for Resource Allocation	44	
Overall Assessment	-23	

LINKAGE OF PLANS WITH OPERATIONS		
	<u>Relative Strength/Weakness</u>	
Top Management Involvement	+26	
Middle Management Involvement	+8	Strong
Calibre of Planning Resources and Staff	-17	
Linkage of Strategic Priorities with Budgets	-21	Very Weak
Degree of Implementation and Impact of Strategy	-30	
Board of Directors Involvement	-40	
Organisation for Effective Strategy Implementation	-41	Extremely Weak
Management Selection Linked to Strategic Task	-46	
Coupling of Strategic Performance with Pay and Promotion	-52	
Overall Assessment	-34	

The most astounding finding of Allen's analysis is the general weakness of nearly all areas of strategic planning, particularly the corporate review and integration of plans, and the linkage of plans with operations. Allen believes that the reason why strategic implementation is low, is simply that "most planning just isn't good enough to be implemented".

Recent empirical research by Dyson and Foster (1980) has led to the development of 13 criteria for effective strategic planning (Table 2.4), and it is interesting to note that they too include feasibility of implementation.

TABLE 2.4 Criteria for Effective Strategic Planning

Clear statement of objectives
Integration of planning function
Catalytic action of planning function
Richness of formulation (of plans)
Depth of evaluation
Treatment of uncertainty in evaluation
Resources planned
Data used
Iteration in process
Assumptions made
Quantification of goals
Control measures (responsiveness to uncertainty)
Feasibility of implementation (testing of short-listed strategies)

2.5.3 Implementation of the Strategic Plan

According to Drucker (1954, p.284) planning and doing are separate parts of the same job, and no work can effectively be performed unless it contains elements of both. Thus, for planning to be effective, it must be successfully implemented, that is turned into action.

The majority of authors (for example see the flow charts of Hussey and Steiner, 2.5) suggest that the strategic plan is the starting point of the planning cycle. Most of these authors have in turn made relatively unsupported statements about how the annual planning system will subsequently turn the strategic plan into action.

Typical of this is a suggestion by Stonich and Zaragoza (1980) that

"companies define their strategies early in the planning cycle and then develop detailed planning budgets just prior to the upcoming operating year".

Or McCarthy et al (1975)

"The budgeting function as seen here creates formal, written statements called budgets or more accurately, "planning budgets", which, convert organisational strategy into a course of action."
(p.400)

One or two authors have suggested that it is considerably easier to conceive a strategy than it is to carry it out (Hobbs and Heany, 1977) and that although planning theorists are extremely eloquent when formulating strategies, they are somewhat less forthcoming on how these should be implemented (Taylor, 1976).

Allen (1980) has shown conclusively that the implementation process is not operating effectively. Out of the 145 US companies in his sample

"almost 90% admitted that their strategic plans were not getting implemented and not having an impact on company performance".

Clearly, even the best laid plans do not implement themselves but require positive management action. Kudla (1978), amongst other authors, has stressed the dangers of day to day management obscuring the longer term plan. In particular, there is a danger that a slight change in the forecast environment will make management think the plan is outdated. Similarly, strategies which are laid by a removed body, both geographically and organisationally, give rise to accusations of ivory-towered planners who are unaware of the operating problems of management.

The solution to these problems are only just beginning to emerge. Allen (1980) believes that the reason why so few companies implement the strategies is because most have not developed their planning capabilities to meet the need. Hobbs and Heany (1977) believe that the problem lies in the fact that operational and top management are not coupled together on a strategy. Such is the aim of strategic management (2.5.2), and as Ansoff (1977) described the problem

"strategic planning focuses only on the problems external linkage under the assumption that internal configurations of the organisation will remain essentially unchanged, assuming implementation will follow as a secondary activity".

As seen in section 2.5.2, strategic management is concerned with the whole process of strategic planning and decision making right through to strategic action.

Other solutions along similar lines have been tried. Allen (1980)¹ suggests that much of General Electric's planning success is because they have been able to translate their strategic priorities into operating plans and budgets effectively. This, he believes, has been achieved through efficient corporate resource allocation which supports implementation instead of frustrating it.

1. Ex-Vice-President for Planning at General Electric.

Stonich and Zaragoza (1980) came to similar conclusions and proposed what they termed strategic funds programmes. These use a funds base line which is merely revenues from existing products, related operating expenses, "normal" investment, and an inflation driven increase in working capital. Then, by taking this away from the total funds available, a figure is arrived at for "strategic apportionment". This is hardly a revolutionary concept, their base line being more commonly known as momentum or maintenance capital.

At the other end of the planning system, monitoring of strategies also has a part to play in their implementation. Kudla (1978) concluded in his study of 323 US companies, that there was a great need for increased strategic monitoring if the plans were to be effectively implemented.

Similarly, Roush and Ball (1980) thought that it was important to have strategic control as well as operational control. Such a system would provide "on-going answers" to the following kinds of questions:

1. Are the assumptions underlying our strategies still valid.
2. Is satisfactory progress being made towards objectives.
3. Are the medium term success criteria/performance targets being achieved.

Proposals similar to these should go some way to ensure that strategic implementation, via some tactical planning system, takes place. They would also ensure the strategies which have not been vetted and agreed by the centre are not implemented.

2.5.4 Tactical Planning

As already indicated, one of main tasks of the tactical plan is to implement the longer term strategy. This is achieved by converting

the strategies and objectives into more detailed annual "budget explosions" designed for action and control. Thus the objectives are turned into actionable, measurable goals¹ which attract responsibilities. The overall aim of tactical planning then, is to interpret the somewhat broader strategic objectives into specific, obtainable goals which encompass the immediate problems within the immediate environment.

Being a major communications document, particularly in a large organisation, the tactical plan often attracts other roles, some of which may conflict. These roles will vary with the organisational structure and management preferences, but may include: development/project planning; targetry; costing; internal co-ordination; budgeting; basic operations planning; etc. Also in large organisations, the tactical plan may act as a summary of a lower level of planning. Central management does not wish to be swamped with the intricacies of the day to day running of the sub-units, thus the tactical plans are often used as summaries of the key issues.

Sub-units will normally break down the plan into a budgetary control document which involves shorter time periods and considerably more detail. This detailed form of planning usually involves the budgetary side of tactical planning.

"Budgets are not plans they are numerical statements, usually in financial terms, which describe plan activities and goals". (Jones, 1974.)

As they normally deal with the goals of sub-units, budgets provide a basis for managerial control (Jones, 1974).

1. Goals are short term minor aims expressed in a specific dimension and to be achieved within a specified time period (Steiner 1969, p.153).

It is important to get a clear understanding of the concept of budgeting, and where it links in to the planning system and specifically tactical (operating) plans. Perhaps the most comprehensive definition has been given by Knight and Weinwurm (1964):

"the translation of operating plans into accounting language and their evaluation in relation to objectives. The operating plans may be regarded as originating in such areas as marketing, engineering, production and personnel, which constitute the non-financial aspects of management. They relate to such matters as markets, products processes and requirements. These plans are then translated into such terms as revenues, costs, assets and liabilities. These accounting terms are summarised in the form of financial statements, profit and loss statements and the balance sheet. Within certain limitations, these statements, in turn, are summarised and evaluated in terms of the indicated return on investment. In this sense a satisfactory sustainable return on investment may be regarded as the paramount financial criterion on the basis of which a proposed operating plan or set of operating results can be evaluated." (p.6)

This definition adequately demonstrates the role of budgets as the quantitative shadow of plans.

In order to gain some appreciation of the methods used for developing a budget, and indeed tactical planning in general, Bergstrand (1974) described the chronological "building blocks" of budgeting (Table 2.5), which he abstracted from the literature.

TABLE 2.5

CHRONOLOGICAL STEPS FOR BUDGET DEVELOPMENT

0. introducing administrative activities
1. clarify goals
2. clarifying basic assumptions
3. developing preliminary budget sections
4. participation in the budget dialogue
5. developing the budgetary forecast
6. consolidating sections in the corporate budget
7. suggesting changes in the preliminary budget sections
8. reworking the corporate budget
9. concluding administrative activities

Source: Bergstrand (1974)

This approach uses some form of iteration (point 7) in order to arrive at an optimal solution at the corporate level.

As stated earlier, this budget will probably be in a consolidated form and needs to be broken down into a form suitable for operating planning, control and implementation.

2.5.5 Operations Planning

From the divisional tactical/budgeting plan, a further more specific form of planning - operating planning - may emerge. This relates to the day to day management of an operating system which is involved with converting inputs into outputs. This form of planning is primarily concerned with elements surrounding production. Mize et al (1971) defined it as follows:

"The allocation of available productive resources to production requirements as determined by demand forecasting".

However, other functions are also associated with operations planning: inventory planning and control; operations scheduling; despatch and progress control; integrating aspects to ensure other functions match in terms of timings and outputs; quality control and so on.

Although operations planning is important to the survival of the business, it is the framework that supports this planning which is of interest to this research. Operations planning can only be relevant to the particular division, department or even manager that executes those plans. It must be extremely detailed and accurate.

2.6 Effective Planning

Having examined what planning is in general, it is helpful to gain some insight into what factors are symptomatic of effective planning. Kudla (1976) gives a logically appealing, although somewhat generalised definition of effective planning, as being planning which

"results in capturing tomorrow's opportunities and avoiding tomorrow's problems by making correct decisions today".

Similarly, Heiser (1959) outlines his feelings on this issue

"the question arises as to what constitutes good planning, admitting that the most carefully laid plans can be upset by factors which in the nature of things cannot be accurately forecasted. It is believed that good planning essentially has two elements:

1. it calls for the availability of all forecast data generally available to the company concerning a specific market,
2. it calls for sound use of the data".

This definition, although broadly acceptable, is essentially lacking in two aspects. It lays too much stress on forecasting, which, as already stated, is only one input factor in planning. Also, the second part of

the definition - "sound use of that data" is not specific enough for practical purposes, it could for instance specify the construction of measures to improve upon the momentum forecast.¹ Such an addition would emphasise the planning aspects of the system as opposed to the "inevitable" market aspects.

Other researchers have turned to specific aspects of planning for their definition. Dyson and Foster (1980) list 13 criteria (see Table 2.4) associated with efficient strategic planning. Similarly, Kudla's (1976) research identified conditions necessary for effective corporate planning. These included:

1. Planning knowledge and skills - which includes training programmes for all management involved in planning, not just the Corporate Planning Department;
2. A planning climate - which means top management should give support to the planning and participate in it;
3. Psychological commitment, both to planning and implementation;
4. Effective group behaviour - which means, among other things, Corporate Planning should listen to the divisions.

Finally, it may be helpful to briefly examine what constitutes a good plan. Such a definition is bound to be relatively arbitrary as different organisations lay varying degrees of stress on different aspects of the planning system.

A logically appealing definition of a good plan is: one which sets itself a reasonably stretching objective and subsequently achieves it. Hussey (1979) has dealt with this topic at some length (p.199) and stresses attributes like: conciseness; the need for the plan to have a purpose; the combination of alternatives; detailing of the chosen course of action with responsibilities and a quantification of the expected results.

1. The momentum forecast is a trend projection anticipating no change in present policies. That is, where the organisation will be if they merely continue along the same lines.

Vatter (1969), simply suggests that "the test of a good plan is whether it is turned into action". Hussey and Langham (1979), and many others, link effective planning to participation.

2.7 Participation in Planning

Bergstrand (1970) identified three main types of planning models from the literature, which are applicable to multi-divisional organisations:

1. Centrally based, with the division being told their plans in detail by the centre, as well as what resources are available.
2. Divisionally based, with the divisions producing the plans and the centre consolidating them.
3. Some mixture of the two, in a bottom-up/top-down fashion, perhaps involving an iterative plan development.

Higgins (1976) believed that to adopt the first style of planning runs the risk of creating elegant but irrelevant plans, produced by technically knowledgeable but impotent planners. Similarly, Steiner (1972) produced evidence that a major pitfall of planning was the assumption that comprehensive planning is something separate from the management process. Later, Dyson and Foster's study (1980) revealed that the integration of the planning function with the decision making process in the company was a major attribute of effective strategic planning.

Such findings lead one to the question "who should do the planning?" and "what degree of participation should there be in the planning process?"

Following McGregor's Theory Y (1960) and the growth of the Behaviouralist School of Management, the concept of participation in planning became widely acknowledged. Earlier, Argyris (1953) had suggested that budgets are merely accounting techniques designed to control costs through people. Similarly, Hertzberg (1959) in his Dual Theory¹ had shown that

1. This theory has been the centre of much controversy. See for example, House and Wigdor (1967). However, Handy (1976, p.390) believes it still has a lot of face validity.

certain factors such as achievement and responsibility, act as motivators, while others, such as salary, company policy and supervision, act as dissatisfying factors. The latter factors are necessary conditions for successful motivation; they are not concerned with the problem "why work harder?" but "why work here?".

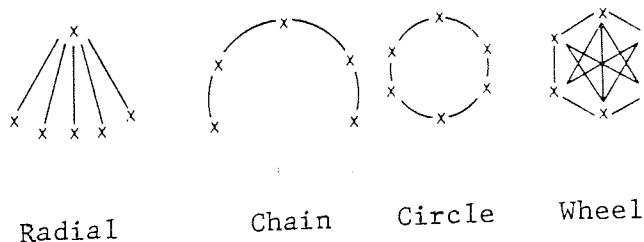
Much earlier, Maslow (1954) had proposed his Hierarchy of Needs Theory, which suggests that the individual will strive to fulfil successive needs such as safety and food, leading up to realisation of the individual's potential (self-actualisation). Subsequent authors, for example Hussey and Langham (1979), have argued that participation in the planning system, leading to a greater share of the decision making, should aid this self-actualisation process and should thus aid motivation. Hofstede's (1968) study showed that there was a strong correlation between higher participation and higher motivation to fulfil the plans. He suggested that motivation is increased because participation satisfies basic psychological needs of autonomy, as well as affiliation needs in the case of group participation (p.67).

In this case then, motivation increases because participation is a group activity with group pressures and norms.

Other researchers have found evidence of these pressures. Lickert (1962), for example, found significant correlation between group discussions of salesmen's results and higher productivity.

For all this however, McGregor concluded "participation is not a panacea", and research by Leavitt (1951) suggested that in fact the least participative (radial) of four communication channels (figure 2.3) was the most efficient in terms of speed and accuracy.

Figure 2.3 Four Communication Channels



(From Leavitt, 1951)

However, in terms of morale, flexibility and creativity (which are all extremely important planning concepts) the circle and wheel methods were found to be considerably more effective. Such a finding supports Bennett's (1974) suggestion that

"participation in establishing of goals, plans and policies is one of the most effective approaches to motivation at all organisational levels."

Sord and Welsch (1958) produced evidence concerning the control process which suggested that it operates more effectively when all levels of management participate in establishing the standards of performance. Likewise, Dew and Gee (1970) found participation in the budget setting process to be an important determinant of the use made of the control data.

As successful planning relies on lower management to be motivated to implement the plans, it is logical to examine what causes this motivation. Early accounting theory largely ignored the human side of planning, assuming that budgets themselves acted as motivators. Knight and Weinwurm (1964) highlighted this point:

"economics in general and budgeting in particular, have been criticised for tacitly assuming that a decision or plan, once made will execute itself. The behavioural scientist hastens to point out that the plan must be so communicated to people that they will both understand the part assigned to them and be motivated to carry it out."

This last statement echoes the findings of Argyris (1953), who was among the first to suggest that planning (budgeting) could also have negative effects. Bennett (1974) suggested that to rely solely on budgeting techniques, without recognising the reliance plans place on management to turn them into action, will eventually lead to decreased efficiency. Jones and Trentin (1966) reached similar conclusions in their research into the usefulness of budgets as pressure devices. They suggested that to construct a planning system which concentrates on techniques and ignores the imperfections of human behaviour is fallacious. By their nature, plans are control, and thus pressure devices, and without participation Argyris (1953) claims cohesive groups may form "to fight" the plan.

Much of the planning literature¹ discusses the need for the planning system to fit the organisational style of the division. Thus, it may be dysfunctional to impose a rigid participative system on an autocratically styled division. However, the argument presented here suggests that improvements in planning efficiency can be gained by moving towards a more participative approach, irrespective of any existing style. The degree of participation achieved will thus probably vary considerably depending on the current organisational and management style. For example, in an autocratic styled division, a more participate approach need not necessarily mean devolution of decision making power. Argyris (1953) found in his research that

"goals are most frequently accepted if individuals can come together to freely discuss their opinions concerning these goals and take part in defining the steps by which these goals might be accomplished".

As a minimum then, top management must consider discussing their objectives with lower management and give them some say in how they might achieve them.

Individual personality factors can also affect the degree to which participation might be successful (Hofstede, 1968). Vroom's research (1959) concluded that

"authoritarians and persons with weak independence needs are apparently unaffected by the opportunity to participate in decisions".

Davis (1963) suggested that certain criteria can be isolated to explain why participation works better in some situations than in others. These include recognising that participation is time consuming and that it should not be employed past the point where its costs exceed its value. Hofstede (1968) added that the subordinate must feel that he has knowledge which can contribute to the particular performance and must be allowed to voice this knowledge. Likewise "pseudo-participation" is mentioned by several authors (for example, Bennett, 1974) as being particularly dysfunctional. This type of participation occurs where

1. See for example, Hussey and Langham (1980, p.195)

"emphasis is placed on the motions of participation rather than the necessary spirit". (Bennett, 1974)

An example of this would be where top management change, without consultation, participatively agreed objectives.

If the necessary spirit of participation is introduced however, the advantages stretch far beyond the motivational effects. Most notable perhaps are the improvements in communications which may also lead to improving management control. It is a simple truth according to Sord and Welsch (1958, p.111) that people must clearly understand what performance is required from them before they can be expected to perform effectively. Similarly, the information provided in a participative system is likely to be less distorted by political biases.

Participation can also assist in the implementation of change; which after all is the purpose of planning. Ewing (1969) suggested

"People resist change - or, more accurately, they resist being changed by other people, for example planners." (p.44)

However, Bennett (1974) sees the greatest justification of participation in the planning and control system as being

"the improvement in budget accuracy and the relevancy that can be obtained by pooling the knowledge of participants".

This last comment is supported by the findings of Vancil (1970) who, in a study of forecast accuracy of plans, found the more top-down the plans were the greater the inaccuracy became.

The general conclusions from this selective sample of literature is that although "participation is not a panacea", it can go some way to removing barriers to efficient implementation of the plans, as well as being of considerable help in their development.

2.8 Chapter Review

Planning is an anticipatory decision making process. It should be a forerunner to action and should be aimed at manipulating the firm, and where possible the environment, towards a desired objective. The need for planning has increased in response to the increased complexity of the environment and the decisions to be taken. Likewise, the increased size of organisations has meant increased autonomy for divisional management and planning has allowed the principle of Management by Exception to operate.

Planning is integrally linked to control and this can cause conflict as the two processes do not have synonymous aims. For convenience, four areas of planning were examined: Corporate, strategic, tactical and operational. Also noted was that there is a methodological gap between the strategic plans and their implementation process. Finally, some attempt at defining effective planning has been made in order that we might be able to see what our goals are, and specifically, the role of participation in planning in making planning effective has been discussed.

THE PLANNING SYSTEM WITHIN DUNLOP

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3.1 Chapter Preview.

This Chapter considers the basic approaches and philosophy towards planning in Dunlop. It examines how the system was designed, and is believed, to operate. The central and divisional approaches and use of planning are considered and then the role of Corporate Planning, being the central focus of all planning in the Group, is outlined.

The most tangible aspects of the planning system in Dunlop are the plans themselves. The four interrelated levels of plans are therefore described, as well as the components which link them - the funds allocation and the control system. The chapter concludes with an analysis of the extent to which planning is required in Dunlop.

The descriptive content of this chapter is based on extensive involvement in the planning system by the author.

3.2 The Philosophy of Planning in Dunlop.

Planning in Dunlop basically follows the Cybernetics School, which views planning as a key part of a centralised control system and links into information systems covering the whole organisation. It thus has certain motivational overtones, and indeed in the McKinsey specification for the system it was suggested that stretching objectives should be used in the plans (McKinsey, 1969).

Dunlop, being decentralised, needed some form of central control mechanism and an overall corporate planning system was a natural progression in planning terms from the McKinsey inspired tri-tier organisational structure (McKinsey, 1969). In this system, detailed planning would remain the sole prerogative of the divisions, with guidance from the trading group (Rossiter, 1978). The Centre, on the other hand, would concern themselves, in the main, with broad directional policy and funding; thus a mixture of bottom-up/top-down planning, would hopefully be achieved.

Rossiter (1979) outlined the basic idea.

"The concept of central planning within Dunlop means treating the totally separate divisions as part of one entity, allowing full account to be taken of not just the divisions' own environment, but also the environment for the whole group."

Table 3.1 describes how this system works in terms of the allocation of responsibilities in the planning process.

"Planning" was first introduced in Dunlop during the 1930's with a simple budgeting system¹. A more advanced form of extended budgeting, with elements of "planning" (in the form of formally considering future oriented decisions), was developed in 1963, primarily because of the decentralisation¹. However, the move towards more formal planning was first evidenced in 1969, with the setting up of the Corporate Planning Department.

Dunlop's planning has developed to fit the characteristics of the organisation. Although there is a planning time-table and certain procedural requirements, the approach to planning is left largely to the discretion of the individual divisions (table 3.1). The general tenor of planning in Dunlop, as in other organisations,² is not to regard it as a specialist task but to view it as a management role. Thus those who implement the Plan, also play a part in its construction. Such a system avoids the approach taken by some companies of having large numbers of specialist planners³. Dunlop's Central Planning Department is made up of no more than seven planners.

1. G.Slater, Ex-Manager Dunlop Corporate Planning, in Eglin (1965).
2. P. Mueller of ITT claimed their system viewed planning as a "line function with planning staff support". (SLRP National Conference 1980)
3. General Electric, for example, employ more than 200 planners (Management Today, 1978)

Table 3.1

Outline of planning responsibilities in Dunlop

Planning Activity	Corporate		Trading Group	Divisional	
	Top Management	Corporate Planning Department	General Management	General Management	Line Management
1. Corporate Plan					
Establish Corporate objectives	<input type="checkbox"/>	•			
Develop & propose strategies	<input type="checkbox"/>	•			
Select strategies	<input type="checkbox"/>				
Organise and co-ordinate Planning effort		•			
Monitor plan progress	<input type="checkbox"/>	Δ			
2. Strategic Plan					
Provide broad environmental assumptions	<input type="checkbox"/>	•			
Set divisional objectives	<input type="checkbox"/>	Δ	<input type="checkbox"/>	•	
Assess strengths & weaknesses and Problems & opportunities		Δ		•	
Evaluate competitive environment		Δ		<input type="checkbox"/>	•
Formulate alternative strategies				<input type="checkbox"/>	•
Evaluate and select strategies				<input type="checkbox"/>	•
Review and sanction strategies	<input type="checkbox"/>	Δ	<input type="checkbox"/>		
3. Funds Allocation					
Categorise divisions according to strategies	<input type="checkbox"/>	•			
Allocate funds	<input type="checkbox"/>	•			
4. Management Plan					
Provision of broad assumptions	<input type="checkbox"/>	•			•
Review of current performance			<input type="checkbox"/>		•
Evaluation of internal and external assumptions				<input type="checkbox"/>	•
Develop annual plan		Δ	<input type="checkbox"/>	•	•
Monitor progress against plan			<input type="checkbox"/>	•	•

- Approves
 Responsible for detailed work
 Reviews & evaluates

The aim of the planning system is to integrate the various elements of planning: Group strategy, divisional strategy and operating decisions, thus obtaining a balance between division and central aspirations.¹ It achieves this by using the funds allocation which relates to the Corporate Plan, implements the Strategic Plans and is expanded upon in the Management Plans.

From a divisional viewpoint, the system attempts to orientate management's thinking towards longer term problems and opportunities, instead of concentrating just on immediate operating problems. Similarly, it aims to make management realise that decisions taken today influence the future, as well as the present shape of the business. Thus the system was designed to get management to think more about change, and by anticipating change be able to use it as a basis of improving the performance of the division (McKinsey, 1969).

From a central viewpoint, the planning system allows top management to adopt an objective approach to the deployment of Corporate resources to meet specified long term objectives (Weetman, 1976). It does this by considering the forward earnings projections and strategies of the divisions. The use of funds allocations and objectives means the Centre can constrain or contract, in real terms, low growth and less profitable divisions, while expanding the more long term profitable units.

3.2.1 The Role of Corporate Planning Department

Turning specifically to the philosophy of corporate planning in Dunlop, Rossiter (1979) has defined it as:

"..... that special brand of planning of resources, direction, pace and product-mix which is necessary to knit together the strategies of an international, multi-product, multi-market, decentralised association of semi-autonomous businesses, where the only common denominator appears to be money, although that, by itself, is inadequate as a directing and controlling mechanism."

1. Corporate Planning (7.1.75)

Dunlop's Corporate Planning Department is primarily concerned with assisting the Board in two aspects of planning: the development and implementation of a corporate plan, and the rational distribution of funds throughout the Group. Subsidiary duties include: plan reviews (management and strategic); construction of a planning time-table, to promote a common planning philosophy throughout the Group; the provision of economic intelligence; approval of sanctions and special ad hoc studies, as may be required by the Board (Rossiter, 1976).

The brand of corporate planning used in Dunlop can be described as a mixture of approaches. Various quantitative and non-quantitative techniques are employed. For example, quantitative categorisations for funds allocations, gap analysis, as well as qualitative assessments of various aspects of the Group environment, etc.

Planning at the Centre is primarily concerned with the overall direction, leaving the more detailed planning to the divisions. Corporate Planning Department helps achieve this balance by using a removed, and largely invisible, guiding hand approach, primarily via the funds allocation (Rossiter 1979).

3.3 The Centre's Perception of the Planning System

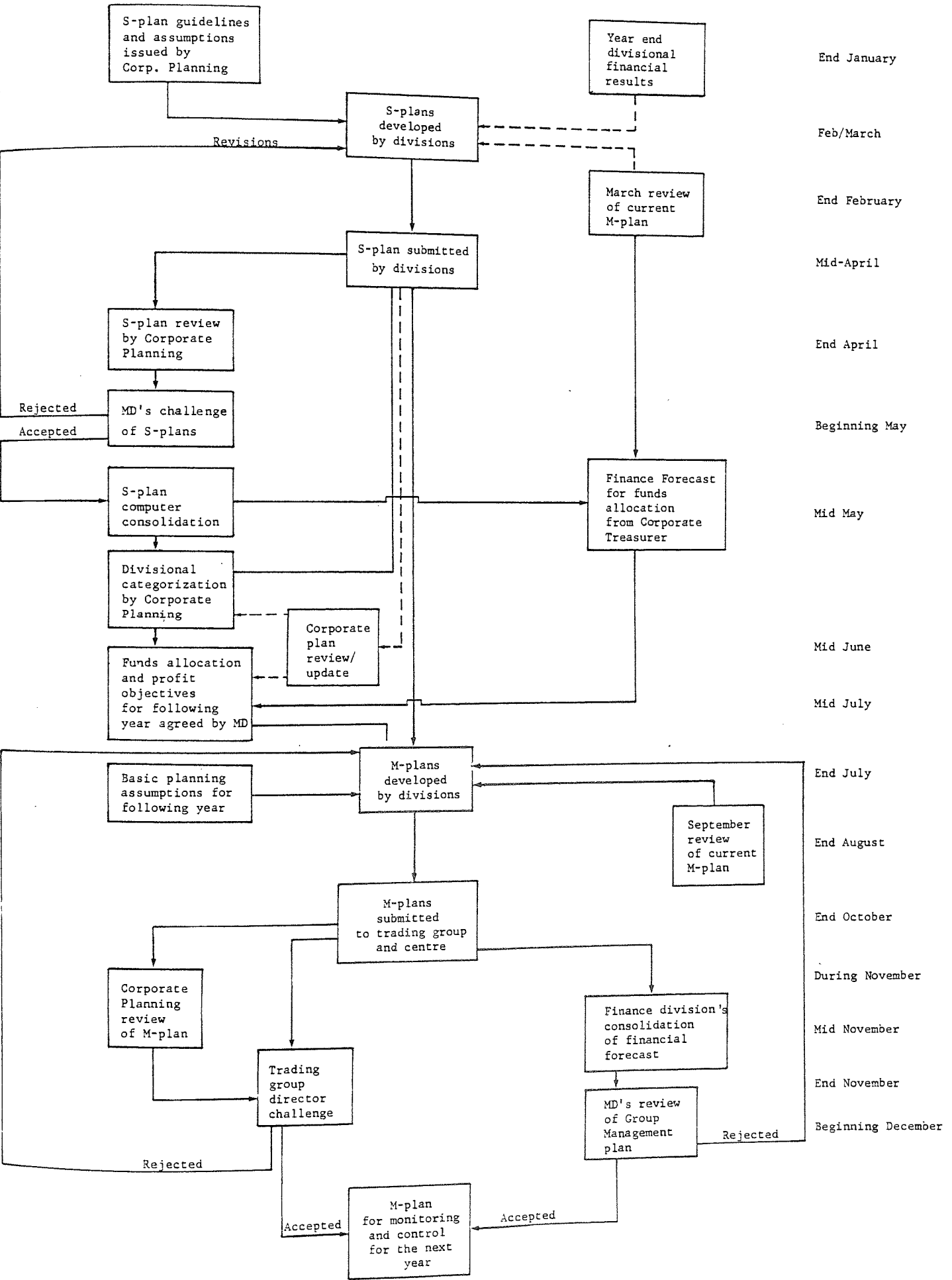
Each year the General Manager, Corporate Planning constructs a planning timetable which details the main planning activities for that year. Since 1976 this has remained largely unaltered, and is represented in the chronological flow chart in figure 3.1.

However, this flow chart does not adequately demonstrate the relationships between the various plans or the linking components. This is more clearly shown in figure 3.2, but to fully understand the system each component needs to be briefly described.

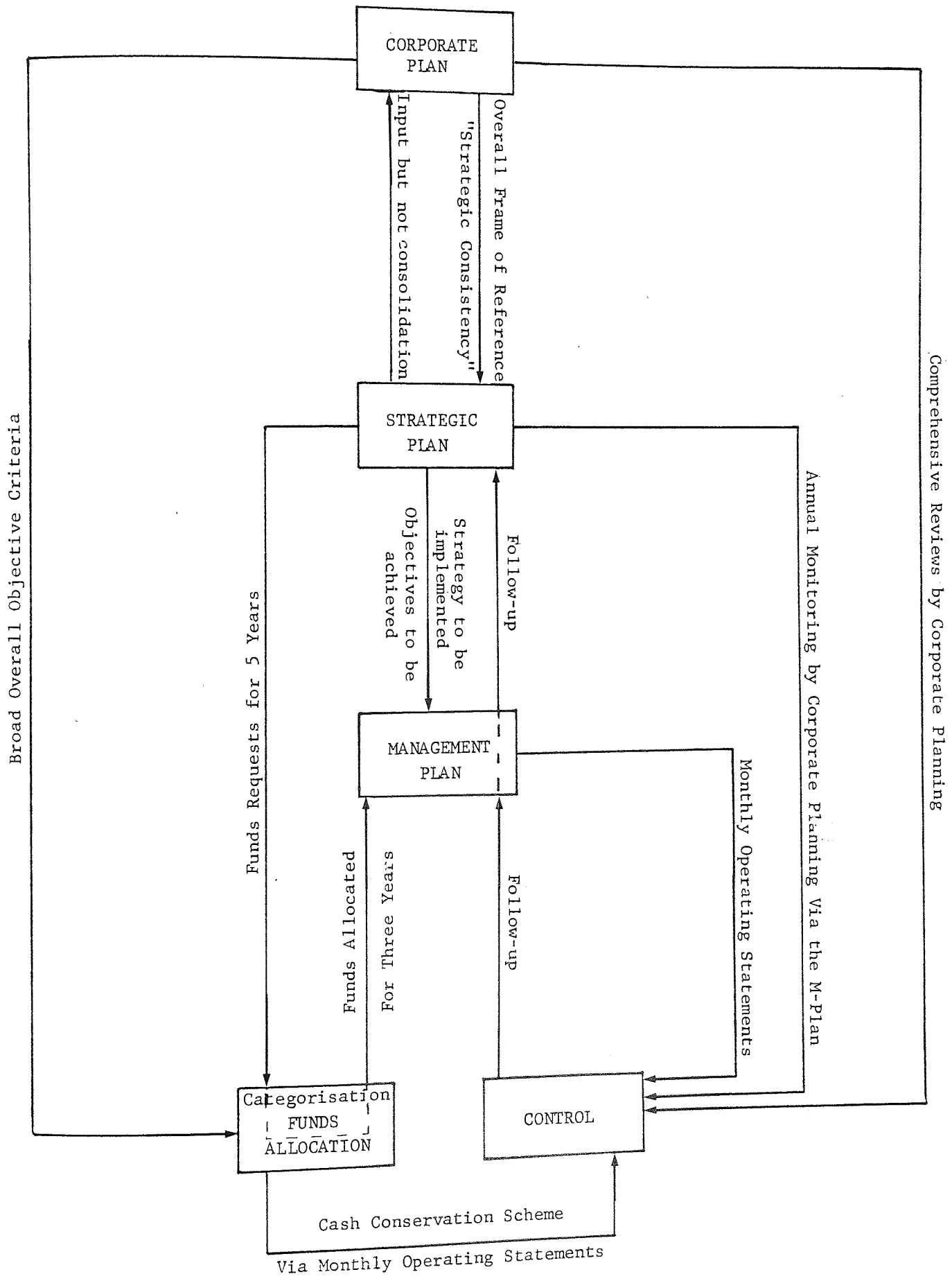
Figure 3.1

CENTRAL VIEW OF DUNLOP'S PLANNING CYCLE

Completion Dates



THE CENTRE'S PERCEPTION OF THE INTERRELATIONSHIP BETWEEN THE PLANS



3.3.1 The Corporate Plan

The Corporate Plan is the only plan developed by Corporate Planning and contains the corporate objectives covering the next five years, as defined by the Board. Although based on the divisional strategic plans, it is not simply a consolidation but contains significant elements of top/down influence from the Board. The approach to construction follows traditional corporate planning techniques (for example: portfolio analysis, gap analysis, etc.) in order to set the objectives and to determine how they might be achieved within the resources available.

The Plan is reviewed on an ad hoc basis and is revised when the Board believe there has been a shift in the environment which is sufficient to invalidate the current Plan.

3.3.2 The Divisional Strategic Plans

The Strategic Plans are constructed entirely by divisions¹, although some assistance, in the form of assumptions and sometimes specific guidelines, is given by Corporate Planning Department. The Plans normally cover a five year strategic analysis of the business, the establishment of long term objectives, and a formal evaluation of the preferred strategy to achieve those objectives. They tend to be concerned mainly with broad qualitative issues, but to allow ease of resource allocation, key financial data is quantified.

Initially, the S-Plans were based on a model, developed and revised by Corporate Planning Department, called Dunlop Safety Glass Division.² This model is aimed at assisting the divisions to produce comprehensive but concise analytical and creative planning documents. For the same purpose, specific guidelines have been

1. Dunlop investigated the formation of strategic business units (see 2.5.2) for planning purposes, but considered the organisational disruption too great in relation to the benefits.
2. An outline of this model is given in Appendix B1.

issued on a divisional basis, outlining areas which each division might like to consider in their next Plan as well as offering some broad strategic planning advice.

Since 1980, Head Office has supplied funds constraints and profit objectives for the S-Plan, which divisions are required to at least meet within their plans. This represents a significant change in emphasis, as previously S-Plans were regarded as a "bid" for funds by divisions (Rossiter 1978).

The Centre also issues basic assumptions in the form of economic data for the five year period. This data describes trends on a UK and broad world basis and also includes descriptions of business environment trends. For example: international trade; government factors; industrial markets; technology; etc. The divisions are expected to embody these basic assumptions within their Plan.

Once constructed, the divisions submit their Strategic Plan to Corporate Planning, who consolidate them. Some assessment of the viability of the gross level of funds growth in relation to earnings projections and gearing constraints should then occur. Similarly, Corporate Planning review the Plans to ensure consistency with the Corporate Plan, as well as with any guidelines which have been sent. The Department also tries to assess subjectively the "realism" of the Plan and to make recommendations as to the investment category of the division based upon this Plan. No guidelines are used in determining the realism of the Plan, although a complicated categorisation procedure is used to assess the investment category (Appendix B2). These Corporate Planning comments are then sent to the relevant Main Board Director, who uses them in his vetting of the Plans.

Ideally, a strategy should only be completely rewritten when a major environmental event occurs which makes it no longer viable. Corporate Planning Department require, however, that the quantitative aspects of the Plan are reviewed every year.



"Each year the (strategic) plans would be up-dated but they would be completely re-written only when a major event occurred in the business environment of that Division or about every 3 years, whichever is the shorter. (Corporate Planning, 16.1.75)

3.3.3 The Management Plans

The Management Plan (which is dealt with extensively in Chapter 4) is a multi-role

"budget explosion of year 1 of the Strategic Plan, incorporating the latest funds allocation."
(Rossiter, 1979)

It is thus the implementing document of the strategy. In Head Office terms, the main interest in the M-Plan is in two areas - Finance Division and Corporate Planning. Finance Division and the Managing Director are concerned with achieving a viable consolidate operating plan for the coming year. Whereas, Corporate Planning are more concerned with longer term issues. They want to ensure that a Plan realistically implements an agreed strategy within the funds allocation.

In divisional terms, the Plan should form their "operating bible" (Rossiter, 1978) for the coming year. As such it is often broken down into considerable tactical detail for internal divisional use.

Both for divisional and Head Office control purposes, the Plan is sub-divided into monthly segments and is subsequently monitored in the monthly operating reports.

3.3.4 The Operations Plans

The operational level of planning is concerned with the day to day aspects of managing a business, much of which is linked into higher level plans, particularly in terms of implementing the M-Plan. Areas covered within these plans include - production planning and

control (production and material scheduling, marketing models, inventory control and distribution), production costing systems, marketing models, etc. Each of these systems forms an integral part of the division's management information system and the approach adopted to each is usually peculiar to the individual division.

3.3.5 The Funds Allocation

In central terms, the most important strategic directional tool is the funds allocation system. The system is aimed at improving Group business mix by funding high growth/profit businesses while constraining others, thus forcing rationalisation (Weetman, 1976). In other words, a portfolio approach is adopted.

Divisions use the funds for capital expenditure and increases in working capital and this is monitored by means of the M-Plans, monthly reporting schedules and sanctions.

The procedure for funds allocation is as follows: Finance Division calculates the borrowing requirements for the next year with assistance from Treasury (who supply the gearing constraint) and reference to the finance forecast in the M-Plan, March Review and Finance Director. This then allows Finance Division to give an advisory funds available figure for years 2 and 3, while a mandatory figure is given for the Plan year. These figures (after any required reserves and contingencies) are communicated to Corporate Planning Department.

The funds are allocated to the division by the CEO, on the advice of Corporate Planning, essentially on the basis of the S-Plan requirements,¹ the Corporate Plan, and the aforementioned categorisation system. This categorisation system is a mainly qualitative assessment of the future performance of the division.

It was envisaged when the system was set up that an iterative process should operate to help reach an optimum allocation.

1. Since 1980 the Centre has allocated funds to the S-Plan in broad terms.

"Arriving at the eventually agreed allocation would occur through a process of gradually modifying strategies and/or the funds available until agreement is reached." (Corporate Planning, 7.1.75)

However, no procedure was actually laid down on how this modification might take place, and consequently the system has never been operated.

The allocations are sent to the trading groups in July, along with the profit objectives, to form the basis of the following year's Management Plan (Rossiter, 1976). Although Corporate Planning break the allocation down by division, only the trading group breakdown is mandatory. Thus the system abdicates responsibility to the trading groups for divisional allocations. The reason for this is that the Centre believes the trading groups are better positioned to respond to the detailed situations of their own divisions.

Divisions are allowed some discretion, in line with agreed strategy, on the apportionment of the allocation between capital expenditure and working capital, up to a sanction limit of £100K. Anything above this limit must be vetted by Corporate Planning to ensure harmony with the agreed strategy and that the objective profit/savings are realistic. The capital expenditure projects are vetted individually, and there is, deliberately, no set procedure for whether or not a project should be accepted, thus helping to ensure flexibility (Rossiter 1979).

In terms of monitoring and control, Dunlop have adopted a system based on cash flow called the Cash Conservation Scheme. This Scheme integrally links profit objectives to the funds allocation. However, although the two are closely linked, the profit objective in the Plan will generally be greater than that linked to the funds allocation in order to help ensure achievement. In other words there is a centrally imposed and estimated contingency.

The operating principle is simple.

"If earnings fall short, funds will be proportionately withheld. If earnings are greater than target, the surplus will be used initially to pay off borrowing and increase inadequate interest cover." (Corporate Planning, 1979)

Those divisions who have contributed excessive cash will be "borne in mind" when next year's allocation is done.

3.3.6 The Control System

In a large decentralised organisation such as Dunlop, the control mechanism has a special significance as it allows a certain degree of autonomy on the part of management. Once the Plan has been set and agreed by Head Office, so long as the divisions stay within the Plan, then they should be left with full discretion to execute it. This is a Management by Exception Principle, where central intervention only occurs when failure to achieve a key performance objective is reported.

In Dunlop's system, a hierarchy of control exists where lower divisional management have their variance reviewed by middle management. In turn, they report only significant variances in key performance criteria to the Management Committee. From there, it is customary to supply only key (usually financial) variances to Head Office. This hierarchy ensures that by the time top management see the key variances full explanations have been obtained and possible remedial actions considered.

When the current planning system was set up, control was recognised as being important if plans were to result in action (Corporate Planning, 16.1.75). Central to this control system was, and is, the monthly operating statements produced by divisions. These compare the actual performance in selected key indicators against the M-Plan. They also form the core of the discussion at monthly trading group board meetings and, on a consolidated level, they are sent to Finance Division to allow them to monitor Plan progress on a corporate basis.

In Head Office terms, the key control indicators include measures of cash flow and profits generation. While in divisional terms, as one might expect, much of the monitoring revolves around the more operational type indicators, like gross contribution.

As well as the monthly operating statements, divisions are also asked to submit March and September Reviews of the M-Plan. These analyse current progress against Plan and are essentially detailed assessments of the latest view on the year-end situation. Although discussion of these documents takes place at trading group level, no formal review occurs at the Centre. Finance Division, however, do use them as new projections, particularly for funds.

The final control document worthy of mention is the M-Plan itself. The Centre, in theory, use this to monitor progress against the strategy, but no formal separate review occurs of strategic progress either at trading group or central level. Occasionally, however, comments are made by Corporate Planning for trading group directors concerning strategic implementation.

3.4 The Degree of Planning Required within Dunlop

Section 2.3 goes some way to detailing the amount of planning required in an organisation, in terms of the potential benefits. However, planning is an expensive and time consuming management task requiring large amounts of detailed information. Because planning is clearly not a free good, management must attempt some sort of cost/benefit analysis to determine how much planning is required. This analysis, rather than being a formal mechanism to answer the question "how much planning do we need?", is possibly a subconscious filtering device.

In Dunlop, planning links into, and is an integral part of, several other systems. Most notable of these are the funds allocation and the monitoring procedures for gaining operational control of the divisions. Thus some degree of planning is required both at a divisional and at a Head Office level.

Investments over recent years have had increasingly long pay-back periods as well as different degrees of uncertainty. This means there is a requirement for a system which plans and co-ordinates long term investments throughout the Group. The aim of such a system is to achieve a near optimum risk/return profile. Also, in any large decentralised organisation, there is a need for a forward looking control document which can be vetted and monitored and thus allows some measure of management delegation.

Such requirements can be fulfilled by a long term broad directional document (S-Plan) backed up by monitoring instruments (M-Plan and monthly operating statements).

The divisions also require highly detailed management planning documents for operational control. Many tasks, for example, production schedules, stocking levels, and so forth, have to be planned well in advance. The problems are even greater when it comes to large capital projects with long paybacks. Thus divisions require plans which formally consider the long and short term in such a way as to avoid crisis, and probably suboptimal, management.

Thus, in a large decentralised company the minimum amount of planning required, both for efficiency and control in the long and short term, is some sort of long term broad strategy backed up by monitoring devices in the form of detailed annual plans.

3.5 Chapter Review

Dunlop's planning system is an integrated collection of plans, developed by different levels, linked together by a funds allocation and plan control procedure. Whilst the Centre develop the Corporate Plan, outlining Corporate objectives and strategies, divisions develop their own strategic, management and operations plans. The divisional Strategic Plan is a broad 5 year policy document implemented by the more narrow 1 year tactical M-Plan. In turn this is translated throughout the division via an operations planning system.

The funds allocation is the central tool for guiding and implementing strategic policy in the Group, in line with the Corporate Plan. This allocation is achieved via a portfolio categorisation procedure based on the Strategic and Corporate Plans.

The control procedure involves the Centre and trading groups in monthly monitoring against the M-Plan and funds allocation, and in two reviews, with revised year-end figures, made in March and September. The M-Plan also annually monitors S-Plan implementation. Although it is difficult to ascertain the degree of planning required in Dunlop, it is clear that some formal divisional Plan is required by the Centre to allow a decentralised system to operate. Similarly, as investments tend to have long term pay-backs, this Plan should examine the longer term. However, to be effective as a operational document the short term must also be considered in some detail. Thus there is a requirement for both long and short term Plans.

OUTLINE OF THE PRESENT MANAGEMENT PLANNING SYSTEM

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4.1 Chapter Preview

Having outlined, in the previous chapter, the overall planning system in Dunlop, this chapter examines one specific element, that is the Management Planning System. In particular, the functions and uses of the Plan are examined, followed by a description of the historical development and the content of the Plan itself. Finally, its interrelation with other systems within Dunlop is considered. The aim of such analysis is to ascertain how the System was designed to operate.

4.2 The Function of the Management Plan

The primary function of the M-Plan is to act as a planning and control document to assist in the operating of the division. The document also aims, in theory, to translate the basic long term objectives of the division into a detailed operational form. This balance between the two elements is outlined in a Dunlop discussion document on the System.

"The focus, then, of this operational plan is on the detailed programmes required to implement the first year of the strategic plan rather than on the numbers. In this way the operational plans can be a practical tool for day to day measurement of the business." (Corporate Planning 7.1.75)

Likewise, the Centre appreciates the need for the Plan to act as a realistic operating document for divisional management.

"The purpose of the document is that of a control budget which embodies the basic objectives of a Division translated into a detailed 1 year form. There should be no element of "target" in either the (Strategic) Plans or the Operating Plans, and no contingencies."¹ (Corporate Planning, 16.1.75)

Because of the depth of information in the Plan, different centres use it for different purposes, and hence it is a multi-role document. While centres like the trading group HQs, which are in tune with the division's activities, need detail without background; other centres, like Corporate Planning, often use the Plan as a source of reference, specifically for background detail.

1. This latter statement on targets is contradicted elsewhere, McKinsey (1969) and Rossiter (6.7.78)

As the Plan is many things to many people, there is almost certainly a conflict of roles. For instance, the Plan may have to simultaneously achieve a stretching objective and accurately portray the future (Corporate Planning, 7.1.75). Similarly, as found by Sord and Welsch (1958, p.26), the Plan is a valuable communications medium.

The main centres involved with the Plan are: the divisions (and all departments within the divisions), the trading group H.Q., Corporate Planning, Finance Division and to a lesser extent Treasury. Each of the centres has a different use and requirement for the Plan.

4.2.1 The Division

The M-Plan is primarily a divisional planning and control document (Rossiter, 6.7.78). The part of the M-Plan which is submitted to the Centre is the culmination of numerous operational decisions taken on a product and divisional basis. In the division, it aims to be not only a backcloth for major operational decisions, but also to act as a motivational instrument, while at the same time implementing the long term strategy. On top of this, it is also a communications exercise to allow some sort of "Management by Exception Principle" (Anthony, 1956, p.277) to operate.

4.2.2 Trading Group H.Q.

The M-Plan is the primary resource planning and control document for each trading group. Funds allocations and profit objectives (in line with the Cash Conservation Scheme) are monitored within the M-Plan and the consolidated M-Plan (with group director's contingencies) represents the trading group's Management Plan for the coming year.

4.2.3 Corporate Planning

Corporate Planning's main interest in the M-Plan is as a document for monitoring the utilisation of the funds allocation and the realism of the implementation of the strategy. However, it is also

a most important communications document, allowing Corporate Planning to vet the use of funds in some detail. Such a role is particularly useful in the vetting of sanctions. Similarly, the Department is interested in the M-Plan consolidation in order "to get a feel for the way things are going."¹

4.2.4 Finance Division

The main quantitative schedules in the Plan are specifically designed for this centre. Their role, in relation to the Plan, is to ensure that on a consolidated basis the Plan is a viable proposition, and if it is not, what action might be taken.

Treasury use the Plan in monitoring macro-cash flows throughout the Group. Similarly, the monthly operating schedules and specifically the March Reviews of the Plan, are used as early warning signals for funds crises.

4.3 Historical Development of the M-Plan System

Budgeting, as a formal system, was first introduced into Dunlop in the 1930's, but it was not until after the McKinsey inspired decentralisation of 1962,² that more structured planning was introduced in the form of the Management Plan. In those days, the Management Plan was a three year projection embodying some strategic elements, mainly in the form of extended budgeting.

In the early 1970's, Corporate Planning and the Board felt that more attention needed to be focussed on the strategic aspects of planning at divisional level (Corporate Planning, 12.3.73). In order to do this, Corporate Planning suggested that either a new type of Plan was required, or a change to the existing Plan format should be made. The reasons why a shift away from the three year Management Plan was needed were numerous, and these had to be overcome by the new system.

1. Interview S. Peach, Financial Analysis, Corporate Planning, 5-7-78.
2. Corporate Planning (12.3.73).

A Corporate Planning report on this topic¹, identified the three year plan as an unhappy mix between strategic planning and operational budgeting, resulting in an operating Plan which was excessive in quantitative detail and deficient in strategic thinking. On top of this, three years was seen as being too long for accurate short term forecasting, while being too short for broad long term strategic planning.

"It is not practical to forecast operating statistics at this level of detail much beyond about one year forward." (Corporate Planning, 16.1.75)

Even with the concentration on quantitative data, years two and three of the Plan turned out to be extremely inaccurate ("rosy longer term forecasts." Corporate Planning 12.3.73) and thus of little practical value to either the division or the Centre. Indeed it got to the stage where

"the Centre could itself forecast more accurately the consolidated figures." (Corporate Planning, 7.1.75)

And this problem worsened as the ravages of inflation took their grip.

Having to prepare all this data for three years forward was an onerous and time consuming task, requiring considerable effort both to develop and review the Plans. Indeed, the Plan challenge had become a largely meaningless exercise of profit targets, with group directors adding in contingencies. It was impossible to fundamentally alter the Plan at this late stage because of the degree of complexity, so the comments were rather irrelevant. The Centre realised that any efficient system of review must allow for modification after that review had taken place.

"Any effective planning system must be capable of allowing adjustment of Plans after they have been examined by Operating Group Directors or the Centre. As operated, the Dunlop system uses profit contingencies for adjusting Plans to more realistic levels but does not adjust other financial parameters, strategy or action programmes." (Corporate Planning, 16.1.75)

Because of these problems, McKinsey (1975) and Corporate Planning Department evaluated several alternative systems. The implementation of a five year Strategic Plan was suggested and, Corporate Planning modified the current M-Plan so as to concentrate on a one year projection. Such a system made fundamental shifts in the emphasis and responsibilities of the Plan, with the aim of turning it into a divisional operating document as opposed to a Head Office information document (Corporate Planning, 16.1.75).

The changes in responsibilities were manifested as follows. Firstly, the trading group director took responsibility off the Centre for vetting the M-Plans.¹ Thus the Centre became largely concerned with strategic vetting, while the relevant Group Director and his general managers would be concerned with operating control and general efficiency matters.

Secondly, a shift from Finance Division to Corporate Planning occurred in the responsibility for consolidating the Strategic Plan. Consolidation of the M-Plan remained, as before, a task for Finance Division. The overall aim of the new Strategic Plan System was to shift the planning emphasis "away from operating control to strategic control". (Corporate Planning, 16.1.75)

The effect on the M-Plan was to turn it into an annual plan, with one year projections (with the exception of the finance forecasts, which would continue to be for three years to allow long term funds planning). This was intended to significantly cut down the construction time, enabling divisions to start planning in September. In turn, this would help to improve forecast accuracy, as more information would, by then, be available to the divisions (Corporate Planning 27.10.75). Similarly, it was believed that one year Plans would simplify the challenge process, as the main strategic issues would have been clarified earlier in the year. The M-Plan challenge then would merely be a question of assessing whether the division was still on its strategic course.

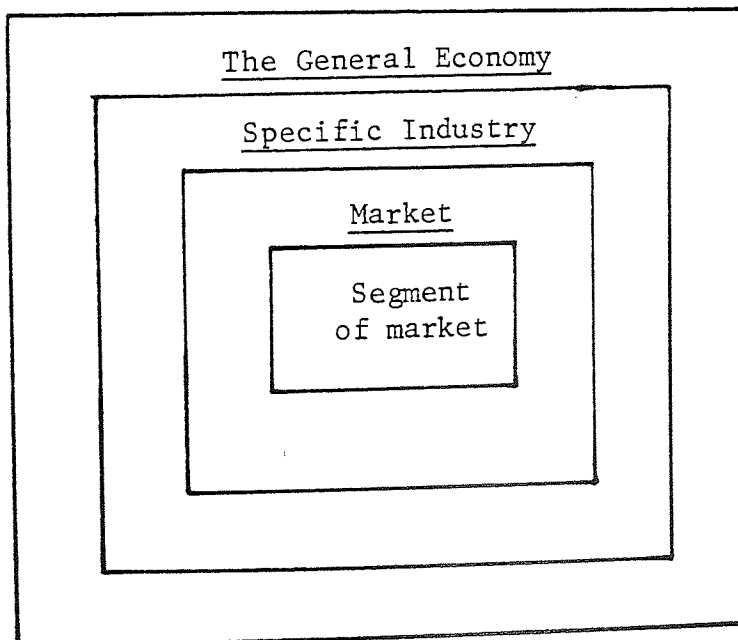
1. According to G. Grimmond, Management Accountant, Dunlop Limited, before 1976, Finance Division were involved at divisional level with challenging plans. It was then recognised that Dunlop was too large for H.O. to become directly involved. "Now the divisional level is left to group directors and comptrollers". (28.6.78)

Since the split between the Management and Strategic Plans occurred, there have been several minor developments in the M-Plan, with a general trend to it becoming more financially oriented. By 1980, the mandatory quantitative schedules were totally financial, to the exclusion of all management accounting data. Changes to the narrative sections, however, can largely be described as semantic, tending to vary between different groups.

4.4 Structure, Development and Content of Management Plan

Essentially the structure of the M-Plan can be simplistically defined by figure 4.1.

Figure 4.1 The Structure of the Management Plan



Not surprisingly, there is an inverse relationship between the size of the above boxes and the amount of space devoted to each topic in the Plan. This is because variables in the economy and in the industry are less controllable than those in the division.

Key points in the development of the M-Plan are shown in the lower part (mid July onwards) of the planning cycle flow chart (figure 3.1). However, it is worth describing the development cycle in some depth, in order to understand how, in theory, the Centre expects the System to operate.

4.4.1 Preplanning Assumptions

Theoretically, the M-Plan development begins with the basic assumptions for planning. Certain assumptions and guidelines are developed centrally, and these include: the funds allocation; the profit objectives; economic assumptions; material price and exchange rate assumptions; and proforma schedules. The latter four in this list ensure that all Plans are developed on a consistent basis in terms of the broader assumptions and structure.

Examining each of these separately:

i) The Funds Allocation

In a simplistic model, the funds allocation could be made on the basis of the strategic profit projections and funds requirements. However, profit projections, which represent only one form of objective, are often of doubtful credibility as they represent a bid for funds.¹ For this reason the Centre adopted a formal categorisation procedure (Appendix B2)² which revolves around more detailed analysis of the divisions prospects.

Early in June, the CEO advises each trading group of their funds allocation for the Plan year (mandatory) and for the following two years (advisory). The allocation represents the growth in working capital and the total capital expenditure for the coming year, as well as a broad total allocation figure for the next two years. Although the figure is shown in the form of a breakdown by division, this is merely indicative, it being largely the responsibility of the trading groups to allocate funds amongst their divisions. Similarly, divisional general managers are allowed some discretion in splitting their gross allocation between working capital and capital expenditure.

1. Analysis of Strategic Plan profit projections by the author showed them to be generally optimistic (Kelsall 1979).
2. In 1979, the categorisation exercise was undertaken by the author and another member of Corporate Planning.

According to Rossiter (6.7.78), the funds allocation is supposed to represent the basic constraint on planning, and is the point from which the Plan should be built up.

ii) Profit Objectives

Profit objectives are developed by Corporate Planning and Corporate Comptroller and agreed by Chairman. They were first introduced in 1975¹ to allow Head Office to specify the minimum levels of profit which should be generated as a result of funds allocation. Peach (Financial Analyst, Corporate Planning, 5.7.78) suggested that, ideally, profit objectives should correspond directly to the S-Plan profit targets set by the divisions. In reality, however, significant alterations normally take place in order to take account of revised expectations by the Centre in the light of current events.

The profit objectives are sent out with the funds allocations and are again mandatory on a trading group basis and advisory on a divisional basis. It is, therefore, then the responsibility of trading group directors to re-allocate the profit targets amongst their divisions, according to their detailed knowledge of individual situations.

iii) Economic Assumptions

The concept of centrally produced basic economic assumptions (as with other assumptions supplied by Head Office) is to help ensure divisions base their Plans on the same, informed, assumptions. In other words, if the Economic Research Department suggests, in their breakdown of industrial production, that the footwear market in general is going to slump, Footwear Division would have to put forward an extremely good argument to justify any growth. Similarly, centrally produced assumptions prevent divisions from basing their Plans on what are known to be optimistic assumptions, which can subsequently be used as an alibi for non-achievement.

1. The system as initially specified stated:
"There should be no element of "target" in either the (Strategic) Plans or the Operating Plans, and no contingencies" (Corporate Planning 16.1.75)

The assumptions for the UK are distributed in July, with a covering letter which includes advice on remuneration, national insurance and pensions for the coming year.

The assumptions report contains a three or four page narrative outlining major macroeconomic indicators and influences in the coming year. These include movements in: GDP; exchange rates; inflation; unemployment and capital investment. It also concentrates on the automotive markets, broken down for car and commercial vehicle segments. This structure can readily vary to adapt to changes in the environment such that new areas of importance might be included.

The assumptions also include several pages of indices covering a breakdown of GDP, consumer's expenditure, vehicle production, selected indicators of industrial production, and service trend costs: Where appropriate these figures are shown as percentage changes in constant prices for the current and following years. In 1980 E.R.D. introduced an appendix which included a discussion of trends in the major overseas markets to which Dunlop divisions export.

The divisions are expected to use these assumptions as a background for the Plan. Indeed, the introductory section of the Plan should, in theory, include a discussion of how the general economic changes in the coming year are expected to influence the division.¹

iv) Material Prices

Key material prices for some 50 commodities are supplied centrally by the Group Purchasing Unit - Materials Supplies Division. These prices represent the latest estimate and Plan assumptions broken down into quarters for each of the materials most commonly used within the Group. No assumptions or narrative are included with this list. The latest estimate for the current year doubles as September Review, and the forecast is monitored by the March Review in the following year.

1. Proforma guidelines for 1976 Management Plan, Corporate Planning 1975

v) Exchange Rate Assumptions

Foreign Currency Department and E.R.D. jointly develop a sterling forecast for the current year-end and Plan year-end for 43 major currencies of interest to Dunlop divisions. The forecasts are developed from the predictions of other institutions, specifically Henley¹ and major banks. The forecasts are developed by a round table discussion between F.C.D. and E.R.D., as well as some discussion with Pirelli over certain forecasts of joint interest. As with material prices, no narrative or assumptions are included with the forecast, which is merely a list of currencies and prices. Again the latest estimate also serves as September Review for the previous forecast, and the Plan forecast is monitored via the March Review.

vi) Proforma Requirements

The final part of the preplanning information is the proforma requirements of Head Office for the M-Plan structure, both in terms of financial requirements and narrative schedules. As suggested earlier (4.4), the aim of the structure is to go from the general to the particular. This is reflected in the proforma schedules which move from the macroeconomy, through the general industry and market trends, to the problems facing the division operating within a particular segment of a market.

Present requirements for the M-Plan are designed so as to allow some flexibility by giving trading group directors the opportunity to ask for separate schedules. The mandatory schedules² required by Head Office are as follows:

1. The Henley Centre for Forecasting.
2. Personal communication, Management Accountant - Dunlop to trading group comptrollers 18/7/77.

The Narrative Schedules

Approximate number of
pages for an average
division¹

Schedule A

In this section divisions are required to highlight areas of economic, social and political significance to their division. In the previous system (pre-1976) this section was put in verbatim. In 1976, it was recognised that this does not lead to the assumptions forming an integral part of the Plan. Since then, although E.R.D's macroeconomic assumptions (UK economy and overseas territories) should be the major source for this section, divisions are encouraged to select relevant parts and modified them in order to highlight their effect on the division.

3

Schedule B

This section covers the following points:

Operating objectives for the year (as set by Head Office)

1

Market environment, including an analysis of competition.

4

Performance of the unit covering all relevant internal factors.

5

Key problems and opportunities in the coming year.

2

Action schedules, including timing and responsibilities.

4

1. Averaged for different sized divisions.

It is entirely at the division's discretion as to what they include under each of these headings. Indeed, the narrative schedules tend to vary enormously from Plan to Plan, but in total average about 20 pages. Some trading groups think this is too long and encourage their divisions to limit the narrative schedules.

The reason why the content of these schedules is left in the hands of the divisions is, as mentioned before (4.2.1), because the Plan is meant to represent a divisional working document. Different approaches are therefore accepted as representing the different management styles and information systems.

The Financial Schedules

Proforma schedules are issued for each of the following (all including at least latest estimate and Plan figures):

Historic profit and loss account - including relevant ratios.

Items included in the profit and loss account, for example exceptional items, technical aid fees, royalties, etc.

Financial charges analysis - including sources of changes in financial charges.

Profit analysis - detailing sources of variance from previous year.

Current cost adjustments.

Analysis of sales - geographical and product breakdown.

Balance sheet - actual, latest estimate, Plan and years two and three (sometimes including a quarterly breakdown).

Finance forecast - latest estimate, Plan and years two and three (sometimes including a quarterly breakdown).

Working capital and ANFE analysis - latest estimate, Plan and years two and three.

Initially, these schedules all included "actual" data for the previous year, but since 1979 Finance Division deemed Plan and latest estimate figures to be sufficient information.

Divisions are normally requested to supply six copies of the Plan to trading Group HQ and three copies to Head Office. On top of the mandatory schedules, Industrial Group H.Q. asks their divisions to supply specific management accounting schedules, and Tyre Group supply some market analysis.

The approach of having a minimum mandatory requirement recognises that some group directors require more comprehensive Plans than others. Similarly, it is uneconomic to provide different formats for different uses. By excluding information which was previously supplied to personnel, purchasing, licensing or legal departments, and providing this separately in the form of letters or reports, much of the problem of the escalating size of the M-Plan can be avoided. Such an approach also avoids the problems created by having reams of financial data required by the Centre which can lead to a "form-filling attitude"¹ and the M-Plan becoming an accountants document rather than a Plan for operational control.

4.5 Interrelation between the Plan and the Centre

Under the old three year Management Plan System, the Centre had a major vetting role to play. The Plan was used as the basis of a resource commitment to a medium term "Strategic" Plan of operations. However, as already mentioned, the vetting process was relatively futile, as the Plan had taken so long to construct even it was unacceptable, it could not be fundamentally changed.

Under the one year Management Plan System, the vetting role should have been a more simple process, as the strategic issues would have already been agreed earlier in the year. At the M-Plan stage then, discussions need only focus on the first year budget explosion of the strategy and the vetting of the realism of strategic implementation.

1. Corporate Planning (16.1.75)

The responsibility for vetting the M-Plan under the new system shifted from the Centre to the relevant trading group director.

"Key discussions and challenges will occur on the (strategic) plans but discussion of 1 year plans would be between group director and his GMs, London being involved to a minimum." (Corporate Planning, 16.1.75)

Because of the size of Dunlop, in relation to the size of the Corporate Planning Department, trading group directors are far better equipped for the intricate review of the M-Plan. Corporate Planning however, still produce a one page critique of the Plan for the trading group director's Plan challenge. The critique is primarily concerned in assessing strategic consistency, but it also operates as a final check to ensure that the Plan is realistic, internally consistent and within its funds allocation. This critique, which is not based on any guidelines to ensure consistency amongst planners, is supplied to the relevant Group Director for his challenge.

The individual group director's challenge of the Plan takes place during November, and generally involves the divisional GM and his senior financial manager as well as the trading Group Director and members of his staff. Some trading group directors supply the divisions with a list of questions which are of interest to the group director, but this in no way limits the area of questioning in the challenge itself. Although initially there were no contingencies in the Plan (Rossiter, 1979), one of the present functions of the challenge is for the trading group staff to determine what level of profit contingency needs to be added (Brown, Strategic Advisor, Industrial Group, 5.12.79).

If the Plan is rejected, the division is asked to resubmit with necessary amendments. If the Plan is accepted, then it goes back to the Centre, with any contingencies, for consolidation by Finance Division. Once consolidated, it is passed to the Board to be reviewed financially as the Group Plan. If it is rejected at this stage (which it was in 1980), divisions may again be asked to resubmit, possibly with revised targets and constraints.

4.6 Relationship between the Management and the Strategic Plans

One of the primary functions of the M-Plan is to implement the Strategic Plan (Rossiter, 1979). The Management Plan can be seen as a more quantitatively detailed look at the first year of the Strategic Plan, and thus should be broadly consistent with that S-Plan. It is also envisaged that the M-Plan will implement, via tactical action schedules, these strategies in order to meet the present circumstances (Peach, Financial Analyst, 5.7.78).

4.7 Control Aspects of the M-Plan System

4.7.1 Monthly Operating Statements

Essentially, the control aspects of the M-Plan System were unaltered after the split between the Management and Strategic Plans. The major elements of the control system, as far as the Centre and trading groups are concerned, are the monthly operating statements. These are prepared by all divisions, and are in financial and management accounting form. They measure progress against the Plan and significant variances are discussed at the monthly trading group board meetings.

4.7.2 March and September Reviews

Also key to the Head Office and trading groups' control system are the March and September Reviews. These give revised projections of key financial data for the year-end. They do not represent a formal progress assessment, but are merely discussion documents for the trading group board. However, in central terms, they provide latest estimates of profit and financing requirements for the annual and interim company reports (Grimmond, 28.6.78). Also the March Review is used as a central guideline in the funds allocation exercise (Weetman 21.6.78). These reviews are considered sufficiently important for Head Office to supply revised assumptions data to assist in their construction.

The System does not make provision for revision of the Plans, in terms of the divisions changing the Plan they report against. The reviews are merely "updated estimates" for the Centre.

4.7.3 Post Implementation Audit

Follow-up procedures on the Plan were laid down at the initial stages of development of the System.

"Failure to achieve plan would be regarded as a serious matter requiring a 'management audit' of the Division and a re-examination of the (strategic) plan to determine whether strategy and objectives are appropriate." (Corporate Planning 16.1.75)

However, a procedure for this management audit was never developed and the system was never implemented. The present follow-up procedure relies on questions being asked at Board level.

4.8 Chapter Review

The M-Plan is a multi-role planning and control document which aims to implement the S-Plan. It is required by different departments, both at the Centre and at divisions, for different purposes, which includes conflicting roles such as producing forecasts and motivational targets. Initially, the M-Plan was a combination of strategy and tactics, but with decentralisation it became clear that this was an unhappy mix. There was a requirement for two separate plans, and thus the S-Plan is now produced early in the year, and is subsequently followed by the more detailed one year Management Plan.

The Centre provides a range of basic assumptions from which the Plan should be built up. These include profit and funds objectives, as well as basic economic data.

The Plans themselves contain both narrative and financial schedules. The narrative schedules describe the internal and external environment of the

division, outlining the objectives for the year and how they will be achieved. The financial schedules give detailed financial accounting data on the effect of the Plans.

The Plans are vetted by trading group directors who frequently add in a contingency. Corporate Planning also vets the Plans for strategic and funds consistency, and the Group M.D. has a final say on the consolidated Plan's acceptability.

The M-Plan plays an integral role in S-Plan implementation, representing a year 1 budget explosion and thus acting as a control device for the S-Plan. The M-Plan itself is controlled via monthly operating statements and March and September reviews. Although follow-up procedures for control purposes were considered important when the system was designed, no formal system was ever instituted.

METHODOLOGY FOR A VARIANCE ANALYSIS OF MANAGEMENT FORECASTS

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5.1 Chapter Preview

The analysis of variance in management forecasts is a relatively underdeveloped discipline. This chapter examines the relevance of such an analysis and outlines factors which might have an influence on accuracy. Similarly, the present state of the literature on the topic is examined and the chapter culminates in a description of various applicable measures of accuracy.

5.2 Introduction to Variance Analysis

The analysis of accuracy in business forecasts has not been extensively researched. Because of problems of compatibility, confidentiality, short runs of relevant data, political implications and so forth, few analysts have had a data base which would allow intensive examination. This has led to the lack of a standard methodology for such analysis and few comparable studies for the interpretation of any results.

Hofstede (1968 p.24) summed the position by suggesting all that could be said of the variance which planning generates is that it should be a small, random and uncontrollable variable. The analysis of forecast variance is one of a number of measures of planning efficiency, and several authors, for example, Sord and Welsch (1958) have used it in determining the efficiency of the planning process. Indeed, the most common form of control in planning is to measure actual quantitative performance against forecast. Hofstede (1968, p.126), however, when using variance to analyse budget performance, did not find it a particularly good measure. His analysis revealed generally low correlations between variance and other aspects of the budget system.

It is the author's belief that there is some form of relationship between plan variance and plan efficiency. A plan based on sound and realistic analysis is more likely to achieve its forecast objectives than a plan which is based on weak analysis. However, it is accepted that variance can be influenced by a host of controllable and uncontrollable variables (5.4) and thus should be seen as only an indicative measure.

Similarly, an examination of variance has much intrinsic merit. It is, for example, an excellent starting point for improving future forecasts (Sparks, 1977, p47). Likewise, it greatly aids the interpretation of future forecasts by giving some indication of past uncertainty. There is, therefore, much to be gained by a comprehensive analysis of variance in management forecasts.

5.3 Relevance of Accuracy in Management Plan Forecasts

The Management Plan is a multi-role budgetary control document for operational control (7.4.1), at both divisional and Head Office level. As such, it is an extremely important input into the decision processes in Dunlop. This seems to be the case in other organisations, indeed Lowe and Shaw (1968) described the annual budget

"as probably the most important single decision and control routine of a firm from both the organisational and economic management viewpoints....."(p 304)

In large, and particularly decentralised organisations, the annual plan can be viewed as a 'contract' between central and divisional management. This 'contract' is in the form of an implicit agreement that states Head Office will provide X amount of resources and allow the division to manage their own affairs without interference, provided they remain on the agreed course.

The initial promise of formal planning suggested that planners would be able to control their own destiny, and thus considerable stress was placed on breach of this "contract" through non-achievement of Plans. As the financial aspects of the Plans were easily quantified, they became performance indicators against which management could be measured. However, using financial projections in such a way is undesirable. Although forecasts are a very important input into, and output from, the planning system, they are not, in themselves, Plans. The act of forecasting should never be confused with planning.

Having said this, forecasts do play a key role in many critical decisions both at a divisional and Head Office level. In terms of the division, the plan is used to predict and allocate resources as well as to monitor and control the business. The Plan allows the division to communicate, in detail, to Head Office how it intends to use its resources (particularly funds) and to forecast the amounts of profit and cash it intends to generate with those resources. In turn, this allows Head Office to plan its borrowing requirements. Thus it can be seen that if potential variance is not recognised and understood, a non-optimal resource allocation will occur.¹ For these reasons it is important to gain some appreciation of not only past variance but also variance which may occur in future forecasts.

An assessment of the inaccuracy in the forecasts based on past data would give some indication of how flexible the planning system needed to be. For a planning system to work efficiently it is essential that the forecasts (and thus the 'contract') are interpreted against a background of the extent to which it is possible for them to be fulfilled. Similarly, if contingencies are to be used, then it is logically sound to base them on some objective criteria which takes into account past variance performance and inherent variability.

Measurement of forecasting accuracy is also important if the planning system itself is to remain effective. Indeed, variance is of great concern to the Centre who believe

"the regularity and enormity of the errors has brought planning into disrepute." (Corporate Planning, 3.2.75)

By monitoring forecast accuracy, in the form of a post-audit, knowledge is gained of past failures which assists in improving performance in the future. Similarly, if divisions are aware of a systematic analysis of forecast performance by the Centre, this should encourage a drive for improvement in accuracy.

1. Rossiter 1979

Hartle (1960) suggested:

"If we find, as I believe we will, that much of the anticipations gathered from business firms have little predictive value we will be forced to give more consideration to the problems of how firms make predictions and how they use them in the decision making process.....I think the inadequacy of much of our anticipations data stems from asking the wrong questions of the wrong people at the wrong time." (p.202)

An example of a "wrong question" in Dunlop terms concerns the independence of the Management Plan forecasts, which can cloud the meaning of accuracy. With such forecasts, 'political' factors often come into play. For example, a group director may decide he wants 20% return from all his divisions, irrespective of their situation, or that a particular growth rate is simply not acceptable. Similarly, changes in management is another reason to question the independence of the data; as too is the learning process, with divisions becoming more adept at forecasting over time. All these factors suggest that the meaning of error in one situation is not the same as in another.

Such problems with the data, and there are many more, cannot be shyed away from. Equally though, one cannot avoid the fact that these forecasts are used as the basis for many top management decisions in Dunlop. Thus, any indication of systematic forecast inefficiency and probable inaccuracy must be of help to the efficient managing of the business.

5.3.1 Level of Acceptable Error

Having decided that forecast accuracy is important in planning, it is natural to ask what degree of accuracy is required. Such a question is not easily answered. As the future remains unknown, uncertainty must exist in all forecasts, hence, to some degree, error will always be present. Specifically, there will always be a random element made up of factors either too difficult or too small to forecast. Accuracy analysis merely determines the degree to which the forecast is imperfect, perfection being a desirable but unattainable aim, except through chance.

Clearly, the forecasts should be viewed as being no more than best estimates of an uncertain future. perfection in forecasting is not required; all that is called for is sufficient accuracy to provide management with the information needed to make near-optimal decisions. In any case, the cost of achieving near perfection can be high; accounting information is not a free good, but is expensive to produce. The cost of achieving additional accuracy therefore should be weighed against the cost of the potential error. Such a cost depends on several factors, most significant of which is the importance of the decision to be taken on the basis of the forecast. For example, a small error in the forecast of return could completely bias a funds allocation decision, whereas a large error in turnover may have little noticeable effect.

The literature has been generally deficient when attempting to define an acceptable level of variance (Hofstede, 1968, p.24). Some authors have attempted to determine this level, for example, Steiner (1969, p.231) quotes a study by the American Management Association (1956) which asked executives what level of variance was acceptable. About 50% thought 10% was acceptable, but the range was from 1% to 25%. This is not surprising, as uncertainty varies with the situation. Hard and fast rules of acceptable levels of variance are therefore not possible. What is required is more relative type measures which adjust for the inherent variability.

5.3.2 Cost of Error in the Forecasts

Attaching costs to errors is an extremely complex task, as it is often impossible to trace a particular cost to a specific forecast error. As the M-Plan is a resource allocation document, errors in the forecasts can lead to non-optimal allocations. However, as Lowe and Shaw (1970) point out, assessing the

"opportunity cost to the firm of this inefficient allocation of resources is difficult to assess formally, in a simple manner, but the opportunity loss depends on the length of time over which the mis-allocation persists.....The loss may be the difference between the present value of missed opportunity and that of the best alternative opportunity when resources are finally shifted."

Several other factors affect the cost of error; indeed its effect need not always be negative in efficiency terms. For example, one could conceive of a situation where an error in a forecast influenced a decision which, with the benefit of hindsight, turned out to be a better decision than would have been taken had the forecast been accurate.

The degree of flexibility or responsiveness present in a division is a key factor in determining the cost of error. For example, the behaviour of operating costs, particularly the proportion of fixed to variable costs, is often of key significance. Where this ratio is very high (i.e. the division carries high fixed costs) the plan can be very sensitive to, in particular, variances in the turnover forecast.

The cost of error can, to some extent, be traded-off against what Lowe (1968) calls 'short term insurance against uncertainty and inaccurate forecasts'. He means by this that a firm can carry idle resources in the form of stocks, plant, labour and so forth, to cope with unforecast fluctuations. Carrying such insurance normally means that fixed costs are high, which again suggests susceptibility to error. Accurate forecasting would appear to be a less expensive and more desirable form of insurance.

5.3.3 Conclusions on the Relevance of Accuracy Analysis

The large number of variables which influence error (5.4) are often used as an excuse for not doing the type of ex-post audit of accuracy suggested here. Some managers have argued that changes in management and other conditions means that past accuracy performance is not relevant to the future. Although there is some merit in these arguments, Merz (1975) points out that, there is a danger that management use them as "a crutch to justify ignoring past forecast errors".

Much can be learnt from a detailed analysis of error, particularly if, as often appears to be the case, bias is present. The simple reporting of forecast performance insures that divisions are aware of the importance of forecast error and, in particular, any bias which is present. It also communicates the fact that higher management are aware of any inaccuracy.

5.4 Factors Influencing Forecast Accuracy

An almost infinite number of factors influence the accuracy of business forecasts.¹ Many of these factors are unpredictable and should thus be treated in a probabilistic manner at the forecasting stage. However, other factors are significantly more controllable and predictable, and it is to these that the forecaster should primarily turn his attention. Lowe and Shaw (1968) identified three categories of possible error sources:

- (1) unpredicted changes in the environment,
- (2) inaccurate assessment of the effects of predicted changes in the environment,
- (3) forecasting bias.

In addition to these, a major source of error is the implementation of the plan. The plans themselves may be well laid, but inefficient operations may prevent them from being properly implemented. Indeed, Harvey and Thompson (1978) suggested that in a post-mortem examination of error it is enlightening if operational variances are separated from planning errors. Planning errors represent the failure to forecast accurately, whereas operational variances are usually due to changes in efficiency or failure to properly implement the plans. For example, the Purchasing Officer might have produced a poor price forecast, whereas the

1. Rees Mogg (1980) showed that even the most restricted game of chess offers more than ten billion combinations in the first four moves. A planning system is clearly considerably more complex than a game of chess and thus offers innumerable variables which are potential error sources.

Production Manager well may have made efficient use of materials resulting in an overall accurate forecast. A post-mortem such as this, however, requires extremely detailed analysis of divisional data, which is rarely available to the analyst.

The first source of error identified by Lowe and Shaw, unpredicted changes, is largely concerned with the uncertainty operating on the unit and is related to, among other things, the type of market in which the unit operates. It might be, for instance, that a unit which is solely dependent on British Leyland will experience much greater uncertainty than a unit which has a large number of customers. The degree to which this uncertainty mirrors itself in the form of error will be some function of the degree of flexibility present in the unit.

A major factor when considering uncertainty is the time horizon for which the forecast is made. Nearly all previous studies have found a positive correlation between the size of the error and the length of the forecast horizon. Such a relationship is understandable because, as the horizon shortens the variables become more controllable and less subject to uncertainty due to the cumulative effect of knowledge about the actual outcome.¹

The source of error attributed to inaccurate assessment of the environment (the second of Lowe and Shaw's factors) is largely concerned with errors in basic assumptions and poor forecasting techniques. Errors in basic assumptions, such as economy growth rates, affect plan accuracy in all divisions. Likewise more specific assumptions, such as the timing and size of price increases or the number of industrial disputes, if proved to be unrealistic, can completely undermine the validity of both the forecast and the plan.

In recent years inflation has entered the basic assumptions and accurate forecasting of this variable has become critical. Unlike other assumptions, inflation directly, and sometimes devastatingly, affects the unit of measurement of the plan, the monetary base. The effect of high inflation rates has forced the use of controversial techniques, for

1. In analysis of Strategic Plan forecasts (1 to 5 years) (Kelsall, 1979) and latest estimate forecasts (6 to 12 months) (Kelsall, 1977) in Dunlop similar relationships were revealed.

example Current Cost Accounting. These techniques normally use inflation forecasts as the method of standardising the monetary base. Accurate forecasts of inflation are therefore essential if the unit of measurement of the plan is not to be undermined.

5.4.1 Forecasting Bias

This is the third, and possibly the most easily eliminable, source of error proposed by Lowe and Shaw. In behavioural terms, they define bias¹ as:

"the extent to which a forecaster adjusts his forecasts due to his own personal interest and perception and independently of factors which might influence the result."

Essentially bias is either upwards, for example, as one might expect when divisions are bidding and overestimating for funds; or downwards, for example where a division underestimates in order to be seen to be "beating" plan. Also the bias can be constant irrespective of the size of the variable or it can be changing with the size of the variable (heteroscedastic). Similarly, errors can be auto-correlated (5.6.8), that is where errors in one period are related to errors in another period. Thus, for example, the forecast error in 1980 could be influenced by the error that was present in 1979. If, in 1979, a division overestimated, they might err on the conservative side in 1980 and consequently underestimate.

Factors which influence bias, as with all forms of error, can be numerous, although they do tend to be behavioural in nature. Lowe and Shaw identified the three main sources of bias as being the reward system, recent company practices and norms, and the insecurity of managers.

The reward system, which is often used in lower level management (salesmen's bonuses and so forth) also appears higher up the line in the form of bonuses for achieving plan. Slightly more psychological

1. Statistically bias is defined as $E(\hat{P}) - P$.

bonuses are regularly found in the form of performance reviews against plan. In the case of Dunlop, this is sometimes achieved via monthly results statements which show performance against Plan attributed to the name of the General Manager of the particular division.

Recent company norms can severely undermine the accuracy of the plan as management may forecast what they perceive as being acceptable in order to achieve praise. Lowe and Shaw found,

"that the desire to please head office had a considerable influence on forecasting and for some areas this involved the submission of unrealistically high forecasts....."

Growth norms appear to be a major culprit for producing upward bias. Indeed growth is often used as a measure of managerial competence - anything less than last year's actual might be viewed as a failure. Corporate Planning (3.2.75) suggested these political aspects of the forecasting have a major biasing effect on the variance in Dunlop.

"the pressure to succeed is translated into optimistic forecasts it is not within divisional management's interests to predict a bleak future."

However, perhaps the major source of bias is derived from the purpose for which the forecast is to be used. As already stated, the Management Plan is simultaneously a planning and a control document. The introduction of the element of control brings into question the concept of accurate forecasting (2.8.4). Control implies a motivational element, usually in the form of stretching targets, which may well detract from accuracy. Indeed Lowe and Shaw (1970) stated:

"our research experience in this case makes it clear that the dual role of forecasts as predictors (and hence planning information) and as controlled devices is an essential feature in understanding the derivation of sales forecasts."

As soon as targets are imposed, the meaning of error becomes clouded. For example, the targets can be so stretching that the manager who sets them subsequently takes a contingency to "counter-bias" the forecasts. This can have adverse psychological implications for lower management. Divisions might deliberately distort the forecast for political reasons in a game theory type of approach. For example, where a division perceives that the target is unrealistic and that centrally imposed contingencies exist they may ignore the targets altogether.

The area of distorting or manipulating control figures is one that can substantially influence error. Many variables, particularly those which are subjectively assessed like stocks and depreciation, can be open to manipulation by the division. For example, a division can conveniently write-off a piece of equipment to reduce declared profit in a particular year. In the long term these effects are negligible - but in the short term they can greatly increase apparent accuracy. A variable in a control document which is so open to manipulation for political reasons can clearly severely bias the forecast.

The final source of bias identified by Lowe and Shaw is the insecurity of managers and this is largely tied up with behavioural theories such as self-esteem (as in Maslow's (1943) hierarchy of needs). Indeed, in order to look "good" in the eyes of superiors a manager may even put in an unobtainable forecast. Similarly, when a division is doing badly, a manager might heavily discount the future in order to gain security for the present. Alternatively, the "hockey-stick" tactic might be employed. This is where little growth or even decline is predicted in short term followed by enormous growth in the long term.¹

1. This is a tactic which the author and other members of Corporate Planning have frequently observed in Plans.

Such a tactic however is not always deliberate, indeed bias in general is not always as predetermined as Lowe and Shaw suggest; it might be related to the optimistic nature of management. Permanent optimism suggests that management are naturally optimistic and will always perceive beneficial probability more easily than detrimental probability. Thus one would anticipate that overestimation would predominate (see for example Westwick 5.5.5). Carlson (1967) concluded that where predictions had been correct in one year, optimism would tend to force next year's forecast upwards. Likewise, he found a forecast of no-change more likely to follow overestimates than underestimates (auto-correlation).

Not all research however supports permanent optimism being present in the forecasts. Ferber (1953), for example, found underestimation to be predominant in the Shippers' forecasts (5.5.1), as to did Lowe and Shaw (1968) in their analysis of incremental change.

To conclude on bias, its identification and, more importantly, its elimination can assist in improving accuracy and interpretation. However, permanent optimism might always mean that some counter-biasing, which may have negative psychological effects, needs to be present. Also, in a multiple role document like the M-Plan, where control targets are mixed with forecasts and political pressures, it is probably impossible to eliminate bias in the forecasts.

5.5 State of the Art

Previous studies into forecast accuracy have been concerned primarily with two areas, macroeconomic forecasts and commercial turnover forecasts. Other areas of management forecasts, for example profit predictions, have received relatively little attention. A large number of macroeconomic studies have been attempted, but few of are directly relevant to business forecasting. Commercial forecast analyses are less well subscribed, and those which have been attempted in this area are generally based on incomplete or uninformed data. There is, therefore, a distinct gap in the literature.

The limited number of studies which have been concerned with annual budgetary forecasts have normally concentrated on turnover. This is largely because other variables are confidential and unlikely to be available outside the organisation.

The relevant studies to this particular analysis can be split into four sections. Firstly, the studies which deal with the two large data bases: The Shippers' forecasts and the SEC. Secondly, Theil, whose contribution is primarily on the methodological side. Thirdly, Lowe and Shaw who have largely been concerned with bias, using a similar data base to that being considered here. And lastly, various other studies which make minor but significant contributions.

5.5.1 Forecasts of Regional Shippers' Advisory Boards, Association of American Railroads

The main attribute of this data base is that it provides a compatible run of quarterly data over 25 years. The data is concerned with the number of rail cars required to move shippers' products and is conducted by voluntary polls about six weeks before the beginning of each quarter. Such data is plainly not synonymous with annual M-Plan forecasts, but nevertheless, the analysis does reveal some interesting approaches and findings.

Such an unusually long run of data has, not surprising, interested several analysts including: Ferber (1953); Modigliani and Sauerlander (1955); Hart (1960); and Hartle (1960).

Ferber attempted to measure the accuracy of the forecasts as well as isolating relevant factors used in producing the forecasts. He also tried to construct some transformation which would improve accuracy.

Ferber's general conclusions were that forecasters were unable to accurately predict change and the forecasts themselves had little relative predictive value. His findings mainly relate to incremental change, and like others, indicated that the magnitude of change was generally underestimated, with forecasters being least accurate during periods of recession. In expansion, the size of the

underestimation was about 5%, while in recession it was more like 17%. Ferber also revealed significant correlation between forecast error and increases (growth) or decreases (decline) in the actual. However, when it came to the relationships between actual and forecast changes, low correlations were generally recorded. Ferber concluded from this that the forecasts completely failed to predict the rate of change.

To measure relative accuracy, Ferber used two naive models: forecasting current quarter's rate of change the same as the respective quarter for last year; and forecasting the current quarter as the same as the level of the corresponding quarter in the preceeding year, adjusted to changes over the last year.

The first model out-performed forecasts in level periods only, which by the nature of the model might be expected. The second model was regularly found to be superior, particularly in times of expansion. From this Ferber concluded that forecasters were unable to accurately predict, change and the forecasts themselves had little relative predictive value.

Hart, when examining Ferber's analysis suggests that his evidence of poor forecasting was not entirely justified. He argued, perhaps somewhat naively, that if the forecasts were as inaccurate as Ferber suggested then they are devoid of forecast value. As such, the forecasters could be expected to change their forecasting techniques to improve that accuracy. Hart concluded that the cause of the inaccuracy was bias entering during consolidation as well as the type of questions employed in the questionnaire used to develop the forecast. Much of this argument rests on there being some incentive for accuracy, which there does not appear to be.

Hartle, believed that bias entered at the initial forecasting stage where there was a preponderance to predict no-change. This preponderance may be due to it being the best alternative when forecasters are uncertain, or because it is the simplest method while appearing to co-operate (thus suggesting again that there is little incentive for accuracy in the system used by the Shippers).

Hartle also rightly suggests that if observed levels of no-change remain constant, counter-biasing corrections could be introduced to improve the forecasts.

Ferber too believes it is possible to improve forecasts. He suggests positive correlations between forecast and actual would indicate that deviations could be used to improve the forecast. This might also suggest that relevant variables have been excluded from the forecast procedure.

Finally, Feber turned to the construction of the forecasts. Through extensive discussion with forecasters, he concluded that the forecasts were primarily extrapolations of recent experiences plus some random elements. Such a conclusion is not surprising as a variable like rail car loading is almost bound to have an extrapolation element in the forecast. Ferber gives no convincing argument that the other element is purely random.

Modigliani's analysis concentrated on turning points in the shippers' forecasts and found them to systematically predict regressively. In such cases the forecast is always right at a turning point at the cost of being wrong the rest of the time. Similarly, forecasters in a recession always appear to be optimistic about the next period and conversely, in expansion, they always seem to be pessimistic.

5.5.2 Securities and Exchange Commission Sales Expectations.

Since 1948 the SEC and the Department of Commerce in America have requested firms in various industries to voluntarily respond to a questionnaire sent out early in the year. Firms are asked to predict sales for the current year, as well as actual sales for the previous year. Again, as this is a large commercial anticipations data base it has been used by several analysts. The most notable of these are: Modigliani and Weingartner (1968); Pashigian (1964); and Lovell (1965).

Modigliani and Weingartner, in contrast to the Shippers' studies, found the level of sales forecasts to be reasonably accurately predicted. However, they did observe that the magnitude of the change had been consistently underestimated.

The analysis was particularly concerned with the effect that errors in the sales forecasts had on investment plan realisations. Modigliani and Weingartner were able to construct a model which largely explained this relationship.

$$I_t = 0.91X_t + 0.031 E_t + 0.98 \quad R=0.989$$

I_t = Actual investment in year t

X_t = Planned investment at year
end for t

E_t = Errors in Sales Expectations
in year t

The relationship suggests that the effect of error in sales on the realisation of investment plans is rather small.¹

Pashigian, using simple naive models to analyse relative accuracy, found that they generally out-performed the forecasts used in the Commerce-SEC data. From this he was forced to conclude that present techniques used were not the best method of predicting sales.

Lovell however, using slightly more recent data, concluded that the magnitude of error was now smaller than previously suggested. Similarly, in contrast to other studies, he found good correlations between forecast and actual changes, which he suggests indicates that firms are becoming more adept at forecasting. Such a conclusion is however relatively unsupported by the evidence produced and takes no account of changing circumstances or levels of uncertainty.

Although the analysis of both The Shippers' and SEC forecasts have produced some interesting conclusions, they offer little in methodological terms. For this we must turn to Theil.

1. This would be an interesting relationship to test on the Dunlop data; unfortunately insufficient compatible data is available to derive it.

5.5.3 Theil¹

Theil has made by far the most important methodological contribution to this type of analysis with his inequality coefficient and decomposition. The coefficient is used to determine relative accuracy, while the decomposition breaks down the error in the systematic and unsystematic parts. Section 5.6.6 deals extensively with these measures.

Theil has employed this measure on various economic forecasts which are not particularly relevant here. However, it is notable that he successfully used them on reasonably short runs (10 years) of such macroeconomic data².

5.5.4 Lowe and Shaw³

Lowe and Shaw's analysis of forecasts in a large multi-outlet retail concern represents a major contribution to the analysis of possible sources of error within the organisation. They primarily concerned themselves with a special type of error, bias, and succeeded in attributing error to specific sources such as recent performance and a variety of intra-organisational factors. Similarly, they related errors to the dichotomy found in plans between forecasting and control (2.2.1).

As for accuracy itself, Lowe (1970) contends that extrapolation techniques have consistently been shown to be inaccurate. In the survey done by Lowe and Shaw (1968), although the forecasts of levels compare well against the naive models, performance in incremental change indicated the presence of substantial underestimation in the forecasts.

1. Theil 1955, 1961 and 1966.
2. Dean (1976) similarly believes that useful conclusions can be drawn from relatively short runs of annual data using Theil's coefficient.
3. Lowe 1970, Lowe and Shaw 1968 and 1970.

On examining sources of error, recent performance of the company (and other companies), and in particular top management aspirations about levels of growth, appeared to be significantly influencing error. Similarly, target measures from the board were regarded as the starting point of the planning process and were often found to significantly influence the level of the forecast and the level of error.

Finally, Lowe and Shaw (1970) attempted to assess the possible economic consequences of these errors. As the forecasts were employed in the estimation of the level of investment, poor forecasts could lead to poor allocation decisions within the company.

"Several managers recognised that this is likely to lead to failure to realise potential because of the great effort spent on redeeming poor situations at the expense of the 'hounding success'".

5.5.5 Other Studies

Of the other studies into the accuracy of business forecasts, only a few are directly relevant to this analysis. Several studies have been excluded because of problems with the data on which they are based. As business forecasts, particularly in variables such as profit, tend to be confidential, analysts have had to rely on either questionnaires or prospectuses for their data, both of which can be biased.

Profit variance was analysed by Dev and Webb (1972), using a data base constructed from forecasts in company prospectuses, thus biasing in favour of companies issuing prospectuses. A further problem with the data was that the forecast interval ranged from one week to fourteen months, thus giving rise to compatibility problems. Such a wide forecast range puts in doubt the validity of the conclusions with reference to annual data, although some are still worth mentioning.

Dev and Webb found extreme variability in the error with distributions which depart significantly from the normal and the log-normal. From this they concluded that one was unlikely to find forecasts of profits which were better than plus or minus 35%, which considering the time horizons being analysed, is a fairly wide range. They try to relate this error to turnover by quoting a previous study¹ which had revealed a turnover error of 1% with a standard deviation of 7.6%. This, according to Dev and Webb, is equivalent to 100% error in profits. Unfortunately however, no indication is given by them as to why this might be so.

Their analysis also revealed a positive correlation between the size of profits and the size of errors. This suggests that companies with larger profits are either exercising better control than those with smaller profits, or face less uncertainty. Unfortunately however, Dev and Webb were unable to isolate the major factors associated with the production of errors in business forecasts. This is perhaps not surprising considering the weakness of their data base.

Westwick (1972) also analysed profit forecasting, this time with data supplied by The Panel of Takeovers and Mergers concerned with 200 companies in a bid situation. This data thus only relates to one particular type of firm, and again there is a time compatibility problem as the forecasts varied from 12 months predictions to 9 month post-estimates of the actual.

The results showed that 23% of forecasts were perfect (which was arbitrarily defined as being within plus or minus 2%), 53% were overestimates and 24% were underestimates. An examination of the skew revealed a greater proportion exceeded by a slight amount (defined as less than 12%) than were perfect. Similarly, more fell short by a large amount (7% were more than 28% below forecast) than overshoot by a large amount (2% were more than 20% below forecast). This indicates a distinct tendency towards positive bias.

1. Vancil (1970) cf below.

Although both Westwick's and Dev's studies give some indication of the likely profit forecast error, the data upon which they are both based has little in common with M-Plan forecasts. For this reason it is dangerous to use these conclusions for more than a broad indication of the magnitude of likely error.

Buckley (1971) used a questionnaire approach to construct his data base, and he rightly recognised that nil returns could introduce bias. Generally he found that profit forecasting was "not particularly accurate" and contained a distribution which was wide and erratic, but like nearly all other studies he found error improved as the time horizon shortened.

Buckley also found a relationship between growth and error in that, on average, low growth companies tend to overestimate while high growth companies slightly underestimate. Similarly, companies facing cyclical growth patterns would overestimate on the downward section, and underestimate on the upward section.

Tull (1967) approached 200 companies directly to obtain turnover and profit forecasts, and of those only sixteen supplied usable information. The sample is therefore again biased as one assumes that companies with poor forecasting records would not be keen to supply the data.

On average he found the absolute error of profit forecasts in industrial industries (225%) to be more than in consumer industries (78%). He attributes this to the fact that consumer industries tend to have more buyers and employ more marketing and thus exercise greater control over the market. However, equally one could argue that industrial industries have more control over their market as more objective reasons are used in buying decisions.

Mean absolute error in turnover turned out to be 65%, and 128% in profit. But forecast time horizons again confuse the issue, as they appear to range from less than one year to ten years. One point of interest in the analysis of profit was that throughout all forecast periods Tull did not find any evidence of an upward bias.

Finally, it is worth mentioning the study by Vancil (1970), which although relating to long term planning accuracy (over 5 years) did produce conclusions which might be useful to short term accuracy.

Basically he found turnover forecasts to be pessimistic, primarily because of inflation and unplanned acquisitions (the latter of which is rarely relevant to short term forecasts). Even with this pessimism, Vancil still described sales forecasts as "reasonably accurate".

Of greater interest, however, is Vancil's attempt to correlate error to "situational factors" including: rate of return, capital intensity, organisational structure, formal planning techniques, growth and so forth. Although most did not show significant correlations, like Buckley he found relationships between the size of growth and the size of error. Companies with low growth rates made more optimistic forecasts than companies with high growth rates. And similarly, high growth companies were more accurate in the short term than low growth companies. He also found large companies to be generally more accurate than small companies. Vancil also showed that the use of formal planning systems affects accuracy. Where top management showed a definite commitment and involvement in planning the plans tended to be more accurate. However, the more top-down the plans were the greater the degree of inaccuracy. Where the "bottom" had a hand in producing their own goals, errors were considerably reduced.

Significantly, Vancil found the forecasts to be more accurate in companies which believed the purpose of the strategy was to provide a frame of reference for the operations budget. Accuracy also improved when the strategy was linked to the budget.

5.5.6 Conclusions on the State of the Art

This review of the literature has indicated that significant gaps exist. None of the studies, with the possible exception of Lowe and Shaw's, have dealt with an annual data base which is compatible with the M-Plan. Similarly, nearly all of the studies have concerned

themselves with analysing various parts of the error without getting involved in a comprehensive analysis. Because of this there exists no complete methodology for analysis error. There is, therefore, considerable scope for analysis such as proposed in the Dunlop study.

5.6 Measures of Forecast Accuracy

5.6.1 Introduction

There is no standard measure, or set of measures, that can be used in a post-audit¹ accuracy analysis, and if there were, merely quantifying the error would not be sufficient to determine its effect. Subjective judgements need to be made about the seriousness of a forecast not matching up to a realisation. For example, depending on the decision to be taken on the basis of the forecast, sometimes only underestimates are important; other times, there may be a threshold below which the error is not significant.

This fact was recognised by Clark and Elgers (1968).

"The computation of an objective measure does not, of course, establish a definite test of accuracy in sales forecasting. Nevertheless, quantitative measures - describing the range of error over the course of the business cycle, or pointing to a bias in the direction of over- or under-estimation, or stating the percentage of sales variation likely to be anticipated by the forecast - enormously add to the utility of the forecast for management."

Indeed as an inaccurate forecast often leads to costs through sub-optimal decisions, any indication of the reliability of a forecast is helpful.

The analysis of error, however, is no easy task. Normally relatively few data points are available when analysing business forecasts and thus summary measures have to be interpreted with immense care. As Hatjoulis (1967) stated,

1. Audits actually during the forecast period are also possible, for example, a comparison between latest estimates and plan.

"one should beware of forming too firm a view of the forecasts on the basis of small differences in the value of various statistics. Indeed we strongly recommend that such statistics are used in conjunction with a careful examination of the forecasts themselves."

Similarly, it is one thing to show there is inaccuracy in forecasts; it is a completely different matter to arrive at a quantitative estimation of where the error originates. The state of the art is by no means sufficiently well developed to trace errors in such a way. As Morgenstern (1963) points out,

"the difficulties are truly enormous when several errors are simultaneously present and when it is necessary to account for each one separately one may easily arrive at a perhaps insoluble position." (p.51)

Indeed, if bias and underlying untraceable variables are present and prevent the emergence of a normal distribution, traditional notions of probability in the error variable disappear. One must then proceed, as Morgenstern suggests, "on a heuristic and common sense basis".

Having said this, numerical accuracy measures have much to recommend them, and if improvements are to be made to accuracy, some estimation needs to be made about what the forecasting problems are and where they lie.

The following section deals with percentage error, summary measures, relative accuracy, prediction of turning point and measures of randomness. Many of these measures relate to both levels and incremental changes, but turning points and Theil's coefficient relate only to incremental change.

5.6.2 Percentage Error

The percentage error calculation offers a method of standardising the error for the size of the variable, thus assisting equitable comparisons. However, this deceptively simple notion possesses certain inherent problems.

The first of these problems is essentially one of definition, should the calculation be:

$$\frac{\text{Forecast} - \text{Actual}}{\text{Actual}} \times 100 \text{ or } \frac{\text{Forecast} - \text{Actual}}{\text{Forecast}} \times 100 \text{ or } \frac{\text{Actual} - \text{Plan}}{\text{Actual or Plan}} \times 100$$

Both actual and forecast have merit in their use as a denominator, although the use of actual is by far the commoner. By using forecast as the denominator one is measuring the actual error of the "forecast"; however the use of actual means one is normalising with a realistic figure. For example, if a division forecasts sales of 200 units but only achieves 110 units, the use of actual as the denominator mirrors the enormity of the error, with a resulting percentage of 82%. Using the forecast as the denominator, the result is only 45%.

As for the numerator, whether one uses forecast minus actual or actual minus forecast depends on how one wishes to represent over- and under-estimate. Forecast minus actual seems the most logical of the two as it represents overestimates as positive values and underestimates as negative values.

The second problem with the percentage error calculation has a more damaging effect on its value as a measure. As the denominator tends towards zero (as often occurs with incremental change), so the resulting percentage tends towards infinity. Thus it is possible to have a relatively small error in absolute value terms which, when the numerator is small, creates extremely high errors in percentage terms. Various alternatives to the traditional calculation can be used to alleviate this problem, however each of these alternatives has its own problems. For example: (1) taking logs of the error values produces an erratic distribution. (2) using actual plus forecast divided by two as a denominator, successfully alleviates the original problem but creates a similar problem when the actual forecast values are of similar magnitude but opposite signs. (3) the use of ratios or index numbers produces an acceptable result but restricts the possible analysis and interpretation.

In that none of these alternatives look particularly desirable, this methodology uses the traditional calculation and ignores values over $\pm 500\%$ by simply treating them as being greater than $\pm 500\%$. Although the figure is relatively arbitrary, values greater than this amount add little to the understanding of the error. Up to this point, it is argued, the values give some idea of the relative performance, particularly in the case of incremental change where errors tend to be very large. In the case of measures of location, such as mean value, the full distribution is used in the calculation.

A further problem with the percentage error calculation is that, apart from the sign, it is not symmetrical in that, if the forecast is half the actual, the error is minus 50%. However, if the actual is half the forecast, the error is 100%. A way around this problem would be to use logarithms, however, it was decided that what would be gained in the symmetry would be lost in interpretation.

5.6.3 Summary Measures

i Mean Error.

$$\frac{1}{n} \sum_{t=1}^n (F_t - A_t)$$

This is the most common summary measure of accuracy, and although it is a measure of location, it is often used with standard deviations to give a measure of dispersion. Generally, mean error is used to measure a particular type of error termed bias. A forecast contains bias if it consistently over- or under-estimates the actual. For a forecast to be bias free it should, over the long run, be approximately equal to zero. However, detecting bias, even in a long series, can be extremely difficult as error is affected by so many variables. Even so, helpful inferences can still be drawn from this measure.

Although the measure is useful, it fails to take account of the cancelling effect of positive and negative errors, and also fails to give additional weight to larger errors.¹ Indeed, Modigliani and Sauerlender (1965) suggested

"The mean errors that we have been discussing are primarily useful as a measure of systematic bias but are otherwise not very illuminating as a measure of accuracy of forecasts."

In their study they preferred mean absolute error as a measure of accuracy.

ii Mean Absolute Error

$$\frac{1}{n} \sum_{t=1}^n \left| F_t - A_t \right|$$

Mean absolute error takes account of the magnitude of the error but not its direction. It is based on the concept that both negative and positive variances are equally serious and thus does not discriminate between signs. Such a concept is not desirable in all instances. For example, overestimations are generally of more concern to a company near a loss situation than underestimations.

With the M-Plan forecasts it is difficult to decide whether negative errors are as critical as positive errors as it depends so much on which role the Plan takes. As already stated (4.7), it has both a planning and controlling function, and as a planning document underestimations are as critical as overestimations (in that they detract from optimal resource allocations). However, as a control document underestimations are possibly less important in that one is aiming for stretching yet achievable targets. Although, therefore, there is an argument in favour of weighting underestimations more heavily than overestimations, from a central viewpoint absolute accuracy is all important.

1. Which may or may not be required depending on the effect of large errors

As with mean error, mean absolute error fails to give extra weight to larger errors, which might be desirable in some instances.

iii Mean Square Error

$$\frac{1}{n} \sum_{t=1}^n (F_t - A_t)^2$$

Where larger errors are of more relative importance than small errors, it is desirable that they should receive greater weight. This can be achieved by using the mean square error measure which automatically takes into account the cancelling effect of error signs. Similarly, by squaring the error, mean square error relates to Theil's Quadratic Loss Function (1966 p.15) which states that the loss due to the prediction error is proportional to the square of the error.¹

Unlike other summary measures mentioned, this measure is the sum of two components: the mean of the error and the variance of the error. It is therefore a measure of dispersion rather than location.

iv Root Mean Square Error

$$\frac{1}{n} \sum_{t=1}^n \sqrt{(F_t - A_t)^2}$$

1. The loss function is not of particular value in this analysis as it demands detailed assessment of forecaster preferences and expert analysis of the "actual". Such detailed analysis is not generally possible.

Root mean square error is another measure of dispersion, but unlike mean square error, the rooted value gives a measure in the same dimensions as the actual and forecast series. By comparing this value with the mean error certain probability statements can be made about the error. As Theil (1966) suggests:

"if the accuracy analysis has revealed that the prediction errors can be regarded as, say, independent random variables with zero mean and a certain R.M.S. value then we can use this result to formulate probability statements about future predictions....." (p.27)

5.6.4 Relative Accuracy - Naive Models

All the measures discussed so far relate to absolute accuracy. That is, simply how close the forecast predicts what actually happens without taking into account the inherent variability in the series. While these measures are extremely useful, they are somewhat isolated as they measure against unobtainable perfection. Similarly when inter-divisional comparison is considered, absolute measures are not fully equitable. As Modigliani and Sauerlender (1965) stated

"Clearly an average forecasting error of 10% may be serious for a series that exhibits only very small movements but not a series subject to violent short term changes. We may suspect that this basic variability probably has a good deal to do with this marked difference in the forecasting record of individual industries."

To avoid these problems, relative measures of accuracy, in the form of naive models, are employed. These models normally use trend extrapolation techniques. If the divisional forecasting technique does not produce a significantly more accurate forecast than a simple naive model, then its value is questionable. It should be clear that naive models do not propound to represent alternative forecasting methods, but merely offer a comparative value for accuracy analysis.

The naive model is an invaluable benchmark. It is usually the simplest and cheapest method of forecasting and thus represents a minimal standard. It is also a good measure of the cost effectiveness of the forecast in that it compares against a virtually cost free model.

To gain an appreciation of relative accuracy a coefficient is used which compares the errors of the divisional forecast with the errors in the naive model, expressed as a percentage of the naive model error. Although the measure gives an assymetrical distribution in favour of the naive model, it is still possible to derive useful information from it. The closer the coefficient gets to zero, the less the value of the forecast. If the value of the coefficient becomes negative, then this indicates that the naive model is actually superior in accuracy terms.

There are many different types of naive model; from the simple no-change model, which predicts the same as the previous year (or average of the previous years), to the slightly more complex average rate of change extrapolation, which averages the percentage change over recent forecast periods.

5.6.5 Coefficient of Variation

Another relative measure of inaccuracy is the coefficient of variation. However, rather than being related to some external model, this measure relates to the internal variability of the series being forecast. In otherwords, it is a measure which is standardised for the series' own variation. When divisions are operating in completely different markets, with different levels of uncertainty, it is important to standardise any measure for these different levels in order to facilitate inter-divisional comparison.

$$\frac{\text{Standard deviation of error} \times 100}{\text{Mean value of actual}}$$

errors are distributed normally about the mean. This unfortunately is often an invalid assumption when dealing with error, and thus the measure is not always applicable.

5.6.6 Theil's Inequality Coefficient

The inequality coefficient is an extension of the concept of standardisation for inherent variability. Theil (1955) rightly suggested that measures of accuracy should take into account the difficulty a division experiences in making a forecast; that is, the degree of uncertainty operating on it. Thus, the measure should allow for larger errors when larger changes in successive actuals occur.

This concept can be extended by examining incremental change. By examining levels, one is not specifically examining the accuracy of the forecast. Extrapolation techniques are often used to make a forecast, and thus both the actual and the forecast are derived from the same base A_{t-1} . By examining incremental change, only the part of the actual which is changing is examined, thus the result is not clouded by the base from which the forecast is made.

Theil's inequality coefficient, U, is defined by positive root of the following equation:

$$U = \frac{\sqrt{\sum (F_t - A_t)^2}}{\sqrt{\sum (A_t)^2}} \quad (\text{Theil, 1966, p.28})$$

The numerator is the root mean square error discussed earlier and by using this measure, negative and positive errors are not discriminated against but are treated as being equally serious.

Bearing in mind that the inequality coefficient is dealing with incremental change, it can be seen that the denominator is the root of the mean square of successive actuals. By using this as the denominator, U is in fact automatically comparing forecast change with a no-change extrapolation naive model. That is, one which forecasts a zero percentage change. In effect this means, the measure is automatically allowing for the inherent variability of the series.

To expand on this point: when $U=1$, the denominator clearly equals the numerator. For a single prediction, if the forecast (F_t) was zero, the numerator would simply be equal to the squared value of the actual (A_t)². When this is divided by denominator, which is again the squared value of the actual, the resulting value is one.

When $U=0$, there is perfect equality, that is every forecast perfectly predicts the actual outcome. Thus the numerator will be zero and, therefore, so will the resulting value of the coefficient.

When U is equal to say 0.5, this is interpreted as the root mean square error being half that which would have been experienced had a no-change prediction being made. Similarly, U has no upper bounds since it is possible to do much worse than make a no-change prediction.

A major advantage of the inequality coefficient, over and above the fact that it offers a useful relative measure of accuracy, is the fact that the numerator can be decomposed allowing more detailed analysis of the error.

i Decomposition of the Inequality Coefficient

The non-rooted numerator of U can be broken down into a number of terms to assist in determining the components of error. Theil (1966, p.33) offers the following decomposition:

$$\frac{1}{n} \sum (F_t - A_t)^2 = (\bar{F} - \bar{A})^2 + (S_F - rS_A)^2 + (1-r^2)S_A^2$$

$$\bar{F} = \frac{1}{n} \sum F_t$$

$$\bar{A} = \frac{1}{n} \sum A_t$$

$$S_F = \frac{1}{n} \sum \sqrt{(F_t - \bar{F})^2}$$

$$S_A = \frac{1}{n} \sum \sqrt{(A_t - \bar{A})^2}$$

$$r = \frac{\frac{1}{n} \sum (F_t - \bar{F})(A_t - \bar{A})}{S_F S_A}$$

S S
F A

The first term on the right of the equation $(\bar{F}-\bar{A})^2$, is the bias component. This disappears when the mean of the forecast change equals the mean of the actual change, as in figure 5.1. If a non-zero value is recorded for this term, then it represents unequal central tendency, that is bias, as in figure 5.2. In most forecast situations, it is common to have only a few data points and thus it is doubtful that, even when the forecasts are unbiased, the error terms will be precisely equal to zero. However, as long as it is not significantly different from zero, then we can assume that the forecasts are unbiased.

The second term on the right $(S_F - rS_A)^2$ is the regression component. This will disappear if the regression coefficient (b) equals one. That is, the regression line lies on the line of perfect forecast. If deviations occur from the slope of unity then this term will take a positive value, as shown diagrammatically in figure 5.3. We could define this type of error as slope error.

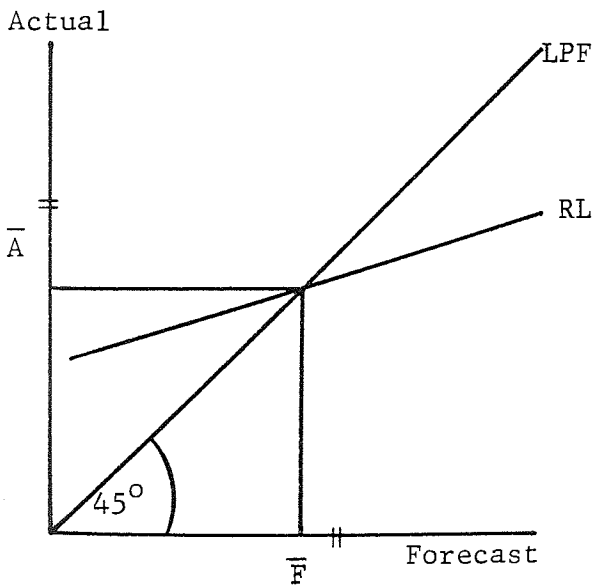


Figure 5.1
Removal of the Bias Component

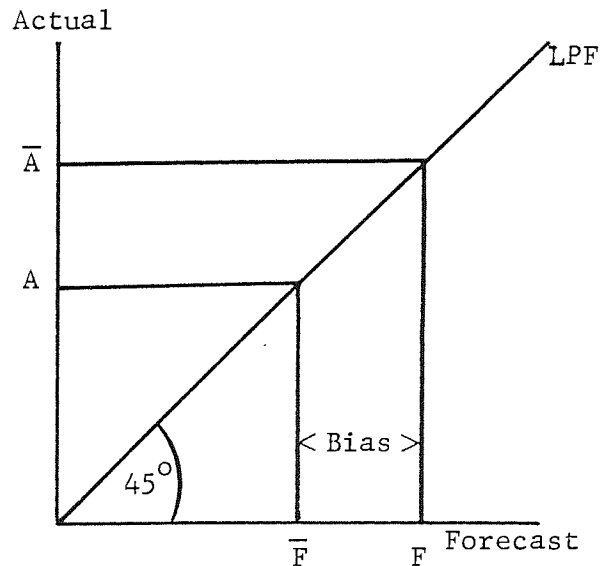


Figure 5.2
Existence of the Bias Component

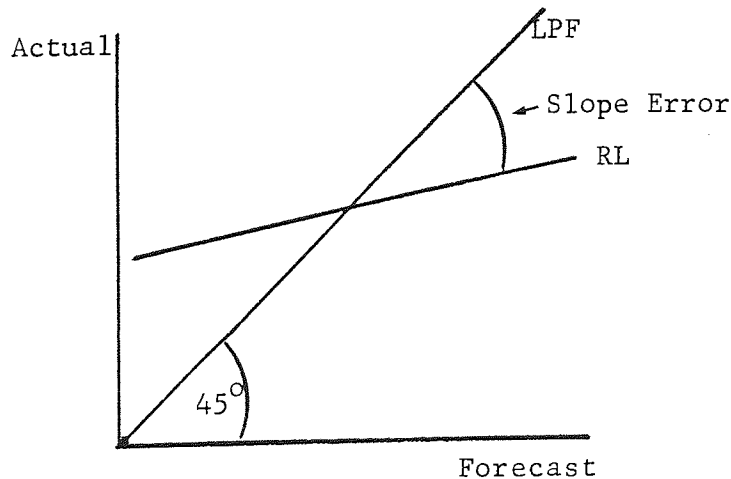


Fig. 5.3
Existence of the Regression Component

Assuming that these two terms are equal to zero, the mean square error is made up of only the final term $(1-r^2)S_A^2$. This represents the disturbance component and deals with the variances of the disturbances in the regression. That is, the regression line lies on the line of perfect forecast, but as one could not expect the forecaster to get all his forecasts on a straight line this measures the disturbances from the straight line (figure 5.4). This is the unsystematic error proportion.

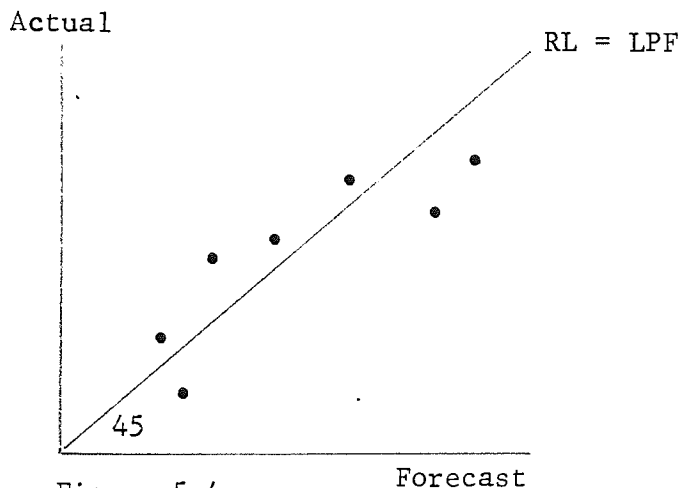


Figure 5.4
Existence of Disturbance Component

A simpler way of handling these components, described by Theil (p.34, 1966), is to divide each by the mean square error term. Thus:

$$U_M = \frac{(\bar{F} - \bar{A})^2}{\frac{1}{n} \sum (F_t - A_t)^2} \quad - \text{ mean component}$$

$$U_R = \frac{(S_F - rS_A)^2}{\frac{1}{n} \sum (F_t - A_t)^2} \quad - \text{ regression component}$$

$$U_R = \frac{(1-r^2)S_A^2}{\frac{1}{n} \sum (F_t - A_t)^2} \quad - \text{ disturbance component}$$

When the three parts of the decomposition of mean square error are individually divided by mean square error, $U_M + U_R + U_D = 1$ ¹. This is of great practical value. The first two components are, as has been indicated, components of systematic error. These should be minimised in relation to the last component, the disturbance proportion, which is unsystematic error and thus outside the control of the forecaster.

To reiterate, when the error, on average, equals zero, the bias component drops out. And when the regression coefficient (b) equals one, the second term disappears. Mean square error then only consists of the random term, which equals the unsystematic part of the error, that is deviations from perfect proportionality between actual and forecast. For the forecast to be efficient, the forecaster should be striving to minimise the systematic elements in the forecast in relation to the unsystematic part (U_D).

5.6.7 Turning Point Analysis

As well as analysing how well forecasts predict the level of change, an analysis of forecast efficiency should also examine how well the direction of change is predicted, that is turning point analysis. In general, forecasters should find it easier to predict a continuation in a trend rather than a change in a trend. Indeed, research has shown accurate forecasts at the end of a contraction or expansion period are rare.²

Four cases of turning point exist:

- (i) Turning point correctly predicted. That is a change in the trend was predicted and actually occurred.
- (ii) Turning point incorrectly predicted. That is a change in the trend was predicted but none actually occurred. This is a turning point error and is termed a false signal.

1. Except in the extreme case, not mentioned by Theil, where mean square error equals zero and thus no error can be attributed to any proportion.
2. Zarnowitz (1967)

(iii) Turning point incorrectly not predicted. That is a continuation of a trend was predicted when a change in that trend actually occurred. This is a turning point error and is termed a missed turn.

(iv) Turning point correctly not predicted. That is a change was not predicted and did not occur.

It is possible to calculate a measure of false signals by using the following ratio:

$$\frac{NT}{NT + TT}$$

Which is the ratio of false signals to all predicted turns.

And similarly to calculate a measure of missed turns:

$$\frac{TN}{TN + TT}$$

That is the ratio of missed signals to all recorded turns.

Useful though this form of analysis is, the size of the turning point is not considered; it could be a particularly sharp change or so flat as to be meaningless. Such a disadvantage should always be considered in interpreting the results of turning point analysis.

5.6.8 Regression Analysis and Optimal Linear Transformation

Linear regression, which is perhaps the most common form of statistically based forecasting technique, also has a place in the analysis of forecast error. The basic linear regression equation is:

$$A_t = a + bF_t + e_t$$

The intercept point on the vertical axis is given by 'a', while 'b' describes the slope of the regression line. The 'e' term is the residual value or disturbance proportion, describing all factors which are not taken into account by the model. For the forecast to be efficient, 'a' should not be significantly different from zero (as too should the 'e' term) and 'b' should not be significantly different from one. Only when the residual of the regression is equal to the forecast error (i.e. the 'real' residual) will the slope equal one. And only when the forecast is unbiased will "a" (the constant term) equal zero.

In order for the forecast model to be efficient, 'e' must satisfy certain basic conditions:

- i) it should have zero mean and constant variance.
- ii) it should be independent, that is not correlated to the variables in the model.
- iii) it should be normally distributed.

If the error term does not have a zero mean, then the forecast will be biased. If bias is the only form of error present it will be displayed by the regression line being parallel to the line of perfect forecast as in the figure 5.5.

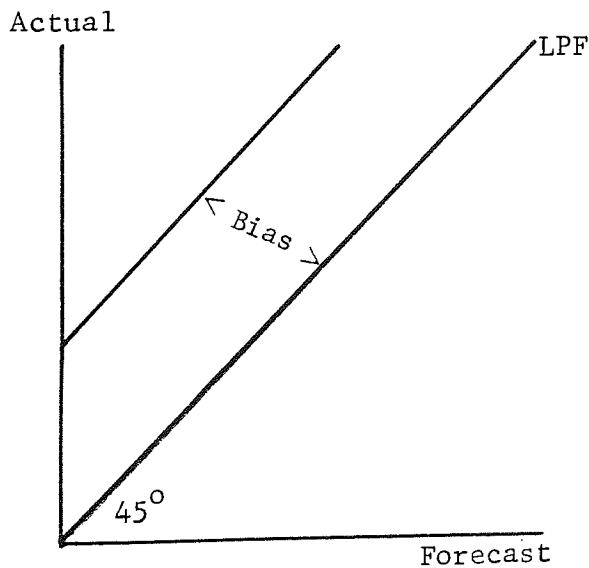


Figure 5.5 Bias

Such pronounced bias can be removed from future forecasts, assuming the forecasting system remains the same.

If the error term does not have constant variance for all observations, then the forecast is termed heteroscedastic. Heteroscedasticity arises when, for example, the error variance decreases proportionally to the variable being observed as in figure 5.6:

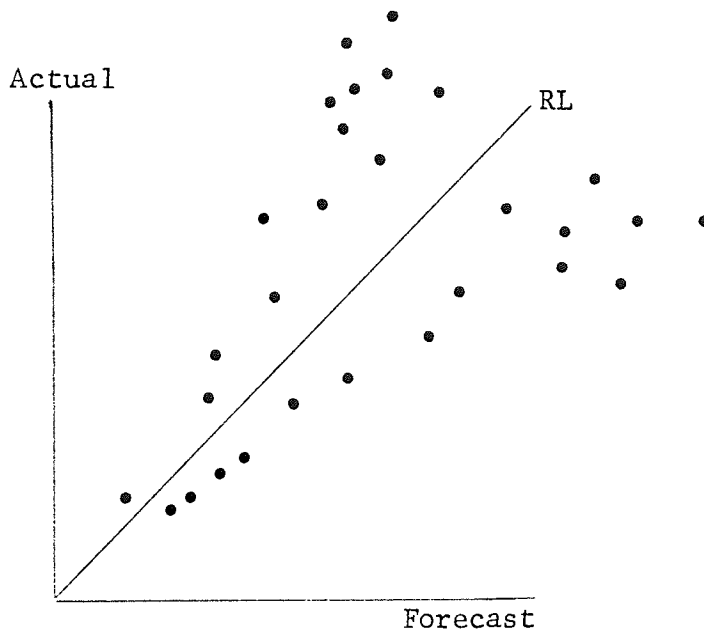


Figure 5.6
Example of Heteroscedasticity

Where the error term is not independent but is correlated to variables in the forecast, the forecast is auto-correlated. This type of error has two forms: negative and positive. Negative auto-correlation is where a positive error in one period is off-set by a negative error in the next period (figure 5.7). Whereas, positive auto-correlation occurs where errors in one period have the same sign as errors in the next period, although these are counter-balanced by errors of the opposite sign in another part of the regression line (figure 5.8).

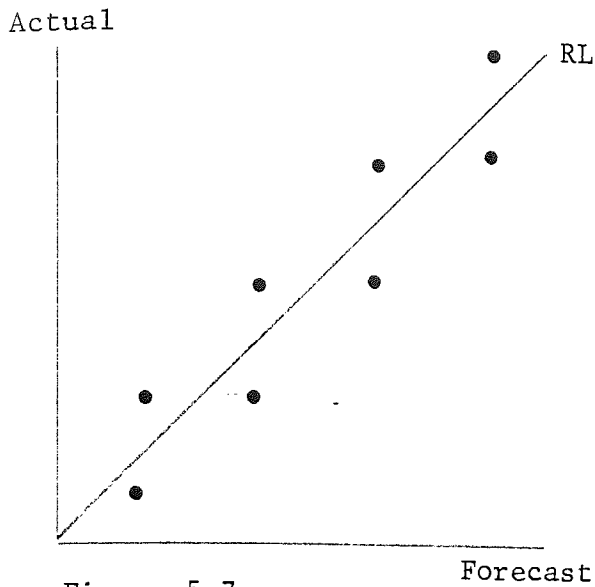


Figure 5.7
Negative Auto-correlation

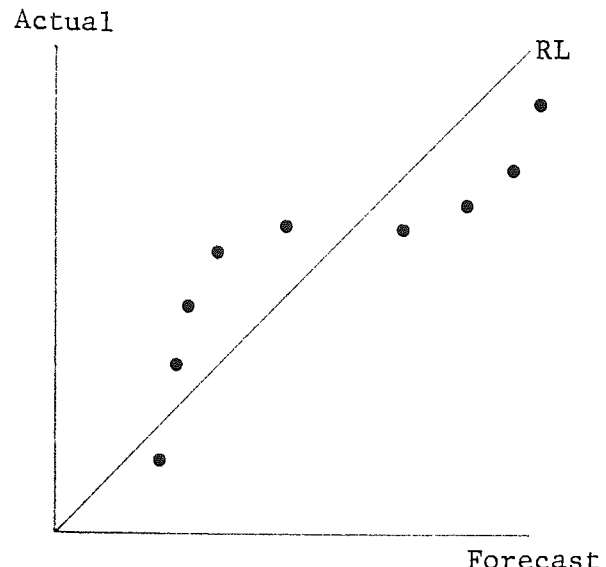


Figure 5.8
Positive Auto-correlation

Lack of a normal distribution for the error terms suggests that the forecast system has broken down and that important causal variances, other than the ones considered in the forecast, have a significant influence.

The evaluation of a forecast series is essentially an assessment of how well it fits the actual series. The traditional measure of goodness of fit is the product-moment correlation coefficient "r". This defines the extent to which two variables vary together, and takes the range +1 to -1. If "r" takes the value +1, then this indicates perfect proportionality between the actual and forecast series. It may also indicate, in the absence of systematic error, perfect forecasting. If "r" takes the value -1, then it indicates negative proportionality, that is, the opposite to what was forecast actually occurs. If the value of "r" does not differ significantly from zero, then this indicates the forecasts are purely random in comparison to the actuals.

In the analysis of levels, this measure is open to some criticism. Forecasts, as mentioned in 5.6.6, generally tend to be extrapolations, both the forecast (F_t) and the actual (A_t) having the mutual base of A_{t-1} . A_t and F_t are at least likely to be of the same order of magnitude, even though the direction of change may be completely missed by the forecaster.

However, the correlation coefficient of levels is useful as it gives some indication of the degree of confidence that can be attached to predictions of future errors. Similarly, high correlations between the forecast and actual rates of change may be used to forecast future rates of change.

Regression analysis also has a role to play in optimal linear transformation, a technique described by Theil (1966, p.34) for improving new forecasts on the basis of analysis of past errors. The linear regression equation $A_t = a + bF_t + e_t$ describes how past forecasts have deviated from the perfect forecast. That is, how the regression line deviates from the line of perfect forecast. A transformation towards a more accurate forecast can be made by multiplying each forecast by the slope component "b" and adding in the constant component "a". This technique assumes stability of conditions.

The effect of the transformation is as follows. The bias component 'a', gives a parallel shift to the regression line as in figure 5.10. The slope component 'b', can be used to rotate the slope of the regression line around the mean point, until the line of perfect forecast, plus the residual disturbance component e_t , is approached, as in figure 5.11.

The theory behind optimal linear transformation suggests that it is possible for the forecaster to eliminate the systematic elements of the errors in the forecasts. Such a theory assumes a certain degree of simplicity in forecasting which is rarely present. Even with large samples of data systematic bias is not easy to identify, and often the information required to make these ex-post adjustments is simply not available. Also the transformation assumes that the forecasting process remains reasonably constant. Such an assumption may be easy to confirm where a forecasting model is being used. However, where more subjective techniques are being employed the assumption is difficult to substantiate.

Even with these problems, linear transformation is still a useful starting point for improving forecasts. Where divisions are making a conscious effort to analyse past performance, so as to reduce the error to the unsystematic element, better forecasting will almost certainly result.

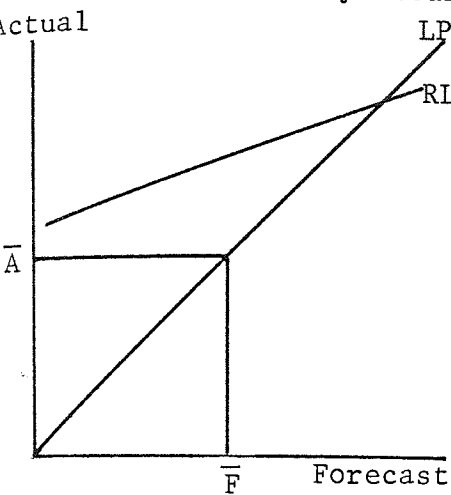


Figure 5.9
Regression of untransformed forecasts

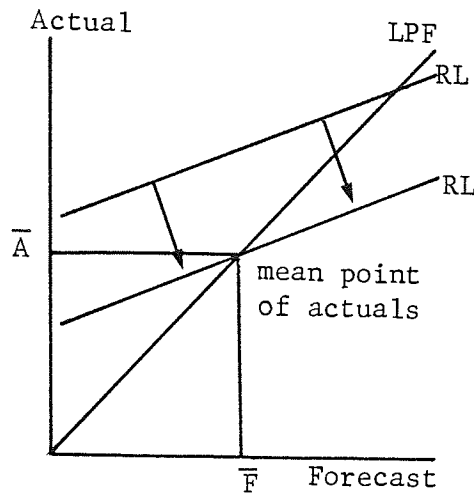


Figure 5.10
Reduction of the forecast for the mean component

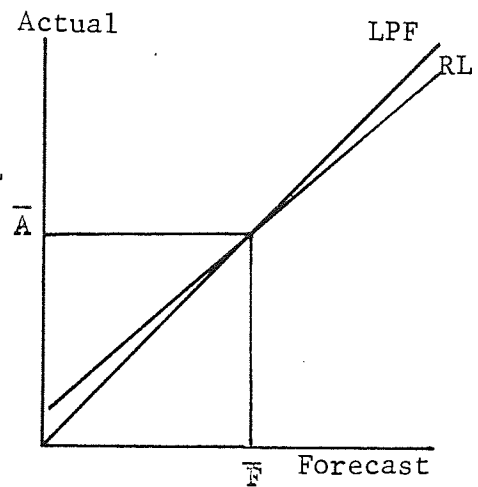


Figure 5.11
Rotation of the slope

5.6.9 Graphical Analysis

Graphical analysis gives an instant picture of the dispersion of error, and by adding various guidance lines into the diagram, types of error, like bias and slope, can be identified. Graphical analysis also makes heteroscedasticity and auto-correlation relatively easy to identify.

The prediction/realisation diagram (Theil, 1966) is a graphical technique using a scatter diagram on which guidance lines are added to aid interpretation (figure 5.12).

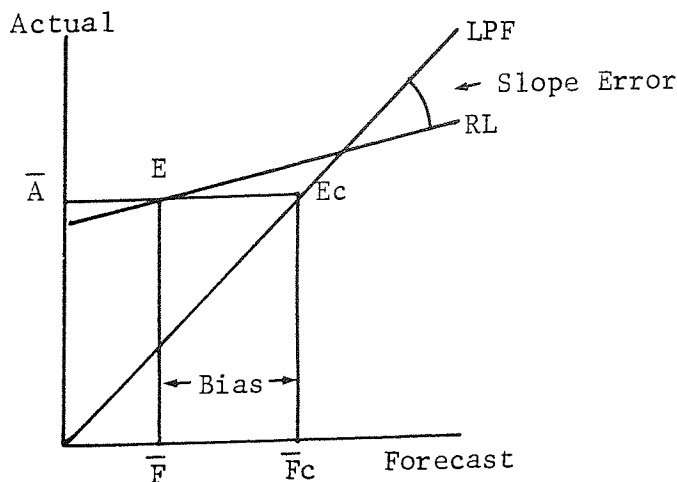


Figure 5.12
Prediction/Realisation Diagram

Key: -

- LPF - Line of perfect forecast
- RL - Regression line
- \bar{A} - Mean actual
- \bar{F} - Mean forecast
- \bar{F}_c - Mean corrected forecast
- E - Mean error point
- E_c - Corrected mean error point

The tighter the scatter around the line of perfect forecast, the more efficient the forecast. The unobtainable perfection is to have all points on this line, but this ideal can be approached by correcting the forecast using optimal linear transformation.

When the forecast is unbiased, $\bar{A} = \bar{F}$ and thus the mean point lies on the line of perfect forecast. The difference between \bar{A} and \bar{F} measures the size of the bias and the sign represents either an under- or over-estimation. As the forecasts can be unbiased but still imperfect, the slope component of the regression should also be examined. The variance around the mean which measures the slope error, is another useful measure of forecasting efficiency, and should be analysed to see how the forecast can be improved.

5.6.10 Subjective Measures.

The discussion to date has been concerned with quantitative measures of accuracy, but obviously these have to be tempered with qualitative, and often more subjective measures. Accuracy, being a complex concept affected by so many variables, is never black and white. Thus subjective factors will nearly always affect the interpretation of the quantitative measures. Alexander (1969, p.64) suggested several subjective measures including:

- (a) To what extent did the forecast assist optimal decision taking.
- (b) Were the errors in the forecast the result of carelessness, deficiencies in theory, design, data or techniques, or of imponderables which no forecast could have predicted.
- (c) Were important changes predicted in terms of direction, magnitude and timing.

Such detailed analysis is outside the scope of a "removed" analysis such as this, but it is within the scope of divisions where the required information is available.

5.7 Chapter Review

The annual plan is one of the most important decision and control documents in the firm, and thus it seems logical to have some assessment of the reliance which can be placed on the forecasts it contains. The art of forecast accuracy analysis is, particularly in the commercial environment, underdeveloped. This stems from two factors: the lack of data because of confidentiality, and the complexity of the error variable, which is influenced by an almost infinite number of factors. Most notable of these factors is that the annual plan is normally both a control document (requiring motivational targets) and a forecast document (requiring a high degree of accuracy).

The literature covers a variety of largely non-relevant analyses of forecasts. Few of these are based on comparable, or even unbiased data bases. One or two, however, have raised interesting questions and have been able to show useful relationships.

With the exception of Theil's relative measure of inaccuracy, which takes into account the inherent variability of the data, the literature is of little practical help in determining a variance analysis methodology. Many separate measures have been identified which help analyse different components of the error. By combining these measures a useful picture of forecast efficiency can be obtained.

6

THE ANALYSIS OF VARIANCE IN MANAGEMENT PLAN FORECASTS

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6.1 Chapter Preview

This chapter aims to produce a comprehensive analysis of the variances found in Management Plan forecasts. Specifically, the chapter describes the aims of the study; the hypotheses to be tested; a description of the methodology to be used in the study, and the selection of the variables to be examined. One of these variables, turnover, is then examined in detail, using the methodology described. The results of the analysis of the other variables are then summarised, with more detail analysis being found in the relevant appendices. This is followed by the testing of the remaining hypotheses and the chapter ends with some broad conclusions on forecast accuracy in the Management Plan.

6.2 Aims of the Analysis

The analysis of variance in the Management Plan aims to achieve the following principle objectives:

- a) to gain some appreciation of the forecasting accuracy present in key variables for different trading groups and divisions
- b) to determine the ability of different trading groups and divisions to forecast both the level and direction of change, taking into account any inherent variability
- c) to gain some appreciation of, and speculate upon, the size of error likely to occur in key variables in future forecasts, and where possible, suggest transformations to the forecasts to improve accuracy
- d) to analyse the error into its major component parts and thus to determine what proportion of that error is due to systematic factors
- e) to attempt to correlate the magnitude of error with relevant variables (e.g. size of division, commitment to planning etc.) in order to determine the major influencing factors on that error.

The analysis is not a "witch hunt" of poor forecasting; instead it attempts to catalogue and analyse error in both absolute and relative terms. Similarly, the analysis does not try to trace the error back to its root causes, although efforts are made to point to possible relationships between the errors and related variables.

6.2.1 The Hypotheses

The following ex ante hypotheses were tested on the error series for each of the variables, turnover, margin and return.

- i. Divisions tend to systematically overestimate in their forecasts.

This hypothesis is suggested by the permanent optimism theory (5.4.1). This theory postulates that forecasters generally see their performance improving and fail to perceive the degree of uncertainty surrounding their predictions.

The hypothesis will be tested by examining whether or not a statistically significant number of forecasts in the Group, and within individual trading groups, overestimate (show positive errors) between 1969 and 1978.

An extension of this hypothesis is:

- a. Divisions tend to overestimate by a large amount more frequently than they underestimate by a large amount.

This sub-hypothesis is tested in order to support the main hypothesis. It will be verified by examining whether or not a statistically significant number of forecasts in the Group, and within individual trading groups, overestimate (show positive errors) in excess of 15% for turnover and 45% for margin and return between 1969 and 1978.

- ii. Divisions tend to forecast growth even during periods of decline.

This hypothesis, which also supports hypothesis i, deals specifically with incremental change. It is suggested by a combination of previous studies and the permanent optimism theory.

Some researchers (for example, Feber, 1953) have indicated that although the level of the forecast may, on average, be accurately predicted, the direction of the change is often completely misforecast. This combined with permanent optimism suggests that growth is generally forecast even during periods of decline.

The hypothesis will be tested by examining whether or not a significant number of periods of actual decline (defined as periods of negative incremental change) are forecast as periods of growth (defined as periods of positive incremental change) between 1969 and 1978.

- iii. Divisional forecasts do not significantly outperform various naive models.

This hypothesis is based on the concept that divisional forecasts are generally no more than a consensus of the marketing department's "gut feel", and rarely is any attempt made to isolate the underlying factors affecting the forecast variables. Under such circumstances, it is often possible for simple naive models, which project a trend, to be as accurate as the divisional forecasts.

To test this hypothesis two naive models¹ and the coefficient described in section 5.6.4 will be used. For the hypothesis to be proved, a significant number of coefficients between 1969 and 1978 must not be significantly positive.

1. Same percentage change model (NM1) and same level of change model (NM2)

Causal relationships

- iv. Low growth divisions tend to overestimate more frequently than high growth divisions.

Several researchers have found a linear relationship between growth and over/underestimation (5.5.5). In behavioural terms, it is probable that high growth divisions perceive their growth as being acceptable to Head Office. This means they can afford to forecast accurately without having to overestimate in order to obtain a better funds allocation. Similarly, there may be a ceiling to the degree of optimism generated by the permanent optimism theory. That is, up to a certain level divisions will forecast optimistically and above that level, even though the growth may be increasing, divisions become conservative or even pessimistic in their forecasts. It is assumed such a situation occurs because divisions do not want to set themselves too stretching a target if their growth is already 'acceptable' in Head Office terms. Such an assumption would support the findings of Lowe and Shaw (1968) who showed that recent company norms significantly affect error (5.4.1).

The hypothesis will be tested by examining the average turnover growth (1969-78) for each division and correlating this to the mean percentage errors. Similarly, it is of interest to correlate growth with mean absolute percentage error to see if the degree of growth has a significant effect on the actual size of the inaccuracy.

- v. There is negative correlation between the size of the division and the size of the error.

This hypothesis is suggested by the assumption that large divisions tend to have more resources to allocate to forecasting and planning, and therefore tend to be more accurate. Similarly, larger divisions may be able to offset failures in one area with successes in another and thus, on aggregate, minimise error.

The hypothesis will be tested by correlating the size of the division (as defined by the mean turnover over the past twelve years) with the size of mean absolute percentage error for the division.

vi. There is a positive correlation between the size of error and the size of return.

This hypothesis suggests that the smaller the return, the more critical the size of the error becomes. Thus divisions which are more sensitive to error may tend to forecast more accurately.

This hypothesis will be tested by correlating the size of return (as defined by the mean return over the past twelve years) with the size of mean absolute percentage error for the division.

vii. There is a negative correlation between capital intensity and divisional error.

This hypothesis is based on the assumption that capital is more stable, controllable, and therefore predictable, than labour. High capital intensive divisions may face less uncertainty (in the form of strikes, wage demands, variable productivity, etc.) than labour intensive divisions, and therefore be able to forecast more accurately.

For the purpose of this hypothesis capital intensity will be defined by the ratio of capital to employees in 1978 and will be correlated to the size of mean absolute percentage error in 1978 for each division.

viii. There is a positive correlation between a division's score in Corporate Planning's funds categorisation and the size of the error.

The hypothesis is based on the idea that as high category divisions normally get a large proportion of the funds they request, they might be expected to forecast more accurately than divisions who are severely constrained. Similarly, the categorisation broadly

represents Corporate Planning's assessment of a division's performance both now and in the future. This assessment takes into account other variables which may be relevant to error, for example high growth.

Unfortunately only limited compatible data is available for this analysis thus only the 1978 categorisation score will be used. This will be correlated to mean absolute percentage error for 1978.

ix. There is a negative correlation between the ratio of funds allocated to those requested and the size of the error.

According to Dunlop's planning theory (section 3), a division should outline in its strategy and the resources required to put that strategy into action. It should then have it agreed by the Centre, and subsequently implement it via an annual plan. Such theory demands that once the strategy has been agreed, the resources, and in particular the funds, are made available in order that it can be implemented. However, in Dunlop, even though a strategy is agreed, the funds allocation for the following year often does not match up to that required by the division. It can represent as much as 50% (7.5). Generally, this shortfall is attributed to changes in circumstances as perceived by the Centre. It is hypothesised that this reduction has a dramatic effect on the errors in the Plan.

The hypothesis will be tested by comparing the size of mean absolute percentage error for each division with the percentage of funds required to those allocated in 1978 (compatible figures for other years are not available).

x. As experience in forecasting increases over time so the size of the error decreases.

This hypothesis is suggested by the fact that as forecasting ability improves through better techniques and experience, error reduces.

The hypothesis will be tested by examining whether or not the mean absolute percentage error for each division decreases by a significant amount, year on year, from 1969 to 1978.

As well as the ten ex ante hypotheses mentioned above, several ex post hypotheses were also constructed. These include: that a linear relationship exists between the size of error in turnover and the size of error in return; or that a change in management has an effect on error and errors in one year have an effect on the errors in the following year.

6.3 The Data Base

The analysis is based on 618 forecasts from 206 M-Plans produced by U.K. divisions over the past eight to ten years. The selected twenty-two divisions include all U.K. operating units with the exception of D.I.S., Engineered Industrial Products and Pirelli Ltd. These divisions have been excluded because they provide an insufficiently long run of data.

All the divisions included in the analysis have produced at least eight years of data and some as much as ten years. The data starts in 1969, 1970 or 1971 and runs to 1978. The difference in the length of run is primarily caused by takeovers or restructuring.

Having such a short run of data is a major problem with an analysis of a parameter as complex as error. It means that only very simple relationships and conclusions may be drawn, but as one rarely finds longer runs of relevant, compatible data in the commercial world this problem must be accepted.

6.3.1 Selection of Variables for the Analysis

Of the large number of forecasts available in the M-Plan, many are either breakdowns of key variables or key variables displayed in a different form. Some method was therefore required to select the variables to be analysed. This was achieved primarily by discussion with the divisions and the Centre. However, also taken into account was the position of the variable in both the error and Plan

development hierarchy¹, and the findings of a pilot study (Kelsall, 1977) which examined several variables in the small sample of divisions. A final and often overriding factor was that there should be a sufficiently long run of compatible data to make meaningful analysis possible².

Based on the above criteria the following variables were selected:

i. Historical Turnover -

As volume figures are not always available in the M-Plan, turnover is the highest variable on the error hierarchy. Once volumes and prices are agreed, leading to turnover, historical variable costs plus forecast increases are calculated on the basis of volume, and therefore gross contribution can almost automatically be derived. Because of the importance volume (and hence turnover) has in terms of Plan development, one can expect errors in turnover to be mirrored in other variables throughout the Plan. The higher the degree of accuracy achieved in turnover, the less subject to error variables further down the error hierarchy (such as gross contribution) are likely to be.

ii. Historical Margin (Profit before interest and tax to turnover ratio) -

Over the past few years Dunlop divisions have become increasingly aware of the erosion in margin primarily caused by increased competition. Margin, being a ratio, is standardised (by turnover).

1. The error hierarchy relates to the number of sub-variables (with their respective errors) which input into a variable. Thus, turnover is near the top of the hierarchy in that it is made up of volume and price (and mix). Gross contribution, which comprises of turnover and all the variable costs, each of which can be broken down according to cost, usage and efficiency, is considerably further down the hierarchy. The development hierarchy relates to the way the Plan is built up from volume through to return.

2. This final factor excludes, for example, any of the inflation adjusted variables from the analysis.

Thus when considering the percentage error of margin one is in fact taking the percentage of a ratio. Errors in a ratio are likely to be smaller and less subject to variation than if an unstandardised value of profit had been taken. This should be borne in mind when considering the results.

A further point on margin is that its two components, turnover and profit, are related such that errors in turnover will, to a certain extent, be mirrored in profit. The errors in this variable, therefore, will be smaller than if the components were less closely related.

iii. Historic Return (Profit before interest and tax to average net funds employed ratio) -

Possibly the most important factor in terms of Head Office's analysis of a division is the size of the likely return on its investment. Such figures play an important role in future resource allocation in the company, knowledge of error in this variable is therefore extremely important in terms of long term survival.

Return is also an important variable in divisional terms. The majority of divisions set profitability objectives in their S-Plan, which, in turn, produce targets for the M-Plan.

Although P.B.I.T. itself is important, it is an absolute measure and of little comparative value unless used with some standardising variable such as A.N.F.E. However, return, being a ratio, does suffer from the disadvantages mentioned under margin.

The figures in this analysis were taken to the nearest £'000 for turnover and to the nearest 0.1% for margin. It was felt that accuracy greater than this, even in an analysis of accuracy, would be derisory and spurious as it would be greater than that justified by the quality of the data.

6.4 A Methodology for the Analysis

Table 6.1 gives the listing of the computer based programme used to analyse the forecast data, and appendix C1 shows the programme output for the variables: turnover, margin and return. The programme basically uses the measures described in section 5.6, so it is concerned with both absolute and relative accuracy, and methods of decomposing the error into its component parts.

Summary statistics are used for both levels and incremental change, and the analysis is also concerned with ability to forecast the magnitude and direction accurately of change.

By using so many diverse and often discrete measures of accuracy, it is probably difficult to get an overall assessment of the ability of different divisions to forecast accurately. For this reason, a categorisation procedure is used to arrive at one measure of forecast accuracy (Appendix C2). Similarly, in order to see the relevance of the results for one division, an example of a divisional variance analysis, is displayed in Appendix C3.

6.5 Results of the Variance Analysis of Turnover

6.5.1 Structure of the Analysis

For convenience, the analysis is broken down into a number of sections. The summary sheets, ranking tables, categorisation and the divisional breakdown all refer to analysis done on a divisional basis. The rest of the analysis, that is the majority of the narrative, is concerned with trading group summaries, and to a lesser extent total Dunlop Group summaries.

Much of the analysis also breaks down into levels and incremental changes and in turn each of these is examined according to summary measures, relative measures and analysis of systematic error.

The final section of the analysis is concerned with trying to identify relationships between the error measures and possible causal variables.

6.5.2 Numerical Summary of the Analysis

Table 6.2 gives a numerical summary of the analysis of error, allowing individual divisions to be compared at a glance. Many of the measures displayed on the table are analysed in the main text.

Table 6.2

TURNOVER SUMMARY TABLE

DIVISION	% age Error		% age Error		Absolute % age Error		Naive Model % age of Absolute Error		Naive Model % age of Absolute Error		FIRST DIFFERENCES				Actual Dif/Forecast Dif		Theil's Coefficient		THEIL'S DECOMPOSITION			Turning Point Analysis			
	std dev.	dev.	std dev.	dev.	std dev.	dev.	std dev.	dev.	std dev.	dev.	% Error	std dev.	% Error	std dev.	std dev.	dev.	dev.	U	U	UM	UR	Dist-urbance UD	% age Type I Error	% age Type II Error	No. Accurately Forecast
Aviation	5.5	10.2	7.7	8.6	12.5	6.7	30	50	70	63	58	0.62	0.79	0.19	0.00	0.81	10	10	10	10	0.81	10	10	1	
*Belting	9.0	18.4	17.1	11.0	16.8	7.6	50	211	273	242	245	0.31	1.23	0.17	0.60	0.26	0	25	0	0	0.26	0	25	2	
Dunlopillo	3.3	8.4	7.0	5.7	7.4	7.9	60	30	125	93	89	0.72	0.60	0.13	0.27	0.60	0	20	0	0	0.60	0	20	0	
*Fire Armour	11.4	15.6	13.8	13.4	9.4	4.8	56	208	322	218	315	0.53	1.03	0.43	0.35	0.23	0	0	0	0	0.23	0	0	0	
Fluid Seal	1.1	7.7	6.9	3.5	8.0	6.1	50	242	668	272	657	0.50	0.54	0.00	0.18	0.82	0	0	0	0	0.82	0	0	0	
*Footwear	7.9	13.7	11.5	6.6	14.6	12.3	40	406	905	425	890	0.67	0.86	0.33	0.24	0.43	0	20	0	0	0.43	0	20	2	
G.R.G.	10.0	13.1	11.6	11.6	6.7	4.7	63	393	950	399	948	0.82	0.43	0.31	0.02	0.77	0	0	0	0	0.77	0	0	0	
Hydraulic Hose	13.9	13.3	4.8	12.2	11.5	8.9	50	373	517	378	514	0.37	1.53	0.46	0.41	0.16	0	13	0	0	0.16	0	13	1	
Industrial Hose	0.3	5.1	4.5	2.4	4.6	6.0	60	-3	36	32	16	0.94	0.35	0.11	0.65	0.24	0	0	0	0	0.24	0	0	0	
I.S.C.	3.8	4.3	5.2	4.5	7.9	5.4	30	123	177	133	171	0.82	0.44	0.41	0.00	0.59	0	0	0	0	0.59	0	0	0	
N.T.S.	15.9	17.1	17.5	15.4	13.5	7.7	63	488	978	493	976	0.15	1.48	0.37	0.37	0.28	0	13	0	0	0.28	0	13	1	
*Oil & Marine	28.9	23.0	29.6	22.0	32.5	17.1	56	587	1000	589	999	0.63	1.31	0.67	0.01	0.33	11	22	11	0	0.33	11	22	4	
*Plant & Equip.	7.0	8.5	9.4	5.7	8.3	3.1	60	1363	3516	1378	3510	0.40	0.85	0.32	0.26	0.43	0	0	0	0	0.43	0	0	0	
Polymer Eng.	-1.7	12.0	6.4	7.6	13.6	8.4	14	21	95	70	67	0.57	0.61	0.03	0.16	0.85	0	11	0	0	0.85	0	11	1	
Precision Rubbers	6.0	25.3	18.9	19.2	22.1	16.4	50	232	601	316	562	-0.06	1.14	0.05	0.29	0.66	20	20	20	0	0.66	20	20	1	
Red. Mouldings	9.7	5.0	9.7	5.0	8.3	4.6	70	937	2022	937	2022	0.66	1.23	0.68	0.11	0.21	0	20	0	0	0.21	0	20	2	
Semtex	13.5	13.7	16.6	9.7	24.6	13.1	50	691	1636	707	1629	0.57	1.22	0.45	0.15	0.40	10	10	10	10	0.40	10	10	3	
Suspensions	16.7	14.2	16.7	14.2	10.9	6.9	50	289	299	289	299	0.26	1.50	0.65	0.09	0.27	10	20	10	10	0.27	10	20	2	
Textiles	12.2	7.8	12.2	7.8	6.8	4.3	70	649	912	646	912	0.40	1.61	0.55	0.28	0.17	0	10	0	0	0.17	0	10	1	
U.K.T.D.	8.8	10.6	10.7	8.7	9.1	4.9	40	655	1549	673	1542	0.41	1.46	0.35	0.44	0.20	0	10	0	0	0.20	0	10	1	
United Reclaim	20.9	12.4	20.9	12.4	21.7	10.6	56	330	419	330	419	0.44	1.76	0.61	0.22	0.18	0	33	0	0	0.18	0	33	3	
*Wheel																									

* Same level naive model used in place of same rate of change naive model.

6.5.3 Analysis of Levels

a) Percentage error distributions

The overall percentage error distribution (figure 6.1) does not deviate significantly from the normal probability distribution and has a range of (25.3%) to 71.2%, with a modal group of 5-10%. This bias towards the positive indicates the presence of a tendency to overestimate.

A trading group breakdown of this analysis is instructive:

	<u>Percentage Error</u>	<u>Modal Group</u>
Consumer	(14.5%) to 50.0%	5-10%
Engineering	(25.3%) to 71.2%	0-5% & 25-30%
Industrial	(21.4%) to 50.6%	10-15%
Tyres	(5.7%) to 30.9%	5-10%

Each group, with its skewed ranges towards positive errors and positive modal groups, shows a tendency towards overestimation. Consumer, Industrial and Tyre Groups all have reasonably normal distributions, however Engineering Group deviates significantly from the normal and clearly experience severe variability in the error.

b) Mean absolute percentage error (Table 6.3)

On a divisional basis, absolute error ranges from a mean of 4.5% to one of 29.6%, with an average throughout the Group of 12.7%. Considering the position of turnover in the hierarchy of Plan development and past research (Lowe and Shaw, 1970), these results appear to be relatively poor. In terms of the trading groups, the picture is similar:

Figure 6.1

TURNOVER PERCENTAGE ERROR DISTRIBUTION

Frequency

46

44

42

40

38

36

34

32

30

28

26

24

22

20

18

16

14

12

10

8

6

4

2

0

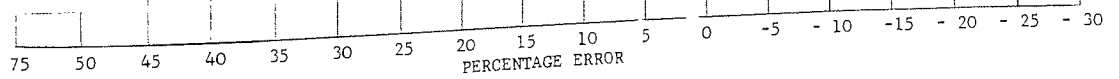


Table 6.3 Mean Absolute Error Ranking

	<u>Division</u>	<u>Absolute Percentage Error</u>
1.	ISC	4.5
2.	NTS	5.2
3.	Footwear	6.9
4.	Dunlopillo	7.0
5.	AFAD	7.4
6.	Aviation	7.7
7.	PRD	9.4
8.	PED	9.4
9.	Semtex	9.7
10.	URL	10.7
11.	GRG	11.5
12.	HHD	11.6
13.	UKTD	12.2
14.	AFSD	13.8
15.	IHD	14.8
16.	Suspensions	16.6
17.	Textiles	16.7
18.	Belting	17.1
19.	O&M	17.5
20.	Redditch Mouldings	18.9
21.	Wheel	20.9
22.	Plant & Equipment	29.6
	Average	12.9

Mean absolute percentage error

Consumer	9.0
Engineering	18.7
Industrial	12.5
Tyres	9.3

Consumer Group, who significantly outperform Engineering Group, would have further enhanced their position had it not been for the poor performance of Textiles (who in any case have more in common with Tyre Group). By excluding this division, Consumer Group's absolute error would have been 7.0%. Similarly, Consumer Group occupy three of the first four places in the ranking table for absolute error (table 6.3). The fourth place is taken by NTS , itself selling in a consumer market.

Various inferences could be drawn from this result, one of which is that forecasting in a consumer market is easier than forecasting in say an engineering market (Engineering Group occupy the last three places in the ranking table).¹ However, this assumes forecasting ability does not vary significantly from group to group.

1. Tull (1967) also found absolute error to be lower in consumer industries than in industrial industries. This he attributes to the fact that the consumer industry is less reliant on a few buyers (5.5.5)

c) Percentage of forecasts within $\pm 5\%$

On the basis of a $\pm 5\%$ level of accuracy, of the 206 forecasts only 58 (28%) fall within the range. Breaking this down according to trading groups, the following pattern emerges:

	<u>No. within $\pm 5\%$</u>	<u>Percentage of Forecasts</u>
Consumer	18	36
Engineering	11	23
Industrial	19	24
Tyres	10	33

These results clearly show that only between a third and a quarter of all forecasts fall within this band of accuracy. If one assumed equal competence in forecasting throughout the Group, these results also indicate that it is easier to forecast accurately in Consumer Group than it is in Engineering and Industrial Groups. This supports the findings of Tull (1967) (5.5.5)

One conclusion from this analysis is that forecasts falling within $\pm 5\%$ can be termed reasonably accurate in Dunlop terms. Translating this inaccuracy into terms of turnover, on a turnover of £17m (the average for the Group 1969-1970) the acceptable error range would be \pm £850,000.

These forecasts deal purely with point estimates rounded to the nearest £1000, and in that none of the 206 forecasts were 100% accurate, as one might expect, the validity of point estimates as against ranges, must be seriously questioned.

d) Statistical bias measures

(i) Mean Percentage error

Although error distributions are useful for identifying systematic bias, mean error gives a more precise indication of

average performance. Positive values indicate a tendency to overestimate and similarly negative ones denote a tendency to underestimate.

An examination of the summary table (table 6.2) shows that overestimation is prevalent throughout the Group. Across all divisions, the range of mean percentage error is from (1.7%) to 20.9% with an average of 9.3%. Further, only two divisions, PRD and AFAD, had negative mean percentage errors. The following breakdown reveals the extent of this overestimation:

Mean Percentage Error

Consumer	6.2
Engineering	14.9
Industrial	8.1
Tyres	8.3

A useful comparison with the trading group breakdown for mean absolute percentage error can be made here. Such analysis reveals that a high proportion of the absolute error is made up of positive (overestimates) errors.

(ii) Tendency to overestimate (hypothesis i)

Of the 206 turnover forecasts, 151 (73%) were overestimates, while only 55 (27%) were underestimates. This appears to be evidence to substantiate the permanent optimism theory which suggests overestimations will predominate. It also substantiates hypothesis i, which stated that divisions tend to systematically overestimate in their forecasts.

The conclusions are similar on a trading group basis:

	<u>Overestimates</u>		<u>Underestimates</u>	
	<u>No.</u>	<u>Percentage</u>	<u>No.</u>	<u>Percentage</u>
Consumer*	35	70	15	30
Engineering*	37	77	11	23
Industrial*	54	69	24	31
Tyres*	25	83	5	17

*Not significant at the 5% level but at 10% level.

It is worthy of particular note that some divisions, Wheel and Semtex for example, overestimated without exception in every forecast over the last ten years. Similarly, many other divisions show persistent bias, although perhaps not to same extreme.

(iii) Tendency to overestimate by a large amount (hypothesis ia)

The results of this analysis are governed by the choice of what arbitrary figure represents 'a large amount'. Westwick (1972) in his analysis conveniently chose 28%. For the purpose of this study a lower figure of $\pm 15\%$ was chosen.

As one might expect, the results of this analysis largely mirror those of the previous section. Of the 206 forecasts, only 4 (2%) underestimated by more than 15%, where as 51 (25%) overestimated by that amount. Again on a trading group basis the results were much the same, with only Industrial group failing to show a result significant at the 5% level.

	<u>No. less than -15%</u>	<u>Percentage of those greater than + 15%</u>	<u>No. greater than + 15%</u>	<u>Percentage of those greater than + 15%</u>
Consumer	0	0	7	100
Engineering	1	5	21	95
Industrial*	3	14	18	86
Tyres	0	0	5	100

Again this seems to be clear evidence that overestimation is rife throughout the Group and supports hypothesis i. Engineering Group in particular, is worthy of special mention as no less than 44% of all its forecast overestimated turnover by more than 15%.

(iv) Tendency to underestimate growth

This analysis was attempted on the basis that there might be a ceiling to the level of optimism. For example, divisions with high growth might forecast conservatively so as not to set themselves too stretching a target. However, there was no outstanding evidence to suggest growth is generally underestimated. Of the 176 periods of growth only 31% were underestimates.

In order to determine if there was a "cut-off" point to the level of overestimation, growth periods of over 25% were examined. Of the 30 periods of growth in excess of that figure, 21 (70%) were underestimated, which is not significant at either the 5 or 10% levels.

(v) Tendency to forecast growth during decline (hypothesis ii)

As there were so few periods of decline, only 30 in all, this is perhaps not a fair test of the hypothesis. Merely as a broad indicator though, the results were:

	<u>No. of periods of decline</u>	<u>Percentage forecast as decline</u>
Consumer	6	0
Engineering	14	14
Industrial	8	0
Tyres	2	0

Thus, of the 30 periods of decline, only two periods were accurately forecast as declines. This tends to at least partly substantiate the hypothesis that even during decline growth is still predicted.

Also of note under this section is that there is little or no evidence of regressivity. That is, divisions are not predicting a reversal of a trend, but are rather predicting a continuation of a trend. This result is also noted under turning point analysis (6.5.4f) through the lower incidence of false signals.

- (vi) Tendency for the forecasts to be more accurate for period $t+2$ than $t+1$.

This analysis suggests that degree of overestimation in turnover is so great that a forecast for the next year predicts the following year with more accuracy. That is to say, $t+2$ rather than $t+1$ (table 6.4). In a growth variable like turnover (which irrespective of volume growth has increased by, on average, 13% p.a. simply because of inflation) such a result would give a clear indication of overestimation being present.

By using the forecast to predict the following year ($t+2$), the mean percentage error for the whole Group drops from 9.3% to (2.6%), and the absolute error is only marginally worse, 13.6% for $t+2$ against 12.7%.

Divisionally, eleven out of twenty-two divisions produced a lower mean absolute percentage error and no less than sixteen had a lower standard deviation by using the forecast to predict $t+2$.

Table 6.4 TURNOVER - BIAS ANALYSIS

DIVISION	% age Error		% age Error std. dev		Absolute % age Error		Absolute % age std. dev	
	t+1	t+2	t+1	t+2	t+1	t+2	t+1	t+2
Aviation#	5.5	-5.6	10.2	12.9	7.7	12.9	8.6	5.6
Belting*	9.0	-10.3	18.4	18.0	17.1	16.0	11.0	12.9
Dunlopillo#	3.3	-7.2	8.4	9.5	7.0	11.1	5.7	4.5
AFAD	-0.1	-16.6	9.8	11.6	7.4	16.6	6.4	11.6
AFSD*#	11.4	-2.5	15.6	16.0	13.8	12.7	13.4	10.1
Footwear	1.1	-12.7	7.7	9.5	6.9	12.7	3.5	9.5
GRG	7.9	-2.2	10.7	13.7	11.5	11.1	6.6	8.3
HHD#	10.0	-9.1	13.1	13.1	11.6	14.2	11.6	6.9
IHD*#	13.9	-3.9	13.3	8.4	14.8	7.1	12.2	5.9
ISC	0.3	-15.3	5.1	6.6	4.5	15.3	2.4	6.6
NTS	3.8	6.7	4.3	5.7	5.2	7.8	2.5	4.1
O&M	15.9	-5.0	17.1	22.4	17.5	19.6	15.4	11.2
Plant &								
Equipment*#	28.9	23.8	23.0	24.1	29.6	27.5	22.0	19.6
PED#	7.0	-4.2	8.5	8.9	9.4	8.2	5.7	5.3
PRD	-1.7	-14.8	12.0	15.9	9.4	18.0	7.6	11.9
Red. Mouldings#	6.0	-4.6	26.3	23.7	18.9	19.5	19.2	14.0
Semtex*#	9.7	1.1	5.0	7.3	9.7	6.5	5.0	3.4
Suspensions*#	13.5	7.7	13.7	14.8	16.6	14.6	9.7	7.8
Textiles*	16.7	9.4	14.2	21.6	16.7	16.4	14.2	16.8
UKTD*#	12.2	2.3	7.8	9.8	12.2	8.9	7.8	4.6
URL*#	8.8	-2.2	10.6	5.9	10.7	5.5	8.7	3.0
Wheel*#	20.9	6.5	12.4	12.8	20.9	12.4	12.4	6.9
	-----	-----			-----	-----		
	9.3	-2.6			12.7	13.6		

* = Forecast (t+2) outperforms Forecast (t+1) in absolute error terms
 # = Standard deviation of t+2 superior in absolute error terms

From this one concludes that although the absolute percentage error is about the same (standard deviations generally being better by using the forecast to predict $t+2$) the mean percentage error would be improved, as much of the overestimation would be removed. Such a result must be viewed as a condemnation of present forecasting procedures.

- e) Relative accuracy - performance against a naive model.
(hypothesis iii)

The coefficient of relative accuracy (5.6.4) compares the absolute percentage error of the naive model with that of the division's forecast. As the coefficient approaches zero, so the value of the division's forecast diminishes; a negative coefficient indicates the naive model is outperforming the divisional forecast in terms of accuracy. A division which only marginally outperformed a naive model would have to carefully their current forecasting procedure.

Because the coefficient uses the absolute percentage error of the naive model as its denominator, the measure is not symmetrical. Little can therefore be gained from examining the mean or standard deviation of the series. However, the figure for the percentage of negative values does give a clear indication of relative performance.

For turnover, naive model I has generally been used as the relative measure. This model is merely a same rate of change extrapolation from the previous year:

$$F_{t+1} = A_t \times \frac{A_t}{A_{t-1}}$$

Generally, there was a clear tendency for this naive model to perform well against, if not outperform, the divisional forecasts. Table 6.2 reveals the degree to which the naive model outperforms the divisions' forecasts.

Looking purely at the percentage of negative coefficients (that is the percentage of times the naive model outperforms the divisional forecast), few divisions produce forecasts which are of much relative value. Sixteen out of twenty-two divisions had negative relative coefficients in at least half the forecast periods. That is to say, had those divisions used the naive model they would have been more accurate on more occasions. Such a finding must bring into question the turnover forecasting procedure at those sixteen divisions. There was no evidence to suggest that this poor performance varies between trading groups. This evidence supports hypothesis iii, which suggests that divisional forecasts do not significantly outperform a naive model.

f) Randomness

To be better than a purely random set of forecasts, the correlation coefficient between actual and forecast values should be significantly positive. By applying the standard statistical 'f' test one can determine whether the 'r' value is significantly different from zero. As explained in section 5.6.8 when analysing levels, particularly for a non-ratio variable like turnover, one would expect reasonably high correlations. Indeed this is borne out by the data, with only three divisions recording an 'r' value lower than 0.9.¹

The fact that all divisions recorded a correlation coefficient which is significant at the one percent level, means that they are all producing forecasts which are significant improvements on random predictions. If one assumes stability of the divisional forecasting system, such results imply that it is possible to predict the likely range of error and thus place confidence limits on the forecasts. Also linear transformations could be made to improve the forecasts by eliminating systematic error. Indeed as long as a high correlation exists between the actual and forecasts series, any consistent deviations between the series can be used to improve the forecast.

1. These are Plant and Equipment (0.62); Redditch Mouldings (0.76); and Suspensions (0.88) all of which are part of Engineering group.

6.5.4 Analysis of Incremental Change

a) Percentage error distributions

Figure 6.2 shows the overall incremental change percentage error distribution does not deviate significantly from the normal, however it does have a very wide range from (189) to >500 and is bimodal. The largest modal group is in the 40-60% error range with the smaller in 0-20% range. This may indicate that although some divisions tend to overestimate, there is another block of divisions who forecast more accurately. Equally however, it could indicate that in some years forecasting is more difficult than in others and most divisions get it wrong by the same amount.

The following ranges were observed for each trading group:

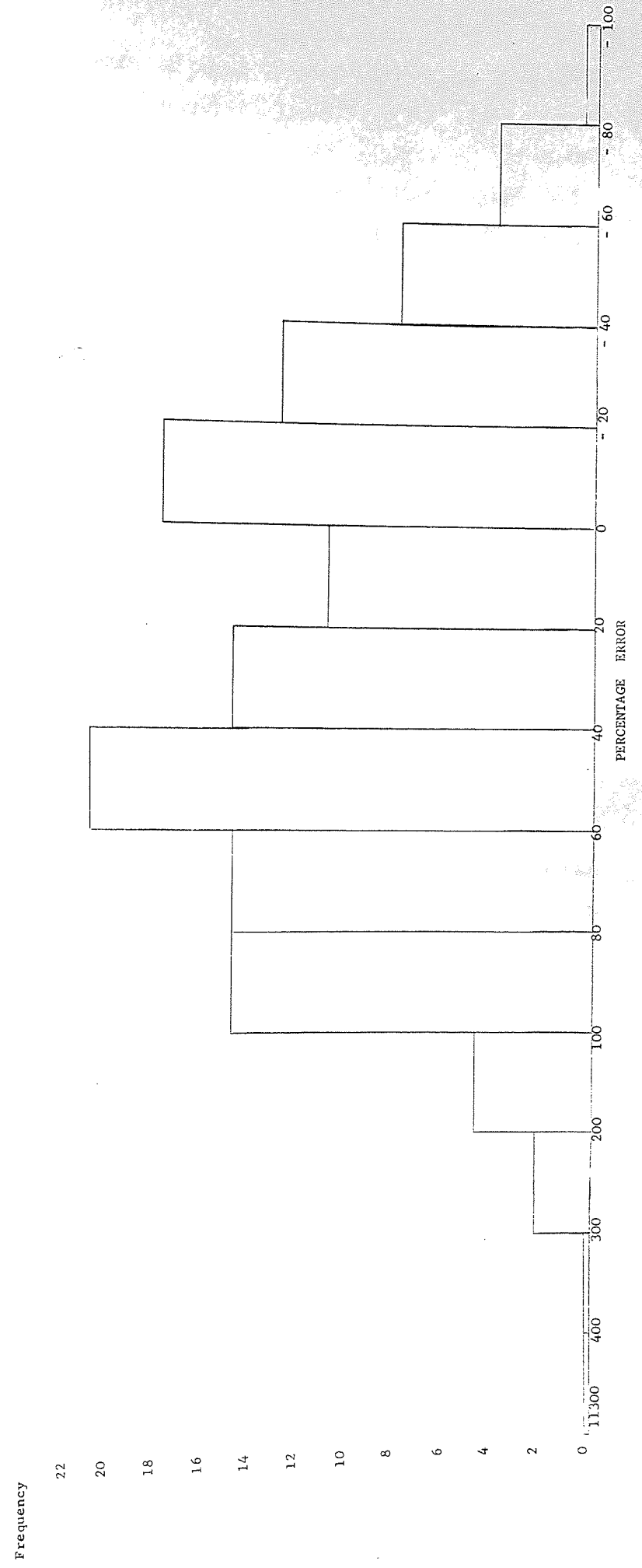
	<u>Percentage error</u>
Consumer	(182) - >500
Engineering	(189) - >500
Industrial	(86) - >500
Tyres	(62) - >500

These strongly suggest the existence of positive bias as all groups have distributions very heavily weighted towards overestimation.¹ Interestingly, although there is a distinct bias towards overestimation, most trading groups have a modal group fairly close to zero indicating some ability to forecast accurately.

The wide ranges of error plainly indicate the inability of divisions to accurately forecast changes in turnover and also shows that change is generally overestimated, on occasion by massive proportions.

1. This is the reverse of the findings of many previous studies, for example Ferber 5.5.1.

Figure 6.2 DISTRIBUTION OF INCREMENTAL CHANGE PERCENTAGE ERROR - TURNOVER



b) Mean absolute percentage error

On a divisional basis, the range of mean absolute error is from 32% to 1378% with an average error throughout the Group of 400%. This again indicates the total inability of divisions to forecast changes. Indeed, the incremental change ranking table (table 6.5) shows that only four divisions have a mean percentage absolute error of under 100%, which by any standards is a poor performance.

The results are no better on a trading group basis, with all groups finding it impossible to give even a reasonable indication of the magnitude of change.

Mean absolute percentage error

Consumer	325
Engineering	401
Industrial	413
Tyres	484

c) Mean percentage error.

The overestimation described in the analysis of the percentage error distributions, is further revealed by an examination of the mean percentage errors for each trading group:

Mean percentage error

Consumer	299
Engineering	378
Industrial	393
Tyres	476

It is not simply that all these errors are positive, but their size which is of concern. It indicates the enormity of the positive bias present in the forecasting of changes.

Table 6.5

Incremental Change Ranking - Mean Absolute Percentage Error
- Turnover

	<u>Division</u>	<u>Mean Absolute Percentage Error</u>
1.	ISC	32
2.	Aviation	63
3.	PRD	70
4.	Dunlopillo	93
5.	AFAD	112
6.	NTS	133
7.	AFSD	218
8.	Belting	242
9.	Footwear	272
10.	Textiles	289
11.	Redditch Mouldings	316
12.	Wheel	330
13.	IHD	378
14.	HHD	399
15.	GRG	425
16.	O&M	493
17.	Plant & Equipment	589
18.	UKTD	646
19.	URL	673
20.	Suspensions	707
21.	Semtex	937
22.	PED	1378
		400

Average

A comparison of the mean percentage error with that of absolute percentage error demonstrates the extent of the bias present in all trading groups. Specifically, Tyres, who have an average absolute error of 484%, only account for, on average, 8% by underestimation.

d) Theil's inequality coefficient

Theil's coefficient can, among other things, be viewed as a relative measure of inaccuracy of incremental change. It achieves this by comparing the error in the divisional forecast of the incremental change, with the error of a no-change forecast (i.e. $F = 0\%$). To reiterate section 5.6.6, when $U=0$, every forecast is perfectly predicting every actual. Similarly, when $U=1$, this suggests that the forecast is equivalent to a no-change extrapolation in error terms. If, for example, $U = 0.5$, this would indicate that the root mean square error of the forecast is half that which would have been observed had a no-change forecast been made. Clearly U has no upper bounds as a division can do worse than a no-change forecast.

This being said, the results are, to say the least, disappointing and mirror the findings in the previous sections. Twelve of the twenty-two divisions produced a coefficient value greater than one. In other words, more than half the divisions in Dunlop UK would have produced more accurate forecasts had a no-change extrapolation been used. Similarly, the average performance throughout the Group was 1.03, demonstrating that, on average, divisional performance is worse than a no-change extrapolation.

Of the ten divisions with coefficients below one, only three: ISC, HHD, NTS, managed to produce coefficients less than 0.50 (i.e. 50% of the error achieved by a no-change forecast). ISC, who outperformed other divisions in terms of absolute percentage error for both levels and changes, again top the rating table (table 6.6) of Theil's coefficient.

Table 6.6

Theil's Coefficient Ranking - Turnover

	<u>Division</u>	<u>U</u>
1.	ISC	0.35
2.	HHD	0.43
3.	NTS	0.44
4.	Footwear	0.54
5.	AFAD	0.54
6.	Dunlopillo	0.60
7.	PRD	0.61
8.	Aviation	0.79
9.	PED	0.85
10.	GRG	0.86
11.	AFSD	1.03
12.	Redditch Mouldings	1.14
13.	Suspensions	1.22
14.	Belting	1.23
15.	Semtex	1.24
16.	Plant & Equipment	1.31
17.	URL	1.46
18.	O&M	1.48
19.	Textiles	1.50
20.	IHD	1.53
21.	UKTD	1.61
22.	Wheel	1.76
	Average	1.02

A useful comparison can be made between the various ranking tables. For example, HHD's mean absolute error for incremental change is 399%, yet according to Theil's coefficient this is 57% better than would have been experienced had a no-change extrapolation been used. This suggests that there is a considerable degree of variability operating in their market.

Likewise, PED have an absolute mean error of 1378%, yet even this is only 85% of that which have been produced by a no-change forecast. Similar comments can be made for GRG and Aviation Division, which indicates the degree of difficulty experienced by some divisions trying to forecast incremental changes.

On the other side of the coin, a division such as Textiles, who have a mean absolute error of 289%, have produced an error which is 150% of a no-change forecast error. In other words, a 50% improvement could have been made by simply using the naive model.

The performance on a trading group basis largely mirrors these results:

Theil's Coefficient

Consumer	0.84
Engineering	1.24
Industrial	0.98
Tyres	1.17

Although the majority of these results are disappointing, there is some indication that several divisions experience high degrees of variability and uncertainty and thus have some "excuse" for their errors.

e) Theil's Decomposition

As stated in section (5.6.6) the decomposition of the inequality coefficient gives an indication of the systematic and non-systematic elements of error. The bias (U_M) and regression (U_R) components represent the systematic part of the error, and the disturbance component (U_D) represents the unsystematic element. It is highly desirable to minimise systematic elements against unsystematic elements. Therefore, bearing in mind that $U_M + U_R + U_D = 1$, U_D should be large in comparison to U_M and U_R , for the forecast to be efficient.

It is helpful to examine these components on a trading group basis:

	U_M	U_R	U_D
Consumer	0.31	0.26	0.43
Engineering	0.39	0.13	0.48
Industrial	0.27	0.29	0.47
Tyres	0.44	0.24	0.32

Although the disturbance proportion accounts for the largest percentage of the error in all groups except Tyres, over half of it is attributed to systematic causes. In the case of Tyres, 44% of error is attributed to bias elements.

At a divisional level, Semtex and Plant & Equipment both produce forecasts with a high degree of bias: 68% and 67% respectively, and these reflect their position in the absolute error ranks (table 6.5).

An examination of the unsystematic element ranking table (table 6.7) in comparison to the Theil's coefficient table (table 6.6) is instructive. There is reasonable correlation between the two tables, indicating that much of the failure to perform well against a no-change model is due to systematic influences. This is an indictment of the forecasting process of many divisions.

Table 6.7

Theil's Inequality Decomposition Disturbance Proportion Ranking
Turnover

	<u>Division</u>	<u>Disturbance proportion</u> U_D
1.	PRD	0.85
2.	Footwear	0.82
3.	Aviation	0.81
4.	AFAD	0.78
5.	HHD	0.77
6.	Redditch Mouldings	0.66
7.	Dunlopillo	0.60
8.	NTS	0.59
9.	PED	0.43
10.	GRG	0.43
11.	Suspensions	0.40
12.	Plant & Equipment	0.33
13.	O&M	0.28
14.	Textiles	0.27
15.	Belting	0.26
16.	ISC	0.24
17.	AFSD	0.23
18.	Semtex	0.21
19.	URL	0.20
20.	Wheel	0.18
21.	UKTD	0.17
22.	IHD	0.16

Generally, the majority of divisions recorded reasonably low regression proportions. However, Belting and ISC displayed a high degree of variation, 60% and 66% respectively. This suggests systematic deviations from the regression slope of unity. So, for example, in the case of ISC even though the absolute mean error is relatively small (32%), a large proportion of that is attributed to systematic forces and therefore can to some extent be eliminated. An examination of ISC's data run (Appendix C1.1) shows that up until 1975 (when incidentally ISC had a change of management) they had consistently underestimated. Since then, they have consistently overestimated. Such systematic deviations from the regression line can be eliminated.

The disappointing conclusion from Theil's decomposition, is that forecasting in Dunlop is generally inefficient. The majority of divisions have a significant proportion of their error arising from systematic forces, which, if past performance had been analysed, could, to a certain extent, have been reduced.

f) Turning point analysis

Accurate forecasting is not only a question of getting the magnitude of the change correct, but also the direction of that change (that is whether the division is heading for expansion or contraction). Analysis of two types of turning point error, missed turns and false signals, can help to determine forecast efficiency in this area. As a rule, divisions using trend projections would produce relatively few false signals (type I errors) but would have a high number of missed turns (type II errors).

With a variable such as annual turnover, particularly during inflationary times, one would not expect many turning points. This is the case with the Dunlop data, which has only 52 turning points out of 206 data points. However, it is still instructive to examine performance in this area.

Throughout the whole Group, the average percentage of false signals to total forecast periods was 2.7, whereas for missed turns the average was 12.2. Such a result indicates the tendency for divisions to continue to forecast a trend at the expense of being wrong when a turning point occurs. This is also true on a trading group basis:

	False signal ratio ¹	Missed turns ratio ²
Consumer	0.25	0.60
Engineering	0.42	0.43
Industrial	-0-	0.50
Tyres	-0-	0.67

1. Ratio of false signals to all predicted turns.
2. Ratio of missed turns to all recorded turns.

Of the 52 turning points experienced by Dunlop during the period under review, only 50% were accurately forecast. However, such analysis does not reveal the full picture, as it deals with both upturns (particularly after a decline) and downturns. With a growth variable like turnover, one would expect upturns to be accurately forecast. If one examines only declines the results are less complimentary (see also 6.5.3.d) v).

	<u>No. of declines experienced</u>	<u>No. accurately forecast</u>
Consumer	6	0
Engineering	14	2
Industrial	8	0
Tyres	2	0

This suggests that divisions are totally incapable of forecasting declines in turnover and thus suggests that Dunlop divisions are generally poor forecasters of turning points.

6.5.5 Confidence Limits Attached to New Forecasts

With the exception of Plant and Equipment, Redditch Mouldings and Suspensions, all divisions recorded correlation coefficients in excess of 0.9, for the correlation between actual and forecast levels. Such high correlations indicate that there is considerable uniformity between the actual and forecast series. This allows predictions about the size of the residual (error) to be made, on the assumption that the forecasting system remains relatively stable.

One can thus say, given relatively normal distributions, that errors in the future should be similar to those experienced in the past. Using normal distribution analysis, it is possible to be 95% confident that the future forecast errors will lie within the range of plus or minus 1.96 standard deviations from the mean. The results of this analysis are displayed on table 6.8.

Although most of the confidence intervals displayed are extremely wide, they do give some indication of the degree of confidence to be attached to new forecasts. They also indicate, not suprisingly given the rest of the analysis, that the downside risk is considerably less than the upside risk.

6.5.6 Conclusions on Forecasting Performance in Turnover

Two overriding conclusions emerge from the analysis of turnover. Firstly, divisional forecast performance, in relative terms, is poor. And secondly, the degree of overestimation, which is present in nearly all divisions' forecasts, is exceedingly large.

The analysis disclosed that sixteen out of twenty-two divisions would have been more accurate on more occasions had a simple naive model been used. Such a result gives an indication of the simplicity of the forecasting techniques needed to outperform present forecasts. It may also, in some cases, give an indication of the ease of forecasting in some of these markets. However, above all, the result must seriously question the value of the divisional forecasts which can be so easily outperformed.

Table 6.8

Confidence Intervals on Forecasts (95% Confidence)

%age Forecast Error

Dunlopillo	3.3+/-16.5	-13.2 to 19.8
Footwear	1.1+/-15.1	-14.0 to 16.2
ISC	0.3+/-10.0	- 9.7 to 10.3
Semtex	9.7+/- 9.8	- 0.1 to 19.5
Textiles	16.7+/-27.8	-11.1 to 45.5
Aviation	5.5+/-20.0	-14.5 to 25.5
Plant & Equipment	28.9+/-45.1	-16.2 to 74.0
Redditch Mouldings	6.0+/-51.5	-61.7 to 57.5
Suspensions	13.5+/-26.9	-13.4 to 40.4
Wheel	20.9+/-24.3	- 3.4 to 45.2
Belting	9.0+/-36.1	-17.1 to 45.1
AFAD	-0.1+/-19.2	-19.3 to 19.1
AFSD	11.4+/-30.6	-19.2 to 42.0
GRG	7.9+/-21.0	-13.1 to 28.9
HHD	10.0+/-25.7	-15.7 to 35.7
IHD	13.9+/-26.1	-12.2 to 40.0
O&M	15.9+/-33.5	-17.6 to 49.4
PED	7.0+/-16.7	- 9.7 to 23.7
PRD	-1.7+/-23.5	-25.2 to 21.8
NTS	3.8+/- 8.4	- 4.6 to 12.2
UKTD	12.2+/-15.3	- 3.1 to 27.5
URL	8.8+/-24.3	-15.5 to 33.1

On the positive side, high correlations were generally recorded, which suggests the forecasts were better than random predictions. It also allows improvements to be made to the forecast by using optimal linear transformation, on the assumption of stability in the forecasting system.

Similarly, with incremental change, over half the divisions were outperformed by a naive model; again seriously questioning the value of present techniques. However, a comparison of the inequality coefficient's results against those of mean absolute percentage error, shows that some divisions experienced a considerable degree of variability in their forecasts. PED for example, with a mean absolute error of 1378%, were 15% more accurate than if a no-change model had been used.

A further condemnation of the value of the forecasts appeared in the analysis of Theil's decomposition. Although unsystematic factors (U_D) account for the single largest proportion of the error throughout the Group (and for each trading group), over half the error is still attributed to the two systematic, and therefore eliminable, factors. Such a result is clearly disappointing in that it indicates inefficiency in the forecasts as errors in past performance are not being used to improve future predictions.

Further indictment of the forecasts is given by the high positive correlation of Theil's coefficient and the disturbance proportion. This suggests that those divisions who performed poorly in terms of the inequality coefficient, have much of that poor performance attributed to systematic factors in the error.

The second overriding conclusion is that massive overestimation is common in both levels and, in particular, incremental change. An examination of the error ranges shows not only the inability to forecast changes in turnover, but also the degree of overestimation

present. This total inability to forecast change is further reflected in the analysis of absolute error. Here there is an overall mean of 400%, with only four divisions managing to produce errors of less than 100%.

This positive bias (overestimation) is also seen in the analysis of levels, with only two divisions managing to produce a negative mean error. This tendency towards overestimation, although nothing like as rife as in incremental change, is seen throughout the analysis. In fact, 73% of all forecasts were overestimates. However, no greater indictment of the turnover forecasting process can be made than the fact that half the divisions had a lower error when their forecasts were used to predict two year's hence instead of one year (i.e. $t+2$ instead of $t+1$). In other words, these divisions would have a better indication of next year's sales by examining last year's forecast, than by making a new forecast.

Similarly, almost all divisions failed to forecast decline when it occurred. In fact, with very few exceptions, divisions appear to always forecast a continuation of a trend, as only 2.7% of forecasts were false signals, whereas 12.2% were missed signals. Considering only a quarter of the forecast periods (52) were turning points, this appears to be a high proportion of forecasts, and therefore indicates the poor performance.

The conclusion from this is that not only are divisions incapable of accurately forecasting the magnitude of change, but also fail to forecast the direction properly.

6.6 Results of the Variance Analysis of Margin

6.6.1 Numerical Summary of the Analysis

A detailed analysis of margin, similar in structure to that employed in the analysis of turnover, can be found in Appendix C4. This analysis has been largely based on the numerical summary found in table 6.9.

6.6.2 Conclusions on Forecast Performance in Margin

As with turnover, the most important conclusion drawn from the analysis of margin is that the majority of divisions do not perform significantly better than a simple naive model, either for levels or incremental change. In other words, any consolidation at Group or trading group level is of little forecast value as, according to the analysis, it can be outperformed by a naive model. Further, low correlations were invariably recorded between actual and forecast, suggesting many forecasts are no better than random predictions.

A comparison of Theil's coefficient and mean absolute error for incremental change, reveals that some divisions with small error would often have performed better had a naive model been used. This indicates that these divisions are experiencing low variability and thus find it easier to forecast more accurately than divisions suffering from high variability.

Generally, poor results were experienced in Theil's inequality coefficient, but these are to some extent lessened by the results of the analysis of Theil's decomposition. This shows that by far the majority of the error is attributed to unsystematic factors. Such a result means that the forecasts are generally quite efficient, with the error almost entirely consisting of unsystematic factors. However, overriding these mitigating factors, many divisions would have still been more accurate had a no-change model been used.

Turning to the standard measures of accuracy, mean absolute error for levels was disappointingly high (90% throughout the Group). However, nearly one in four forecasts fall within the range $\pm 15\%$.

Table 6.9 MARGIN SUMMARY TABLE

DIVISION	% age Error std. dev.		Absolute % age Error std. dev.		Naive Model % age Absolute Error std. dev.		Naive Model % age Negative Coefficients		FIRST DIFFERENCES				Actual Dif/Forecast Dif R		Theil's Coefficient U	THEIL'S DECOMPOSITION				Turning Point Analysis		
	% Error	std. dev.	% Error	std. dev.	% Error	std. dev.	% Error	std. dev.	% Error	std. dev.	% Error	std. dev.	% Error	std. dev.		% Error	std. dev.	UM	UR	UD	% Error	Type II Error
Aviation	109	325	134	316	66	86	40	-8	194	164	105	0.13	1.18	0.01	0.33	0.66	20	10	4	20	10	4
Belting	33	83	68	57	45	37	63	240	685	342	641	0.00	1.27	0.00	0.39	0.64	50	0	2	50	0	2
Dunlopillo	4	51	36	37	43	27	40	-44	125	101	90	0.30	1.02	0.05	0.09	0.86	30	0	5	30	0	5
Fire Armour	7	28	24	15	25	20	56	-21	136	105	90	0.40	0.92	0.00	0.01	1.00	11	11	4	11	11	4
Fluid Seal	3	110	68	57	115	135	33	-14	132	107	80	0.48	0.90	0.03	0.05	0.94	33	11	5	33	11	5
Footwear	43	126	77	109	154	252	30	11	101	95	36	0.55	0.84	0.00	0.00	1.00	30	0	6	30	0	6
G.R.C.	80	223	169	166	300	353	30	-125	1145	579	996	0.53	0.98	0.02	0.30	0.68	20	10	4	20	10	4
Hydraulic Hose	3	22	16	15	21	9	50	85	330	180	290	0.56	0.83	0.00	0.10	0.96	13	0	3	13	0	3
Industrial Hose	66	98	70	95	133	97	25	87	146	118	122	0.55	0.99	0.30	0.01	0.73	13	25	3	13	25	3
I.S.C.	13	48	28	41	43	61	40	39	389	259	293	0.50	1.06	0.01	0.32	0.67	30	20	4	30	20	4
N.T.S.	14	56	41	41	96	95	40	4	410	240	334	0.61	0.82	0.00	0.06	0.94	10	10	4	10	10	4
Oil & Marine	29	99	57	86	48	30	25	-590	1414	662	1382	0.18	1.03	0.00	0.09	0.94	25	13	4	25	13	4
Plant & Equip.	105	86	117	71	257	167	25	58	78	79	56	0.45	1.09	0.33	0.03	0.66	11	11	3	11	11	3
Polymer Eng.	90	181	116	165	129	138	33	6	122	90	82	0.78	0.64	0.00	0.08	0.96	33	0	4	33	0	4
Precision Rubbers	19	52	39	39	43	28	44	6	334	232	262	0.31	1.40	0.06	0.49	0.47	33	0	6	33	0	6
Red. Mouldings	127	367	148	359	170	336	50	-493	1252	638	1185	0.52	0.87	0.05	0.02	0.94	20	20	4	20	20	4
Semtex	215	193	221	186	131	87	80	189	149	197	138	0.45	1.52	0.62	0.06	0.32	50	20	2	50	20	2
Suspensions	40	67	51	58	94	81	30	79	301	203	235	0.46	0.95	0.10	0.06	0.83	20	10	6	20	10	6
Textiles	86	146	109	130	154	162	50	126	217	176	178	0.57	0.90	0.13	0.05	0.82	10	10	3	10	10	3
U.K.T.D.	78	86	92	71	75	33	50	91	132	143	73	0.11	1.30	0.33	0.18	0.49	40	10	3	40	10	3
* United Reclaim	128	200	148	186	181	199	40	61	113	103	76	0.45	0.99	0.24	0.01	0.75	20	30	4	20	30	4
Wheel	123	161	144	142	133	176	55	541	1474	601	1450	0.30	1.11	0.15	0.11	0.75	33	0	2	33	0	2

* NMI used in place of NH2

This suggests that the high mean absolute error is caused by a small number of high value errors, while the largest proportion of errors fall within a reasonably tight low value range. Such a conclusion is, to some extent, supported by the fact that the modal range for the Group is (20%) to (40%).

The existence of this negative modal range must, to a degree, question the validity of hypothesis i, which postulates that divisions tend to overestimate. Generally, there appears to be little tendency to overestimate in margin, even though the mean error is high. This, compared with the results of mean absolute error, suggests that on average overestimates are larger than underestimates. This conclusion is supported by the fact that 86% of forecasts greater than $\pm 45\%$ were overestimates, thus confirming hypothesis ia.

Growth is generally not underestimated in margin (in contrast to what was postulated in hypothesis ii), however, there does appear to be a 'ceiling' to the level of overestimation. This 'ceiling' appears to be, at most, about 25% growth. That is to say, above 25% growth, divisions tend no longer to overestimate.

The tendency to overestimate is equally not present in incremental change, although there is considerable variability in the forecasts. This variability suggests that divisions find it difficult to forecast change, though margin's performance is a significant improvement on that which was seen in turnover. This increase in performance appears to be largely attributed to the fact that the probable range of actual outcomes for ratios is much smaller than the probable range of outcomes in turnover. For example, to significantly improve actual outcomes in margin, disproportional changes in profit have to occur over the changes in turnover, although volume sensitivity can distort this picture. Any change over and above a few points, becomes less likely and thus the probable range of outcomes is relatively small.

Even if divisions cannot forecast the magnitude of change accurately, getting the direction of the change right would be helpful. This in

itself is a very valuable piece of information as it is essential to know whether to plan for an expansion or recession. It seems from the analysis of margin, that 80% of all turning points are correctly forecast, which seems a satisfactory result when compared with the difficulty experienced in forecasting change. However, this accuracy is obtained at the cost of one in four of all forecasts being a false signal, while only one in ten is a missed turn. There is, therefore, some evidence to suggest that rather than forecasting a continuation of a trend, divisions forecast a change, that is regressively. Divisions who forecast in such a way will always be right at a turning point at the expense of being wrong the rest of the time. Such a policy is, of course, of little use in terms of forecasting accuracy.

6.7 Results of the Variance Analysis of Return

6.7.1 A Numerical Summary of the Analysis

The detailed analysis of return, which largely follows the same structure as turnover, can be found in Appendix C5. This analysis has been largely based on the numerical summary found in table 6.10

6.7.2 Conclusions on Forecast Performance in Return

The overestimation observed in turnover, is substantially reduced in return, suggesting less systematically induced bias. However, although bias is reduced, the analysis still lends some support to hypothesis ia, which implies divisions systematically overestimate, and hypothesis ia, which suggests that they overestimate by a larger amount than they underestimate by. Performance in the summary measures also gives cause for concern. For example, the mean absolute error range was between 24% and 235% with an overall mean of 102%. Thus one is forced to conclude, with such high errors, that the Group is incapable of forecasting return with any degree of accuracy.

As with turnover and margin, a poor performance against the no-change model (Theil's coefficient) is recorded, with an overall value of 1.03, which again supports hypothesis iii. The analysis suggests that, on a consolidated basis, superior results would have been achieved if a no-change forecast had been used¹. Indeed, as low correlation coefficients were observed, this suggests random forecasts would have been as efficient.

Again, the comparison between the coefficient and mean absolute error indicates that, on occasion, divisions with high absolute errors are still forecasting efficiently. This occurs when a division's relative performance is good even though its absolute error is large, and suggests that a high degree of variability is present. Equally, the opposite is true of some divisions (that is, low absolute error with poor relative performance) which suggests the relative simplicity in forecasting of those markets.

1. Similarly, Corporate Planning concluded that, under the 3 year Management Plan System, the Centre could forecast more accurately than the divisions (4.3)

Table 6.10

RETURN SUMMARY TABLE

DIVISION	% age Error		% age Error		Absolute % age Error		Naive Model % age Error		Naive Model % age Error		% age of Negative Coefficients		FIRST DIFFERENCES				Actual Dif/Forecast Dif		Theil's Coefficient		THEIL'S DECOMPOSITION				Turning Point Analysis			
	std dev.	dev.	std dev.	dev.	std dev.	dev.	std dev.	dev.	std dev.	dev.	std dev.	dev.	% Error	std dev.	% Error	std dev.	R	U	UM	UR	Dist-urbance	UD	% age Error	Type I Error	% age Error	Type II Error	No. Accurately Forecast	
Aviation	125	358	144	351	52	77	30	56	170	138	115	0.16	1.15	0.03	0.30	0.67	30	10	4									
Belting	31	55	71	55	42	34	63	-9	253	184	174	0.10	1.08	0.04	0.12	0.87	50	0	2									
Dunlopillo	-1	52	41	32	55	40	40	-96	216	158	175	0.14	1.06	0.11	0.08	0.81	20	10	5									
Fire Armour	9	39	30	26	29	15	56	-20	177	125	127	0.49	0.88	0.00	0.01	1.00	22	22	3									
Fluid Seal	62	146	91	130	133	152	33	16	137	111	81	0.49	0.90	0.05	0.03	0.94	33	11	5									
Footwear	47	159	84	143	162	296	30	0	90	82	38	0.23	1.00	0.05	0.11	0.84	20	10	4									
G.R.C.	49	176	159	166	224	332	50	50	218	170	145	0.26	1.37	0.04	0.52	0.45	30	10	4									
Hydraulic Hose	8	41	24	34	21	21	50	1078	2746	1189	2700	0.51	0.81	0.02	0.16	0.88	25	0	1									
Industrial Hose	79	121	86	115	130	75	25	147	160	159	148	0.49	1.04	0.30	0.02	0.71	13	25	2									
I.S.C.	19	77	40	69	55	65	40	-449	1077	541	1034	0.19	1.25	0.01	0.37	0.61	20	20	6									
N.T.S.	11	40	33	24	61	55	20	-159	228	179	213	0.56	0.82	0.03	0.02	0.95	10	20	5									
Oil & Marine	31	112	71	91	55	37	25	-38	120	106	69	0.25	1.02	0.02	0.09	0.93	38	0	179									
Plant & Equip.	111	83	123	63	167	94	33	86	75	97	60	0.58	0.94	0.28	0.00	0.73	11	11	3									
Polymer Eng.	97	190	124	173	164	185	22	13	125	92	85	0.80	0.65	0.02	0.14	0.88	33	0	4									
Precision Rubbers	7	38	29	26	47	24	22	-74	256	161	212	0.44	0.92	0.02	0.03	0.97	11	22	4									
Red. Mouldings	199	605	235	592	192	395	40	-13	154	128	87	0.39	0.96	0.00	0.07	0.93	20	20	4									
Semtex	227	199	233	191	125	87	70	294	420	315	405	0.23	1.81	0.55	0.17	0.27	40	20	2									
Suspensions	64	99	80	87	112	94	40	8	267	205	172	0.36	1.07	0.15	0.11	0.75	20	20	5									
*Textiles	113	187	137	170	136	125	40	208	444	277	404	0.47	0.97	0.11	0.06	0.83	10	10	5									
U.K.T.D.	83	92	92	84	92	64	40	108	144	135	118	0.32	1.18	0.40	0.04	0.56	30	20	5									
* United Reclaim	116	168	130	157	149	137	40	86	131	116	105	-0.04	1.22	0.23	0.15	0.62	30	20	5									
Wheel	165	183	178	169	150	178	56	682	1571	709	1559	0.13	1.37	0.36	0.12	0.53	22	11	1									

* NH1 used instead of NM2

The performance of the Group in terms of Theil's decomposition is an improvement on that seen in turnover and margin. Fifteen of the twenty-two divisions record disturbance proportions in excess of 70%. As with the other two variables, the lower ranking divisions, in terms of absolute error, seem to have high proportions of that error attributed to systematic influences. This indicates that some divisions are not learning from past mistakes.

Interestingly, divisions who appear to forecast well in levels do not necessarily repeat this performance in incremental change. However, an examination of turning points shows return to be a relatively volatile variable, with 110 turning points recorded, which may to explain this incongruity.

Turning points in general were accurately forecast (75%), but to achieve this performance false signals were common. Indeed, a false signal was given for every 2.6 predicted turns, and 24% of all forecasts turned out to be false signals. This compared with the 14% of all forecasts attributed to missed turns indicates some tendency towards regressivity. Also of interest is that, as with margin (although not turnover), decline were neither consistently forecast as decline or as growth, suggesting a certain randomness about these forecasts.

Overall performance in return is perhaps fractionally worse than performance in margin, suggesting that return is slightly further down the error hierarchy, although this is by no means significant. However, there is some reduction in the level of overestimation, in comparison with turnover and margin, and this may perhaps indicate the stress placed in predicting this variable accurately.

6.8 Analysis of Causal Relationships

Having isolated the size and direction of the variance, it seems a logical step to attempt to isolate any variables which might influence this error. However, as Morgenstern (1963) points out, this is by no means an easy task.

"Such quantitative estimates require a statistical theory which now exists only for a part of the whole field for which error estimates are required. The difficulties are truly enormous when several errors are simultaneously present and when it is necessary to account for each one separately one may easily arrive at a perhaps insoluble position."
(p.51)

The pilot study¹ extensively examined the area of causal relationships by using multiple and polynomial regression. The analysis hypothesised as to the major causes of error: errors in the economic assumptions; changes in management; errors in market share forecasts; inherent variability; and so forth; but was unable to produce any empirical evidence to support them. This was initially attributed to lack of sufficient observations, but as the possible sources of error were virtually infinite, even with a vastly increased data base, isolating relationships would still be extremely difficult.

This analysis can, therefore, only concern itself with simple relationships which may or may not be causal. The following were chosen on the basis of discussion with divisions and the results of the pilot study:

- The relationship between various measures of error for each variable, and:
- growth as measured by turnover (iv)
 - the size of the division as measured by the size of turnover (v)
 - the size of return (vi)
 - capital intensity as measured by the ratio of capital to employees (vii)
 - divisional categorisation score (viii)
 - the proportion of funds allocated as a percentage of those requested (ix)
 - time (x)

Table 6.11 shows that few correlations for hypotheses iv-vi are particularly significant.

1. Kelsall (1977)

TABLE 6.11

Correlation Coefficients of Related Variables

<u>Error Measures</u>	<u>iv</u> <u>Rate of Growth</u>	<u>v</u> <u>Size of the</u> <u>division</u>	<u>vi</u> <u>Size of the</u> <u>return</u>
Turnover:			
Mean %age Error	0.43*		
Mean %age			
Absolute error	0.33	0.28	0.10
Theil's Coefficient	0.52*	0.00	0.26
Theil's Disturbance			
Proportion	0.33	0.14	0.35
Margin:			
Mean %age Error	0.70 \emptyset		
Mean %age			
Absolute error	0.69 \emptyset	0.10	0.49*
Theil's Coefficient	0.04	0.17	0.23
Theil's Disturbance			
Proportion	0.22	0.20	0.42*
Return:			
Mean %age Error	0.71 \emptyset		
Mean %age			
Absolute error	0.71 \emptyset	0.17	0.26
Theil's Coefficient	0.30	0.10	0.36
Theil's Disturbance			
Proportion	0.44*	0.20	0.55 \emptyset

\emptyset - Significant at 1% level.

* - Significant at 5% level.

... indeed an examination of the... shows that the relationship is a...
 ... Appendix 10. Similarly, a exponential regression...
 ... the equation mean absolute error...
 ... for predictive purposes...
 ... relationship exists between these two variables.

Hypothesis iv - This hypothesis suggests that there is a significant correlation between the size of mean absolute percentage error and the rate of growth in a division. Buckley (5.5.5) in his analysis of turnover and profit variance showed that low growth companies, on average, overestimated while high growth companies had a slight tendency to underestimate.¹ Table 6.11 shows significant correlations for such a relationship with the Dunlop data, particularly for margin and return. Indeed the following regression equations can be constructed:

return mean error = $180 - 7.09 (\text{growth})$

standard errors (25.2) (1.6)

margin mean error = $153 - 5.68 (\text{growth})$

standard errors (21.5) (1.3)

Although the correlations are not particularly strong, they do give some indication of the propensity to overestimate and thus lend support to the hypothesis.

For return, on average, once growth reaches 25% divisional forecasts start to show up as underestimations. The similar point for margin is at 26% growth.

Also mean absolute error in return, and as one might expect margin, seems significantly correlated to turnover growth. Indeed an examination of the regression equations shows that the relationship is a negative one²:

1. cf also Vancil 5.5.5
2. An even better correlation is derived from an exponential regression ($R=0.77$) which gives the equation mean absolute error = $281 \times \text{Exp}(-0.082 \times \text{growth})$. Cf graph in Appendix C6. Similarly, a exponential regression for margin gives an R value of 0.78 and the equation mean absolute error = $257 \times \text{Exp}(-0.085 \times \text{growth})$. Unfortunately, for predictive purposes, no lagged relationship exists between these two variables.

return mean absolute
error = 203 - 6.84 (growth)
standard errors (24.41) (1.52)
margin mean absolute error = 177 - 5.88 (growth)
standard errors (21.96) (1.37)

Such relationships suggest that the higher the actual growth the less the size of absolute error. Interestingly, for the relationship to generate a zero error, growth would have to be in excess of 30% in the case of both return and margin.

Hypothesis v This hypothesis suggests that as the size of a division increases so the size of error decreases.

Table 6.11 shows that no linear relationship exists between the size of a division and its error. This supports the findings of Holmberg (1974), but contradicts the findings of Vancil (5.5.5).

This result shows a large division is generally just as likely to produce a large forecast error as a small division. This suggests that the increased resources available to large divisions, plus any ability to offset failures in one area against successes in another, does not significantly affect their accuracy. However, large divisions tend to be much more complex than small divisions and thus may well require the additional resources merely to stay on a par in accuracy terms.

Hypothesis vi This hypothesis suggests that there is a positive correlation between the size of a division's return and the size of mean absolute percentage error.

Table 6.11 shows that only margin supports this relationship, which the findings of Dev and Webb and Vancil supported (5.5.5). The Dunlop evidence suggests that as return reduces (or indeed becomes negative), divisions do not become more sensitive to inaccuracy. Similarly as return increases, divisions are still as inaccurate.

Interestingly, an examination of the regression equation between Theil's disturbance proportions and the size of return, shows that a positive relationship exists ($R=0.55$). Thus, to some extent, when return increases so does the efficiency of the forecasts in that the unsystematic part of the error increases. This indicates that, in general, high return divisions are more efficient forecasters.

Hypothesis vii This hypothesis states that a negative correlation exists between capital intensity and mean absolute percentage error. However, low correlations were produced for the relationship which suggests that the proportion of capital to labour, does not have a major effect on error. This supports the findings of Vancil (5.5.5).

Hypothesis viii This hypothesis suggests that a positive correlation exists between mean absolute percentage error and the division's categorisation score. Again the low correlation recorded suggests that this (and therefore to a certain extent funds availability) is not an influencing factor on error.

Hypothesis ix This hypothesis states that there is a negative correlation between the size of mean absolute percentage error and the amount of funds allocated as a percentage of those requested.

Taking into account the reason put forward for suggesting this hypothesis, (6.2.1) the results of this analysis, which found no significant correlation, are somewhat surprising.

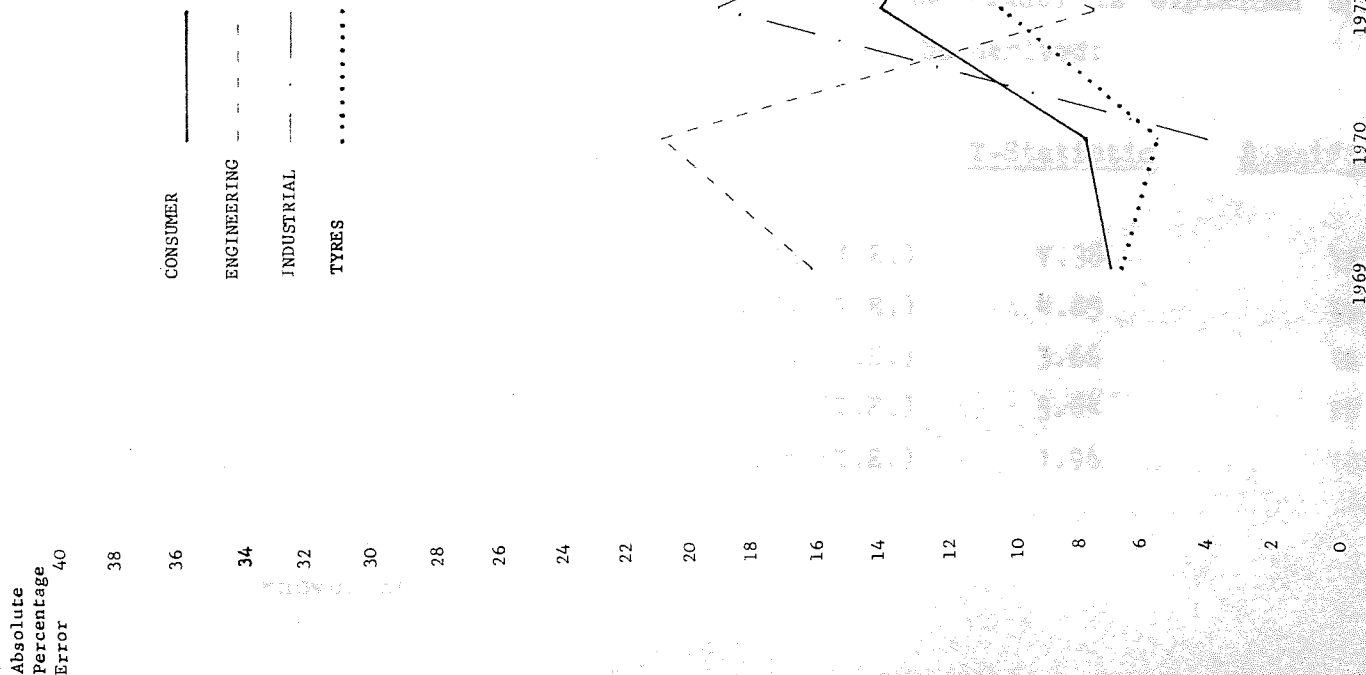
The low correlation might be explained by the fact that divisions have a certain amount of discretion about how they allocate their funds between capital expenditure and working capital (indeed the divisional studies have revealed they make use of this facility). In other words divisions delay capital expenditure in order to source the working capital requirement for that year. Thus, in the short term, tactical accuracy can be maintained at the expense of longer term strategic inaccuracy.

Hypothesis x

The hypothesis states that over time, as divisions become more adept at planning, their forecasts become more accurate. Such a hypothesis mainly rests on the assumption that divisions are, with experience, becoming more flexible in the planning and implementation. However, it does not take into account the fact the level of uncertainty varies on a year to year basis and thus it is easier in some years to achieve the forecast than in others.

The fact that the hypothesis is not proven, which can be seen in the example given for turnover in figure 6.3, is therefore perhaps not surprising. However, while error is not improving over time, it is clearly varying on a year to year basis throughout all groups. In figure 6.3, all trading groups suffered a low error in 1973 rising in 1974 to a peak in 1975. The following year error slumped, rising again in 1977 to, hopefully, peak again in 1978.

Figure 6.3 TURNOVER - ABSOLUTE PERCENTAGE ERROR OVER TIME



Attempts have been made to correlate this pattern to macro-economic factors, GDP, consumer expenditure, growth in certain sectors of the economy, etc. Similarly, efforts were made to correlate the error to errors in the basic economic assumptions supplied by Economic Research Department. Unfortunately no significant correlations were discovered for any of these relationships.

One factor which might have influenced the high level of inaccuracy in 1975, is the introduction of profit objectives from the Centre that year. Such a relationship, however, would be difficult to conclusively prove.

6.9 "Special Interest" Relationships

As well as the above ex ante hypotheses, one or two areas of special interest were examined.

To be able to discover a relationship between errors in turnover and errors in return would be of help in determining the sensitivity of return forecasts, particularly as it is possible to gain some broad idea of the likely future errors in turnover forecasts (6.5.5). Although by no means a close linear relationship (Appendix C7), a certain proportion of the variation of error in return (21% to be exact) is explained by error in turnover. The following equations can be derived:

	<u>R</u>	<u>Equation</u>	<u>T-Statistic</u>	<u>Significance</u>
Overall	0.46	R.E. = 18.46 + 6.43 (T.E.)	7.36	1%
Consumer	0.57	R.E. = 25.03 + 9.04 (T.E.)	4.85	1%
Engineering	0.47	R.E. = 17.08 + 7.95 (T.E.)	3.66	1%
Industrial	0.39	R.E. = 14.37 + 3.58 (T.E.)	3.64	1%
Tyres	0.35	R.E. = 29.75 + 4.86 (T.E.)	1.96	10%

R.E. = Return Error

T.E. = Turnover Error

As relatively low correlation coefficients are recorded, one would not rely too heavily on these regression equations. However, they do give some idea of the order of magnitude between errors in turnover and errors in return. The overall equation suggests that even when perfect turnover forecasting is recorded, the error in return will be in the late teen's. As turnover error gets worse, return error is a factor of six or seven times larger. Thus, from what one would term a relatively accurate forecast of turnover, say within $\pm 5\%$, one would expect an error in return to be somewhere in the order of $\pm 50\%$.¹ Such a relationship might be explained by factors such as volume sensitivity.

A further relationship of particular interest, is that underestimates in one period may be mirrored as overestimates in the next period (and vice versa) as divisions try to adjust their forecasts for past errors. However, analysis of individual forecasts does not support this hypothesis. Following an underestimate, a division is equally likely to produce another underestimate as an overestimate. Similarly, in the case of an overestimate a division is marginally more likely to produce another overestimate, which is not surprising as it mirrors their tendency towards positive bias.

A final area of interest is the effect that changes in management has an error. Some divisions suggested that it would be inappropriate to examine error without taking into account changes in top management. Unfortunately, central records of top management changes do not extend to full Management Committee level. It was therefore decided merely to examine whether changes in the General Manager (as he is the one who set and targets and 'puts his name' to the Plan) had any effect on error.

1. Dev and Webb (1972) argued that a 1% error in turnover with a 7.6% standard deviation was equivalent to a 100% error in profits. Similarly, Tull (1967) found in his study that a 65% error in turnover was associated with a 128% error in profit.

Surprisingly, across the whole of Dunlop no significant correlation could be found between changes in management and error, either for the year in which the change took place, or the following year. A few odd examples do display significant correlation, the classic one being ISC's turnover forecasts which consistently underestimated up until the change in general manager (1975) and from then on consistently overestimated. However, generally, few meaningful conclusions can be drawn from this analysis except to say that management change does not seem to have a dramatic effect on error.

6.10 Conclusions on Accuracy in Management Plan Forecasts

Any conclusions drawn from this analysis are coloured by the fact that the Management Plan is both a planning and controlling document. In its planning function accuracy is essential to ensure near to optimal resource allocation is achieved. However, in its controlling function, accuracy is less important than obtaining motivation towards a stretching but obtainable target. Also, being a control document, many political and behavioural factors cloud the meaning of accuracy. Irrespective of this, accuracy is essential in the system as the forecasts are used in key decision making processes.

Section 6.2. outlined the aims of this analysis and to demonstrate the degree to which they have been achieved, the conclusions will be discussed in relation to these aims.

- a) To gain some appreciation of forecasting accuracy present in key variables for different trading groups and divisions.

This analysis shows that the forecasts, by any standards, are significantly inaccurate. On average, throughout the Group, the following mean absolute errors were recorded: turnover, 13%; margin, 90%; and return, 102%. Even the very best division recorded a 24% return absolute error. Errors of such magnitude must question the value of the present forecasting and planning procedure.

The ability to forecast accurately, in absolute terms, seems to vary from group to group, with Industrial Group generally being the most accurate forecasters. All groups however, experienced great difficulty in forecasting incremental change, particularly in the case of turnover. This is possibly because, unlike margin or return, turnover is not a standardised ratio.

- b) To determine the ability of different trading groups and divisions to forecast both the level and direction of change taking into account any inherent variability.

This analysis is largely concerned with relative accuracy, as measured by naive models and Theil's coefficient, and the overall conclusion is that, generally, performance by the divisions is very poor. On average, the naive model outperformed divisional forecasts in all three variables. That is to say, generally, Dunlop would have been more accurate had it employed a simple naive model (as simple as a no-change model). Such a result suggests that a direct consolidation by the Centre of the forecasts is a totally meaningless exercise.

A further indictment of the forecasts is that, in over half the divisions, the naive model outperforms the divisional forecast. Thus in these divisions, the value of their forecast, some of which appear to be quite accurate in absolute terms, must be severely questioned. This means that generally Dunlop is using sub-optimal forecasting techniques for their markets. Indeed, the correlation coefficients for margin and return suggest that random forecasts would be as efficient.

The analysis did show that some high error divisions are suffering from high variability (as measured by Theil's coefficient), indicating, in relative terms, some degree of forecast efficiency. Similarly, some divisions with low absolute errors suffer very low levels of variability. Forecasting in these markets is a relatively simple exercise therefore, yet a naive model can outperform the divisional forecast.

When examining forecast proficiency in incremental change, turning points are generally well predicted. But in the case of margin and return this might be achieved by forecasting regressively. In the case of turnover, divisions tend to display a high proportion of missed turns in comparison to false signals. This suggests that the use of trend projections is common.

One can conclude from this that not only are divisions incapable of forecasting magnitudes of change with any degree of accuracy; they also experience difficulty in forecasting the direction of change.

- c) To gain some appreciation of, and speculate upon, the size of error likely to occur in key variables in future forecasts, and where possible, to suggest transformations to improve accuracy.

To be able to predict errors with any accuracy on the basis of past performance, normal distributions and significant correlations are required. In nearly all cases in turnover, and in a few cases in margin and return, these are available, but where estimates of future error have been made, the range of error is extremely wide. The value of such estimates lies more in their use as estimators of the degree of uncertainty, than as predictors of exact ranges of future errors. Divisions displaying particularly high correlations, however, are candidates for linear transformation, and attempts have been made on the few applicable divisions (see Appendix C3) to improve the error range. Unfortunately, few divisions have significantly high correlations in margin or return to enable the extensive use of this technique.

- d) To analyse the error into its major component parts and thus to determine what proportion of that error is due to systematic factors.

This analysis revealed a high degree of systematic overestimation, thus supporting hypothesis i. Indeed, in the case of turnover, 73% of the forecasts were overestimations. To get some idea of the size of the overestimations, a forecast for next year is generally more accurate for the year after that than for the year it was meant to predict ($t+2$ instead of $t+1$).

This overestimation is to some extent phased down in the case of margin and return, although it is still sufficiently significant to prove the hypothesis that divisions overestimated by a larger amount than they underestimate by. The degree to which this overestimation takes place, however, appears to have a ceiling, in that once growth reaches about 25%, divisions begin to display underestimations.

The decomposition of Theil's coefficient shows that in the case of turnover the largest part of the error is made up of systematic bias and variance. Therefore, with careful study of past performance, these could be eliminated. In the cases of margin and return the largest proportion of the error is attributed to unsystematic factors. This indicates a degree of efficiency in the forecasts.

Similarly, in all variables, high positive correlations were found between Theil's coefficient and unsystematic factors. This suggests that divisions who are poor relative forecasters had much of their error attributed to systematic elements which could be eradicated.

- e) To attempt to correlate the magnitude of error with relevant variables in order to determine the major influencing factors on that error.

Unfortunately, because of the complexity of the error variable, techniques are not available to produce anything but very simple relationships between the error and possible causal factors. However, certain interesting relationships were at least suggested.

As indicated in the analysis of statistical bias, there is a relationship between growth and errors in margin and return. This relationship could be used to predict the degree of overestimation which might be present in the forecast, by an examination the growth experienced by the division. For example, high growth divisions (in excess of 20% annually) are less likely to overestimate than low growth divisions.

Similarly, a relationship exists between errors in turnover and errors in return. Such a relationship may be extremely useful in

that, as shown in the analysis, adjustments can be made to turnover forecasts to improve accuracy and thus better predictions of return, based on the improved turnover forecasts, could be derived.

Interestingly, no significant relationships were found between error and the size of the division, the proportion of funds allocated against those requested, categorisation score or the degree of capital intensity. However, although error does not seem to be improving over time, there is some relationship between errors throughout different trading groups, on a year to year basis. This suggests that some, as yet undiscovered, underlying variable is present.

The overall conclusion of this analysis is that prediction techniques used within the Group are not producing accurate results, either in absolute or relative terms. On the basis of this, Dunlop should now be seriously questioning firstly, the value of the present forecasts and secondly, the use made of those forecasts. It is important that the system comes to terms with the fact that error will, to some degree, always be present. Thus the planning system itself must be able to take account of it.

6.11 Chapter Review

The analysis examines three key variables from the ten years of Plans, and broadly concludes that most divisions cannot forecast the level, the magnitude, or the direction of change, with any degree of accuracy. Indeed the average error for return is in excess of 100%.

Much worse than this however is the fact that, on average, the forecasts for all these variables are outperformed by a simple naive model. This brings into question the value of such forecasting within Dunlop. A further indictment of the forecasts is that much of the error, in the case of turnover, and a high proportion in the case of margin and return, is attributed to systematic and therefore eliminable factors.

The most blatant display of these eliminable factors comes in the form of overestimation; which appears to be rife throughout all forecasts but is

almost gargantuan in the case of turnover. In some instances where persistent overestimation is present, divisions still insist on forecasting growth. Indeed a regression of growth and errors in turnover, shows that generally a division has to achieve growth of about 25% before underestimation takes place. Similarly, on average, the forecast of turnover for the next year is more accurate for the following (i.e. $t+2$ instead of $t+1$). Such easily eliminable bias can be used by Head Office to adjust the forecasts, and for many divisions this has a dramatic effect on their accuracy. However this cannot diminish the inadequacy of the present forecasts.

Efforts to discover the root causes of this error were largely unsuccessful, probably because of the almost infinite number of variables which affect the error.

Finally, it is concluded that if divisions either cannot or will not improve their forecast techniques, then many would be better disposing of them altogether and resorting to simple naive models.

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AN ANALYSIS OF THE MANAGEMENT PLANNING SYSTEM

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7.1 Chapter Preview

In order to improve a system, constructive suggestions should be based on careful analysis of the system's present strengths and weaknesses. Early on in this research the process of construction and uses of the M-Plan was studied in detail at Dunlopillo. This resulted in a basic model of M-Planning from which developments could be made.

Following this, individual aspects of the System were investigated in a number of divisions. The aims of this investigation were two-fold. Firstly, it allowed divisions to express the opinions and ideas on the M-Plan System. And secondly, it provided the opportunity to analyse precisely how the System operated, as opposed to how the Centre believed it operated.

7.2 The Dunlopillo UK Study

7.2.1 Introduction

In June 1978 Brian Simpson, Divisional Director of Dunlopillo, offered the author the opportunity of viewing the complete system of Plan construction, from the setting the volume estimates for each market, right through to the writing of the narrative sections.

Essentially this analysis was undertaken in three parts: involvement in the market forecasting meetings; observation at the market presentation meeting; and discussions with the accounting department. The aim of such analysis was to gain a detailed appreciation of one division's Management Planning System for use as a basic model in the later divisional visits.

7.2.2 Description of the Division

The Dunlopillo Division is part of Dunlop's Diversified Products Group (figure 1.1), and was initially established to exploit the discovery of latex foam and, subsequently, the advances in polyurethane foam. Dunlopillo is split into two sections: Retail,

dealing with the highly competitive bedding side of the operations; and Industrial, which is primarily concerned with the oligopolistic automotive market, but also sells to the more competitive furniture industry.

The early part of this study is concerned primarily with the Industrial side of the operations.

In Dunlop terms, this division is a medium sized, category two unit¹ with mature technology and a turnover of around £30 million (£22 million in Industrial, £8 million in Retail). The business generates a profit of about £1 million (£0.8 million for Industrial, £0.2 million for Retail).

Although in the past the division has enjoyed some success, the future may be more difficult. Commitment to the UK automotive industry and the imminent fire legislation against foam, plus the failure to successfully diversify, means that the division is categorised as a "cash cow" in Dunlop¹.

7.2.3 Dunlopillo's Approach to M-Plan Construction

Figure 7.1 aims to concisely describe the main phases of M-Plan development in Dunlopillo. A much more detailed flow chart describing the intricacies of the system can be found in Appendix D1.

It is helpful to elucidate the main construction stages, before analysing the implications of Dunlopillo's approach to their planning.

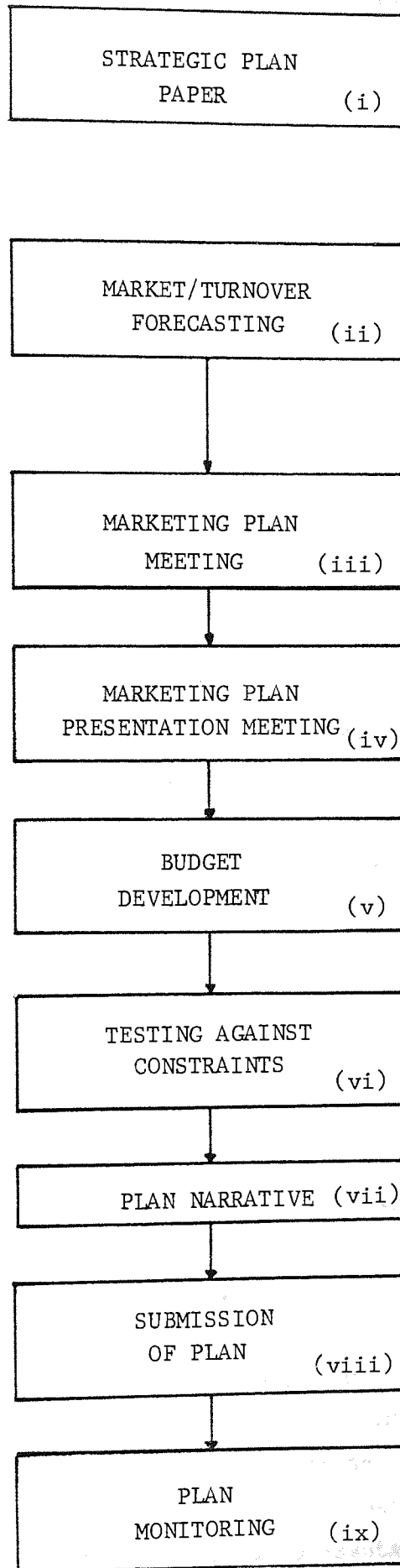
i. The Strategic Input

Dunlopillo's strategic input into the M-Plan is derived from the annually produced or revised strategy paper. This aims to reflect aspects of the Strategic Plan which are relevant for that particular year.

1. The categorisation procedure is discussed in Appendix B2.

Figure 7.1

The Main Phases of M-Plan Construction at Dunlopillo



The paper is supplied, before the sales estimates are set, to "those primarily concerned with Plan construction"¹. It thus aims to form a backcloth for the M-Plan.

ii. Setting of Turnover Forecasts.

The first stage of Plan construction is the forecasting of volumes for the rest of the year (which simultaneously represents the September Review and the Latest Estimate) and the Plan year.

Dunlopillo employs two methods to produce the turnover forecast: predictions of customer demand derived from sales representatives and agents, and key customer/key competitor analysis done by the individual market managers. This key competitor/key customer analysis is a reasonably formal system whereby top competitors actions are regularly analysed and top customers are approached for their requirements. Similarly, "customer profiles", which assess the commitment of each major buyer, are constructed on a regular basis.

By the end of July the market managers are ready to present their volume estimates to the Market Planning Meeting for discussion and conversion into sterling turnover figures.

iii. Marketing Plan Meetings (end of July)

Members of the Meeting:

Marketing Director

Market Manager (for each product area)

Three Accountants

Market Planning Manager.

The Marketing Plan Meetings are aimed at producing a fairly accurate "first shot" figure for volume, sterling turnover, total variable costs, and gross contribution in each market. They normally take the form of each of the six market managers giving a detailed half day presentation of his market and the

movements he sees in it over the next eighteen months. Any deviations against that Plan are analysed after which the managers predict the outcome for that year.

The detailed data (discussion with customers, representatives estimates, etc.) on which the forecast in volume terms was made, is then presented. The new Plan's forecast is compared with the current year's latest estimate to help in the identify volume gains/losses. The volume figure is then converted into a sterling turnover figure using current prices (as at 1st August).

At this stage, that is after the forecast is presented, E.R.D. economic assumptions are introduced and the macroeconomic projections for relevant markets are compared with the market managers forecasts. They are thus used as a final check for turning points and growth, year on year, and any inconsistencies are briefly analysed.

During the process of volume setting, the Accountants play an integral role in the procedure. It is their function, using the jointly agreed most representative month's total variable costs, to produce a variable cost (set on a weight basis per product) and a gross contribution at current prices for the relevant volume. These are checked against past data after the meeting to help isolate inconsistencies.

At the same time, the Marketing Department supply a monthly volume breakdown, allowing the Accountants to calculate turnover and gross contribution on a monthly basis. Also at this stage, the Production Planning Manager checks the volume estimates against capacity. After these checks have been completed, the Marketing Department are ready to present their Plan to representatives from all departments.

iv. Marketing Plan Presentation Meeting

Expanding on the 'team approach' theory used in Marketing Plan Meeting, Simpson felt it desirable for Marketing to present their 'first look' volume and gross contribution figures to

everybody involved in achieving them. The aim of such a meeting is to gain general commitment to the Plan at an early stage. This approach has been developed over the past five years and now upwards of thirty people from all departments attend the one day meeting.

Each Marketing Manager briefly presents his Plan by covering, among other things, a review of the current year, market trends, customers comments, and next year's Plan by weight and volume.

Also covered at the meeting are the general economic climate, the objectives and opportunities for the next three years and actions required to implement the Plan.

v. Budget Development

Once the volume figures are set, the Accountants and the Production Planning Manager perform a detailed check of mix and volume against available capacity for each product. This analysis gives a more detailed check of the volume/capacity match now that more firm figures are available. Small shortfalls in capacity can normally be overcome by reshuffling machines, but major shortfalls (which are rare as the division has, unfortunately, plenty of spare capacity) require replanning to take place.

Dunlopillo's Plan development relies heavily on a computer based financial modelling package. This package is used for projecting sales and gross contributions, as well as being helpful in determining the effect of different levels and timings of cost and price increases.

With the aid of the computer, the latest estimate is derived using the most representative month's total variable costs for each product. These can be escalated forward to the year-end, then known and forecast cost increases can be added in. Similarly, forecast price increases can be built into the sterling turnover forecasts for the year-end. With this contribution latest estimates, for the

current year can be developed. Constant expenses can then be added in to derive a latest estimate profit figure.

The process for arriving at the Plan figures for next year is much the same. Once the latest estimate and next year's volume forecasts have been developed, it is a simple procedure to derive gross contributions at beginning of year prices and costs. Generally, the timing and size of price and cost increases is easy to assess as most are negotiated well in advance. Where this is not the case, for instance with labour, managers are asked to supply guestimates.

Constant expenses are constructed on a departmental basis, with departmental managers being supplied with the outline Plan and asked to give their forecasts. These are then consolidated and a "first look" profit can be obtained at the beginning of year prices and costs. This is then vetted by the Divisional Director. Cost and price increases are then agreed, and the "Plan proper" is then developed.

vi Testing Against Constraints

The draft financial budget can now be constructed for next year. This is then checked ex post against their funds allocation and profit targets. If the Plan does not come within the funds allocation, or match up to the profit target, then modification takes place against working capital or constant expenses, as it is too late to recalculate the Plan.

vii Plan Narrative

Once the financial budget is completed, it remains for the Director to write the narrative. This is derived mainly from the notes from the Marketing Plan Presentation Meeting and supposedly the Strategic Plan¹. The Plan is now complete and ready for submission to the Centre.

1. Simpson, 1978.

viii. Submission of the Plan

Corporate Finance and Corporate Planning review the Plan for the Director of Diversified Products and then Simpson attends a Plan challenge. The Plan, after any required modifications, is then implemented.

ix. Monitoring

Dunlopillo's monitoring systems are based around its financial modelling and reporting package. This allows weekly turnover monitoring in sterling against Plan in all major product groups. In turn, this means much closer control can be maintained over the business.

The participative approach to Plan development is continued through to Plan monitoring, with relevant departments commenting on any sizeable variances.

7.2.4 Analysis of Dunlopillo's Approach to M-Plan Construction

i. Problems of Mixing Financial and Managements Accounting Data

The division views its M-Plan System as a method of gaining motivational control over the business (table 7.1). However, the Plan as presented to the Centre, is seen merely as a collection of financial data which is of little use to the division's operational management. This part of the Plan was described by Hoggan (Chief Accountant) as being merely "the tip of the iceberg". Beneath, and leading up to this, is a whole management accounting information system broken down into monthly figures on a product basis. It is this which divisional management use to control the unit.

However, Dunlopillo do accept the need for the financial data and they are generally satisfied with the present M-Plan System. Indeed, it was suggested that even if there was not a requirement from the Centre to produce an M-Plan, Dunlopillo would still operate broadly under the same system as "it is a good discipline" (Hoggan).

ii. Strategic Input

Under the Planning System as envisaged from the Centre, the strategy, being the definitive direction of the division, should be the first and most important consideration at the start of the M-Planning cycle. However, Dunlopillo only see the S-Plan as providing the broadest frame of reference for the Management Plan. Knowledge of the existence of a strategy throughout the division was low, with several lower management levels being completely unaware of it.

According to Simpson, the annually produced strategy paper is provided to key people in the planning exercise; however, it was never directly referred to in the early development stages. For this reason it is difficult to see it having a major impact on planning. Such a conclusion suggests that there is a certain inevitability about the Plan - it being guided by the market rather than internally developed strategic objectives. It is not until the Plan Presentation Meeting that objectives and longer term aspects are mentioned; this is generally too late for them to have any significant impact.

Similarly, Dunlopillo do not consider a review of progress against current strategy to be of particular importance in the development of the Plan. The fact that this can be a useful method of linking the strategy to the annual plan was put to the Divisional Director.

"I take your point that progress against current strategic objectives would be a valuable input into the Marketing Plan Meetings and we will consider such an item for such future meetings." (Simpson, 1978)

At present Dunlopillo used past data merely to give some indication of the trend, rather than a means of expanding their knowledge of divisional strategy and tactics.

The idea of having an annually revised strategy paper based on the Strategic Plan is appealing. By directly translating the long term strategy into a one year format, it should significantly assist in ensuring the strategy is implemented. It is unclear from the discussion with Dunlopillo, however, whether the annual strategy paper is in fact rewriting the strategy. Although Simpson claims this is not the case, discussion with other levels of management raises some suspicion that this might be so.

iii. Volume Forecast

Dunlopillo's first step in Plan construction is the volume forecast. Several factors input into the forecasts, but essentially they are "gut-feel", mixed in with a degree of key customer and key competitor analysis.

Benevolently these forecasts might be viewed as a combination of bottom-up/top-down. The representatives and agents supply the "grass roots" view of the market, in the coming year, while the Marketing Manager, via discussions with important customers and knowledge of competitors, sets the overall market forecast.

Under such a system, there is little systematic analysis of what is happening in the market in terms of the underlying influential variable. Having said this though, the accuracy which is achieved by this method is, by Dunlop's standards, quite acceptable.¹ Such results may be because Dunlopillo is operating largely in an oligopolistic market where prices and volumes are much more easily predicted.

iv. Price and Cost Forecasts

Once the volumes for each market have been established, a major input at the Marketing Plan Meeting is the price and cost data. This is supplied by the Market Manager and checked by the Accountants. On the automotive side, price and cost increases are negotiated well in advance, so they are able to be forecast with reasonable accuracy. Furniture and other markets in Dunlopillo are in a less certain position.

The use of prices and costs, set as at the 1st August for initial latest estimate and 1st January for Plan figures, means that a base is developed from which various price and cost increases can be tested (size and timing). Similarly, it means that the effect of the inflation operating on the division can be reviewed.

v. Use of Economic Assumptions Data

Another input into the volume setting exercise is E.R.D's economic assumptions. However, they are briefly considered and play no role in determining the market size. Thus, rather than acting as an input into the system, they are used merely as a check, and observation of this checking suggests that this was not particularly rigorous.

Such an approach is particularly surprising in a consumer market like Dunlopillo's, where it is common for macroeconomic variables to be considered as prime indicators of market demand. Similarly, in the Market Plan Presentation Meeting, although there was some discussion of macroeconomic forecasts, they were dismissed very quickly. This might be explained partly by the fact that divisions appear to find it difficult in making the conceptual leap from the economy as a whole to their tiny segment of that economy.

vi. Use of Participation

Generally, planning systems at Dunlopillo tended to encourage participation. In particular, the use of the Marketing Plan Meeting and Marketing Plan Presentation Meeting helped to get the whole "team" motivated towards the Plan. However, the decision making role still rests firmly in the hands of the Market Managers, although representatives and agents have an input at an early stage.

Participation theory suggests that lower management should have the opportunity to express their opinion on the objectives (Argyris 1953). This can be accommodated within the Dunlopillo system by discussion with representatives after the Marketing Plan Meeting.

The Marketing Plan Meetings are structured so that they get the Marketing and Accounting Departments working together right at the very start of planning. Both Departments thought that this had improved efficiency, and such an approach does have several advantages. Without knowledge of the effect of volume on gross contribution or the variable cost movements in various products, it is difficult for Marketing to become aware of the effect on their plans on divisional profitability. If Marketing develop the Plan in isolation, the situation may occur where the mix of products is totally inappropriate to derive the desired contribution.

Much of the work at this stage is done outside such meetings, particularly after the setting of the volume/gross contribution levels, when detailed costs/volume/capacity checks must take place. The approach adopted by Dunlopillo has been to set the market and then let the Accountants and Production Planning Manager check capacity. It is of some concern that the detailed capacity checks do not in fact take place at an earlier stage. It can be argued that Dunlopillo can afford to approach this problem in this manner as they have sufficient spare capacity to deal with any imbalance in mix. This may not always be the case, and it seems sensible to include production

planners in the initial market meetings rather than briefing them at a later stage, when fundamental changes in mix/volume are more difficult.

In participative terms the Marketing Plan Presentation Meeting has a key role to play in Plan development, largely because it involves a significant proportion of the management team who will have to implement the Plan.

The meeting, however, has little decision making power, the main objective being to get the "team" thinking along the same lines towards the same objective. The opportunity to challenge the resulting figures is minimal, but this is not particularly important; "nitty-gritty" problems should be sorted out when Managers become more involved in their own section's Plan.

The aim of this meeting therefore is not to get a once and for all agreement about the minor implications of the sales forecast. It aims to get a broad agreement about the general direction that the division will follow, as well as to solve the more obvious problems.

More specifically the objectives might be summarised as follows:

1. To formalise the starting point of the M-Plan construction for personnel not engaged in the market forecasting meetings.
2. To gain the "team" atmosphere towards planning and the Plan, by allowing each department to clearly see where it fits in to the whole organisation.
3. To gain interaction and possible synergy of market information with other departments information.
4. To help expedite the planning process. Assembling all departments concerned with Plan development in one meeting gives an immediate overview of the requirements, production problems, likely product profitability, and so forth.

5. To help in reducing problems during the year. Written minutes are taken at the meeting which can be referred to during the year if disagreements occur.
6. To allow representatives of the whole organisation to talk informally about product development.

Similarly, the mere act of having a formally presented detailed plan of a market, covering its past, present and predicted performance, helps to clarify the position in the minds of management.

Turning specifically to the areas covered in the Marketing Presentation Meeting, the agenda tended to suggest that there was some degree of strategic input. For example, it included objectives for the next three years, and the opportunities that might present themselves over that period. However, both these were covered very briefly in the meeting. Their input represented more of a form of extended budgeting rather than a determined attempt to translate strategic thinking of the S-Plan into tactical action.

vii. Testing against constraints

After the meeting, the Accountants begin the final stages to develop the budget. Once the "first look" profit is derived, then final testing against resources and objectives takes place. In other words, Dunlopillo plan as if there were no limit on funds or at least a free availability of working capital. This is not how the Centre envisage the system to operate (4.4.1). The use of computer based financial modelling, with its ability to re-run the Plan quickly with different decision packages, may allow this system to work reasonably efficiently. However, there was no evidence that this re-running occurred in Dunlopillo. Without this ability to almost re-writing the Plan from volume up, leaving the resource testing until this late stage totally negates the planning effort.

For a non-computer based planning system, over-spending in funds would have to be met by changes in constant expenses, reduction in turnover, or changes in the turnover to working capital ratio. This type of approach can only effectively work if the turnover figures are extremely optimistic for motivation purposes, while the contingencies present in the Plan would prevent profit from being overestimated. Thus, the working capital forecasts would be based on optimistic turnover forecasts, which would make them overestimates, and a division could thus afford to reduce these in proportion to the optimism in turnover required to obtain an unbiased forecast. Such an approach is undesirable, as it means that resource allocations, both at Central and divisional level, are based on unrealistic forecasts.

A further constraint on planning is the profit objective. Again, if this is not achieved, the use of a computer based financial modelling package may allow some re-planning to take place. Similarly, the Trading Group Director has been known to ask for more profit, as in 1977 when he asked for another £75,000, which meant that some re-planning was required. Conversely, in 1978 the Plan was £100,000 above the target which the Group Director had set. This allowed Simpson to add in his own contingency, while maintaining the motivational target. He regards his own targets in these circumstances as being desirable, as he believes some stretching increases the chance of achieving the Group Director's objectives.

viii. Plan monitoring

Once the Plan is developed and in operation, Dunlopillo's monitoring systems are reasonably well developed in Dunlop terms. The computer based financial monitoring system allows them to do weekly monitoring in sterling for all products. This information is subsequently fed into other systems for production planning and so forth. Similarly, significant variances are followed up by discussion with relevant managers.

7.2.5 General Conclusions

In Dunlop terms, Dunlopillo operate a reasonably well developed planning system. For several years they have led the field in computer financial modelling, which has greatly aided their efficiency in Plan development and monitoring. Similarly, their use of participative meetings in order to gain a "team spirit" appears to be well in advance of that which is seen in other divisions.

However, in two areas Dunlopillo were noticeably weak. Firstly, the strategic input does not appear to be very significant in Plan development, although Dunlopillo's use of the annually revised strategy paper could be of assistance here. Secondly, the forecasting system, although resulting in reasonably acceptable forecasts, might be significantly improved by more objective techniques, and in particular by analysing more effectively the impact of the general economy on the division.

7.3 Analysis of Divisional Philosophies and Attitudes Towards the M-Plan

7.3.1 Introduction

Having examined one division's methods of Plan construction, this section aims to analyse divisional attitudes and philosophies towards the whole M-Plan System.

Essentially, the aims of this analysis can be summarised as follows:

1. To ascertain the philosophies of divisional management towards the M-Plan System.
2. To determine the level of planning "awareness". That is to say, the divisions' perception of various approaches to planning and where they fit into the divisions' style of management.
3. To determine how planning is approached in the divisions.
4. To give divisions the opportunity to comment on the present System and to suggest changes or improvements.

7.3.2 Methodology of Data Collection.

The nature of the M-Plan System makes a questionnaire approach to data gathering undesirable. The System is extremely complicated, and a multiple choice postal questionnaire may, therefore, be inappropriate as the nuances of the System might be lost. It is also highly confidential and often political, making a written document undesirable. It was thought that managers may be more forthcoming in an interview situation than on the written page.

Given these problems the majority of managers interviewed appeared to be extremely frank about their feelings towards the System.

The interviews took place between November 1978 and December 1979, and included seventeen divisions from four trading groups. Meetings also took place with members of Corporate Planning, Finance Division and Treasury. Each divisional visit normally included two or three interviews. Usually another member of Corporate Planning Department was present, with whom a discussion would take place, after the interview, on the data gathered.

The individual interviews normally lasted two to three hours and were conducted in private. The interviewees nearly always included the Chief Accountant and usually the GM/Divisional Director and Marketing Manager. The selection of personnel was normally left in the hands of the divisional contact (normally the Chief Accountant). This helped ensure that the key personnel in the Plan construction were interviewed.

The procedure for setting up the interviews was as follows. A list was drawn up ranking the divisions in terms of their size (turnover), funds category (central perception of their "attractiveness") and trading group. These were then ranked such that a balance might be achieved early on in the interview programme between large and small divisions of different groups and attractiveness. The divisions selected for a visit would be contacted over the telephone and the purpose of the research, and specifically the type data required, would be outlined. An introductory letter would then be sent to the contact (Appendix D2), outlining the aim of the visit and the type of information required.

The interviews normally commenced with a description of the interviewer's role and the aim of the research. In particular, the need for a divisional input into proposed modifications to the System was stressed. A data collection document (Appendix D3) was used in the interviews not as a questionnaire, but as a method of structuring the discussion. This allowed systematic data gathering for subsequent analysis and comparison between divisions. Such an approach was particularly helpful as many of the questions were open ended.

The interview always commenced with the interviewer asking the interviewee to describe the role the M-Plan played in the division. The discussion then continued, and the interviewer only prompted when it was clear that a relevant topic was not being covered. An attempt was, however, made to adopt a common approach at all interviews by using the data collection document.

The answers were recorded ad verbatim where possible, and where appropriate, a preselected box was ticked in order to give some commonality to the answers.

Some attempt at validation was made during the interviews, with a few of the questions acting as cross-checks on the others. For example, question 6, 7 and 27 all to some extent act as cross-checks for one another. The data was also validated, where possible, by asking each of the two or three interviewees the same questions.

One point of note on interpretation of the results is that many of the answers to the questions must represent generalisations. Several of the divisions are made up of number of units, each with their own nuance of approach toward the M-Plan System. However, the answers usually only relate to the division as a whole.

7.3.3 Summary chart

Where it has been meaningful to categorise an answer, then this has been included on the summary chart (table 7.1). The majority of questions however were "open" and thus a categorisation was not attempted.

7.4 Analysis of Divisional Data Collection

7.4.1 Divisional Perception of the M-Plan

In terms of the divisions' perception of the Plan, the interviews reveal two strongly held beliefs. Firstly, nearly all divisions (71%) described the M-Plan as a multi-role document, being used by many different centres for many different purposes (qu.1). Secondly, the centrally designed M-Plan is largely a Head Office financial accounting document of little use within the division (qu.1). It is the divisions' management accounting breakdown of this M-Plan that is used for divisional control, and not the M-Plan itself. This study of the M-Plan is concerned with the whole system including the divisional breakdown, and its various roles.

i. A Multi-role Document

Most divisions (88%) described the M-Plan as a divisional document for budgeting and control, although several saw it as having other roles. Semtex described the plan as having "a multiplicity of roles, some conflicting". While AFSD believes that

"....as the Plan is many things to many people, it is impossible to have one which is anything more than a mish-mash".

The conflict in roles of the Plan is something which was regularly stated in the divisional interviews. Conflicts such as whether the figures represented a control target or a budgetary forecast (qu.6 and 2.8.4) were the most noted.

These comments indicate that there is an awareness that the M-Plan, being a multi-role document, may not be adequately fulfilling its individual roles.

ii. A Head Office Document

The fact that the M-Plan is broken down into a divisional budgetary control document is of particular importance in interpretation of the system. Many divisions expressed the opinion that the centrally designed Plan represented little more than a Head Office information document.

This, interestingly enough, conflicts with the Centre's view. They see it as a divisional document¹.

Divisions have always produced their own more detailed versions of the M-Plan, broken down into management accounting terms, to product level on a monthly basis. However, over the years, the Head Office mandatory requirements have been trimmed down to the bare financial requirements. The divisional breakdowns relate directly to these mandatory schedules, although they may also contain undeclared reserves. Only, one division suggested the divisional Plans and the Head Office Plans were different.

The divisional budgetary control system represents the basis from which the Plan is constructed (qu.15). HHD summed up this position.

"The M-Plan represents the apex of the pyramid, the final figure, there is nothing you can use it for in the division.....there isn't even a mention of volumes."

Likewise IHD said:

"The M-Plan is an accountants exercise, the real Plan is the supplementary booklet which contains all the working documents."

The fact that, in effect, two documents are constructed was of some concern to one or two divisions. For example, Aviation Division who see the Plan as a control document for action, were concerned that there was "a danger of the financial budget becoming all important" and thus the action element might be lost.

1. Rossiter 6.7.78

"It is the action element which counts, not the quantification of that action".

iii. An Action Document

The action element is critical to the Plan's effectiveness; if no action is going to result from the Plan, then there is little point in making it (2.2). Suspensions emphasised this point describing the Plan acting as "a clearing house for action schedules" and its major role being as "an action document to achieve the on-going S-Plan".

iv. A Strategic Implementation Document

Only Suspensions and Wheel divisions saw a major role of the M-Plan being to implement the S-Plan. Wheel division described the M-Plan as "an adjunct to the S-Plan" and believed that the weakness in the present system was the "interface between the two". Conversely, IHD believed that the impact of planning (particularly strategic) was so limited in their division that the M-Plan represented little more than a prediction of a possible response to the environment.

All divisions regarded the Plan as being useful in planning and controlling terms, as well as having some positive influence on their operating efficiency. It is thus hardly surprising that all divisions would operate a similar planning system, even if not required to do so by Head Office.

To get some idea of the criteria used in assessing Plans at divisional level, the divisions were asked what they regarded as a "good" Management Plan.

"One which is realistic - turnover is a good yardstick" (IHD)

"One you can achieve" (Suspensions)

"Have an element of stretch but must be achievable"
(GRG)

"Realistic and accurate in terms of turnover and profit. Brief but inclusive of major changes in products and processes" (PRD)

"One that makes efficient use of resources it had at its disposal" (HHD)

"Has it generated sufficient return" (Wheel)

"One that produces a reasonable return on funds. The other ratios are interesting, but return is critical" (AFSD)

"A structured Plan with actions required to support the objective. Financial schedules which are developed in some depth and can be readily understood by those who use them, in order to allow efficient monitoring" (Aviation Division)

These quotes suggest that most divisions regard achievement of target return or profit to be the most important criteria in judging a Plan. Only one division believed that detailed action schedules to achieve the objective was an important criteria for judging the Plan.

The conclusions from this varied picture is that divisions regard realistic planning to achieve an objective to be of extreme importance in the management of their divisions. Indeed this is also the case put by the Centre.

"planning is critical to Dunlop's survival.....funds are difficult to come by, and accurate planning is therefore essential".
(Rossiter, 1979)

7.4.2 Divisional Resource Commitment to Planning

Most divisions (75%) start M-Planning in early July which is before Head Office planning assumptions are distributed (funds allocations, profit objectives as well as economic planning assumptions are sent out at the end of July). Only one division (PRD) suggested their planning started after the middle of August.

One aim of the planning system revisions in 1976 was to significantly reduce the time taken for developing the M-Plan (4.3). This has not been achieved, as divisions normally started the Plan construction in July under the old three-year M-Plan System.¹ This is not entirely surprising as the "new" system envisaged reducing the time by challenging and clarifying major issues at the S-Plan stage. The M-Plan would then merely explode the first year of the S-Plan (4.2). As will be shown in section 7.5, the link between the M and S-Plans is not as strong as envisaged. Thus, although some issues may have been clarified at the S-Plan stage, the M-Plan development still virtually starts from scratch in July.

Most divisions expended a considerable amount of effort producing the M-Plan. On average, 54 man weeks were spent developing the Plan (qu.57). Question 58 asked whether divisions thought this resource commitment was cost effective. Out of the eight divisions questioned on this point, all but one (Suspensions) thought that it was worthwhile. Suspensions still saw the necessity for the document at Head Office, but merely thought it required too much divisional time to produce it.

7.4.3 Planning Techniques

Several questions were asked in order to get some broad appreciation of divisional attitudes towards the use of what might collectively be termed planning techniques. The answers to these questions may be of some help in trying to assess, in the broadest sense, divisional responses to any new techniques which might be proposed.

On the forecasting side, most divisions (71%) used a combination of methods, mainly of a subjective type, "gut feel" and discussion with key customers (sales force estimates) being particularly popular. Very few divisions attempted more objective approaches or so called "sophisticated forecasting techniques". Only UKTD had what could be described as a forecasting model, although one or two others did try to do some analysis of trends (time series analysis) or purchased external forecasts of their markets.

1. Corporate Planning (7.1.75)

Subjective forecasting techniques, particularly key customer, lend themselves very well to certain markets, for example, in Aviation Division where long term contracts are struck and there are very few customers. In other markets, more objective analysis is appropriate, as it takes into consideration less tangible outside influences. This type of forecasting encourages management to make their assumptions explicit, which means they are forced to consider variables which may have been missed under subjective techniques.

Divisional attitudes on probability gives an indication of their attitude towards planning techniques and planning in general. Section 2.2 quotes Ackoff (1970), who states that planning is a question of different probabilities and uncertainties. Some assessment of probability, either implicitly or explicitly, is therefore an important factor in planning because, as Ackoff shows, it determines the type of planning required.

Most divisions appeared to be either unclear as to how probability applies to planning¹, or were opposed to it; preferring presumably to continue with the single point estimates used at present. Some divisions were against it because "it would involve more work" (PED) or because it was viewed as "a pseudo-science" (PRD). Also one division suggested that "most managers do not have the knowledge to deal with probability". Such findings support the research of Dyson and Foster (1980), who found very limited use of probabilities to represent uncertainty in strategic planning.

Other divisions did give more favourable responses, particularly after it was explained that probability might represent a simple method of expressing their uncertainty concerning the forecasts. But there was a fear expressed that the more figures supplied to Head Office or trading group HQ, the more divisions were likely to be challenged (Redditch Mouldings). One division, for example, said

"it might be useful to have it built into the narrative, but I would be worried about what Head Office and Brookes² would do with the figures".

1. One Planning Manager said "How do you expect us to give you a range when we can't even get the exact figure right".
2. Trading Group Director.

The inference drawn from this lack of enthusiasm about the introduction of probability is that there is a misconception concerning uncertainty and planning generally. Some divisions gave the impression that if they submitted point estimates everything would turn out as planned. If however they gave a range, it might reflect management's incompetence, as it suggests they have not got total control over the situation.

The divisions' attitude towards inflation accounting as a planning technique is more encouraging. Although some divisions still had reservations, and one or two even suggested it was no use whatsoever, many divisions had positive feelings towards it. This may, in part, be due to the action taken by Head Office. They have constantly encouraged the use of inflation accounting, both by the use of lectures and seminars, and by designing reporting and planning systems so inflation adjusted figures predominate.

The same can be said about the use of computer based financial modelling techniques. The Centre has set up a special committee to look into the use of financial modelling in Dunlop and divisions are encouraged to operate on a self-help basis with guidance from the Centre.¹

7.4.4 Economic Assumptions

The basic economic assumptions are supposed to be a "backcloth" to the division's Plan (4.4.1) and ensure consistency in the consolidated Group Plan. It is thus of concern that 5 of the 11 divisions questioned on this point said they preferred to rely on their own environmental forecasts. The remaining divisions either used the assumptions to help them in producing cost forecasts, or as a check on their own market and cost forecasts. None of the divisions convinced the author that they were attempting to make "the conceptual leap" between the economy and the market. That is to say, the general economic indicators (as opposed to the industrial sector or cost indicators) did not seem to have any influence on market forecasting.

1. The author sat on the committee and produced a joint report in order to stimulate computer financial modelling (Appendix D4).

One or two divisions mentioned the covering note in the assumptions which discusses remuneration. In the past this has stipulated, for example, such assumptions as zero increase in total remuneration. One division described it as being 'ridiculous to base your Plan on such a figure'. The feeling presumably being that it totally invalidates the Plan by using unrealistic assumptions.

7.4.5 Method of Construction of the Financial Data

All divisions follow basically the same approach to developing the financial schedules in the Plan (qu.15); although some divisions had their own idiosyncrasies to fit their own management style.

For Plan (as opposed to latest estimate) figures, the approach follows that described in section 7.2.3. That is, producing volume forecasts for each market/product, and using current total variable costs (all at year-end prices and costs) to obtain a "first look" gross contribution. Forecast cost and price increases are then built in and the final gross contribution is obtained. Each department then submits estimates of fixed costs for the coming year and these are reviewed by top management, who sometimes subsequently ask for revisions to fit their own aspirations. The full Plan is then submitted to the GM, and he may also ask for revisions.

Pirelli Limited said their General Manager

"looks at the final picture and chops it about. So the figures are produced perhaps about three times, but they must always be achievable."

The final Plan is seen by all management levels, so even the individual salesman knows where he fits into the overall scheme (qu.15).

Nuances on this theme include adding in strategic decisions (AFSD), although these need not relate directly to the S-Plan. Also some divisions, where markets permit, look at profit targets to see what price increases are needed to achieve them.

The fact that alterations happen after the forecasts have been submitted to top management, suggests that the decision making role firmly rests with top management.

7.4.6 Financial Projections

i. Forecasts or Targets

The degree to which divisions believe the financial projections are achievable is of great importance to the way in which they are used at the Centre. There is a great difference between an accurate budgetary forecast and a motivationally stretching target (2.2.1).

The majority of divisions believed that the M-Plan represented a forecast with some measure of stretch (qu.6). Thus, although the forecasts are realistically achievable, for motivational purposes they are set at the top end of what is considered obtainable. They contain some element of targetry, but it is minimal (URL).

Section 7.4.1 noted the conflicting roles of the M-Plan, particularly between motivational targets and accurate forecasts. As AFSD put it

"the most likely outcome is no good for sales, they need a stretching target".

Similarly, URL claimed that although there was some measure of stretch in the forecasts "we always try to make it possible to obtain them". While PRD suggested that it was not so much a question of stretching, more a question of "a small degree of luck".

ii. Profit Targets

The problem is, however, not always one which is in the control of the division. Since 1976, profit targets have been centrally imposed on trading groups, who in turn split them amongst their divisions. Most divisions (75%) received profit targets and a few divisions expressed strong feelings on them. For instance,

"things have changed since X took over. Often X will simply demand more and sit there until it is promised".

Thus these targets can be particularly stretching and according to Dunlop's Management Accountant¹,

"it is debatable whether the final results were any better than if they are left as a forecast".

He suggests that

"it is a question of psychology, set the targets too high and GMs may give up or they may realise how much more they have got to do".

Similarly, research by Lowe and Shaw (1968) suggested that target measures from the board significantly influenced both the level of the forecast and the level of error (5.4.1).

However, at least six divisions suggested that these targets were open to some discussion, and as GRG stated

"although we are set stiff targets by X, if we put in a well supported case he will come down a bit".

Two approaches to targets were suggested by Grimmond (28.6.78), the divisions could either accept it at the Plan construction stage, and then make excuses for non-achievement during the year. Alternatively, they could "fight it" and get it reduced "and then have an easy ride during the year". Most divisions, he suggested, adopted an approach somewhere in the middle.

All the divisions regarded these targets as either too tight or tight but obtainable (qu.27), and two divisions saw them as "a necessary evil". Similarly, most divisions believed that the finished Plan was either "tight or just right" in terms of achievability.

1. Grimmond (28.6.78)

Having said this, it is difficult to see how divisions can say that the forecast represents a realistic prediction. Dunlopillo claimed that they developed the Plan as a forecast and

"only the final profit figures contains any targetry or political considerations".

Which may indicate a certain incompatibility within the Plan.

AFAD had similar opinions, believing that

"early profit targets would pre-empt good planning as it prevents divisions planning for reality".

The Centre is firmly in favour of targets. McKinsey (3.2) in their initial design of the planning system wanted a stretching target to be imposed each year on the divisions, and the GM Corporate Planning stated that

"targetry does go on in Dunlop, and it is a necessary element of planning". (Rossiter, 6.7.78)

However, these targets can have dysfunctional effects. For example, Plan development at one division involved all figures being built up from market forecasts (as with other divisions, except that a computer based forecasting model was used). If these realistic forecasts do not achieve the director's profit targets they are changed.

"The financial schedules are set so as to please 'X'; thus the indicators are "fudged" to meet the financial schedules."

Similar comments were made at PED: "the real Plan is in my draw".

These comments back up the opinion of Glavin (1974) who suggests

"the real plan is that the people have decided to do, not necessarily what is written in the planning document"

iii. Realism

The imposition of the Cash Conservation Scheme in 1979 has meant some shift away from unrealistic targets. As HHD put it

"with the squeeze on funds, figures generally have got to aim at being realistic".

One reason for the implementation of the Cash Conservation Scheme is because Treasury found it impossible to plan on the basis of unrealistic cash flow targets, for which no contingencies were introduced

"The crux of the problem is the imposition of profit objectives leads to over-optimistic cash flow plans". (Weetman, 21.6.78)

The Cash Conservation Scheme goes some way to improve this situation.

Several divisions thought that there was a high requirement for realism in the Plan. For example, GRG is a division made up of four production units and these individual production managers

"might put in forecasts that are regarded as optimistic. We (central GRG management) then put in a contingency, but let site managers report against their own initial forecasts".

Similarly, Pirelli thought it would be "silly" to produce anything but a realistically accurate Plan as "they use it as their bible". Several other divisions described the figures as a mixture of targets and forecasts. These are nuances on the same theme as stretch forecasts. PED, for instance, pointed out that as several people were involved in the development of the Plan, a mixture of optimism and pessimism was "almost bound to occur".

The inference from this mixture of targets and forecasts is that the Centre and the divisions are left with an unclear picture of how to interpret the predictions. If they are targets, then, for example, centrally imposed contingencies could be added to give some realism

on which to plan. If they are forecasts, then the Centre can plan effectively on the basis of these predictions. However, if they are some combination of the two, there are problems of central prediction. The problem is further complicated by externally imposed targets, which may or may not be stretching. For example, one division (AFAD) received a target of 40% return on funds in one year and after much debate this was reduced to 38%. What was actually achieved was more like 25%. Dunlopillo, on the other hand, received a target £100,000 below what the division intend to plan for.

It is difficult to tell whether these type of targets result in improved performance. Dunlop's overall profitability certainly has not improved since they were first imposed¹, nor has accuracy. Their effect has meant that trading groups indulge in "second guessing" the divisions' own planning by some "gut feel" of what might be achieved.

iv. Contingencies

All trading groups introduce contingencies in to the consolidated figures. The feeling of the trading group management was outlined by the ISC Group Comptroller, who suggested

"if contingencies weren't introduced, then the Plans would show profit increasing by a ridiculous percentage".²

The divisions do not get to see these contingencies, but are left with a Plan that the trading group HQ believes cannot be achieved. Answers to question 33 suggest that most divisions (67%) know of the existence of contingencies at trading group level, although they may not know their exact size.

According to Industrial Group's Strategic Advisor

"contingencies are calculated by gut feel and past experience, and the knowledge that group and the Angus House staff have acquired". (Brown, 5.12.79)

1. Grimmond (28.6.78)
2. Farleigh (12.7.78)

There is no evidence to suggest different methods are used in other groups. According to Grimmond there is no uniformity about the method of setting them, but the system is not very efficient. As Grimmond acknowledges, even with the contingencies "the forecasts nearly always overshoot".

The need for some phasing-down type contingency is clear, because although the individual Plans might look realistic, once

"they are consolidated, they produce an unacceptable picture and the MD rejects it". (Rossiter, 6.7.78)

All divisions (with the exception of Wheel) claimed that, wherever possible, they included contingencies unofficially in their Plans. Most divisions described this as "prudence", and Aviation Division, for example, stated "we would be failing in our duty if we did not put something in".

For the 1980 Plans, the Centre issued a directive that the Plans were not to include any director's reserves (Brown, 5.12.79). But as one division suggests

"it is always the case that divisions don't show their full hand, but contingencies must be hidden now reserves are banned".

7.4.7 Divisional Perception of Plan Variance¹

Divisions were not particularly proficient at estimating their past variance. In turnover, only one third of the divisions managed to estimate their variance over the last five years to within 5%. Similarly, when asked whether they regarded last year's forecast as optimistic, pessimistic, or accurate, the majority of divisions (67%) placed their forecast in the wrong category.

1. The data discussed in this section is not totally internally consistent. Different divisions were asked the question at different times during the year, thus some divisions had more knowledge when asked than others.

Divisions were also asked to give an assessment of the probability of achieving the current forecast¹. Here most divisions performed somewhat better, with 88% of divisions having a reasonable idea of the accuracy of the forecast.

7.4.8 Effect of the Funds Allocation

Section 3.3.5 outlines how the funds allocation system should form the basis of Plan development. The evidence from the divisional interviews almost entirely points to this system not actually operating. The majority of divisions suggested that they developed the Plan and then adjusted the funds requirement to meet the allocation (qu.21). This adjustment usually takes place to constant (fixed) expenses, but it may also mean reducing working capital on occasion.

Interestingly, most of the divisions who admit to this "fudging" of funds, saw funds as a limiting factor on their planning (qu.22). GRG suggested that as the turnover forecasts are optimistic, working capital cut-backs can usually be maintained without affecting volume in real terms (although at the time the individual units may feel aggrieved that the forecasts were being reduced). Again this is a form of "second guessing" the management who construct the Plan.

Several divisions claimed that the funds allocation had no effect on their planning and that they planned on the basis of free availability of capital. Only one division - Pirelli - suggested that the funds allocation formed the basis of their Plan, as suggested by the Centre. Pirelli examined the allocation, and using the S-Plan, ascertained its likely effects on the forecasts in the M-Plan. The Plan was then drawn up to fit the allocation. The M-Plan finance forecast contains information on the role of years two and three. These two years are extremely important in setting the forecast for longer term (Rossiter, 1979). Two divisions (Dunlopillo and Pirelli), suggested that these figures are

"calculated on the simplistic balance sheet and are, to say the least, very dubious".

1. Defined in questions 40 in the data collection document.

Three other divisions have subsequently expressed similar opinions.

7.4.9 Participation

For participation in Plan construction to have a significant impact, personnel below Management Committee level must be involved in some form of decision making. Alternatively, as an absolute minimum, they should at least be consulted on their parts of the Plan before it is finalised (2.7).

The majority of divisions appear to adopt a reasonably autocratic style to the decision making process, with either the GM or Management Committee having sole power of decision. One or two divisions have committees, involving only the very top management, to deal specifically with planning. IHD, for instance, only involved the Marketing, Accounting and Divisional Directors and

"each is concerned with their own forte rather than all sitting down as a team".

In this division, all departments work separately with little dialogue between various areas. Marketing set their figures in isolation and send these to Production, who independently budget for volume. Only at this late stage are Accounting asked to look at the effect of the forecast on gross contribution, and if things need changing it means going back to square one. Answers to questions 14 and 15 suggest that only Dunlopillo actively encourage liaison between departments.

Wheel Division adopted a particularly autocratic approach to planning. Although the Management Committee were involved in some discussion (qu.50) over Plans, it was essentially the GM's personality that influenced the final outcome (qu.55). According to the GM

"I don't like forecasts to be less than the previous year. If the forecast is less, then we have an in-depth investigation. If it is the same or more, we check it against the growth required".

There is thus a certain degree of pressure on lower management to include some measure of growth to please the GM. If they do not, they know that questions will be asked. Lowe and Shaw (1968) found that such "company norms" significantly biased the forecasts (5.4.1).

The Accountant at Wheel Division claimed that there was

"not sufficient time for a great deal of participation and once the volume figures are set, they are very much a corset within which everyone else must operate".

This is not a surprising comment from a division which claims to have spent only 10 man weeks on producing the Plan. This does not mean though that there is not scope for participation in discussions over volume figures and, at a later stage, discussion over the level of constraints.

Other divisions, GRG for instance, include some element of participation down to departmental level, and encourage personnel to take a role in shaping the Plan (qu.55). However, the Comptroller admitted that although

"the figures were open to some negotiation, they were fairly tightly set".

Five divisions (Dunlopillo, AFSD, HHD, Suspensions and Pirelli), in particular, showed some element of participation in their planning. AFSD had a special committee to co-ordinate their planning effort. This was called the Management Planning Committee and included members from most departments and the Management Committee. The approach to planning in this division is to let the management development their own forecasts in areas where they have some influence, without major intervention. They are not allowed a totally free hand though, and there is some measure of vetting by the Committee, and there is still some degree of control emanating from, in particular, the GM.

Interestingly AFSD, although one of the most participative divisions, was the only one that did not think that personnel played the optimum role in Plan construction.

"Peripheral functions should be more aware of what is going on. Originally the management planning committee had a much wider membership, but it took too long in discussion."

One point here is that although participation has several positive benefits (2.7), it can be consuming, both in terms of time and resources. It is therefore not a question of "the more the merrier" but one of striking some optimum balance between the cost and the benefit from increased participation.

Suspensions and Pirelli were the only two divisions to talk in terms of including trade unions in their Plan development discussions. Although they did not have any decision making role, they were at least consulted. Suspensions said

"all managers are involved (in Plan construction), including those below departmental level. We also hold full discussion with the unions. Everyone involved in achieving a target has a hand in setting it".

This was echoed by HHD who adopted a responsibility accounting approach

"Everyone who is responsible for a target has a hand in setting it - right down to the reps. in the depot, but some stretching is still possible".

7.4.10 Plan Challenge

Most divisions described the Group Director's challenge as "useful", although at least one division suggested that it was possible to "hoodwink" the challenge team. Some divisions, however, expressed a desire for it to be a communications exercise. AFSD said that it

"allowed them to flesh out the bones of the Plan"

And similarly, IHD said that they were asked to give high and low estimates of profit, giving them the opportunity to describe the uncertainty surrounding the forecasts. IHD also suggested that

"it is very useful from the divisions point of view because it allows them the chance of lobbying their case through the disciplined medium of the M-Plan".

Not all divisions were so favourable towards the challenge. Aviation described it as

"a non-event - we would prefer to go direct to Dent (MD), as communication channels get things mixed up".

A Director of one division claimed

"you can't be 100% open with Brooke (Group Director) or else I would not be allowed to manage the way I wanted".

This suggests there is often something hidden away somewhere. It is almost like a game between the Group Director/Centre and the division to keep it hidden. Such a concept links into Hofstede's (1968) "game" approach to budgetary control.

Question 32 asked divisions if they saw Corporate Planning comments on the M-Plan. Some said they saw them unofficially but few divisions had any favourable words about these comments. HHD, for example, described them as "useless". However, they, as with a few other divisions, were keen on more direct contact with Corporate Planning, particularly over planning techniques.

It is clear that the divisions did not find the comments, where they saw them, particularly useful. The reason for this is possibly because Corporate Planning is too far removed from the reality of the operating problems.

7.4.11 Plan Monitoring

All divisions monitored the Plan on at least a monthly basis via the monthly operating statements. However, some divisions monitored selected variables on a weekly basis. For example, Dunlopillo used a computer system for comprehensive weekly monitoring.

In terms of determining whether a variance was significant enough to investigate, all divisions questioned seemed to use subjective methods such as past experience. Divisions seemed concerned to see if it was a "one-off" situation or something that was likely to recur or continue. Wheel Division thought that all variances should be questioned and "certainly not just red (unfavourable) variances". This is a very laudable attitude, but it is a time consuming business to monitor all variances. One or two divisions, for example HHD, explained that on a few variables, for instance waste, they had automatic control systems to monitor them; but on the higher level variables they were monitored through "gut feel".

The action taken by divisions when a significant variance occurs normally involves corrective action meetings between the Accountants and the relevant departments to determine what remedial action is being taken. By the time the variance reaches Management Committee stage "all the questions have normally been asked" (Pirelli).

In terms of central monitoring of the monthly results, one or two divisions mentioned that the Plan figures were open to manipulation and thus, to a degree, a division could distort the figures by, for example, timely stock write-offs.

As for implementation, no evidence was collected to suggest there was any formal monitoring of the action schedules. These schedules, in all cases except Engineering Group, did not relate formally to the S-Plan.

The March and September Reviews give the divisions a chance to have a comprehensive look at how they are doing against Plan. According to Dunlop's Management Accountant

"the March and September Reviews are not used as monitors at the Centre. The March Review was designed for a check at Board level before year-end results, to give a prediction for the year in hand. Similarly, September Review is used for half year results". (Grimmond, 26.6.78)

Likewise, according to Treasury, March Review is used

"as the first warning bell that the division is not on Plan and much of the funds forecast is done on the basis of March Review". (Weetman, 21.6.78)

Other forms of follow-up are less formalised. Head Office reward/punishment systems for Plan performance are, according to Grimmond, not extensive.

"It happens in two ways; through Corporate Comptroller, and his briefing of top management and through direct briefing to the relevant MD on non-achievement by a division." (Grimmond, 26.6.78)

Another form is via the trading group board, and this is a much more powerful tool as it is more direct. At monthly meetings the operating statements are reviewed and any major variance is analysed.

7.4.12 Divisional Suggestions for Improvements to the System

All divisions were broadly satisfied with the way in which the Plan was constructed; although most made suggestions for modifications. These can be categorised under various headings.

i. Mandatory Schedules

Several divisions were not happy with the mandatory schedules required by Head Office (4.4.1). These schedules have been reduced over recent years in response to divisional complaints that the Plan takes too long to construct (Peach, 5.7.78). This has led to a Plan which consists of the very basic Head Office requirements and is of little value to the division's planning (5.4.1).

The mandatory schedules, however, have been supplemented by trading group requirements, which means that there are now three levels of requirements in the M-Plan. This had led to a certain antagonism on the part of the divisions. Aviation Division, for example, suggested that too much time was wasted in constructing different schedules for the trading group, Head Office and the division. Some of these schedules (for example, Industrial Group's requirement to break down inflation adjusted profitability figures to product level) were described as "futile" (GRG). Because of feelings such as this, Aviation Division suggests that

"there is a danger of the M-Plan becoming a collection of figures to be monitored rather than a document for management action"

Aviation Division also suggested that the efficiency of Plan development would be greatly aided by reaching some agreement on what is required by each level and simplifying this into one format.

Currently, divisions wishing to lend support to an argument are at liberty to supply additional schedules. However, divisions rarely supply any more than the absolute minimum mandatory requirement. In part, this may be because the Centre does nothing to actively encourage the submission of any additional schedules (Grimmond, 26.6.78).

Experience in the planning system and discussions with members of Corporate Planning, suggests that without the non-mandatory management accounting data (for example, product gross construction schedules) the Plan cannot be adequately analysed. These schedules are constructed for internal use within the division (5.4.1), and thus could easily be provided.

At least four divisions (Dunlopillo, AFAD, Pirelli and HHD) thought that the M-Plan had developed into "an unhappy mix of management and financial accounting data" (AFAD). According to Pirelli, members of line management "don't understand the financial schedules" and, as the M-Plan is supposedly a divisional document, they wanted less stress placed on the financial aspects.

Similarly, several divisions (for example, PRD, GRG, Redditch Mouldings) were concerned about the duplication of data in the Plan. HHD suggested that one or two pages of basic financial data should be included in the Plan and the Centre could then develop the financial requirements from this data. This would allow the Plan to relate more directly to the monthly operating schedules (HHD). Suspensions thought this would encourage non-accountants to participate more in the planning, thus helping to avoid producing "an accountant's document".

ii. Other Forms of System Rigidity

Several divisions (for example, Wheel, ISC, GRG and UKTD) were concerned about the inflexibility of a centrally imposed system which forces a £150 million turnover division to produce a Plan in the same format as a £1 million turnover division. GRG, for example, is made up of four diverse operating units and has to produce a Plan narrative "of not more than 9 pages"¹

Although there is some merit in encouraging conciseness, this can be taken to extremes. Centrally imposed mandates which force the production of inappropriate Plans do not appear to have much merit.

The timetable of the Plan cycle was also of concern to some divisions (for example, URL, ISC, AFAD). Several mentioned that the Plan would be much more accurate if they could submit in December instead of mid-October. For example, ISC is oriented to the Summer sports market and find it difficult to begin accurate forecasting for next year until late in the Summer.

Although divisional desires should be accommodated wherever possible, co-ordinating the planning of such a large Group demands the Plan is constructed long before year-end in order that consolidation and vetting can take place.

1. Industrial Group (1980)

iii. Realism in Planning

Realism is something which many divisions thought was of extreme importance in planning (7.4.1). However, one or two divisions mentioned pressures placed on them to make the Plan optimistic. According to Wheel Division, there is a constant pressure from their Group Director and Head Office to produce a Plan which "looks good in terms of high returns". This may lead to unrealistic Plans and Wheel Division thought the Centre should place "the accent on realism so that you can get realistic funding".

Other divisions express similar beliefs. For example, Suspensions thought it was a pointless exercise to make up excuses for their Group Director in order to explain uncontrollable events which had caused variances in the Plan. Similarly, IHD thought that the system of targets and contingencies should be abolished in favour of the division's own assessment of the situation.

Other divisions mentioned similar cases, suggesting "there is too much politics in the Plan "(Wheel). This, in part, backs up the findings of Hofstede (1967) who suggested there was a "gaming" approach to budgeting. PRD presumably had something like this in mind when they suggested

"as a general manager becomes experienced, he begins to write the Plan so that it answers the question in the Group Director's mind."

iv. Link with Corporate Planning

Some divisions suggested there was not enough feedback on the Plan

"not enough questions are asked at Head Office, so you can put anything down. More feedback is required on the Plan"

One division, Aviation, suggested that because there is little feedback,

"there is no major reason to be particularly worried about the quality of the Plan. If Dunlop was 'hire and fire' organisation, then the Plan would be more accurate."

Top-down commitment, via feedback from Corporate Planning may be one way around this problem. Similarly, a few divisions (for example URL, Suspensions) were keen for some assistance on planning matters, with some comments from the divisions indicating that Corporate Planning may have a role to keep the "planning momentum" going. For example, Suspensions suggested

"as our planning system becomes more sophisticated so the variance in the Plans becomes larger."

The inference from this is that divisions can easily become disenchanted with "sophisticated" or improved systems simply because increased uncertainty in the environment has probably caused larger variances to occur in the forecasts.

7.4.13 Building Blocks of Plan Development

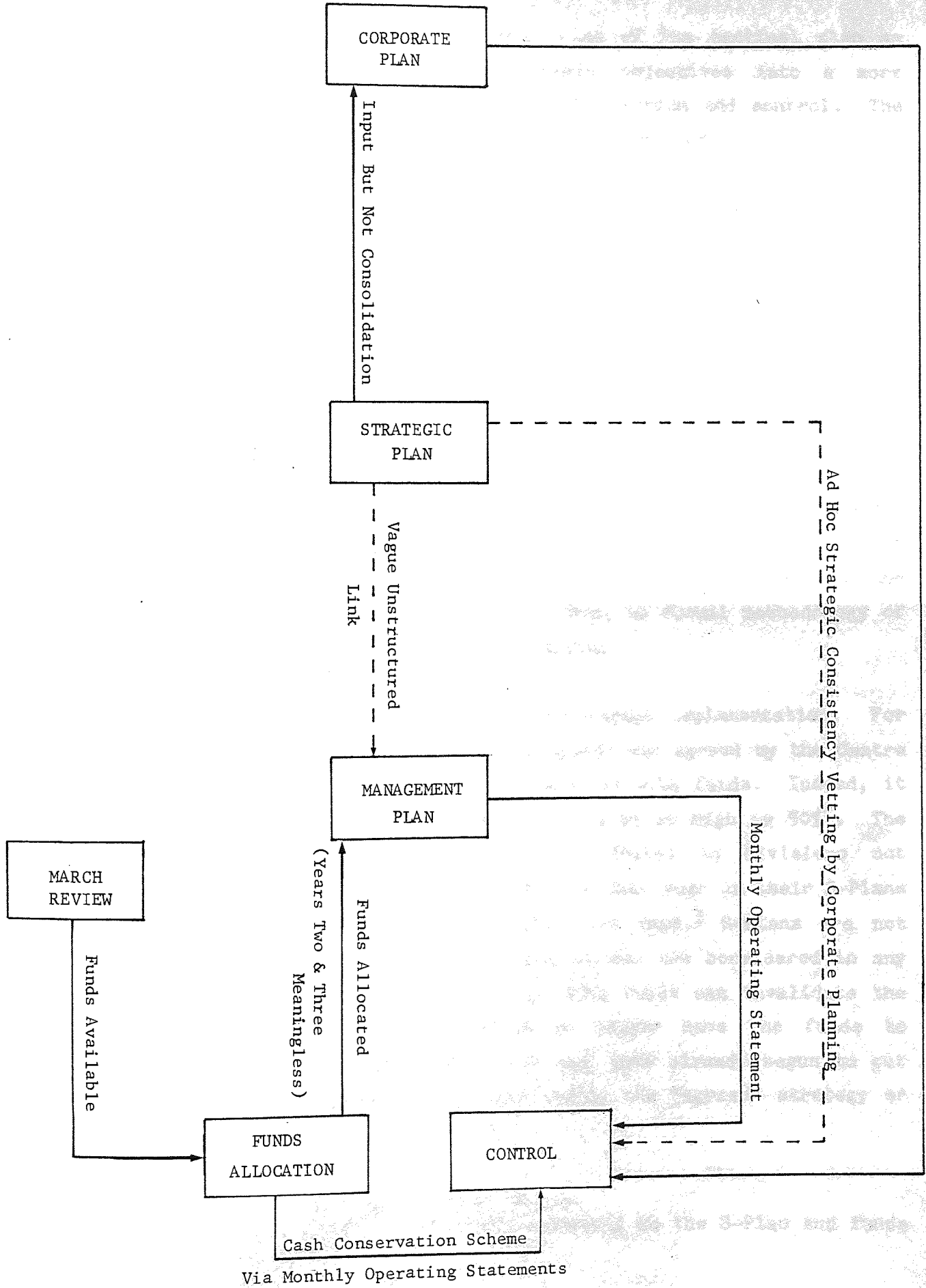
Finally, having interviewed several divisions in Dunlop, it is possible to develop a picture of how, generally, divisions develop their plans (table 7.2)

Table 7.2 Chronological Steps for Management Plan Development

- 1 Begin developing volume forecast
- 2 Receive proforma, basic assumptions, profit targets and funds allocations
- 3 Produce turnover forecast
- 4 Develop budget from turnover forecast
- 5 Test against profit targets and funds allocation
- 6 Rework fixed expenses to meet profit targets and funds allocation
- 7 Contingency setting by divisional GM, if possible
- 8 Submission to trading group for contingency setting and Plan challenge
- 9 Submission to H.O. for consolidation
- 10 Submission to MD and possible rejection

Similarly, it is possible to develop a picture of the relationship between the various elements of the planning system as they actually operate (figure 7.3), as opposed to how the Centre believe them to operate (figure 3.2).

THE REALITY OF THE PLANNING SYSTEM



Spasmodic Review by Corporate Planning

7.5 Interrelation between the Management and Strategic Plans

Section 2.5.3 discusses one of the main roles of the tactical plan as being to convert the longer term strategic objectives into a more detailed annual "budget explosion" designed for action and control. The strategy should be the key guiding instrument of the firm

"if you can get your strategy right everything else will follow."¹ (Easton, 5.6.78)

Although such a statement has much merit, the best strategy in the world is worthless if it is not implemented. Within Dunlop, the M-Plan is the main implementing instrument of the strategy and it is the role of Corporate Planning to vet these to check if they are consistent with the strategies.

In practice the situation appears to be some what different from theory. No advice or guidelines are given from the Centre as to how this implementation might take place, and it is left in the hands of the divisions to design an applicable system. Thus, no formal methodology of implementation exists within the planning system.

The planning system itself can in fact discourage implementation. For example, although the Strategic Plans are vetted and agreed by the Centre in April/May, they are not necessarily supported with funds. Indeed, it is a common occurrence for the cut in funds to be as high as 50%². The reason for this reduction is normally attributed to divisions not producing the cash flow that they promised for that year in their S-Plans or March reviews. Although this is often the case,³ S-Plans are not vetted in such a way that the funding implications are considered in any depth. The failure to support a strategy with funds can invalidate the whole planning process. The divisions no longer have the funds to implement the agreed strategy, which they may have already begun to put into action. The M-Plans therefore must modify the "agreed" strategy or even implement completely new strategies.

1. Strategic Planning Manager, Delta Metals.
2. Average reduction between UK funds requested in the S-Plan and funds allocated for the M-Plan in 1980
3. Kelsall (1979)

A further problem is that Corporate Planning often revise the profit objectives in the light of changing circumstances (Peach 6.7.78) This may mean that the proposed strategy is no longer relevant to achieving the new objective.

Taking these factors into account, it is not surprising that 75% of divisions saw the S-Plan as representing only the broadest frame of reference for the M-Plan. In other words, little more than a "scene setting" exercise. The majority of the divisions saw no major link between the Plans, while only three divisions use the M-Plan in the way envisaged by the Centre (3.3.3), that is, as a strategy implementing device. At worst, some divisions (ISC, for example) saw the strategy as having no relevance at all.

Three divisions (Redditch Mouldings, AFAD and Wheel) suggested that "the S-Plan becomes dated very quickly". This seems to be especially the case with Engineering Group, whose trading group H.Q. asks the divisions to produce a strategy in so much detail that it could be described as a five year M-Plan.¹ Redditch Mouldings described this document as being "of little value to the divisions as a planning tool", because of the irrelevant detail it contains. Such a Plan must be weighed down with tactical detail, thus again making it susceptible to changes in events. However, as only 20% of divisions formally monitored the S-Plan (qu.8a), it is difficult for them to determine whether it is still relevant or not.

Several divisions (Dunlopillo, AFAD, IHD) described the S-Plan as being developed by the very top management (GM and Management Committee) with the management who develop the M-Plan not being privy to its contents. If this is so, it is difficult to see how the S-Plan can be integrally linked to the M-Plan. This point was expounded by ISC, who believed that by constructing the two separately, they could not be integrally linked.

"The M-Plan is becoming a tactical document which stands on its own feet, instead of becoming a means to an end" (that is the strategic objective).

1. As described by Redditch Mouldings. Head Office only receive a précised version of this, in the format suggested by Corporate Planning.

Aviation Division were similarly of the opinion that the development of the two Plans should be combined into one exercise constructed in Autumn and reviewed in the Spring.

Although constructing the two together may help to assist strategic implementation, it may also mean returning to a similar system as operated under the old 3 year M-Plan (4.3). This method encouraged over-emphasis on the short term tactical actions, and not on the longer range strategies,¹ and is therefore generally undesirable.

Only one or two divisions, for example, Aviation and Pirelli, displayed what might be termed as a positive attitude towards the S-Plan. Originally Pirelli viewed it as a Head Office document of not appreciable importance to the division, but now see it as an important starting point and guideline for the M-Plan.

Similarly, Suspensions suggested:

"Ideally, the M-Plan should be the first year of the S-Plan, but first we look at slippage (variance) against the Plan as a starting point for the new M-Plan."

The Engineering Group Comptroller thought the M-Plan

"cannot be viewed in isolation but must be viewed as part of the S-Plan." (Hammonds, 25.6.79)

This encouragement from their trading group HQ may have affected the positive attitudes expressed by Suspensions and Wheel divisions.

Wheel division clearly outlined the difference between the theory and practice of Dunlop's Planning System:

If it were your own business, you would design your tactics to fit your strategy. In Dunlop there is never any feedback from Head Office on Plans - whether you have got the strategy right or when the funds are available. You plan on the basis of your strategy being right, and Head Office then turn around and say 'change your tactics because we haven't got the cash for the strategy'."

1. Corporate Planning. 16.1.75

Some divisions actually admit there is little strategic input in their Plans. IHD acknowledge that they do not get involved in strategic manipulation, but rather concern themselves with tactical responses to the environment. It is the author's belief that this is the type of "planning" done by most divisions in Dunlop.

Having seen the divisional responses to questions on the strategic input, it is difficult to see how, generally, the M-Plan could possibly implement the strategy.

Attempts were made by the author to discover the degree of strategic implementation taking place in Dunlop. However many problems, were encountered. For example, there is often no way of telling which tactic relates to which strategy; and divisions rarely get the full funds allocation to implement the strategies anyway. More importantly though, merely because the narrative in the M-Plan refers to a strategy it does not mean it is being implemented. The only way a strategy can be implemented is by integrating it into the Plan development so it has a fundamental effect on the way that a tactic is developed.

Experience with reviewing Plans by the author suggests it is common for the Plan to implement some parts of the S-Plan, as well as to bring in new strategies not agreed in the S-Plan. In other words, the division changes "tack" even at the beginning of an S-Plan cycle, and implements strategies which have no background analysis and without vetting or agreement from the Centre. Such a practice is usually highlighted by Corporate Planning comments, but as the Plan is not rejected it does not have a fundamental effect on the M-Plan. This is not desirable, as it means that divisions can implement unauthorised strategies and use funds allocated for other strategies "to do their own thing".

7.6 Chapter Review

This chapter has described how one division attempts their Plan construction process, and has analysed divisional views on the M-Planning System as a whole.

Dunlopillo's Plan construction system is a reasonably advanced example of how divisions in Dunlop tackle the task of M-Plan development. Parts of their system are reasonably participative, particularly between the accounting and marketing functions at the start of Plan construction. However, their system does not effectively implement the S-Plan, and forecasting and planning techniques in general are somewhat subjective.

The roles which divisions in general saw the Plan fulfilling varied enormously, but it is clear that the M-Plan which is submitted to the Centre merely represents the apex of the divisional planning documents. Similarly, most Plans resulted in a confused mixture of targets and forecasts which led to some difficulty in interpretation.

Divisions generally started their planning very early in the year and simply because of the enormity of the task, there may be some danger of the system turning planning into a form filling exercise. This problem of the size of the effort required is perhaps compounded by a lack of "advanced" planning techniques in the system, such as forecasting models and computerised financial modelling.

The target/contingency system leads, to some extent, to unrealistic Plans which appear to frustrate divisional management. Likewise, the imposition of targets and funds allocations is largely ignored until after the planning process, when the Plans are then "fudged" to achieve the constraints.

In terms of participation, most divisions operate a reasonably autocratic approach to the Plan development, with the GM and Management Committee having sole decision making power. A few divisions adopted a more participative approach, believing that those who had to achieve the Plan should have a hand in setting the targets.

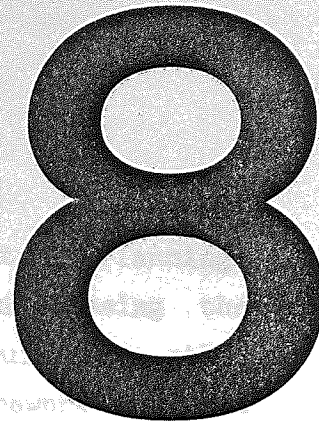
The majority of divisions made constructive suggestions for improvements to the system, and many proposed a slimming down of the schedules demanded by trading group HQs and Head Office. Almost all divisions wanted to see greater realism entering the Plan and particularly wanted a reduction in the political influences.

The interrelationship between M and S-Plans was also examined, and this turns out in practice to be much weaker than in theory. The major break down between the two occurs on the funding side. Because of a failure of the funding system to be resilient to downside variance, funds are not always available to implement agreed strategies.

There was little evidence of the S-plan having a significant impact on the M-Plan. A few divisions, however, did use an examination of progress against the S-Plan as a starting point for developing the M-Plan.

Generally most divisions were broadly satisfied with the present M-Plan System and would operate a similar system even if not required to do so by Head Office. This final comment suggests that even if all is not entirely well with the system, it has some positive attributes.

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THE CONCEPTUAL AND PRACTICAL ARGUMENTS FOR BUDGETARY PLANNING

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8.1 Chapter Preview

This chapter examines the broad concepts behind Budgetary Planning. Specifically, it is concerned with "scene setting", discussing the conceptual basis for Budgetary Planning, the changes required in other parts of the planning system, and the organisational framework required to implement the proposals. The remainder of the chapter summarises the evidence gathered in the research, the inferences drawn from that evidence, as well as proposing possible areas for improvement.

8.2 The Concept of Budgetary Planning

The previous two chapters have demonstrated that there is a need for an alternative system of planning to that presently used in Dunlop.

Budgetary Planning extends the concept of M-Planning while fulfilling all of the same basic functions within the same basic infrastructure. It aims at producing a realistic divisional operating action document, which efficiently implements the agreed strategy. It links the needs of operational management with the desire to move towards strategic management. Although Budgetary Plan is similar to the concept of strategic management, in that both aim to achieve strategic action, rather than being concerned with specific topics such as organisational structure, Budgetary Planning is concerned with producing an overall, disciplined procedure of annual planning.

Budgetary Planning achieves this aim not by minor amendments to the financial schedules, but by fundamentally altering the system of Plan development as well as management's concept of planning. It is thus not just another technique, but a philosophy of management thinking. By adopting such a system, the strategy becomes a fundamental input into the annual plan development.

Budgetary Planning is also a response to the demands that recent developments in corporate planning have placed on annual planning. It is specifically concerned with educating management to think both operationally and strategically. As Taylor (1974) says:

"Managers must be made aware that they have two sets of obligations; 'operational', i.e. achieving productivity and profitability for their particular departments or divisions in the short term, and 'strategic', looking after the survival and profitability of the enterprise in the long term. This strategic responsibility needs to be emphasised by management and it also should be reinforced by the management system."

It is for this reason that the Budgetary Planning System is designed to shift the emphasis towards the strategic elements of planning, in an effort to redress the balance between operational and strategic considerations. Budgetary Planning is a combination of budgeting and planning. The planning part identifies the alternative tactics needed to achieve the desired objectives; while the budgeting part quantifies the results in a suitable form for monitoring and control. The end result should be a Plan suitable for short term operational control which implements the long term strategies in pursuit of the overall objectives.

The planning literature has been very liberal in making statements about how a strategic plan should be linked to an operating plan. For example, Hussey (1979).

"A strategic plan without the support of a detailed operating plan is likely to be like an engine which has not been efficiently coupled up to the machinery it is to drive." (p.147)

However, when it comes to methodologies to achieve this "coupling", the literature is less helpful. Indeed, recent research has shown that a gap exists between the strategy and the implementing document (2.5.2). Budgetary Planning aims, among other things, to fill this gap.

By integrally linking the strategy to the annual plan, the new system aims to move Dunlop's planning¹ away from the Ackoff's (1970) satisficing or Market Theory oriented type of planning (2.2) towards a more Planning and Control Theory oriented planning (2.2). In such a system, strategic objectives and funds allocations will form the starting

1. See table 8.1 no 21

point and basic constraints for planning, and will be derived directly from an iteratively agreed strategic plan. It is a central principle of Budgetary Planning that divisions are best placed to predict what they can achieve. Equally, the system is sufficiently realistic to recognise that only Head Office has the required perspective to say what should be achieved; hence the requirement for the iterative development of the S-Plan.

In relation to the strategy, the Budgetary Plan fulfils two roles - an implementing role and a monitoring and controlling role. As an implementing device, it turns the strategy into action through detailed annual planning and specifically by the generation of alternative tactical approaches. The Strategic Plan abdicates all tactics to the Budgetary Plan, thus allowing for the possibility of modification to meet any revised circumstances. In this way Budgetary Planning responds to the shortening time horizons of management caused by increased uncertainty of recent years¹. This follows the findings of de Smit and Rade (1980) who suggested

"Plans have a briefer operational life since the value patterns on which they are based are increasingly subject to change. All this means more change in planning and more plans."

Research by Dyson and Foster (1980) indicates that many organisations thought that the next round of their Strategic Plan cycle was an adequate means of monitoring progress against strategy. The findings of this research support this conclusion as only 20% of Dunlop divisions reviewing strategic progress on anything more than an annual basis. In its monitoring and control role, the Budgetary Plan monitors the assumptions upon which the strategy was based to ensure fundamental changes have not occurred to invalidate the strategy. Where drift in the assumptions is revealed, "fine-tuning" might be required, via the tactical alternatives, to bring the strategy back on course.

1. See for example P.F. Drucker, "Age of Discontinuity", Pan (1971) and the discussion in 2.3.

The Budgetary Planning System, however, is more than just a strategic implementation device. It also aims at being an efficient, and more objective, annual planning system by correcting many of the problem areas revealed in the analysis of the M-Plan System (table 8.2). For example, the System aims to fulfil the needs of the divisions, thus helping to turn the Plan into an effective divisional document. Similarly, through the use of, inter alia, self-analysis, the System encourages realism in the Plans and in particular, accuracy in the forecasts. Likewise, participation, as a tool to help motivate towards achievement (Hofstede 1968), is another area on which Budgetary Planning concentrates.

8.2.1 Development Phases of a Budgetary Plan

It may be helpful at this stage to examine the steps involved in developing a Budgetary Plan (table 8.1). By comparing these steps with similar lists for budgeting (table 2.5) and M-Planning (table 7.2), it is possible to get an initial feel for where major differences occur.

A comparison of these two lists shows the additional emphasis placed on planning in the Budgetary Planning System; for example, via the production of a momentum forecast and the generation of tactical alternatives. Similarly, the goals are agreed in advance (in the S-Plan) rather than being imposed by the Centre (table 7.2) or via some clarifying procedure during Plan development (table 2.5). Participation also plays a major role in the Budgetary Plan development.

Although Budgetary Planning has a primary role to implement the strategy via a divisionally oriented annual Plan, it also has several other subservient roles. For example, it is a communications document between the division, the trading group and the Centre. Similarly, it is a motivational document which encourages management to achieve a desired objective.

Table 8.1 Chronological Steps for Developing the Budgetary Plan

0. Introduction. The team spirit talk.
1. Issuing of preplanning information. The funds allocation and the goals derived directly from the Strategic Plan.
2. Performance review. Assessment of the latest estimate and Strategic Plan implementation.
3. Assessment of the momentum forecast.
4. Review of the operating environment in relation to the Strategic Plan assumptions.
5. Generation of tactical alternatives to implement the strategy in order to achieve the goals.
6. Development of the budgetary forecasts from the chosen alternatives.
7. Participation in the Budgetary Plan dialogue with Head Office - plan challenge.
8. Possible amendments to the Budgetary Plan on the basis of consolidation.
9. Reworking of the Corporate Budgetary Plan.

8.3 Modifications Required to the Strategic Planning System

Detailed analysis of the S-Plan System is outside the scope of this study¹. However, certain modifications are required to the present System both for it to be logically sound, and for it to link successfully into the Budgetary Planning System.

Allen's (1980) study suggests that strategic development is not particularly strong in US companies and he believes that strategic implementation is low because

"the hard fact is that most planning just isn't good enough to be implemented."

1. Some analysis done by the author is given in Appendix F1

A study, using largely subjective criteria, conducted by the author and other members of Corporate Planning¹, on the proficiency of Strategic Planning in Dunlop suggested that the majority (88%) of divisions produced either mediocre or poor Strategic Plans. If this is a true reflection of current strategic practices in Dunlop, and there is no reason to suggest things have altered, then Allen's conclusion equally applies to Dunlop. The aim of these modifications is to help divisions to produce strategies which are worthy of implementation, as well as to modify the System to encourage implementation to take place.

8.3.1 Requirement for Broad Strategies

A basic conceptual change in management thinking is required to encourage implementation. The Plan and the strategies must be much broader than at present. If a strategy is to remain viable for some length of time in a rapidly changing environment, then it is essential that it can accommodate a degree of change (uncertainty) in the environmental assumptions. The proposed system subordinates all tactics (Appendix E1) to the Budgetary Plan, which is where they belong. The S-Plan then contains only indicative statements on the implementation of the broad strategies, along with probability ranges around goals, culminating in desired objectives. Detailed Strategic Plans like those used internally within Engineering Group (which amount to little more than a five year Management Plan²) would no longer be developed, but would be replaced by considerably less detailed strategies.

8.3.2 An Iterative Approach to Plan Development

The overall aim of these changes is to produce a strategy which is more realistic and far more resilient to change. In order to assist in developing such Plans, an iterative approach to Plan construction would occur between the Centre (specifically the Planning Consultancy Team) and the divisions.

1. Corporate Planning Guidelines for 1981-5 Strategic Plans 1979
2. Discussion with Redditch Mouldings 13.2.78

Reviewing of the Plans under the current System is largely a "rubber stamping" process; the strategy only being modified in very exceptional circumstances. By submitting a full Strategic Plan so late in the planning year, there is little opportunity for the Centre to ask for modifications as Plan development is too time consuming. The aim of the iterative approach is to get a mutually agreed Plan before it is "put to bed".

Several authors have produced evidence of the existence of an iterative approach to Plan development. For example, Gluck et al (1980), found companies trying to negotiate strategically consistent objectives between corporate headquarters and business unit general management. The following statement is a particularly good example of this approach.

"We want two years and \$35 million in additional investment to prove to you we can make this into a 35% gross margin business. During that time we will make zero profit, but will strengthen our market share by three points and reduce material waste at our Atlanta Plant from 10% to 3%. Alternatively, you can have \$4 million at the bottom line next year and \$6 million the year after that. No investment, and only minimal share loss. But be prepared to sell the whole business because after that its all downhill."

Such an iterative approach (although somewhat simplistically presented here) has much in common with the three levels of funds/strategy discussed in 8.3.3. The iterative approach of Budgetary Planning, however, is a little more complex.

Under the proposed System two types of Strategic Plans will initially be submitted to the Centre. Divisions not revising, or being asked to revise their Strategy will submit a summary S-Plan Paper which will review, rather than revise, relevant factors for the coming year. This Paper will also outline the effect of changes in the environment since the S-Plan was developed, and will generally act as a device to aid implementation.

Only when divisions have experienced a fundamental change in their business will a new set of strategies be developed, and then only after discussion and agreement with the Centre. Divisions submitting a new set of strategies will first be asked to produce a trial S-Plan early in the planning year. This will briefly outline their proposed central strategy to achieve the desired objectives (which throughout the System will be in the form of probability ranges) within the forecast ranges of environmental assumptions. It will also give an indication of the likely funds commitment required for that central strategy.

The Centre will analyse these trial plans, consolidating them to check against Corporate objectives, and categorising them to see their affect on the funds allocation. Discussion then takes place between the Centre and the division to derive a mutually agreeable "contract" (funds for objectives). The divisional director will give a commitment to key performance indicators and these will be the goals against which the division will be monitored.

This iterative approach is aimed not at "second-guessing" the division, but at producing a stretching, yet realistically achievable, Plan. It thus avoids self-fulfilling Plans. But it should be equally common for the Centre to question a plan for being too stretching (unrealistic) as for not being sufficiently stretching (self-fulfilling).

8.3.3 Changes Required to the Funds Allocation System

A further modification to the Strategic Planning System, in order to obtain broader strategies, will be a redesigned funds allocation process.

The proposed system of funds allocation (figure 8.1) completely revises present philosophies towards funding and aims to give stability and commitment to the Strategic Planning Process. Essentially, this is achieved by not having one level of allocation but three, each relating to a modified strategy and objective, and

each forming a different "contract" between the Centre and the division. Although three strategies are developed in this proposed Strategic Plan process, they are in part analogous to the alternative strategies which are developed in the current Strategic Plan System. The additional resources required to develop this new form of Plan would therefore be minimal.

Level 1

The consolidated level 1 funds figure available for allocation for the Group over the next 5 years is derived from the Corporate Plan and agreed with Corporate Finance. From this figure a prudent/pessimistic contingency (which will take into account the fact that overestimates are more common than underestimates) is taken, based on a downwards estimate of the uncertainty surrounding the forecasts. This estimate is obtained from a mixture of divisional forecast credibility (Appendix C2) and "gut feel" for the future of the economy as a whole.

Corporate Planning take this total funds figure and apportion it on a divisional basis (after some liaison with Trading Group Directors) according to the categorisation procedure (Appendix B.2) and the trial S-Plans (8.4.2). Thus the allocation is largely performed on an objective basis, which can be later justified, while Trading Group Directors still have some input, probably of a more subjective nature.

The allocations are then communicated to the individual divisions who are expected to develop their central strategy around them, and to which they should give an absolute and firm commitment.

Within the present climate, and for the foreseeable future, the level 1 allocation will represent little more than momentum funds for category 1 and 2 divisions, and contraction funds for category 3 divisions¹.

1. See Appendix B2 for definitions of the various categories.

Once these allocations are agreed, turnover to working capital ratios can be set via discussions with the Trading Group and the Centre. These ratios will forge a link between the working capital allocation and any future changes in volume. Similarly, divisions will be requested to give a specific breakdown (in some detail for years one to three) of major capital expenditures on a project basis, to allow detail funds monitoring to take place. By doing this, the requirement for funding information on years two and three (which section 7.4.8 showed to be of suspect quality) in the annual plan is eliminated.

Level 2

As well as producing a central strategy using the level 1 allocations, divisions will also be required to produce a "contingency" strategy, to which they must give an equally firm commitment. This strategy will be developed with a reduced level of funding, which takes into account the possibility of a downturn in the environment in relation to the Plan assumptions.

The responsibility for calculating the size of this reduction in the funding level would lie with Corporate Planning. It would be done on an individual divisional basis and thus take into account different levels of uncertainty surrounding the forecasts, previous reductions in funding levels, forecast credibility and funding categories.

Level 3

This level of funding is partly analogous to the pre-1980 Strategic Plan. Divisions would be required to modify the central strategy so as to quantify the effect of any marginal funds which may, or may not, be available, depending on trading conditions and/or surplus reserves/contingencies.

If, and when, these funds become available they would be allocated, in line with these level 3 strategies, on the basis of the division's funds category, predicted marginal return, and particularly its forecast credibility.

Although the initial allocation would be almost entirely made up of level 1 allocations (which would, of course, reflect some sort of portfolio approach), there may be exceptional circumstances whereby a division would receive a level 2 or level 3 allocation.

If, by continuous monitoring of strategic implementation and funds usage, it becomes clear that conditions are changing, Corporate Planning would select divisions for contraction or growth in funds. These divisions would then be asked to switch to the appropriate strategy. Such a system may involve divisions shifting among levels to reflect the effect of the revised conditions on the portfolio.

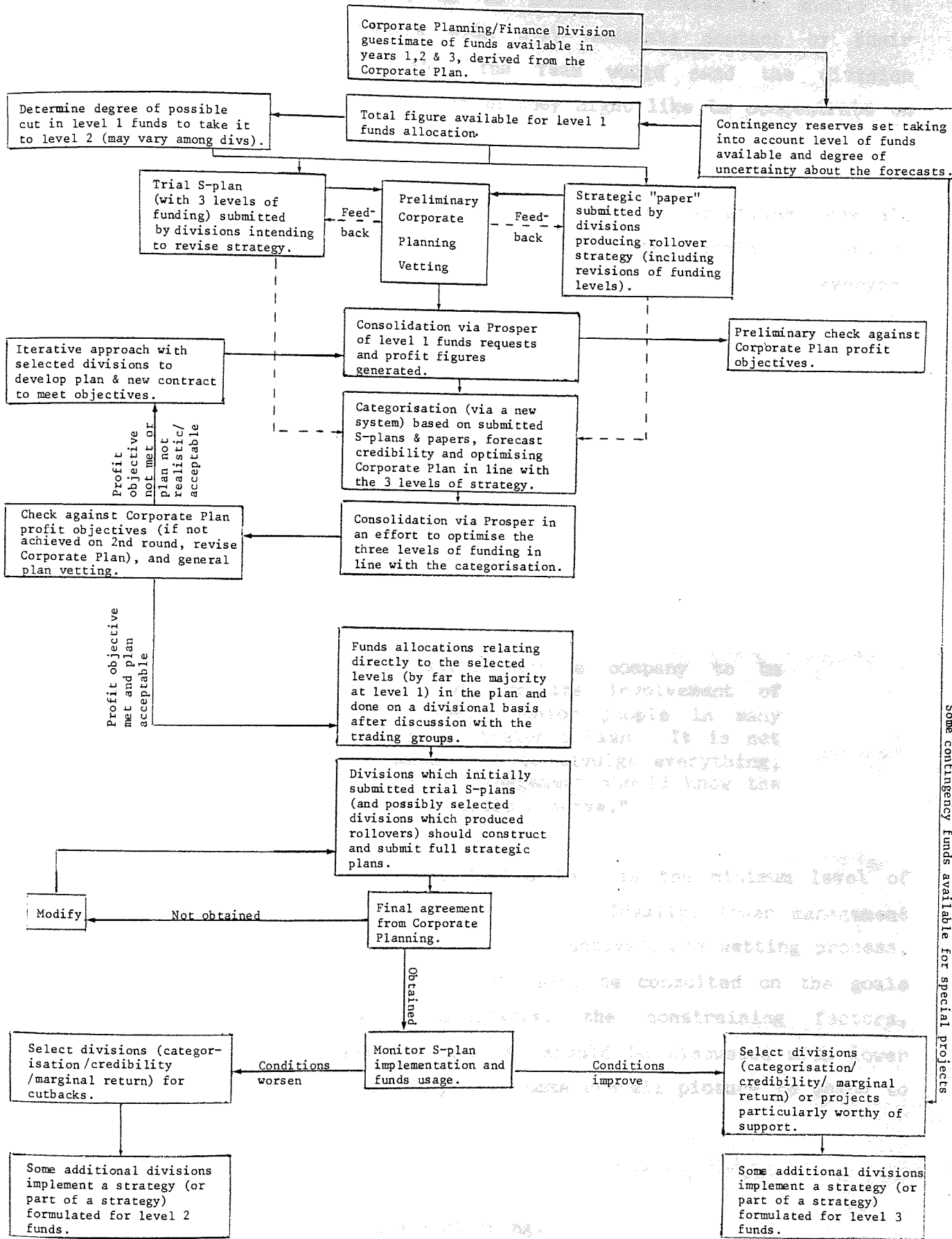
Under the proposed system, no centrally imposed profit objectives will be used. If the initial allocation does not produce a profit level (including any central contingencies) which matches the Corporate Plan objectives, then an iterative approach should be employed between Corporate Planning, Trading Group and selected divisions to reach agreed divisional profit objectives. The aim of such an exercise is to get a profit level which is acceptable to Centre and will gain the commitment of the division's management.

If monitoring and follow-up reveals either positive or negative drift in the profit predictions, then shifts in the funding levels can be made in a remedial or capitalising manner in order to keep within the funds/profit objectives.

8.3.4 Corporate Planning's Educational Role

Reviewing planning competence is a particularly important aspect of the proposed System. As part of the Head Office review of the Plans, Corporate Planning should attempt to use predetermined criteria to assess the Strategic Planning competence of divisions. Divisions who are shown to be particularly weak strategists should be assisted in the planning by their Planning Consultancy Team (9.3.2), who would help them to isolate key strategic issues and methods of obtaining strategic advantage.

Flow Diagram of the Proposed Funds Allocation System



Divisions who are shown to be mediocre strategists should be reviewed from the Centre with only moderate contact by their Planning Consultancy Team. The Team would send the division guidelines outlining points which they might like to concentrate on in their forthcoming Plan¹.

To assist Strategic Planning in general, representatives from all divisions should be invited to attend Corporate Planning seminars on practical approaches to strategy formulation. In this way, everyone involved in the Strategic Planning process would have exposure to the techniques available to them.

8.3.5 Participation in the Strategic Planning System

On confidentiality grounds, divisional management are likely to be cautious about participation. Gluck et al (1980) concluded in their US research that confidentiality was one of the hardest things for top management to give up. However, they believed

".....it is impossible for a company to be strategically managed without the involvement of wide niches of relatively junior people in many aspects of the Company's Strategic Plan. It is not necessary for top management to divulge everything, but as a minimum, junior management should know the strategic purposes their actions serve."

Under the Budgetary Planning System this is the minimum level of participation that could be considered. Ideally, lower management should have some input into the key objective/goals setting process, but as a minimum, they should at least be consulted on the goals which relate to them. Similarly, the constraining factors, particularly the funds allocations, should be discussed with lower management in order that they have some overall picture in which to develop their Plan.

1. As done in 1979 by Corporate Planning.

8.3.6 The Control System

Another important change to the present S-Plan System is in its monitoring and controlling system. At present, the Plan is not formerly monitored, and hence there is little control over its progress. To remedy this, the S-Plan will contain goals which attract responsibilities and timings and progress against these goals can be measured by the Budgetary Plan's March and September review system.

8.3.7 Methodological Link

To assist in the implementation of the Strategy, a methodological link needs to be proposed and communicated to the divisions. The following procedure represents one possible approach. It has been developed via discussion with members of Corporate Planning and through experience in the System.

1. Strategies are developed by divisions through an iterative dialogue with the Centre.
2. The Board, with assistance from Corporate Planning, gives its backing to individual strategies.
3. Corporate Planning assist in determining the desired level of funds to be committed by the Board to the agreed strategies.
4. The M-Plan development cycle begins in the divisions:
 - i. The S-Plan Paper (in abridged form) is circulated to all significant participants in the M-Plan development process.
 - ii. Market forecasts are developed in relation to this paper; specifically testing against funding constraints and strategic goals.
 - iii. Action schedules are developed to implement this tactical Plan and relate specifically to the S-Plan.

Although relatively simple, this methodology is an essential component of the planning system as it is this link which draws together the various components of planning.

8.4 Organisational Framework for Planning

A common concept in planning is that for it to be successful, the system should match the organisational structure (Steiner, 1969, p.36). Within Dunlop identical organisational structures are rare, implying centrally imposed detailed planning systems are not applicable. Steiner (1969, p108) suggests that the planning system is so intimately intertwined with the organisational structure, that each planning system should be individually tailored to meet the needs of the particular organisational structure. However, for compatibility and logistic reasons, this is not practical in a multi-divisional company. Thus, an alternative approach is required, and Budgetary Planning adopts a flexible system which can meet the needs of different divisions.

As well as being desirable to have some flexibility to accommodate a wide range of organisational styles, there is also some desire to formalise the planning system. Vancil (1970), for example, found errors in forecasts to be lower where formalised planning systems were employed. Similarly, Sord and Welsh (1958) in their study of budgeting suggested that there was no lack of ability to develop technically sound planning systems, the problems arose in the application of those techniques. It is the author's belief that by designing a formalised system to encourage and assist efficient application, this problem can be overcome. Conversely though, Steiner (1972) suggested that a major pitfall in planning is that by injecting so much formality into the system it lacks flexibility and restrains creativity.

A dilemma therefore exists with both formalised and flexible systems having advantages and disadvantages. Budgetary Planning aims to overcome this dilemma by the use of broad recommendations, in the form of guidelines, which can be adapted to meet the individual requirements of the divisions. Specifically, the System aims to stimulate creative thinking (9.8) while educating management in a more sophisticated form of planning. It achieves this by offering a more structured system of Plan

development and subsequent use. It is a system which translates vague strategic concepts into tactical action. Similarly, by shifting the planning onus firmly onto the divisions, and by turning the annual plan into a divisional document, the "form-filling" attitude is largely avoided.

Ahlquist (1974) produced evidence to suggest that there was inherent resistance to planning systems imposed from the Centre. As the Budgetary Planning System has been developed partly via discussion with the divisions, this is not thought to be a major problem. However, the most important changes are conceptual ones which may require a long term educational programme to get them fully accepted.

In terms of meta-planning, the proposed system is not something which can be introduced into every division immediately. It is a goal to be approached over a period of time. The exceptions to this, are divisions who have been isolated as being poor or mediocre planners. They will be expected to make significant and expeditious steps towards the adoption of the System.

8.4.1 The Planning Committee

Partly in response to the problems of implementing a new system, and partly because of the co-ordinating problems of planning, Budgetary Planning proposes the use of a participative committee to deal specifically with planning matters.

Evidence gathered in the divisional visits suggests that the co-ordinating role of planning is normally done by the Chief Accountant or the Management Committee. Only one division (AFSD) had a similar body to that proposed here - The Planning Committee.

This Committee will be a team below the level of Management Committee. Although its scope and size will vary from division to division, ideally it should include members from Marketing, Accounting and Production Departments, as well as some representation from the Management Committee. The Committee will be viewed as having a personal assistance's role to the Management Committee and will derive its executive authority from that Committee.

The aim of the Committee is not to create another level of planning specialists, but rather to try and integrate management and planning (Higgings, 1976). However, the Committee should have some planning skills represented on it and should be seen as the focus for the Centre's educational program (8.3.4).

The creation of such an intermediate level Committee will help ensure commitment from all departments. By extending the Committee's role to subsequent monitoring as well as to construction of the Plan, this commitment, which is very important in motivational terms (2.7), could hopefully be maintained throughout the Plan period.

As well as co-ordination, the Committee has several other important roles (the following list is merely illustrative as precise roles will vary from division to division).

1. To produce the planning timetable. This should indicate responsibilities and timings as well as showing why the information is required and when it is to be sent to whom.
2. To assist the Management Committee in the production and subsequent distribution of the Strategic Plan Paper.
3. To ensure relevant personnel are supplied with all the required data at the right time. Similarly to act as a communications channel and source of knowledge on planning matters in general.
4. To receive the plans from all departments and ensure a co-ordinated fit, as well as checking progress against overall objectives and funds constraints.
5. To present the tentative Plan to the Management Committee and to subsequently assist in obtaining any revisions required by that Committee.
6. To monitor performance against Plan (and via Plan, against the strategy) throughout the year by regular reports of both qualitative and quantitative nature. Recommendations regarding any remedial action should be made to the Management Committee.

7. To produce and maintain a data base for planning¹.
8. To determine the extent of the influence of the Plan on operating decisions, in order to ensure the Plan is implemented.
9. To liaise with their Planning Consultancy Team (9.13.2) on planning matters.

As with many other proposals, the Planning Committee is not a panacea for the problems of the planning system. In particular there is a danger that the Committee will become "a talking shop" if it gets too large and uncontrolled (AFSD 7.4.9). Similarly, research by Leavitt (1951) (2.7) suggests that such committees are not always the most efficient in terms of speed and accuracy. However if the Committee is well run, it should significantly contribute to the efficiency of the planning system.

8.5 Summary of Evidence, Inferences and Areas for Improvement

Table 8.2 displays the evidence gathered from the divisional visits, the divisional study, the variance analysis and general involvement in the planning system. From this evidence certain inferences have been drawn by "matching" the evidence with the author's conceptual model of how the system should operate. This model, which has much in common with the proposed Budgetary Planning System, is based on the literature, the divisional visits and involvement in the planning system at Dunlop.

Briefly the model can be described as follows:

A flexible annual planning system operating within the confines of an efficient corporate planning system, including a five year strategic planning process, a funds allocation and a control procedure. Using an objective approach to planning, and taking into consideration behavioural

1. Plans should be developed from detailed analysis and assumptions which should be contained in what might be termed a planning data base. This should include financial and other quantitative data on the operations, key environmental assumptions, eg competitor analysis etc. Allen (1980) found this to be a particularly weak area of planning.

factors, the system aims to produce plans which are based on accurate and resilient forecasts and, more importantly, which can be implemented. The aim of these plans is to achieve a jointly agreed strategic objective by implementing the agreed strategy.

The model rests on the following beliefs:

1. Planning is only efficient if it results in worthwhile action, and thus the system should encourage the implementation of the plans.
2. Those who implement the system should have some say in the decision making process which takes place during plan construction (2.7).
3. Communication barriers should be removed and, in particular, multi-departmental plan construction should be encouraged (7.2.4).
4. Effective planning can be encouraged by the Centre adopting an educational role.
5. The system itself should actively encourage more objective and effective planning.
6. The plan should primarily be a divisional document (7.4.1.)
7. Planning should be based on, and result in, realistic forecasts.
8. Within the broad constraints of the environment, it is possible to manipulate the division rather than simply react to a forecast environment.

From the inferences certain areas for possible improvements were proposed. Usually an inference could generate a multitude of possible areas which might be improved. In order to rationally select from amongst these alternatives, a set of criteria was developed.

the arguments presented here are
are therefore used
in particular, the evidence
the detailed arguments presented
sheets.

The improvements must contribute towards a new planning system which:

1. is compatible with, and gives cohesion to, the general infrastructure of the present planning system
2. helps to fulfil the planning needs of both the Centre and the division
3. fulfils those needs efficiently
4. is compatible with various divisional management styles
5. avoids creating animosity towards Head Office and planning
6. gains commitment from both Central and divisional management
7. aims to educate management in planning approaches and techniques
8. motivates divisions to produce better plans which are realistic and achievable
9. is internally consistent
10. helps to ensure the plans are implemented
11. moves towards more objective and analytical (particularly self-analytical) forms of planning
12. is capable of accepting further development.

Some of the areas for proposed improvement are similar. This occurs where cross-validating questions were used in the data collection document, thus the conclusions, which may be drawn from slightly different evidence, support one another.

By the very nature of a summary table, the arguments presented here are bound to appear somewhat simplistic. Cross-references are therefore used where it is necessary to expand on, in particular, the evidence. However, this table is no substitute for the detailed arguments presented in the thesis.

TABLE 8.2 SUMMARY OF EVIDENCE, INFERENCES AND AREAS FOR IMPROVEMENT

EVIDENCE CONCERNING THE PRESENT SYSTEM	INFERENCE DRAWN FROM THE EVIDENCE	AREAS FOR POSSIBLE IMPROVEMENT
<p><u>General divisional philosophy towards the M-Plan System</u></p> <p>1. 71% of divisions see the M-Plan as a multi-role document for use by many different centres for different purposes (qu.1) (7.4.1).</p> <p>2. Nearly all divisions expressed the opinion that the M-Plan presented to the centre was little more than a Head Office information document (7.4.1) and at least four divisions thought that it was an "unhappy mix of management and financial accounting data" (7.4.12).</p> <p>3. All divisions saw the M-Plan as having a positive influence on efficiency and as being useful in planning and controlling the division (qu.2), (qu.3) (7.4.1).</p> <p>4. 88% of divisions would operate a similar system to that at present in operation within Dunlop, even if not required to do so by the centre (qu.49) (7.4.1).</p> <p>5. On average, 54 man weeks were spent producing the plan (qu.57), and most of the divisions who were asked thought it was a cost effective use of resources (qu.58) (7.4.2).</p> <p>6. 50% of divisions believed that realism and achievability were the criteria for judging a "good" plan (qu.45) (7.4.1).</p>	<p>The M-Plan is not solely a divisional annual planning document, it has many roles, some of which may conflict.</p> <p>There is a danger, by forcing the divisions to produce a document which is of little value to the managing of their divisions, that two plans, which might be incompatible, will be developed.</p> <p>Even accepting the present faults with the planning system, it is still perceived by divisions as having positive elements.</p> <p>Divisions like the present Strategic/Management Plan System.</p> <p>Divisions are willing to expend a considerable amount of effort in producing a plan, which suggests that some commitment to the present system exists.</p> <p>The plan must be realistically achievable for divisions to be satisfied with it.</p>	<p>Decide on the primary roles for the M-Plan, and structure the system so that the other roles are subservient, thus avoiding any conflict of roles.</p> <p>Design a system which reconciles as far as possible Head Office's requirements with the requirements of the divisions.</p> <p>Effective aspects of the system should be retained in any redesigned planning system.</p> <p>As 3.</p> <p>The system should aim to maintain the commitment to planning and direct resources allocated to planning in the most efficient manner.</p> <p>The system must avoid placing pressure on divisions to produce over-stretching plans which are unachievable.</p>

Table 8.2 - continued.

EVIDENCE CONCERNING THE PRESENT SYSTEM	INFERENCE DRAWN FROM THE EVIDENCE	AREAS FOR POSSIBLE IMPROVEMENT
<p>7. Only one division mentioned that a good plan was one which detailed the actions required to achieve the objectives (qu.45) (7.4.1).</p> <p>8. No evidence emerged of divisions formally considering tactical alternatives (qu.8)</p> <p><u>Participation</u></p> <p>9. 62% of divisions adopt a largely autocratic style to their plan construction (qu.53)(7.4.9).</p>	<p>Action, the key to achieving a plan, is not sufficiently stressed under the present system.</p> <p>As no alternatives are considered, divisions are not planning (Section 2.2); they are merely predicting the inevitable.</p> <p>The M-Plan is developed at a relatively high level in most divisions with little discussion amongst departments who will subsequently be expected to implement the plan.</p>	<p>The plan structure should force divisions to make explicit the action they intend to take to achieve the plan.</p> <p>The planning system should encourage divisions to formally consider alternatives.</p>
<p>10. In 77% of divisions the decision making power rests firmly in the hands of the GM and his Management Committee (qu.50) (7.4.9).</p>	<p>Targets and other decisions are developed by top management with lower management playing no major role in the decision making. This may have an adverse effect on motivation and achievement.</p>	<p>Encourage increased participation in the plan construction wherever it is appropriate.</p> <p>Increase the decision making role of lower and middle management wherever possible.</p>
<p>11. Only in the case of one division (Dunlopillo) was inter-departmental liaison in plan development actively encouraged by the system (qu.14), (qu.15) (7.2.4).</p>	<p>Plans are developed discretely by separate departments in the division which may not lead to compatible divisional plan.</p>	<p>Develop the system so as to encourage inter-departmental liaison in plan development.</p>
<p>12. 67% of divisions saw sales as a major limiting factor to their planning, yet only 15% of divisions involved any other departments in the decisions being made (qu.22) (qu.14)(7.4.9).</p>	<p>Departments such as Accounting and Production are given a sales forecast to work from. This forecast may produce, for example, inappropriate gross contributions or might be incompatible, with the capacity available in which case marketing</p>	<p>As 11.</p>

Table 8.2 - continued

EVIDENCE CONCERNING THE PRESENT SYSTEM	INFERENCE DRAWN FROM THE EVIDENCE	AREAS FOR POSSIBLE IMPROVEMENT
<p>13. Only one division (AFSD) thought that their management did not take the right role in the plan construction (qu.54).</p>	<p>Top management in the division are generally happy with the level of participation in the system as it is presently operating. The M-Plan is perceived as being mainly an accountants document for top management.</p>	<p>Modifications to the present system in participation terms must be made in the form of recommendations and should be flexible to match the various organisational styles of the divisions.</p>
<p><u>Link between the Strategic and Management Plans</u></p>	<p>There is no formal methodology within the centrally imposed planning system to integrate Strategic and Management Plans, thus the system does not encourage strategic implementation.</p>	<p>Develop a methodology to link strategies to the M-Plan.</p>
<p>14. No guidelines or advice have been issued from the Centre as to how strategic implementation might take place. (7.5).</p>	<p>Neither the system nor the Centre encourages the divisions to regard the S and M-Plans as being inextricably linked.</p>	<p>Design a system so as to encourage a link and educate management into a strategic way of thinking.</p>
<p>15. The balance of replies in the DCD suggested the S-Plan represents little more than the broadest frame of reference to the M-Plan. (qu.8)(7.4.1).</p>	<p>Division may find that the funds allocated in the M-Plan are not sufficient to implement the agreed strategy (mitigating reasons suggested in 5.5).</p>	<p>Propose a more flexible funding system to help ensure funds are available for the strategy to be implemented.</p>
<p>16. The difference between the funds agreed in the S-Plan and those allocated in the M-Plan averages at a shortfall of around 50% (7.5).</p> <p>17. The S-Plans are accepted by the Centre and subsequently implemented by the divisions with formal vetting of the funding implications (7.5).</p>	<p>Changes in the funds allocated against those requested are almost inevitable.</p>	<p>The funding implications of the S-Plan must be checked to see if they are acceptable and within the constraints of the Group before the S-Plan is sanctioned.</p>

Table 8.2 - continued

EVIDENCE CONCERNING THE PRESENT SYSTEM	INFERENCE DRAWN FROM THE EVIDENCE	AREAS FOR POSSIBLE IMPROVEMENT
<p>18. To avoid the problem discussed above, in 1980 Dunlop changed to the system of mandatory funds allocations in the S-Plan rather than allowing divisions to "bid" for funds with their strategies (3.3.5).</p> <p>19. Profit targets are not derived from the Strategic Plan but are set by the Centre (7.4.6).</p>	<p>High cost, high pay-back strategies may now be excluded as divisions must develop strategies within tight funds constraints. This may result, in the long term, in sub-optimal strategies.</p> <p>The link with the strategy is to some extent broken. Changes in profit target from the objective set in the S-Plan may mean that the strategy is not appropriate to achieve the new profit target.</p>	<p>Provisions should be made for the divisions to bid for any additional funds.</p> <p>The methodology of profit target setting in the M-Plan should link directly to the S-Plan objectives.</p>
<p>20. At least three divisions suggested that the M-Plan becomes dated very quickly (7.5).</p>	<p>There is not sufficient resilience to change in some of the present S-Plans; consequently they are not always appropriate for implementation.</p>	<p>The S-Plan should be considerably more resilient to change.</p>
<p>21. At least three divisions suggested that the S-Plan was developed at the top level in the division and its contents were not disclosed to other management levels (7.5) (see 8 and 9).</p>	<p>If the S-Plan is not communicated to the management levels involved in constructing the M-Plan, then it is difficult to see how the S-Plan can have a significant impact on the shape of the M-Plan.</p>	<p>As far as possible, parts of the S-Plan which relate to the M-Plan year should be communicated to all management involved in the development of the plan.</p>
<p>22. One division stated that their planning only got involved in tactical responses to the environment rather than any strategic manipulation of the division (7.5).</p>	<p>It is the author's belief that this type of planning is common in Dunlop, certainly more common than the divisional responses suggest. Divisions are Market Theory oriented (2.2).</p>	<p>Every effort should be made through the system to develop the strategic planning ability of the divisions. Similarly, the system should encourage a move towards a Planning and Control Theory approach (2.2).</p>

Table 8.2 - continued

EVIDENCE CONCERNING THE PRESENT SYSTEM	INFERENCE DRAWN FROM THE EVIDENCE	AREAS FOR POSSIBLE IMPROVEMENT
<p>23. Only 20% of divisions regularly reviewed progress against strategy (qu.8a) (7.5).</p> <p><u>Basic Planning Assumptions</u></p>	<p>There is a danger that once the strategy has been constructed it will be forgotten about.</p>	<p>Regular monitoring of progress against the S-Plan should take place.</p>
<p>24. 73% of divisions amended the finished plan to fit in with the funds constraints (qu.21)(7.4.8).</p>	<p>The funds allocation is not an initial input in the planning process and the "fudging" of the plans to fit the allocation to some extent nullifies the planning effort.</p>	<p>The system should encourage funds allocations to be an integral part of plan development from the start of the cycle (that is at the volume setting stage) and allow re-calculation of the plan if this basic constraint is not met.</p>
<p>25. At least one division thought the remuneration assumptions supplied in the basic assumptions were ridiculous (7.4.4).</p>	<p>The Plan may be constructed around assumptions which divisions believe to be unrealistic.</p>	<p>The basic assumptions must be seen to be realistic in the eyes of the divisions.</p>
<p>26. 85% of divisions amended their fixed costs in the finished plans if profit objectives were not met (qu.21a) (7.2.4).</p>	<p>Rather than redeveloping the plan so as to meet the basic assumptions, the majority of divisions "fudged" the plan to fill the gap between objective and momentum projection. The planning effort is thus invalidated.</p>	<p>The system should encourage profit objectives to be an integral part of the plan development from the start of the plan cycle, and should allow recalculation of the plan if the objectives are not met.</p>
<p>27. As 26</p>	<p>"Gaps" between the goals and the projection are filled by "fudging" rather than by planning.</p>	<p>The system should encourage divisions to fill "gaps" by creative planning.</p>
<p>28. Centrally produced economic guidelines do not form a fundamental input in the planning system (qu.13a) (7.4.4).</p>	<p>Divisions have difficulty in relating the assumptions to their markets or seeing the importance of macroeconomic indicators on their markets.</p>	<p>Redesign the format of the economic assumptions to assist in making the conceptual leap between macro level and divisional level.</p>
<p>29. 75% of divisions start their planning before the central assumptions/fund allocation/profit objectives are distributed (qu.12) (7.4.2).</p>	<p>The current system takes an inordinate amount of time and as preplanning information arrives after the start of the planning cycle, the link between the S and</p>	<p>Design a system which is either easier to operate or provides information at a time when divisions require it.</p>

Table 8.2 - continued

EVIDENCE CONCERNING THE PRESENT SYSTEM	INFERENCE DRAWN FROM THE EVIDENCE	AREAS FOR POSSIBLE IMPROVEMENT
<p><u>Planning Techniques</u></p> <p>30. 71% of divisions use subjective type techniques for forecasting their markets (qu.13) (7.4.3).</p> <p>31. 71% of divisions use a combination of techniques to forecast their markets (qu.13) (7.4.3).</p> <p>32. 60% of divisions were either opposed to, or unsure of, the use of probability in planning (qu.47) (7.4.3).</p> <p>33. 66% of the divisions saw inflation accounting as being necessary for either Head Office's assessments or divisional management or both (qu.48)(7.4.3).</p> <p>34. 60% of divisions are using or developing computer based financial modelling techniques (qu.20)(7.4.3).</p> <p><u>The Financial Projections</u></p> <p>35. Top management in all divisions reviewed the plans after they had reached a reasonable stage of development and would ask for revisions to fit their aspirations if they were not met (7.4.5).</p>	<p>Divisions have tended to avoid forecasting models either because they are not felt to be appropriate, or because the more objective type forecasting models are beyond the understanding of management.</p> <p>This method acts as a form of validation of the forecast.</p> <p>This tends to indicate divisions do not fully appreciate the concept of planning (Ackoff (1970) cf 2.2).</p> <p>The slightly more positive attitude towards inflation accounting and other techniques may indicate that the encouragement given by Head Office towards inflation accounting has had a positive effect.</p> <p>As these techniques develop, the complexity of the planning problems which can be tackled by divisional management will increase.</p> <p>The decision making role rests firmly in the hands of top management (GM) in all divisions and middle management may find their participatively agreed objectives are revised.</p>	<p>Although encouragement should be given in the use of objective forecasting techniques, only divisions themselves are sufficiently close to their markets and their abilities to determine what techniques ought to be used.</p> <p>The system should encourage a multiple approach to forecasting techniques.</p> <p>The system should be designed to encourage the analysis of uncertainty and risk by using probability assessments.</p> <p>If any "new" or "sophisticated" techniques are to be introduced, then there should be considerable top-down commitment to getting them accepted.</p> <p>The system should be designed to allow techniques such as computer financial modelling to be incorporated at a later stage.</p> <p>By relating the plan directly to the S-Plan objectives, and by increasing participation in objectives setting, the problem of objectives being changed by top management could, to some extent, be avoided.</p>

Table 8.2 - continued

EVIDENCE CONCERNING THE PRESENT SYSTEM	INFERENCE DRAWN FROM THE EVIDENCE	AREAS FOR POSSIBLE IMPROVEMENT
<p>36. 88% of divisions viewed the financial projections either as forecasts with some measure of stretch or as a mixture of forecasts and targets (qu.6) (7.4.6).</p>	<p>There may be considerable confusion in interpreting the projections which are neither realistic forecasts nor motivationally stretching targets.</p>	<p>Efforts should be made to split motivational targets and financially realistic forecasts.</p>
<p>37. As 75% of divisions received profit targets (qu.26), the present system encourages the use of targetry (7.4.6).</p>	<p>The projections are generally inappropriate for financial planning.</p>	<p>Profit targets should not be centrally imposed.</p>
<p>38. Effort has been made via the cash conservation scheme to get more realistic financial forecasts (7.4.6).</p>	<p>There is a demand at the Centre for more accurate financial projections.</p>	<p>The degree of realism required in the plan should be heavily stressed in the system.</p>
<p>39. All trading group HQ's introduced profit contingencies (7.4.6).</p>	<p>Divisions are left to achieve a plan that incorporates targets set by trading groups which the trading groups believe they cannot achieve.</p>	<p>By avoiding profit targets the requirement for contingencies may be reduced.</p>
<p>40. Trading group profit contingencies are set subjectively (7.4.6).</p>	<p>The resulting profit figures might not be rationally determined.</p>	<p>Contingencies, if required, should be set after detailed analysis of past variance.</p>
<p>41. 67% of divisions were aware of the existence of group directors profit contingencies (qu.33).</p>	<p>Motivation is reduced somewhat because the divisions are aware that the group director does not think they can achieve the target.</p>	<p>If contingencies need to be employed at the Centre, they should be confidential.</p>
<p>42. Of the four divisions questioned on profit targets, three found them tight but obtainable, and one found them too tight (qu.27) (7.4.6).</p>	<p>When profit targets are introduced they appear to be motivationally stretching and thus may distort the forecasts.</p>	<p>Objectives should be set so as to be viewed as obtainable by both divisions and the Centre.</p>
<p>43. In terms of achievability, about half the divisions (55%) saw the plan as being (tight) and the other half (45%) saw them as being set at just about the right level, no division thought the plans were easy to achieve (qu.7)(7.4.6).</p>	<p>At least half the divisions in the Group think that the financial projections are difficult to achieve and thus are not realistic assessments of what they believe will result.</p>	<p>The plan system should allow the development of realistic plans.</p>

Table 8.2 - continued

EVIDENCE CONCERNING THE PRESENT SYSTEM	INFERENCE DRAWN FROM THE EVIDENCE	AREAS FOR POSSIBLE IMPROVEMENT
<p>44. All divisions except one, claimed to unofficially include contingencies in their plans whenever possible, even though there is now a central edict against their use (qu.34) (7.4.6).</p>	<p>There is little point in requiring divisions not to include contingencies.</p>	<p>The use of divisional contingencies should be accepted but divisions should be encouraged to declare them.</p>
<p>45. All but one division suggested that the funds allocation had no effect on the plan until at least after the basic volumes and contributions were fixed (qu.21) (7.4.8).</p>	<p>The Plan has to be adjusted after it is largely set by reducing fixed capital and possibly by increasing the turnover to working capital ratio.</p>	<p>A closer link between the funds allocation and volume needs to be forged.</p>
<p>46. All of the five divisions questioned on the construction of years two and three in the finance forecasts, suggested that their meaning was doubtful as they were constructed on a simplistic basic (7.4.8).</p>	<p>Forecasts of central funds growth and borrowing projections are of little value if based on these forecasts.</p>	<p>An alternative method of predicting long term funds growth and requirements needs to be found.</p>
<p><u>Variance Analysis</u>¹ Levels:</p>		
<p>47. Vanceil (5.5.5) found accuracy to be better where formal planning systems existed.</p>	<p>Formalised planning can result in improved accuracy.</p>	<p>Efforts should be made to formalise parts of the planning system in order to encourage accuracy.</p>
<p>48. The mean absolute error for turnover, margin and return was 12.7%, 90% and 102% respectively (6.5.3b).</p>	<p>With the exception of turnover, the predictive value of the forecasts, in simplistic terms is minimal.</p>	<p>Improvements need to be made in forecast accuracy, interpretation and use.</p>
<p>49. Divisions systematically overestimate their turnover forecasts (6.5.3d).</p>	<p>Because of the system of construction of the M-Plan, this bias will distort the whole Plan.</p>	<p>Bias, being systematic, should in theory be eliminable, thus methods should be proposed for divisions and the Centre to trace and analyse bias.</p>
<p>50. Turnover forecasts for year (t+1) more accurately predict (t+2) than they do (t+1) (6.5.3d).</p>	<p>The degree of optimism is rife.</p>	<p>The system should encourage accuracy rather than optimism.</p>
<p>1. References quoted here all refer to turnover. Similar references for margin and return can be found in Appendices D4 and D5.</p>		

Table 8.2 - continued

EVIDENCE CONCERNING THE PRESENT SYSTEM	INFERENCE DRAWN FROM THE EVIDENCE	AREAS FOR POSSIBLE IMPROVEMENT
<p>51. Division tend to overestimate by a large amount more frequently than they underestimate by a large amount (6.5.3d).</p> <p>52. The majority of divisions for turnover, and 36% and 27% of divisions in margin and return respectively, would have forecast more accurately over the ten year period had they employed a naive model (6.5.3e).</p> <p>53. In turnover all divisions recorded significant correlations between the actual and forecast figures (6.5.3f).</p> <p>Incremental Change:</p> <p>54. The average mean absolute error in incremental change experienced throughout the Group is 400% in turnover, 246% in margin and 244% in return (6.5.4b).</p> <p>55. Overall Group performance for Theil's coefficient was 1.02 for turnover and 1.03 for margin and return (6.5.4d).</p>	<p>The risk of being significantly inaccurate in the forecasts is much greater in terms of the down-side risk than the up-side risk.</p> <p>The relative value of the forecasts in all three variables is questionable. Such results as shown here demonstrate that even simple forecasting techniques will improve the forecast accuracy of many divisions.</p> <p>The forecasts are significant improvements on random forecasts and, assuming stability, it is possible to make predictions about the likely error range, as well as to use linear transformation to make subsequent improvements to the forecasts.</p> <p>Divisions appear to find it considerably more difficult to forecast change in turnover than they do in the ratio type variables, return and margin.</p> <p>On average, divisional performance throughout the Group is worse in accuracy terms than would have been experienced had a no-change model been employed.</p>	<p>The Centre should be aware of the types of error which can occur and the effect they might have on their decision making.</p> <p>Better forecasting techniques should be encouraged by the system.</p> <p>The Centre should use these results to monitor and forecast error and to improve divisional forecasts.</p> <p>Stress should be laid on the forecasting of change.</p> <p>In divisions not performing significantly better than a no-change model, the present forecasting techniques should be drastically modified.</p>

Table 8.2 - continued

EVIDENCE CONCERNING THE PRESENT SYSTEM	INFERENCE DRAWN FROM THE EVIDENCE	AREAS FOR POSSIBLE IMPROVEMENT
<p>56. Comparison of absolute percentage error and Theil's coefficient shows that some divisions experienced considerably more inherent variability in their results than others (6.5.4d).</p>	<p>Examination of traditional percentage error measures does not reveal the full picture as regards forecast accuracy. Some divisions operate under greater instability and thus are naturally subject to larger variances. Indications can be gained from this as to the complexity of the forecasting techniques to be used in various markets.</p>	<p>Theil's coefficient should play a major role in determining the relative performance of divisions as it takes into account inherent variability. A comparison of this with absolute percentage error may help in determining risk in funds allocations. It should also be used in dermining the forecasting techniques required in various markets.</p>
<p>57. Over of 50% of the error in turnover, and nearly 25% in the case of margin and return, is attributed to systematic forces (6.5.4e).</p>	<p>A large proportion of the error is attributed to eliminable factors.</p>	<p>Divisions should carefully monitor systematic influences on the error in order that some effort might be made to eradicate them. A learning process, particularly with reference to overestimation, should take place.</p>
<p>58. A significant proportion of the error in margin and return is attributed to unsystematic factors (6.6.2 and 6.7.2).</p>	<p>It is not possible to eradicate all the error in the forecast as there will always be a certain amount of error caused by uncertainty.</p>	<p>The planning system should be sufficiently flexible to accommodate this error.</p>
<p>59. Theil's coefficient disturbance proportion is positively correlated to the mean absolute percentage error in turnover and return (6.5.4e).</p>	<p>Divisions with larger errors have a large proportion of that error attributed to systematic factors. Conversely, divisions with smaller errors generally have a smaller proportion of that error attributed to systematic factors.</p>	<p>Reward/punishment systems should be devised to encourage divisions to reduce the size of their systematic error.</p>
<p>60. In turnover, divisions are unable to accurately predict turning points and, in particular, declines (6.5.4f).</p>	<p>Divisions have difficulty in predicting changes in trends, particularly adverse changes.</p>	<p>The consideration of change in turnover trends should be more actively encouraged.</p>
<p>61. In margin and return, 27% and 24%, respectively of all forecasts turned out to be false signals (6.5.4f).</p>	<p>There is some tendency to forecast regressively in these two variables, that</p>	<p>Divisions should be encouraged to consider turning point analysis as part of their</p>

Table 8.2 - continued

EVIDENCE CONCERNING THE PRESENT SYSTEM	INFERENCE DRAWN FROM THE EVIDENCE	AREAS FOR POSSIBLE IMPROVEMENT
<p>62. Some divisions consistently produce more accurate forecasts than other divisions (Appendix C2).</p> <p>63. Turnover growth and mean absolute percentage errors in margin and return are correlated (6.8).</p> <p><u>The Control System</u></p>	<p>Some divisions are better forecasters than others, even after inherent variability is taken into account.</p> <p>To minimise the errors in return and margin, the growth in turnover must be something of the order of 25%. This indicates a distinct propensity to overestimate.</p>	<p>Accurate forecasters should be rewarded while inaccurate forecasters should be punished.</p> <p>Divisions should be encouraged to consider relationships between growth and error.</p>
<p>64. Apart from the salesman's bonuses, there was no evidence of a reward/punishment system operating in any division for plan achievement (qu.38) (7.4.11).</p>	<p>There is no direct incentive in the system to achieve plan, in particular, at lower or middle management level.</p>	<p>The system should encourage achievement of plan.</p>
<p>65. All divisions use subjective methods to determine whether a variance was significant and worthy of investigation (qu.39)(7.4.11).</p>	<p>There is no way of objectively ascertaining if a variable is out of control or simply subject to random fluctuations.</p>	<p>Effective means of objectively monitoring variance, to determine its significance, should be developed.</p>
<p>66. All divisions had monthly formal meetings to discuss progress against plan (qu.37)(7.4.11).</p>	<p>The M-Plan plays a recurring role in the operating of the division.</p>	<p>By closely linking the S-Plan to the M-Plan, strategic decisions should play a recurring role in operating a division.</p>
<p>67. Suspensions thought that the exercise of having to explain variance caused by uncontrollable events was pointless (7.4.12).</p>	<p>The author believes that this is the opinion held by several divisions and logic suggests that it is pointless making excuses for events which are outside the control of the divisions.</p>	<p>Monitoring of a plan should concentrate not so much on which division has not achieved a certain action or objective, but why they did not plan for the event which prevented them from achieving it.</p>
<p>68. Several divisions suggested that they could manipulate the data reported to Head Office (7.4.11).</p>	<p>The reported data may not be suitable for financial rewards for plan achievement.</p>	<p>Reward/punishment systems should be linked to other factors than financial remuneration.</p>

Table 8.2 - continued

EVIDENCE CONCERNING THE PRESENT SYSTEM	INFERENCE DRAWN FROM THE EVIDENCE	AREAS FOR POSSIBLE IMPROVEMENT
<p><u>Link with Head Office and Trading Group</u></p> <p>69. All divisions, with the exception of two, found the plan challenge a reasonably useful experience (qu.31), although at least two divisions intimated that they "hid" information from their group director (7.4.10).</p> <p>70. Several divisions described Corporate Planning's comments for the trading group directors as naive (qu.32) (7.4.10).</p> <p>71. At least three divisions wanted increased contact with Corporate Planning, particularly in relation to planning techniques (5.4.8) (7.4.12).</p> <p>72. 62% of divisions (including all of Industrial Group) were unhappy with the multiplicity of mandatory schedules for trading group level (7.4.12).</p> <p>73. Four divisions did not like the stress placed on financial accounts, as well as the duplication of data in the Head Office requirements of the M-Plan (7.4.12).</p> <p>74. No division regularly submits additional schedules to lend support to their plan (7.4.12).</p>	<p>The challenge encourages a "them and us" type attitude. Even the title encourages this thinking and it is possible that this approach might lead to sub-optimal management.</p> <p>Although the comments are not written for the divisions, it is possible that they are naive and superficial and thus of little value to the group directors.</p> <p>There appears to be at least some scope for Corporate Planning to fulfill an educative role.</p> <p>Divisions do not like producing a host of time consuming schedules which are of little value to the division.</p> <p>Because these divisions find the financial accounts unhelpful in their planning, there is a danger of the M-Plan becoming a form filling exercise.</p> <p>Divisions are unwilling to submit additional schedules because they believe that the more they offer the more they can be challenged upon. Similarly, they are not actively encouraged by the centre to submit anything other than the mandatory schedules.</p>	<p>The system should accept that it is the task of divisional management to manage their units and the so-called plan challenge should become more of a communications exercise.</p> <p>Efforts should be made to increase Corporate Planning's understanding of divisional markets and problems.</p> <p>Corporate Planning should adopt an educational role.</p> <p>Encourage the submission of management accounting schedules in their divisional format.</p> <p>The system should be designed to avoid duplication of data and the amount of financial accounting data should be kept to a minimum.</p> <p>Every encouragement should be given to the divisions to submit schedules in their divisional form in order to back up their plan. Divisions who have not supplied sufficient data should be challenged aggressively.</p>

Table 8.2 - continued

EVIDENCE CONCERNING THE PRESENT SYSTEM	INFERENCE DRAWN FROM THE EVIDENCE	AREAS FOR POSSIBLE IMPROVEMENT
<p>75. 31% of divisions expressed the opinion that a better plan would be produced if they could submit later in the year (7.4.12).</p>	<p>Divisions are aware that uncertainty increases with the time horizon of plans and there is a danger that they will perceive Head Office as forcing them to produce a plan earlier than they would normally have done. This may perhaps cause some animosity.</p>	<p>The system should offer the division the opportunity of making minor revisions to the plan up until it is submitted to MD in December.</p>
<p>76. Four divisions mentioned the inflexibility of the centrally imposed planning system (qu.11), (qu.46) (7.4.12).</p>	<p>Because of the necessity for compatibility of plans most divisions are forced to adapt their planning to a style which may not be wholly appropriate for their division.</p>	<p>The system should aim to have the maximum degree of flexibility in it.</p>

8.6 Chapter Review

Evidence of problems with the present M-Plan System has primarily been obtained from the divisional visits and the variance analysis. Nearly all areas of the System have been considered in this analysis. For example: the lack of consideration of alternative courses of action; the lack of a methodological link between M and S-Plans; the lack of participation; the simplicity of the forecasting system; the poor performance of forecasts in relation to naive models; etc.

From this evidence, and by comparison against a conceptual model, certain inferences were drawn, which in turn allowed areas for possible improvements to be proposed. These areas are the springboard from which a new planning system is to be developed. The basic concepts of the new system have been clarified, as the conceptual change is vital to the success of the System. The need for a link to the strategy, the need for a planning input, realism and resilience, participation, and so on, are all important changes in the planning system.

Similarly, for Budgetary Planning to operate successfully certain modifications are required to the S-Plan System. Specifically, these are concerned with turning the strategy into an iteratively developed Plan which is much broader, realistic, and more resilient than at present. The iterative approach, utilising a trial S-Plan, aims to develop a mutually agreed contract which can be implemented, via a proposed methodological link, in the Budgetary Plan.

Many authors have stressed the need for the Planning System to fit the organisation structure, but as Budgetary Planning is a detailed and more formalised system, individual requirements cannot be easily accommodated. Budgetary Planning gets round this problem by proposing recommendations in the form of guidelines which poor and mediocre planners will be under more pressure to implement ad verbatim, than good planners.

The organisation of the planning effort is something which requires considerable attention, as this partly determines the efficiency of the System. Within Budgetary Planning, the co-ordination of planning is undertaken by a participative body known as the Planning Committee who look after both Plan development and Plan monitoring.

A DISCUSSION OF A PROPOSED BUDGETARY PLANNING
AND CONTROL SYSTEM

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9.1 Chapter Preview

This chapter outlines an approach to annual planning and control which fundamentally reappraises the system of construction, implementation and subsequent control, rather than concerning itself with minor modifications to proforma schedules.

The annual planning cycle is first outlined and then each of the interlinking units within the cycle is described in detail. The various sections are ordered chronologically in terms of the planning cycle.

9.2 Budgetary Planning Cycle

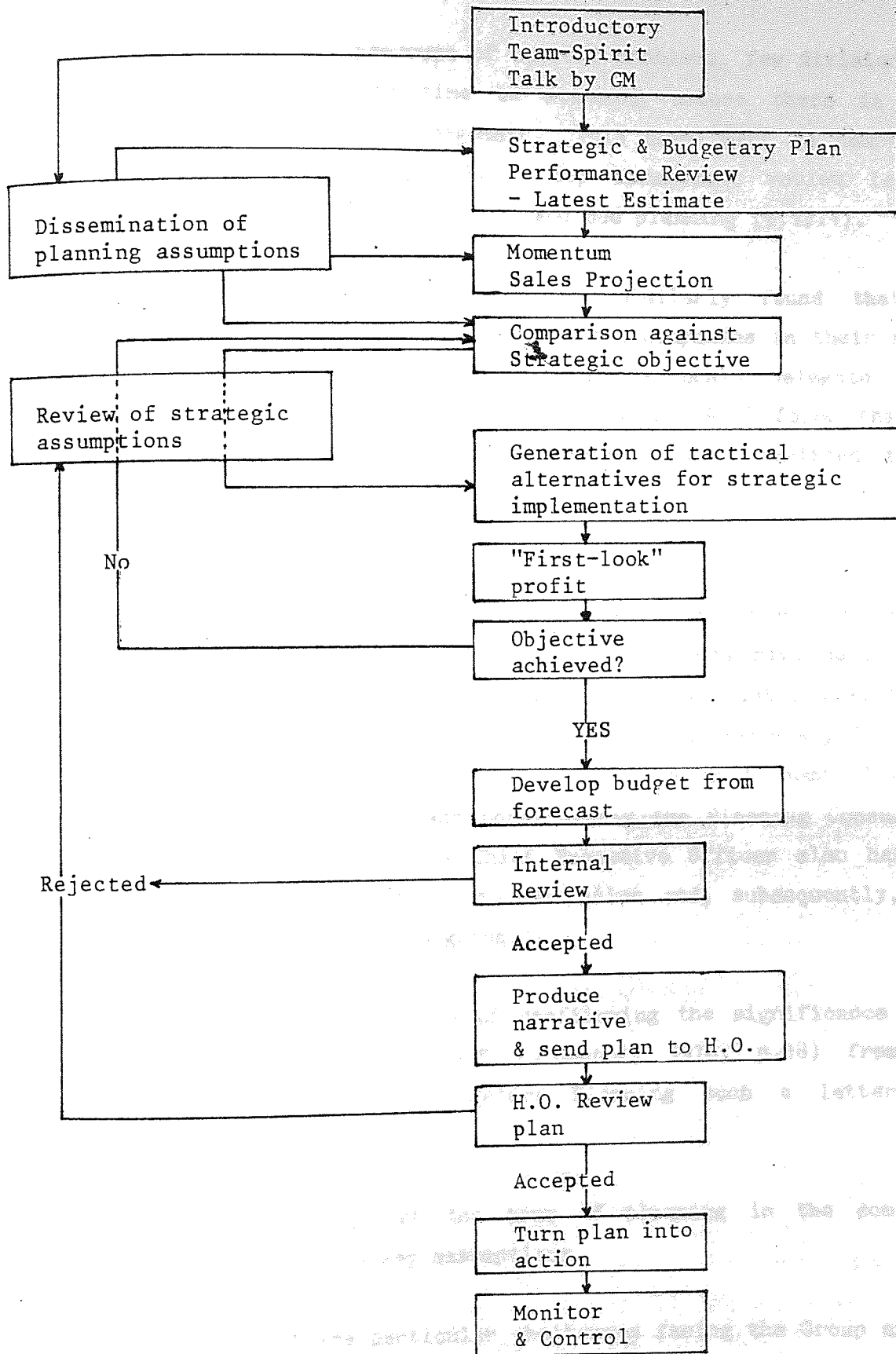
The planning cycle, which as the name suggests, is a continuous annual exercise made up of several components or tasks. Each one of these tasks is essential to the overall concept of Budgetary Planning and their interrelationships can be adequately described by the flow chart in figure 9.1. To fully understand Budgetary Planning, it is necessary to discuss each of the stages within the cycle separately.

9.3 Head Office Planning Administration and Preplanning Assumptions

In a decentralised planning system, such as operated under Budgetary Planning, Head Office have a key role to play. They should be seen by the divisions to represent the "driving force" in the planning system. In particular, they should be the main co-ordinators of the System and by using preplanning assumptions, they should arrive at the desired overall Group Plan.

9.3.1 Top-Down Commitment

The literature is almost unanimous about the need for top management commitment to planning. Kirby Warren's (1966, p.51) study suggested



...particular... facing the Group as a whole in...
...year. The example, generating with, increasing...
...position of receiving...
...the treatment and importance which...
...management... to planning.

that under the pressure of current problems, few divisional managers will devote their time to planning unless there is a definite commitment by top management. This commitment is demonstrated, in Kirby Warren's case, by a top management review leading to a differentiation between good and bad planning (9.12.1).

Steiner and Schollhamer (1975) similarly found that the most important "pitfall" perceived by the companies in their research was top management's assumption that it could delegate planning to specialist planners. Likewise, Vancil (1970) found that where the Chief Executive Officer was involved and committed to planning, accuracy of the plans increased.

Evidence from the research in Dunlop suggests that where considerable top-down commitment has been given to the implementation of new techniques, divisions have adopted it fairly promptly. It is for this reason that the Centre must be viewed as the prime movers in getting the proposed Budgetary Planning System implemented. Much of this motivation must come from Corporate Planning Department and particularly the Planning Consultancy Teams (9.3.2). However, the Chief Executive Officer also has a role to play, in the initial implementation and, subsequently, in keeping the planning momentum going.

The most common method of reaffirming the significance of planning is via a "Plan Letter" (O'Connor, 1976, p.18) from the Chief Executive. Within Budgetary Planning such a letter has three primary aims:

- a) to broadly set the tone of planning in the coming year by echoing the key assumptions.
- b) to outline particular challenges facing the Group as a whole in the coming year. For example, generating cash, increasing competitive position or reducing risk.
- c) to demonstrate the commitment and importance which top management attaches to planning.

The letter might also include "special questions" which the Centre might wish to address themselves to in the coming Plan. These would include any threats or opportunities which might be perceived to affect the whole Group, and would vary from year to year. An example of such a question might be "what moves towards microprocessors is the division making in the coming year".

Top-Down commitment to getting the Budgetary Planning System implemented is also important (7.4.3). Thus, every opportunity, for example, the General Manager's meeting, should be grasped in order to gain support for the new System and to demonstrate the Centre's commitment to it.

9.3.2 Planning Consultancy Teams

Another method of demonstrating top-down commitment to planning is for members of the Corporate Planning Department to have greater contact with the divisions. Such an approach has much to endear it. To believe that divisions are automatically competent, innovative and creative planners is somewhat foolhardy. Indeed, research by Al-Bazzaz and Grinyer (1980) showed that a major problem in planning was the interface between the planning department and the operating units. One way around this problem is to appoint individual teams who would be responsible for a collection of divisions and would be specialists in the particular markets.

Contact between the divisions and Corporate Planning was minimal under the M-Planning System (7.4.10). This meant that:

- a) it was difficult for members of the Department to obtain sufficient detailed knowledge about the divisions to make pertinent or probing comments in their Plan reviews. This led to the production of naive comments (7.4.10).
- b) divisions had little direct contact with the Department, which they see as being detached and faceless, and therefore do not make optimum use of its consultancy role.

- c) being removed from the divisions, the Department does not use them as a source of detailed knowledge about various markets.
- d) it is difficult to make accurate long term decisions on resource allocations as detailed market and divisional information is generally only available from the divisions themselves.

The Budgetary Planning System aims to improve the link between the divisions and the Department by having balanced teams of specialist planners responsible for a number of divisions who would operate in similar markets¹. Thus instead of knowing a little about the whole Group, the planners will have more specialist knowledge about a few divisions.

Each of the teams would consist of a planner and a specialist. Thus for Consumer Group, a market research specialist would accompany a planner; while for Tyre Group, an economist specialising in automotive markets would accompany a planner.

The terms of reference for these teams would be as follows:

- 1) Advising and assisting divisions directly on all planning activities, and specifically on planning techniques, for example, probability (7.4.3). Essentially this is an educational role, and is particularly important. Ahlquist (1974), Kudla (1976), Dev and Gee (1970) and Dyson and Foster (1980) have all shown the importance of educating management in planning. It is pointless creating a superior planning system which is outside the capabilities of the management to operate it. By stressing this educational role, Budgetary Planning recognises that planning is a specialist activity largely done by non-specialists. Appendix F1 outlines some of the educational approaches, such as seminars and specific guidelines, which Budgetary Planning uses.

1. This links into the Strategic Business Units concept mentioned in Section 2.5.2.

- 2) Assistance in co-ordinating planning, particularly between Budgetary and Strategic Plans and the funds allocation.
- 3) Advising GM Corporate Planning on all matters concerning sanctions for the divisions for which they are responsible.
- 4) Objective assistance in the development of strategies and tactics.
- 5) Execution of any special duties and assignments in connection with planning as might be required by divisional management with the agreement of GM Corporate Planning.
- 6) Act as Corporate Planning's specialists on matters concerning the divisions for which they are responsible and specifically,
 - (a) Engage in regular debriefings with other teams so interactions amongst divisions (across trading groups) can take place. Corporate Planning Department will be seen as a central focus for information within the Group.
 - (b) Evaluate not only the Plans themselves but also the planning process by a dialogue with the divisions both during and after Plan development.¹
 - (c) Assess the impact of various proposed funds allocations on the divisions and assist in the categorisation process.
 - (d) Monitor progress against Plans and meet divisions to evaluate any remedial action that they may decide to adopt on significant variances.
- 7) Liaise with trading group personnel in order to ensure, among other things, compatibility of planning philosophies and concepts.

1. This links in with the Adaptive Theory of Planning described by Ackoff (1970) as outlined in section 2.2, which suggests that the planning system is as important as the plan itself.

- 8) Sustain the planning momentum.¹
- 9) Construct and maintain a planning data base.²

It is important to stress that divisional planning remains the fundamental responsibility of line management. The specialist teams merely act as consultants, co-ordinators, and catalysts for idea propagation.

In order for the system to work effectively, a point of liaison between the team and the divisions should be nominated. This would normally be the Chairman of the division's Planning Committee. At the Corporate Planning end, the teams would report directly to GM Corporate Planning and exchange information by debriefings which would take place at regular departmental meetings.

The use of Planning Consultancy Teams also aids the participative nature of Budgetary Planning as well as showing top-down commitment towards planning.

9.3.3. Preplanning Booklet

A further area of responsibility of the Planning Consultancy Teams will be assisting in the yearly preparation and subsequent dissemination of the preplanning booklet. This is basically a collection of assumptions and constraints which give central management the opportunity to indicate the basic constraining factors on which they want the divisional Plans to be based.

1. In times of high uncertainty plans tend to deviate from actual outcomes, Suspensions, for example suggested that the more sophisticated the planning became the greater the variance seemed to be. However, the problem was not viewed within the increasingly uncertain environment. Corporate Planning must help to keep "planning spirits" high in such cases.

2. Several authors, for example, Dyson and Foster (1980), mention the importance of collecting the right sort of data on which to develop plans. This will include data on the general environment, specific competitors, interfirm comparisons etc.

As most divisions begin planning before the basic assumptions arrive, and as it is envisaged that planning under a Budgetary Planning System will take about the same amount of time as under a Management Planning System, there is a necessity for these assumptions to go out earlier if they are to form a fundamental part of the planning. In the case of the macroeconomic, material and exchange rate assumptions, this may mean sending provisional assumptions which could be subject to revision until, about the beginning of September, by which time most Plans should be fairly well developed.

The preplanning booklet will contain the following:

- (i) Plan Letter (9.3.1).
- (ii) Tactical goals.
- (iii) Funds allocations.
- (iv) Macroeconomic assumptions.
- (v) Materials and exchange rate assumptions.
- (vi) Variance Analysis of Individual Divisions
- (vii) Proforma schedules.

The proposed modifications to the present system of funds allocation and Plan objectives/goals are based on two concepts. Firstly, that Head Office is not best placed to pre-empt divisional planning in the form of profit objectives; and secondly, the existence of funding constraints and the need for realism in planning. The optimum for which this system aims is to have realistically achievable Plans which produce sufficient profit and cash in order to supply the funds requirements.

(ii) Tactical Goals

One of the primary reasons for planning is to achieve a desired objective, thus the setting and subsequent implementation of objectives is crucial to effective planning. In the past, objectives have been concerned solely with profit targets set by Head Office, with only broad reference to the Strategic Plan (7.4.5). Under the Budgetary Planning System, iteratively agreed

strategic objectives (8.4.2), which are participatively set, or at least discussed, form the basis of the annual goals. These goals are merely specific objectives, which attract responsibilities and should be achieved within a specific time period. Or as Hussey (1974,p.104) describes them, "time assigned targets derived from the strategy".

Although the setting of objectives is a primary role of the strategic planning process, their implementation is clearly the province of the Budgetary Plan (2.5.3). As McCarthy et al (1975) stated:

".....if management is to do planning, it must first deal with objectives - perhaps unconsciously - as essential inputs to the management process."
(p.220)

Thus Budgetary Planning should aim to make goals (objectives) the starting point of planning. It achieves this by starting with the objective and working back to the present position (gap analysis, 9.6) and by using strategies to fill the gap (tactical alternative evaluation, 9.8.2). Such a system also relies heavily on the ability to re-plan until the goal is achieved. Thus there is a demand for computer assisted financial modelling (Appendix D4).

As stated in section 8.4.1, the goals derived from the strategy will be in the form of probability ranges. These ranges will be developed from various sensitivity analyses of the assumptions on which the Plan is based. Such ranges help ensure that the Plan is not outdated by minor changes in the environment.

There are numerous variables which divisions and the Centre might choose as objectives and goals. Generally however, divisions may regard most of these goals as merely constraints on the Budgetary Planning Process. In fact it would be naive at present, with the current funding problems in Dunlop, to assume that there are not overriding financial goals to which all other objectives must be subordinated. Such planning, with an overall super-objective, is

termed preferences-first (Olve, 1977) and closely relates to traditional planning theory in that resource allocation is achieved by simply sufficing the super-objective.

Multi-objective planning, with each objective vying concurrently for resources, needs a sophisticated model of the firm in order for a near-optimal solution to be achieved. Given the present low level of such model development in Dunlop (qu.34, table 8.2), and although multi-objective planning is desirable (in that the exigencies of management can simultaneously be fulfilled), a preferences-first type of planning appears to be the most realistic approach.

Adopting a preferences-first approach within the Budgetary Planning System means divisions should determine their super-objective in the Strategic Plan and via dialogue with Head Office. All other objectives should then be viewed as constraints on satisfying that super-objective.

Although the objectives and strategies are set and agreed in the Strategic Plan, it is important that, before inclusion as goals in the Budgetary Plan, they are examined to determine their realism in the light of current events. For this to be ascertained a review of both the internal and external environments is required (9.7).

If the review indicates that the goals are unrealistic, then the division should enter into an interactive process with Head Office to determine what revisions might be required. Similarly, it may be that circumstances throughout the Group and its environment have made the division's goals unrealistic, from a central viewpoint. Again dialogues with divisions would then have to be conducted. These dialogues may merely revolve around the timings of the achievement of the goals of their size. However, they would not be so substantial as to threaten the eventual achievement.

Hopefully, major changes in the strategic objectives would be rare as it is envisaged that the Strategic Plan, as well as being more flexible would be open to considerably more dialogue and

scrutinisation at the development stage than at present. Once agreement has been reached, particularly on the objectives and resources required, the Strategic Plan would be regarded as a firm commitment by both sides.

If minor changes are required to the goals, then they would be discussed as early as possible, thus ensuring that they still form the basis of the Plan. A prime factor in determining any change in the goals is their realism in the eyes of both the divisions and Head Office. Indeed, a major input into these discussions would be the division's forecast credibility rating, as determined via the variance categorisation system (Appendix C2). This rating would be derived via a number of measures which take into account, among other things, the uncertainty operating on the divisions. Divisions with low ratings would, for example, find it more difficult to obtain additional funds to generate any additional profit.

Section 2.7 discusses the need for objectives to be participatively agreed, while section 7.4.9 shows that most Dunlop divisions adopt a largely autocratic approach to this problem. Budgetary Planning aims to reconcile these two approaches by breaking down the overall divisional goals into market/unit goals. It achieves this by an iterative dialogue between the division's G.M. and his managers. However, this is only a recommendation, as some divisions may find that such an approach would not fit their organisational style.

(iii) Funds allocation

Research into the methodology of funds allocation by Allen (1980) showed that generally the systems were extremely weak. As ex-Vice-President of Planning in General Electric, he believed that General Electric's success in translating strategic priorities into operating plans was because the resource methodology worked in such a way that it supported, rather than frustrated, implementation. The evidence produced in this research (7.5) suggested that Dunlop's current system actively frustrates implementation.

It is fallacious for Dunlop to agree a strategy without actively considering the funding aspects of that strategy. This normally leads to financial support being withdrawn after several months of implementation on the grounds that sufficient funds are no longer available. However, it would be equally fallacious to believe that changing environmental circumstances do not affect the level of Group funds available, or the level which ought to be allocated to a particular division. In an effort to avoid this problem, Budgetary Planning utilises the facilities of three levels of funding described in section 8.3.3.

Under this system, Corporate Planning will vet the strategies in April/May, specifically considering the funding implications on a Group basis. Using a portfolio categorisation system (Appendix B2) which specifically considers forecast credibility, the Board, via Corporate Planning, will allocate funds. In the first year the system operates, by far the majority of divisions will receive the level one allocation, to enable them to implement the agreed level 1 strategy. However, in exceptional circumstances, levels two or three may be allocated at this time.

With subsequent years within the Strategic Plan Period, a change in the Group environment (for example, an unexpected downturn or upturn in several divisions) or the environment of a particular division (for example, unexpected market opportunities) may cause the current level of funds allocated to be inappropriate. In such circumstances, Corporate Planning would review the situation and recommend a shift to the appropriate level of funding and consequently the division would implement an alternative, but previously agreed, strategy.

Forecast credibility categorisation will have a considerable influence on which divisions receive which level of funds. For example, divisions who have consistently failed to "deliver the goods" and who have high values of systematic error, will find it extremely difficult to obtain any surplus funds for a level three strategy. Likewise, it is much more likely that they will be among the first to shift to a contraction strategy - level two.

Dunlop has recently moved to a cash flow system of funds control called the Cash Conservation Scheme (3.5.5), which links the funds allocation to achievement of planned cash generation. Although this system has much merit, it is in some respects inflexible and does not take into account uncontrollable volume shifts. In order that these might be included, divisions, as part of their Strategic Plan process, should negotiate working capital to turnover ratios. This would mean that volume gains would only be accommodated either by efficiency increases, or up to any increase in the working capital ratio which may have been allocated. Falls in turnover would result in a proportional fall in working capital.

The basis of the proposed funds allocation system is that while only divisions have sufficient knowledge to construct the Plan, only Head Office has the overall perception required to allocate the funds.

(iv) Macroeconomic Assumptions

The system for producing basic economic assumptions has operated for several years without major change. At present, the assumptions successfully provide a frame of reference for the Management Plan by outlining the macroenvironment, thus ensuring that upon consolidation the individual Plans are compatible; each being based on the same assumptions.

In the past, an apparent problem has been the difficulty management has experienced in relating the macroeconomy to their part of the industry (7.4.4). This may in part be attributed to the lack of forecasting model development, where it is commonplace to look for causal links between the macroeconomy and the individual firm.

The author's experience suggests that the only exception to this picture is the inflation assumptions, which, probably because of their direct impact, are taken very seriously. However, divisions should recognise that other macrovariables can have an equally significant, if not so immediately direct, impact. In particular, such variables allow divisions to consider, for example,

environmental ramifications, which are outside their immediate market but affect markets which interplay on their own. Hussey (1979) suggested that:

"Many require special help to enable them to make this conceptual leap: the reasons are that it represents a different thought process from the way in which managers normally make their day to day decisions, the uncertainty surrounding the forecasts and the future in general leads to a reluctance to consider the possibility of change, and the format of the "hard" data may be far removed from the "soft" data on which managers generally take decisions." (p.11)

If managers are to make this 'conceptual leap', the data should be presented to them in such a form as to allow ease of access to those concepts.

To date, the selection of indicators has largely been governed by ERD's perception of divisional requirements. On occasion, this appears to have led to some of the indicators being too far removed from the divisions needs (7.4.4). In order to alleviate this problem, an aim of the Planning Consultancy Teams will be to ascertain any requirements which divisions may have for specific indicators. However, it is not a role of ERD to supply specific market information, such a task should remain the specific responsibility of the division.

Similarly, as the problem of economic assumptions is a specialised task, it is intended that ERD should offer a direct consultancy service on all aspects of economic planning assumptions¹. And likewise, in order to assist ERD in determining the importance of indicators, as well as to help with monitoring of the assumptions, divisions will be required to state, where possible, the key indicators for each major market.

1. In particular advice on territories, which is at present offered to divisions, will be more widely publicised as a service.

Unlike in the Management Plan System, divisions will not be forced to use assumptions which they consider to be unrealistic. However, if they do use alternative assumptions, a coherent argument should be included as to why this is so and exactly what the assumptions are. Adjustment at the Centre to ensure compatibility can then be made.

Because of the apparent difficulty experienced by divisions in relating the macroeconomy to their markets, and in an attempt to get top management to consider the assumptions in all aspects of their planning functions, certain minor format changes are proposed. It should be noted that many of these modifications are of a cosmetic nature in order that this subsystem will mesh with Budgetary Planning.

(iv)a New Format for Economic Assumptions.

The Outlook for the UK Economy, as the name suggests, contains not only macroeconomic forecasts but also a narrative discussing the assumptions and general economic trends upon which those forecasts are based¹.

As at present, the report will be briefly prefaced, outlining its contents, but rather than the main body being a continuous narrative, the individual assumptions will be delineated by separate headings. This allows not only better understanding of the document, but also makes it a more efficient reference document.

The sections will broadly cover the same ground as at present: General Review of the Economy; Government Policy; Prices and Wages; Consumer Expenditure; Capital Investment; Vehicle Production; Exchange Rate; and GDP. However, prevailing economic conditions may require special sections to be introduced on a one-off basis.

1. The assumptions for the 1981 Management Plan also contain a report covering worldwide prospects. This covers, in particular, Europe and major Dunlop markets outside Europe.

Although the basic content and headings will remain the same, rather than being a discrete document, these sections will explicitly consider, among other things, changes from the assumptions produced for the S-Plan.

Under each of the headings it is proposed to introduce a graph(s) showing the trend over the past five to seven years¹ and a projection forward of the next three². As it is trends and turning points that should primarily concern planners³, the introduction of graphs will help visualise the salient points of the trend in an easily absorbed manner.

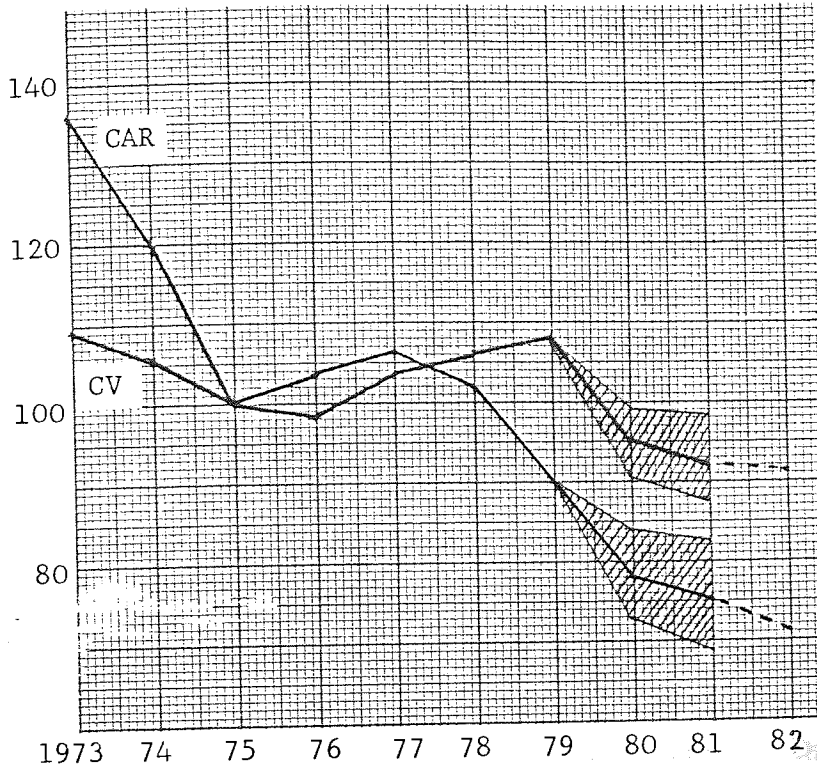
The extension of the forecast horizon for assumptions from one to two years is again tied in with the concept of Budgetary Planning. As Budgetary Planning is involved with strategic implementation, a longer term view of economic assumptions is required to ensure the basis on which the strategy was constructed is still valid. Any changes which have occurred may well affect the tactical implementation of a particular strategy. Thus the Budgetary Plan can be seen as a method of "fine-tuning" the strategy to meet changing circumstances.

The revised format will thus be a collection of graphs and assumptions under various headings. An example of how this will look is given in table 9.1.

1. The length of time the past trend should go back depends largely on what has happened to the trend. However, as macroeconomic assumptions are cyclical, it should include at least five years so as to display a complete business cycle.
2. ERD produce their forecast in July when only one quarter's past data for that year is available. This is often of little help in forecasting terms so the forecast for the rest of the year is generally regarded as being an annual forecast.
3. The days of flexibility in large companies is rapidly disappearing as economies of scale and large scale investment programmes become commonplace. Even in tactical terms, committing resources in one way rather than another usually has longer term implications. This longer timescale, with estimates of trends and turning points should be considered during the planning stage in order to assist in decision making.

Table 9.1

Selected Economic Indicators - Vehicle Production



This graph uses an index of production where 1975=100. The cross-hatched area represents the degree of uncertainty surrounding the forecasts. Thus they provide an indication of the possible variation to which the Plan should be resilient.

Assumptions and Comment

CAR

New car sales will continue to slump because of increased import penetration and the effects of the recession, particularly in the business sector. Vauxhall will produce only CKD, and Talbot will be forced along similar lines. Thus, even with the growth in car sales, UK production will slump (particularly with the perpetuation of the strong pound). It is assumed that no import controls will be introduced during the period.

CV

Again imports are eating into the home market, but this time at a much slower rate. Light trucks, however, look to be fairly buoyant but local manufacture in LDC countries may severely affect exports.

As many Dunlop divisions are very diversified, suggesting the existence of several fringe markets for which little direct information is available, a disaggregated forecast of industrial production would be of some use to the planning. Like other forecasts, this will be a two year projection.

The idea of this disaggregation is that it allows divisions to make broad predictions about more minor markets (in that they are industrial sector projections) as well as allowing them to check the Strategic Plan market assumptions. Similarly, the disaggregated forecast may go some way to supplying the divisions with more directly relevant indicators, thus assisting them in making the aforementioned 'conceptual leap'.

Ideally the inclusion of more than one scenario would be extremely helpful for planning in these uncertain conditions. It is however recognised that it is both expensive and difficult to produce more than one scenario at a time. The inclusion of broad probability estimates on the assumptions, as shown in the example, goes some way towards accounting for this uncertainty.

(v) Materials and Exchange Rate Assumptions

Traditionally, these assumptions have simply been a list of the materials and currencies, (as required by the divisions) with forecasts for the latest estimates and Plan year. In the future, in line with Budgetary Planning, this will be extended for another year.

Similarly, the basic assumptions on which the forecasts are based will be provided. Indeed, ERD are at present developing econometric models which will be employed to forecast several currencies, and in this case both the models and the assumptions will be provided. By supplying these basic assumptions, divisions can appreciate the factors considered critical in making the forecasts, and also they help in monitoring the forecast throughout the year.

As with the economic assumptions, some broad probability assessments will be given with the forecasts. Also, some attempt should be made to forecast exchange rate turning points for inclusion in the divisional monthly breakdowns.

(vi) Variance Analysis of Individual Divisions.

Also included in the preplanning booklet, for each individual division, will be an analysis of their variance in their forecasts over recent years. Such analyses will follow the example shown in Appendix C3 and will analyse the individual components of the error. In particular, this analysis will consider improvements or deterioration in the divisional performance on a year by year basis.

(vii) Proforma Schedules

To enable ease of reviewing and compatibility, a standard set of proforma financial schedules are used for the budget section of the Plan. Although with rationalisation and computerisation the minimum financial requirements in the M-Plan have been substantially reduced, divisions still complain of repetition in the schedules (7.4.12). In order to alleviate this problem, Budgetary Planning uses a computerised financial model to develop the financial schedules from a few sheets of non-repetitive divisional data. This will represent the absolute minimum budget section requirements. However, it is expected that divisions will voluntarily actually submit their own mainly management accounting data. Broad guidelines will be issued as to what this should include, but it is entirely at the discretion of the divisions as to what is submitted. Divisions who do not submit sufficient data to support their Plan will be asked to resubmit. Equally, the divisions will be reminded that, in planning, conciseness is a virtue.

The narrative schedules will also be modified to fit in with the concept of Budgetary Planning. In general, they will be more oriented towards describing the tactics required to implement the strategy in the light of current events. The exact contents of these schedules is described in section 9.11.1.

Once a division has received the preplanning booklet, their Budgetary Planning Cycle can begin.

9.4 Introductory Team Spirit Talk

The introductory planning talk by the General Manager to all those involved in the Planning System is an all too often overlooked task¹. The concept of such a talk is that it will help in ensuring, among other things, the pursuance of the participation theme within Budgetary Planning, even within the more autocratically run divisions. In order for this to be achieved, the meeting should take place at the very start of the planning cycle, however further meetings, perhaps of a more seminar type, may be useful actually during Plan development.

The overriding aim of the talk is to get everybody who is involved in planning thinking in a co-ordinated manner along the same lines towards the same objective. However, several other aims exist, and the following is a non-exhaustive list of examples:

1. To introduce the concept of planning in order to ensure it is not viewed as a pointless top management exercise (Hussey, 1974). Although generally, throughout Dunlop, there appears to be a commitment to planning, there still seems to be some resistance towards the concept².
2. To outline the proposed planning programme and distribute the preplanning booklet. Likewise, the division's Planning Committee should prepare the Strategic Plan Paper, which can be attached to the booklet.

1. Although, in Dunlop, no division formally operates an introductory talk, the Dunlopillo Marketing Plan Presentation (7.2.4) has several similarities to the ideas being proposed here.

2. An often mentioned attitude in Dunlop is "we spend too much time planning and not enough time actually running the business." This in part can be attributed to the inefficiency of the planning system but the existence of such attitudes suggests that management are misconceiving the purpose of planning, which is to help in running the business in a certain way. An outline of section 2, which describes planning theory and its benefits may be of some help to set the scene.

3. To review progress against the Strategic Plan and restate the long term objectives and strategy.
4. To describe the present state of the gap existing between the trend and the objective.
5. To indicate progress against the present M-Plan.
6. To give a preliminary outline of any major threats and opportunities already perceived in the coming year and their possible effects on the division, such that the planning programme might encompass them.

The talk also formalises the starting point for those not directly involved in mainstream planning as well as expediting communication, by feeding everybody the same information at the same time. Such communication helps considerably in reducing queries later, and will help in the long run in the drive towards more open management.

Finally, the team spirit talk offers top management the opportunity to display their commitment to planning. The need for this commitment is well recognised in the literature, Andrews (1971) and Steiner (1969) are particular proponents. For example, Steiner states:

"There can be no effective comprehensive corporate planning in any organisation where the chief executive does not give it firm support and make sure others in the organisation understand his depth of commitment." (p.88)

Once the team spirit talk has been conducted, the first stage in actual Plan development is to examine performance against current Plans in some detail.

9.5 The Performance Review

The performance review is essentially concerned with the analysis of two areas: the implementation of the current Strategic Plan, and the likely out turn of the current Budgetary Plan. Of interest in both these areas, but particularly to the more quantitative Budgetary Plan, is some assessment of forecast accuracy.

Within the M-Plan System, the starting point for Plan development is the current position of the division. Budgetary Planning places less emphasis on the current position, taking a more forward thinking approach. The particular year's goals are used as the starting point for planning, rather than some current or past position. Even so, it would be fallacious to produce a new Plan in isolation without considering past and present performance and trends.

9.5.1 Latest Estimate Review

The review of the current year's Budgetary Plan (called latest estimate) involves taking the most up to date position, usually the September review, extrapolating this forward and including all known facts (price increases, cost changes, volume shifts, etc). This first shot review need only be in broad terms in order to get an idea of current performance against Plan. The detailed latest estimate figures which appear in next year's Plan will have to be calculated at a later stage as strategic implementation may well affect current projections.

It may also be helpful to rough out some broad figures to summarise each product area, as for example in schedule table 9.2, in order to get some idea of individual products trends.

9.5.2 Review of Progress Against Strategy

The second stage of the performance review, the implementation of strategy, is much more important in terms of Budgetary Plan development (Roush and Ball, 1980). Ideally, a strategy should operate until it has achieved its objective within the timescale of the Plan. This means that for a major long term strategy, the S-Plan could well operate for several years. Experience in the Corporate Planning Department suggests that this ideal, unfortunately, rarely occurs, perhaps because of a lack of planning ability. An often quoted comment of Dunlop managers is, "the Plan is out of date before it is even written". This, however, is not a failure of the Plan, but of the planning system, as it does not make strategies sufficiently resilient to the rapidly changing environment.

At present, in many Dunlop divisions, the strategy is rewritten annually, thus strategic monitoring is less significant. A few divisions have kept the same strategy for a number of years, and hopefully this will become more common as planning competence increases. In such cases, monitoring and reviewing of progress becomes particularly important if efficient implementation is to take place, as this allows divisions to see exactly where they are in relation to their long term objectives.

The Strategic Review, which is the responsibility of the Planning Committee, analyses the progress against objectives and the extent to which the strategy has been implemented. At the end of the review, the Planning Committee should be able to tabulate some broad conclusions concerning progress against strategy. For example:

The objective of increasing turnover to £15 million by 1984 via a combination of "real" price and volume increases and mixed changes now looks unrealistic because of the failure of laminated hose to achieve 15% annual growth and a 25% contribution (this being a goal to be achieved in early 1981).

The strategy of expanding in the DIY motor repair market looks like being successfully implemented, with our market share growing from 15 to 22% before the target date of mid 1981.

The reduction of employee costs as a proportion of value added still appears to be broadly on course, with employee costs now being less significant than material costs.

Each strategy and its goals will be examined in such a manner that the realism of the overall objectives (which will be in the form of probability ranges) can be effectively assessed.

Product Analysis - Latest Estimates

PRODUCT	TURNOVER		MARKET SHARE		CONTRIBUTION		%age of total Contribution	Competitors	Supporting Comments
	PLAN £K	L.E. £K	PLAN %	L.E. %	PLAN £K	L.E. £K			
Skyline Hose (24 types)	1,450	1,230	27	27	420	380	28	Beaumont have adopted an aggressive strategy to capture market share.	In order to maintain market share prices have been cut in 15 types. Efforts to maintain contribution have centered around overhead reduction.
Ridged lock (4 types)	950	1,300	70	85	250	370	27	Fairbrother are looking less threatening as they have failed to develop a comparable hose.	This new product has been exceedingly well accepted by the market in a relatively short time.
Duraline (3 types) ETC	750	740	7	6	120	110	8	Associated Plastics have launched their new line and are commanding an increasing share.	In this low contribution line it is becoming more difficult to sell outside the rapidly contracting auto industry.

9.5.3 Analysis of Variance

The preplanning booklet supplied by Head Office (9.3.3) includes an analysis done by Corporate Planning of variances appearing in each divisions' recent Budgetary Planning forecasts. This analysis should form the basis of the divisions own variance analysis, done along similar lines to those described in Appendix C3. However, unlike this example, the divisional analysis should be done in much more detail and perhaps should be broken down into a market or sector analysis. Similarly, the analysis should not just be concerned with analysing statistical trends in the error, but would be more concerned with why these trends have occurred. This would probably require some form of behavioural analysis of the forecasting system.

The aim of this analysis is not to have a "witch hunt" of poor forecasters, but to isolate factors which ought to be considered in making future forecasts. The individual forecasts in any case, will almost certainly have been discussed in some depth at the monthly board meetings, and other such similar meetings.

Specifically, this analysis should concern itself, via Theil's coefficient, with ascertaining how much better present forecasting techniques are than a naive model. Clearly, divisions not making substantial improvements in accuracy terms against a naive model over a period of time, should consider drastic modifications to their forecasting techniques. Similarly, Theil's coefficient should be compared against the mean absolute error in order to gain some idea of the inherent variability operating on the division, thus showing the difficulty the division experiences in forecasting.

The analysis should also involve a decomposition of the error (Theil's decomposition) in order to identify systematic influences such as consistent overestimation. Likewise, most important, is a consideration of the accurate forecast of turning points. Divisions should also be aware of any relationship that exists between errors in one variable and errors in another variable, for example growth in turnover and errors in return (6.8).

This comprehensive analysis should give the division some idea of where its forecasting strengths lie and in what areas they need strengthening, as well as whether things are improving or deteriorating. Also, by considering error in such a formal manner, it may help to give some appreciation of the uncertainty surrounding the forecast, thus allowing some probability statements to be made and hopefully encouraging the divisions to produce more resilient Plans.

9.6 The Momentum Forecast

The momentum sales forecast is the base point for planning being a simple extrapolation of natural growth adjusted for known influences and previous Plans. In other words, where will the business be if no strategic planning input is present. It is thus an essential step in linking the Strategic and Budgetary Plans as it allows divisions to see the exact effect of strategic implementation.

This approach is well known in strategic planning and is used, in particular, in gap analysis¹. However, it also has a useful role in Budgetary Planning as it assists management in monitoring the effect of Strategic Plan implementation.

In particular, the momentum forecast can be compared against goals and funds constraints to give some indication of the type of tactics required to implement the strategy in order to meet the goals. For example, when laid down, a strategy of diversifying into the Motor Factor market, might envisage the environment changing in one way rather than another. Later events may show these assumptions to be incorrect and thus a change of emphasis, achieved through tactical implementation of the Plan, might be required if the overall objective is still to be met. So, for instance, with the above mentioned strategy, the acquisition of a sales manager and marketing team might now be more appropriate than mere internal growth. The degree of change which has occurred can be measured by examining the gap envisaged when the strategy was constructed, with the size of the gap at the time of the Budgetary Plan. In this way, the momentum forecast helps the divisions consider changes from trends, that is turning points.

1. cf Argenti, (1974) Chapter 5 for a discussion of gap analysis.

To construct the momentum forecast, recent trends in sales and any given information from salesmen concerning major changes in customers should be taken into account. Similarly, price changes which have previously been planned, plus relevant economic indicators or known Government legislation should be considered. An approach similar to that employed in Dunlopillo (7.2.3) of using costs and prices set at beginning of year levels (7.2.3) might also be considered here. This would allow the effect of inflation to be seen, as well as allowing various price and cost combinations to be tested at the tactical alternatives stage.

In the more sophisticated divisions it may be possible to consider some broad probabilities around the momentum forecast (for example, best estimate, most favourable, least favourable) in order to get some idea of the uncertainty to the markets. Generally though, simple techniques for constructing the momentum forecast (for example, extrapolation perhaps via naive models) should be used. The aim is not to produce a detailed forecast but only to get a broad indication of what might be achieved without a strategic input.

Having derived a rough sales forecast, a broad quantitative estimate of the major parts of the Budgetary Plan should be obtained. This estimate need only be in the roughest form, possibly based on past variable and fixed costs formulae escalated for inflation. Its use is merely to obtain a "first-look" profit to see if the Plan broadly achieves the goals within the funding constraint. By using this "first look", the degree of planning required to fill the gap, and thus achieve the goals, can be determined.

The next stage then, having obtained a momentum forecast, is to examine the proposed strategies from the Strategic Plan to fill the gap.

9.7 Review of Strategic Assumptions

9.7.1 Introduction

Having projected sales in the momentum forecast and determined the likely size of the gap for various goals, a comprehensive review of the environment should be undertaken. This will allow the division to assess the extent of any change in the assumptions upon which the

strategy was based. This review is aimed at revealing changes in the environment which may assist in developing alternative tactics for strategic implementation. In the extreme case, it may reveal that the strategies are no longer realistic enough to achieve the desired objectives.

The recognition that changes in the environment can affect plans has been stressed by several authors. Hussey (1978) isolates the importance of monitoring by stating that:

"Assessments on which plans were based must be continually monitored, tested for validity, and if necessary reforecast." (p.9)

Likewise, Hughes (1978) suggested monitoring continually to gain "assumption control".

In terms of actually executing the review, as many people as practically possible should be involved in order to aid the participative element of planning. As far as the internal environment is concerned, this means including representatives from nearly all departments. The objective here is to ensure all relevant factors are covered. It is only at a later stage of consolidation that one needs to consider which of the internal strength and weaknesses or external threats and opportunities are significantly important to affect planning.

9.7.2 Monitoring Environmental Assumptions

In order to avoid planning in a vacuum, an awareness of changing conditions in both the internal and external environments is vital. As the division should know "where it is and what it has". The objectives and goals have been set in the light of certain environmental assumptions and these should be checked to see if they are still valid. Changes in the assumptions may mean a quite different approach is required to implement the strategy than was originally envisaged in the S-Plan. Such concepts link into Taylor's (1976) argument that one of the functions of planning is as a framework for innovation (2.2).

Although the interplay between the division and its environment is critical to its future direction, actually describing the relationship can be extremely difficult. It is customary in strategic planning to describe the environment in terms of the dichotomy between external and internal factors. For this reason, when reviewing the current developments within a Budgetary Planning System a similar style is adopted.

The objective of environmental analysis is to systematically scan the environment for changes and issues which may cause the strategy to be implemented in one way rather than another. Similarly, one should not discard the possibility that changes might be so severe as to question the validity of a particular strategy.

Essentially, the review is concerned with two factors. Firstly, do the strategic environmental assumptions still hold, and secondly, have any new environmental factors become critical in the intervening period between the Strategic and Budgetary Plans. This, therefore, involves a complete re-scanning of the whole environment.

9.7.3 External Environment

By their very nature, external factors tend to be less controllable than internal factors and thus manipulating them in practical terms is usually difficult. Similarly, being removed from the everyday pressures of the internal environment, there is a tendency for management to overlook the external environment.

The majority of external factors will probably act as constraints on the Plans, but planners should always try to find opportunities within these constraints. It is often possible to view a problem from a different angle in order to see an opportunity, particularly in the longer term.

Although Head Office supply political and economic trends for the Management and Strategic Plans, as well as "business trends"¹ for the Strategic Plan, as Dunlop is so diversified (both geographically and product-wise) only the divisions are in a position to review their environments in the light of their own situation².

The major problem that exists in Dunlop in relation to external environmental analysis is relating the broad factors to the specific actions of the division. This is by no means an easy task. As McCarthy et al (1975) point out there is a danger to

"only consider the direct effect of 'current events' on the organisation without making a careful and detailed assessment of general economic and specific 'industry' conditions. With such a myopic view, important changes and developments are often neglected and faulty assumptions usually of a "status quo" nature are made about others. Such an approach can be fatal at worse, and cause severe problems at least." (p.189)

Similarly, certain aspects of the external environment may be extremely broad and may take considerable time to affect the division. And as Taylor (1976) points out

"Managers typically concentrate on matters for which they are criticised or rewarded. The manager is likely to ask himself who is likely to get promotion. Manager A who develops social programmes and builds social acceptance for the company, or manager B who gets 10% over his annual product profit or productivity figure."

The answer to this problem must be largely a matter of education and system design. Hopefully, in that the Budgetary Planning System emphasises these more strategic aspects of management, the System itself may help to reinforce the point.

1. Business trends includes technological, political, social and labour factors.
2. Check lists for external environmental factors can be found in several books cf for example, Higgins (1980) p.85.

9.7.4 Internal Environment

Once the external environmental assumptions have been reviewed, thus setting the broad boundaries and constraints acting upon the firm, the internal environmental assumptions should be re-examined to ensure that they are still viable. The review of the internal environment aims to assess the division's strengths and weaknesses in the light of its competitive position. Thus monitoring of this environment is designed to reveal significant alterations which may affect the division's Plans. As McCarthy et al (1975) put it:

"The internal analysis should tell the analyst what the company is capable of doing; what it has resources to do. This might well be different from what it is doing or what it wishes to do." (p.107)

As with much of the external analysis, large parts of the internal analysis will be done on a continuous, perhaps, informal basis. Likewise, because it is desirable to examine as many of the firm's functional areas as efficiently possible, even monitoring the internal environment assumptions can be a lengthy process. Denning (1971) outlined the extent of this analysis.

"The aim of an appraisal of this nature is to gather together in summary form the major parameters which define the company as it currently exists and to establish among these parameters where the company is strong, where it is weak and what real resources it has to deploy in exploiting its strengths in the light of the (external) environmental appraisal." (p.12)

The list of possible areas to be monitored is virtually endless, as factors which were not considered critical in the strategic appraisal may have become so. In order to ensure all areas are covered it is perhaps advisable to supply those involved in the review process with a list of internal factors¹.

1. Several texts offer a suitable check list of internal environmental factors. For example, W.T. Greenwood's "Business Policy and Management Audit Approach." New York, MacMillan 1967. R.B. Buchele "Business Policy in Growing Firms" San Francisco. Chandler Publications 1967.

In recent years, competitor analysis has been increasingly stressed in Dunlop's planning guidelines and thus the market strengths and weaknesses analysis has become a particularly important factor. It is a moot point whether such competitor analysis should be examined within the external or internal environment. The line taken in Budgetary Planning has been to consider the analysis under the internal environment, but for logistic reasons to present it under the external environment in the Plan.

9.7.5 A Practical Method of Environmental Monitoring

Scanning of the environment is not something that can be done quickly but should be a continual process which involves setting up some formal scanning and reporting procedures. An obvious problem here is deciding which of the enumerable factors should be considered and to what depth they should be examined.

One solution to this problem is for the Planning Committee to construct and maintain a data base for planning. Such a solution recognises that Plans do not just materialise, but must be developed from detailed analysis. Research by Allen (1980) suggested that this was a particularly weak area of planning and resulted in

"plans that use verbose essays in place of quantified understanding of the business".

The data base within a Budgetary Planning System might include financial and other quantified data on the operations, key assumptions (including those centrally supplied), environmental assumptions and specifically customer and competitor profiles.

Hussey and Langham (1979, pp.164-168) discussed a methodology for appraising environmental issues which although not revolutionary or innovative, does give a practical approach to this task. Their system included:

- i. A preliminary selection done on a judgemental basis.
- ii. An analysis of the current state of each factor and its relationship to the firm.
- iii. A forecast of the development of each factor. This may be quantitative (as in a forecast of GDP) or judgemental (as in the course of a particular area of legislation).
- iv. Relating the forecasts to the firm, which they claimed, requires a mixture of intuition, analysis and a type of behavioural approach.
- v. Screening out of the less important factors leaving only those which really count.

Budgetary Planning largely adopts Hussey and Langham's approach, but their last factor needs some clarification in the form of criteria in order to make the approach consistent. The criteria to be considered in such a screening process may vary from division to division, but should include the following:

1. Are the factors which were considered important in the Strategic Plan still likely to have a significant impact?
2. Has the degree of impact changed at all since the Strategic Plan?
3. Is the factor likely to have a bearing on decisions to be taken in the Budgetary Plan?
4. Are any new factors likely to have a significant impact which was not foreseen in the Strategic Plan assumptions?

This final criteria is by no means any easy one to evaluate. Hussey (1978) suggests that the approach should be to:

"Screen out all that are not vital to the thinking that goes into the plan. The purpose is to aid the development of plans and their implementation not to demonstrate a great shopping list of activities of the planning department." (p.12)

Also, as noted earlier, management are generally not particularly successful at assessing the impact of environmental factors, on their division, tending only to perceive the direct impact of assumptions. Again, as Hussey points out:

"A change in the rate of interest is not simply another number for accountants to play with: it may also effect consumer disposable income, or purchases by companies, and thereby affect demand."

Check lists or key questions may help, but more importantly planners should be educated to see the relationship between their business and the environment. This is a role for the Planning Consultancy Teams.

An example of how this form of analysis might be displayed is given in section 9.11.1 in table 9.4.

As a major aim of Budgetary Planning is to develop realistic plans, the System must recognise that changes in the environment, since the Plan was developed or reviewed, occasionally completely nullify the strategy, objectives or goals. If this occurs, and the changes would be so great that it would not require a review of the environmental assumptions to reveal it, the division should resubmit their Strategic Plan. Such a reappraisal would hopefully occur sometime before the Budgetary Planning cycle begins, and would involve considerable dialogue with Head Office over revised strategies and objectives.

Once the process of reviewing the internal and external environments is complete, the division can then start the process of generating alternative tactical policies in order to implement their strategy within the currently predicted environment.

9.8 Generation of Tactical Alternatives

The review of the environment and the momentum forecast should give the division a clear picture of where it lies in relation to its strategy and objectives and the degree of difficulty it might encounter in achieving those objectives and medium term goals.

If Budgetary Planning is to operate successfully in a division, it is at this stage that its influence can be most pronounced. Tactical alternative generation is where the creative aspect of planning exists. Under the Planning and Control Theory (2.2), management should generate alternatives which manipulate their internal (and thus relatively controllable) environment to act towards their external (and less controllable) environment. As section 2.2 points out, it is the generation of alternatives that forms the central core of planning, for without alternatives there is no reason to plan.

The process of alternative generation can represent the difference between success and failure of the strategy. It is important to consider a wide range of alternatives rather one course of action which is applicable to only one set of circumstances. These alternatives should deliberately take into account the various levels of uncertainties surrounding the environmental assumptions and should thus make the Plan more resilient to change.

9.8.1 Process of Tactical Alternative Generation

As lower management has been involved in the review of the internal, and possibly external, environment they are probably best placed to start the job of tactical alternative generation. Such an approach goes some way to fulfilling the participation aspect of Budgetary Planning. Perhaps the best method of achieving this involvement is in teams, where synergy often helps to improve creativity. Dyson and Foster (1980) quote a methodology by Rosenhead and Best (1980) who use a variant of the Delphi approach by splitting management into subgroups of polarised ideas and pursuing each to its natural conclusion.

The process of alternative generation involves, more than anything else, creativity and flair. Unfortunately, the concept of creativity has taken on somewhat "trendy" connotations in terms of techniques (for example, brain storming, lateral thinking, random thought generation, etc.). However, the concept should not be overlooked because, as Steiner (1969) puts it:

"Among all the elements entering into planning and making of plans there is not likely to be any argument about the fact that creativity is the most important." (p.252)

Because the generation process involves creativity it cannot be forced, although certain techniques may assist.¹ In particular, the environmental analysis is of some assistance as this has isolated the variables which are viewed as being critical to strategic implementation.

The procedure then, to actually generate alternatives ought to include:

1. An examination of the strategies which are to be implemented.
2. An examination of the summary of performance against previous Budgetary and Strategic Plans for financial strengths and weaknesses.
3. An evaluation of the forecast changes in the environment and their effect on strategic implementation, and particularly assessing the uncertainty surrounding any environmental assumptions.
4. A consideration of the degree of difficulty which might be experienced in achieving these objectives.
5. A consideration of methods which could be employed to counter new threats and weaknesses and exploit new problems and opportunities which have been revealed by the review of the environment.

The overall aim should be to generate as many ideas as possible, bearing the mind that a large number of tactics might often be required to implement the strategy, particularly in a rapidly changing environment. No vetting should take place at this stage as this may stifle creativity.

9.8.2 Evaluation of Tactical Alternatives

Once management have generated sufficient tactical alternatives¹, they should be fed to the Planning Committee who would have a co-ordinating, evaluating and selecting role. By involving the Committee in such a role, a bottom-up/top-down mixture is achieved.

The co-ordinating role of the Committee helps ensure that there is a good internal fit, without contradictions, of all the selected alternative tactics. While the evaluating role involves the team in comparing competing tactics against certain predetermined criteria. These criteria may vary, but should include:

1. Does the tactic actually implement a strategy?
2. Does the tactic modify the strategy such that it is still capitalising on opportunities, averting threats, overcoming weaknesses or exploiting strengths in the light of the current environmental assessment?
3. Does it achieve the desired goal within the environment and within the required timescale?
4. Is it possible to be carry it out with the resources available, and does it make best use of those resources?

1. What can be termed sufficient can only be intuitively defined depending on the level of uncertainty in the assumptions.

5. Is the tactic resilient to a wide range of possible environmental events? That is, can it accommodate a degree of uncertainty in the assumptions. This process of resilience testing can be achieved by continually questioning the assumptions. For example, "what happens to the tactic if the exchange rate falls by 10 points against the assumption?" It is at this stage that "what if" computer based financial modelling (Appendix D4) can make a major contribution as it allows numerous different assumptions to be tested and 'run' extremely quickly.

6. And linked to the previous point, is the level of risk acceptable?

When the tactics have been tested against these criteria, certain ones may be viewed as being more beneficial than others. In order to determine this, Martin (1978) suggests using a subjective type of cost/benefit analysis to indicate which of the options yield the best improvement over the momentum forecast. He claims that where such analysis is done collectively by a management team it should yield a result which is within 85-90% accurate. However he offers little practical advice as to how this might be achieved.

Within the Budgetary Planning System each tactic is viewed in competition with every other tactic and is presented in the form of a decision package.¹ These packages should include an outline of the expected return or result of the tactic, an estimation of its financial cost, its drain on the resources, and some form of an evaluation of the effect of the package on the advancement towards a particular strategy or goal. Also, some subjective probabilities should be attached to these to indicate the degree of uncertainty surrounding the forecasts.

... have been generated, it is up to
... will automatically be
... in terms of an evaluation
... 2.3.

1. This type of analysis borrows much from zero based budgeting.

Once these decision packages have been evaluated, they should be ranked on the basis of this evaluation, and then the Planning Committee should give a full quantification of the tactics which look most promising. This quantification, which should be done in tabular form to allow ease of comparison, should include some broad indication of performance, impact on resources and the degree to which the objectives are achieved.

9.8.3 Example of Tactical Alternative Evaluation

The following is an example of how the proposed system of evaluation might work in a Dunlop division.

Strategy 4: Bring profitability into line with the rest of the industry (i.e. 20% CCA return) by 1985 through (i) a comprehensive and substantial cost effectiveness programme, (ii) etc. etc.

Proposed tactical alternatives in pursuance of the strategy 4(i) in 1982:

- (1) Rationalise mixing.
- (2) Review wage structures.
- (3) Identify precise standards for sectors of the business.
- (4) Close down paint shop and contract out.
- (5) Reduce heating bills by improving insulation.
- (6) Find market for lint waste.
- (7) Reduce waste level.
- (8) Reduce manning in the assembly shop.
- (9) Restructure administration department.
- (10) etc., etc.

Once all the feasible alternatives have been generated, it is up to the Planning Committee to evaluate them. Some will automatically be knocked out as being incompatible, but an example of an evaluation of the above alternatives is given in table 9.3.

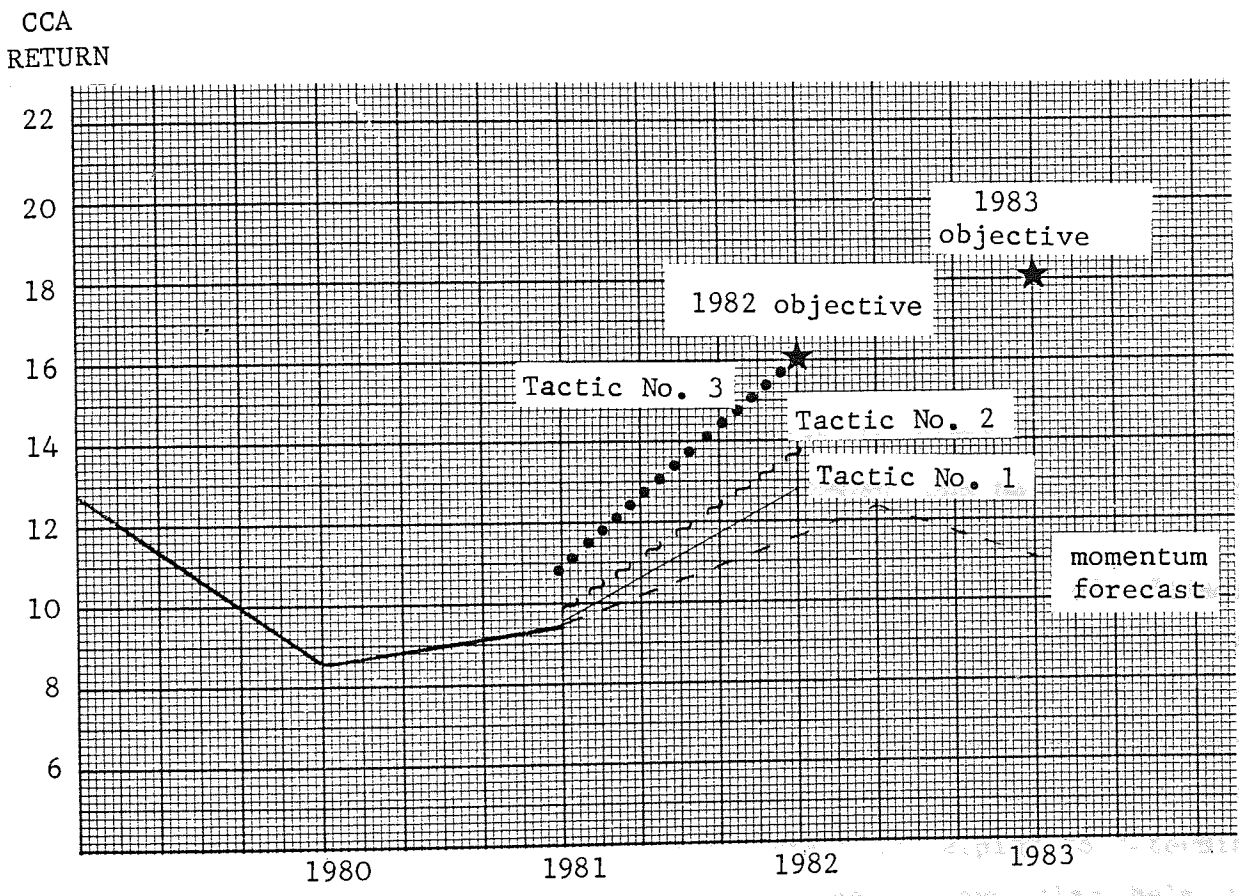
TACTICAL EVALUATION

Table 9.3

STRATEGY 4(i)	TACTICAL ALTERNATIVES		
Evaluation Criteria	1	4	6
Environmental Changes	In line with assumptions	In line with assumptions	3rd Oil crisis has made lint waste and economic fuel
Resource Requirements	4 man saving by closing M10. Capital saving, by reducing to one M8, of £50K	2 man saving £20K O/H saving. 2000 sq. ft. liberated for new production line	¼ man saving on tip delivery 1000 sq ft storage space
Financial Implications	£210K p.a. increase in profitability via cost reduction in first year £5K installation and disruption £20K	£40K increase in profitability via reduction in costs. Cost: £12K redundancy. £20K p.a. paint contract £2K decrease in working capital	£14K p.a. for sale of waste plus £8K reduction in tipping costs p.a.
Subjective Probability	85%	80%	65%

Once these have been evaluated in this manner it is then the task of top management to select the appropriate set of alternatives to maximise their chance of achieving the goals and objectives. One approach to this might be some form of gap analysis (figure 9.2) to observe the effect of each particular strategy.

Figure 9.2 Tactics in Pursuance of Strategy 4



Similarly, some assessment of whether various tactics can be achieved within the funding constraint might also be shown on a graph.

9.9 Resulting "Planned Forecast"

Once the various tactics have been chosen, the detailed Plan for the rest of the year (latest estimate) and for the following year can be made.

9.9.1 The Sales Forecast

The sales forecast is the "backbone" of the budget from which all other forecasts should emanate (unless there is a particular limiting factor, like funds, which more fundamentally influences everything else).

After constructing the momentum sales forecast and the generation of tactical alternatives, it is doubtful if this phase of Plan development will need to formally exist. However, it is useful to discuss here under one heading.

It is not proposed to enter into a detailed discussion of sales forecasting, as this is an area which is particularly peculiar to individual markets. Certain points, though, can be usefully made.

Section 7.4.3 noted the extremely low level of forecasting sophistication in Dunlop and section 6 described the high level of variance which exists in Dunlop forecasts. For this to be reduced, divisions should ensure that they understand the variance and particularly the systematic elements and the degrees of inherent variability. Such factors are important in helping to determine the types of forecasting techniques required. They also help in the general learning process which aids improved forecasts.

One area of strength of the present forecasting system in Dunlop is that although rarely sophisticated, a variety of techniques are often used which help to cross-validate the final forecasts. Such an approach should be encouraged.

Budgetary Planning encourages divisions to start off with a trend forecast (momentum forecast) perhaps in the form of a naive model and then to use more objective techniques, perhaps computer based

forecasting models, to refine this forecast. This is not to say that judgemental forecasts, based on experience and knowledge of the market, should not have a refining influence on these forecasts, particularly in the area of turning points. All this is largely a matter for the divisions to decide, although the Planning Consultancy Teams should be able to offer advice, particularly on more objective techniques.

A variety of levels of forecasts might also be considered. Michael and Jones (1973, pp.369-372) discussed four levels of forecast:

- i. Imperative forecasting - the minimum that must be sold, that is the break-even point
- ii. Constrained forecasting - the maximum that can be produced as defined by the available capacity
- iii. Predictive forecasting - trend extrapolation assuming the past will not change, as in the momentum forecast
- iv. Determination forecasting - based on the predictive, but incorporating the plans of management, as in tactical alternative generation.

This last type of forecast might include a probability range, which could be as simple as best estimate, most/least favourable. Evidence from this research suggests that although divisions may not fully appreciate probability (7.4.3), when it comes to making subjective estimates of it they were reasonably accurate (7.4.7).

Using whatever techniques are appropriate to a particular market, and taking into account the selected tactics which have a bearing on the forecast, the Marketing Department should prepare detailed volume forecasts for each major product. The Accounting Department should also take part in this exercise and should be armed with

roughly escalated total variable costs for each product, so an immediate picture of contributions can be derived. This is an approach successfully employed by Dunlopillo (7.2.3), where the Marketing Department is concerned with predicting volumes, price changes and mix, while in the same meeting, the Accountants supply rough standards in order to derive a contribution for each product.

The problem of plans being a mixture of forecast and control data (2.2.1) is also something which can be dealt with here. The combination of realism and motivational targets is not an easy one to achieve and as motivational factors are so interwoven with the psychological characteristics in each division, it is pointless to lay down a hard and fast system to help reach this balance. Divisions when considering the levels of motivational targets for individuals should take careful note of the permanent optimism which appears to be so prevalent within Dunlop (6.5.3). It is possible that even with more sophisticated techniques, the natural optimism of salesmen may generate the motivational target required.

The problem then becomes one of how to derive the Plan figures, for which accuracy is of utmost importance. One way to get round this problem is for the Sales Manager to agree an achievable target with the salesmen, which includes some measure of stretching it. This stretch may well be derived by the permanent optimism, which is well recognised to be present among sales staff.¹ This optimism can be used to give them a target which, being their own, they will readily accept. The sales force thus perceives their targets as being realistic and are therefore willing to show commitment towards achieving them. It is then for the Sales Manager to add in a contingency. This is achieved with the benefit of consolidation, which makes small degrees of optimism, once aggregated, much more obvious. This contingency should also be based on some overall market forecasting method and should take special note of past variances.

1. Cooper-Jones (1974) for example, says "sales staff are universally optimistic....." (p.38)

From this forecast, with the contingency added, management should develop the rest of the Plan forecasts. By using such a method, a division should be able to derive a motivationally stretching sales target which salesmen should readily accept. At the same time, this can be used as the basis of a more realistic forecast from which the Plan can be developed and objectives be achieved.¹

The end result of this exercise should be a broadly feasible outline Plan. The next step is to flesh out the bones by producing a detailed operating statement in the form of a budget for the coming year.

9.9.2 Construction of the Budget from the Sales Forecast

The budget will be constructed from the sales forecast in the same manner as in the present M-Plan System (7.2.3). This normally involves breaking the volume forecast down into monthly sections then adding in price increases, as and when they occur, on a product or even customer basis. Total variable costs are then calculated on a product or even size basis and are escalated according to known and forecast cost increases. Fixed costs are normally derived on a departmental basis taking into account present costs, inflation, volume forecasts, etc. The individual product figures are then consolidated to derive a "first look" picture of the budget.

9.10 Internal Budget Review

Having now got the Plan figures in more detail, it is important to check again that they meet the required goals within the funding constraints. Broad estimations of the extent to which the goals and funds constraints are fulfilled will have been derived during the tactical alternatives selection. However, some of the detail is not available at that stage, thus there may now be some small underfulfilment or overspending, meaning that some minor replanning is necessary. Above all, if planning

1. Such a system relies essentially then on only one set of figures being developed and giving targets only to sales staff.

is to represent some degree of realism, divisions should avoid making ad hoc adjustments to fixed expenses or turnover projections in order to meet external constraints (cf question 21 in DCD). Such adjustments merely nullify the planning effort by producing an unrealistic profit figure.

As well as involving Accountants in the sales forecast, to assist in assessing the financial consequences, it is helpful to also involve production planners at this early stage in order to assess the logistics of producing the turnover. By doing this, obvious capacity utilisation and manpower problems can invariably be ironed out (7.2.4). The objective, however, is not to produce detailed loading schedules or delivery timings, but merely to ensure broad compatibility between the Marketing Department's desires and the Production Department's capabilities. Considerable judgement is required in order to obtain anywhere near an optimum result at this stage, and the outcome relies heavily on the experience of the production team.

Once broad checks against resources have been made, it is important to ensure that there are no obvious contradictions within the Plan itself. Argenti (1977) suggests that divisions should extensively search for possible relationships between variables where it might logically be expected one exists. If the hypothesised relationship does not hold, then a reason should be sought for this being the case. Thus, for example, if the Production Manager forecasts increased labour productivity and the Personnel Department is forecasting increased manpower and the Sales Director is predicting static real turnover, there is an obvious inconsistency. There may well be a good explanation for this, but this should be sought and analysed.

Similarly, explanations should be found for any deviations of the market and divisional forecasts with those of the macroeconomy. Argenti (1977) also strongly recommended the use of ratios checks in order to perceive slight optimism or pessimism in the forecasts. So, for example, if both the unit cost and selling price forecasts are unremarkably optimistic, individually this may not be noticeable. However, if the movement of the ratio of contribution per unit is calculated, a marked change might appear and this should provoke investigation.

Such cross-checks, although not rigorous in investigative terms, do help to avoid the glaring inconsistencies, which experience in reviewing Plans suggests often occur.

9.11 The Structure and Content of the Budgetary Plan

As in the M-Plan System, the Budgetary Plan contains two interrelated but separate main sections: the narrative schedules, and their quantitative shadow, the budgetary schedules.

9.11.1 The Narrative Schedules

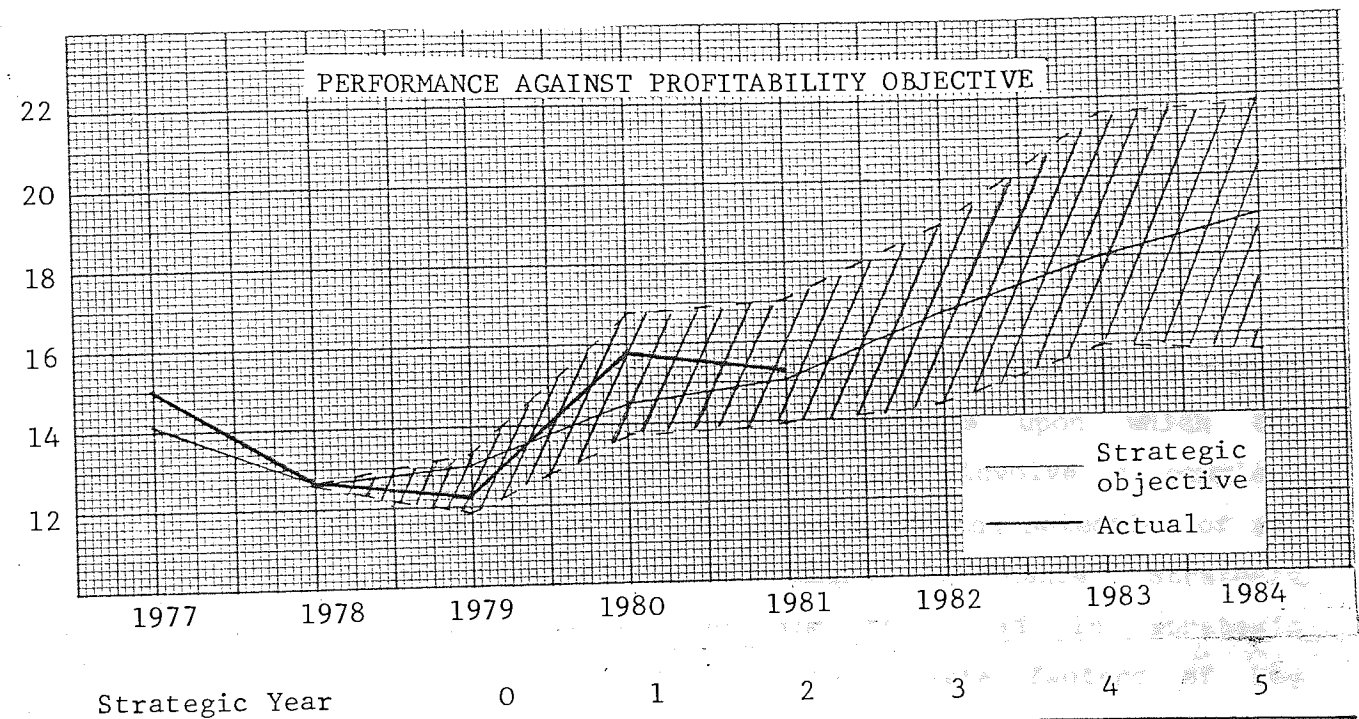
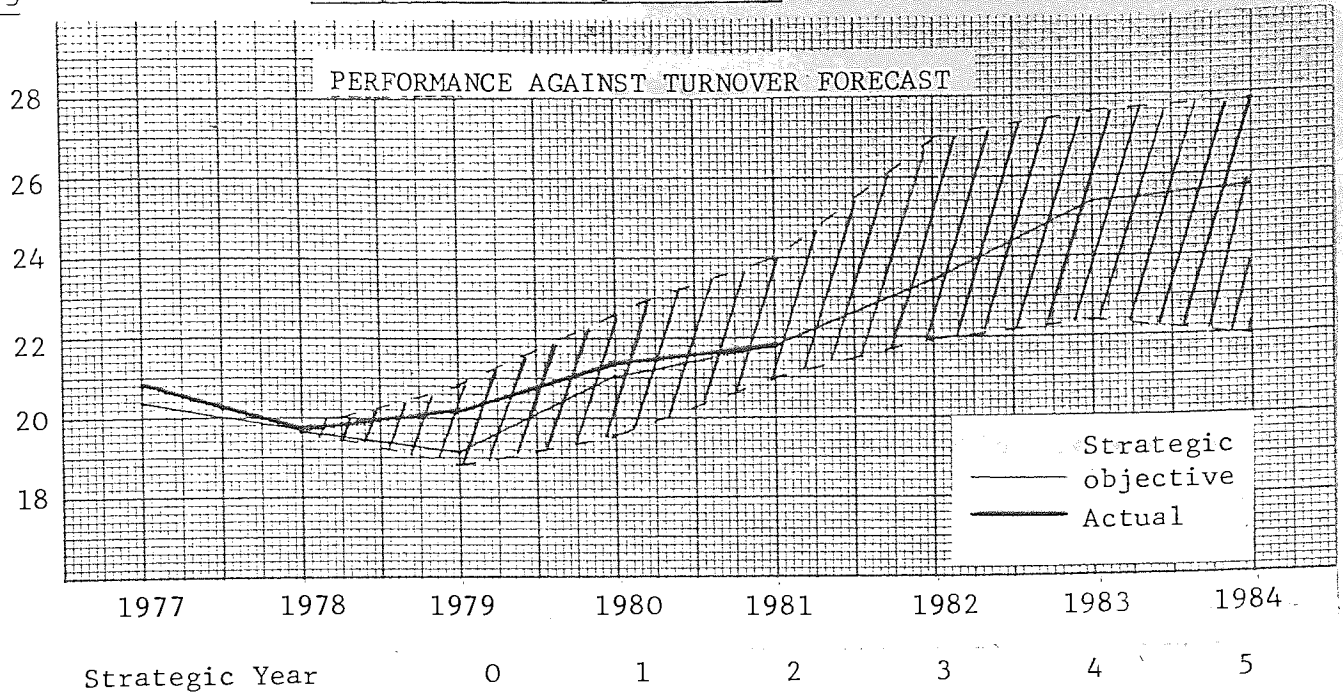
In a Budgetary Planning System, the narrative schedules do not support the financial schedules, as the author believes is the case in the M-Plan System. To operate the System in such a way is a misconception and completely invalidates the concept of planning. Within Budgetary Planning, the narrative schedules outline the divisions forward decisions which it intends to implement in order to achieve an objective. These "plans" are subsequently quantified in the budget which merely gives numerical support to the Plans. The switch in emphasis is extremely significant as it stresses, as with all Budgetary Planning, the importance of planning rather than quantitative momentum projections.

The aim of the narrative schedules is basically two fold. Firstly they provide a detailed and reasoned operating document for the divisions in the coming year, and secondly they outline progress against the longer term objectives in terms of strategic implementation.

Because one of the important concepts of Budgetary Planning is flexibility, it is difficult to give specific rules about what should be included in these schedules. Ideally, one would say that divisions should include what is needed to give them an efficient operating document which implements their agreed strategy. But this is of little practical help, and for this reason they following guidelines and examples are offered.

Example of Strategic Summary

FIGURE 9.3



Turnover	20.4	19.8	20.2	21.6	21.8	23.4	25.3	25.8
Actual	20.7	19.8	19.1	21.4	21.8			
Real Index	97	93	94	99	98	105	111	110
Actual	96	93	88	100				
CCA Profit	1.7	1.2	1.0	1.8	1.7	2.0	2.5	2.7
Actual	1.8	1.2	1.1	1.7	1.7			
CCA ANFE	12	9.4	8.0	12.0	11.0	11.9	13.7	14.2
Actual	12	9.4	9.0	10.8	11.0			
CCA Return	14.3	12.7	13.0	14.9	15.2	16.8	18.3	19.0
Actual	15	12.7	12.2	15.7	15.5			

Comments & Notes

This section is for explanatory comments and not for detailed analysis of the data.

1. Years 1977 and 1978 figures show performance against previous S-plan
2. 1981 figures show latest estimate against plan
3. All figures except indices are shown in millions of pounds

Section A: Summary of Strategy

This should be a summary of the Strategic Plans and objectives. The section should outline progress made to date and isolate relevant issues as well as giving a clear statement of the goals which relate to the coming year.

Graphical representation of progress against key objectives may be of some help in outlining the Plan. An example of this is given in figure 9.3.

Apart from broad comments, no detailed analysis is required at this stage, as this section merely "sets the scene".

Section B: Analysis of the Environment.

The objective of this section of the Plan is to review the validity of the assumptions upon which the strategy is based. This will involve a complete rescanning of the environment and the selection of any new factors which might influence strategic implementation. The aim here, as in strategic planning, is not only to isolate factors of key significance (which incidentally should be quantified wherever possible), but to determine their relationship to the division and its Plans.

For convenience and consistency with the strategy, the environment should be dealt with under two sections: external and internal.

i. External Environment

As in the Strategic Plan, major changes in problems and opportunities facing the divisions should be identified, which should include at least a review of the following:

Table 9.4

Environmental Analysis			
Factor	Threat/ Opportunity Strength/ Weakness	Budgetary Planning Implications	Strategic Implications
<u>A External</u>			
1. Political Regional development policy changes since strategy.	Threat	Grant assumed in S-Plan no longer available. Cost of new line therefore increased from £60K to £100K. Payback no longer practical within proposed timescale.	If line is scrapped £35K shortfall against profit goals.
4. Economic Inflation rates for years 1 & 2 are now forecast at 15%, against 10% and 9% in the Strategic Plan.	Threat	Pricing and cost increases now look like under- estimates.	This could mean that many of the products will not make the profits envisaged and thus as much as 5% shortfall on the profit goal is expected.
<u>B Internal</u>			
4. Marketing Market share figures for Flexihose appear pessimistic since acquisition of new marketing team.	Strength	Scope for rapid increases in market share.	Turnover and profit figures look about 4% & 1% pessimistic respectively.
7. Failure to successfully install computerised stock control facilities before mid 1981 has led to 3% increase in working capital requirements for 1982.	Threat	Insufficient working capital for expansion in Polyhose market.	The goal of 25% market share in Polyhose by 1983 may be threatened.

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Macroeconomic assumptions - as supplied by ERD, but specifically related to the industry and the divisions.

General business trends - these will vary from division to division but generally should include political, social, technological and ecological trends. Again, ERD will supply a brief update on the strategic assumptions. As these factors tend to be more specialised than the general economic factors, it is envisaged that the majority of scanning in the area will be done by the division.

Market trends - because of the importance of market trends to a tactical plan, this area, which would come under the external environment in the Strategic Plan, will be discussed as a separate section in the Budgetary Plan.

ii. Internal Environment

As with the external environment, the aim of this section is to review the validity of the assumptions (strength and weaknesses) which were isolated in the Strategic Plan.

a. Analysis of performance of the unit.

This section should include a penetrating analysis of performance against current Plan and strategy.

The objective is not to proffer a list of excuses, but to isolate fundamental reasons for variances which may help in successfully implementing the next Plan. All key performance indicators and objectives should be analysed and where possible the reasons for any variances should be related to the Plan year. A variance analysis of past performance should also be included in this section.

b. Analysis of internal factors.

All changes in factors which are considered significant to the implementation of the Plan should be considered in this section. These might include efficiency, manufacturing (particularly capacity, conversion costs, etc.), personnel (particularly industrial relations and productivity), selling prices, capital expenditure, technology, research and development, etc.

The overall aim of this section is to accurately assess the key factors (strengths, weaknesses, opportunities and problems) which affect the implementation of the strategy in the coming year. Once they have been selected, it is desirable to display them in some form, quantitatively if possible. Several authors (for example, Hussey 1978) have suggested a tabular form to help make reviewing easier. An example of such an approach is given in table 9.4

Section C: This section should describe the results of the tactical alternative generation and selection process. Ideally, the section should contain a brief reference to each strategy and associated goals which are of relevance to the coming Plan year, as well as an outline of the various tactics selected to implement that strategy. Where possible, the tactics should be fully quantified. The following is an example of how this might be displayed.

Strategy 2: To increase profitability in the consumer market by 1983 to a level exceeding the average for the industry (16%) by selective product marketing in the DIY markets.

Tactic 1: Launch "Top Boss" range in conjunction with Hadley Ltd (see R&D section of 1980 Plan for description of qualities and development). Such a move would fill the gap left by Marples and would counter the threat from the Japanese, particularly Ioki (see Competitor analysis in the Marketing Plan).

Tactic 2: Pilot development of a low cost scratch resistant acrylic "glass" for possible 1983 launch into the double glazing market. Such a development would open up a new market sector, being particularly economic, and this market would grow steadily as the real cost of fuel increases.

Tactic 3: Etc.

Each of these tactics would be quantitatively evaluated as in table 9.3. Thus the resource commitment and the financial implications of each individual selected tactics would be outlined and a subjective probability would be attached to each.

Every selected tactic would also have an action schedule which would outline responsibilities and timings.

Section D: The Marketing Plan.

This section should give a clear description of the planned actions in each of the major markets. Each market should first be graphically displayed with its momentum forecasts and its strategic goal and planned tactics from Section C superimposed on top of this.

Details should be given of any major assumptions and limiting factors upon which each market is forecast and an indication of any uncertainty (probability) surrounding the forecasts should also be given. The discussion in this section should make it clear how the division intends to attack each market in the Plan year, and specifically, it should outline the changes that the division will make in order to achieve the desired goals.

This section also gives an opportunity for the division to discuss alterations in the competitive situation since the strategy was formulated.

The section should not be devoted to qualitative thoughts on past performance, but rather should give a detailed analysis of how the tactical alternatives which present themselves (in pursuance of the strategy) might be employed in order to achieve, or assist in achieving, the goals.

Divisions will be encouraged to describe the forecasting techniques they use in each market in an effort to move them towards more objective techniques.

Section E: Action Plans.

The proposed action plan is an amended version of that at present employed by Engineering Group and is shown on table 9.5. This schedule is designed to place strategic implementation uppermost in the minds of management. It relates directly to the analysis of the environment and is cross-referenced to the strategy which it is implementing.

Action Programme No. 4 Refers to Environmental Analysis 3.2, 3.3, 3.6	Departments: Marketing, Technical, Works Manager			Overall Responsibility: Reporting to: Peter Brown George Stevens		
Overall objectives To increase market share in export markets	Support Groups 1 Technical 2 Marketing 3 Production			- A.N.P., R.C.S., A.D.B. - J.N.R., N.J.H., & P.C.M. - P.B.K.		
Strategy No. 4 Selectively develop and introduce new and existing products to meet the demands of South American markets	Start Date	Finish Date	Financial Implications		Subjective probability assessment	
Tactical action steps to be taken	Mar '80	Sept '80	Research costs - £4K Distribution cost £18K p.a.		.8	
1. Locate and arrange suitable distribution facilities in Brazil and Argentina. 2. Remodel Dunlopan for the South American market (i) Technical design (ii) Test runs (iii) Sample orders or Argenta Trading Co.	Feb '80 Mar '80 Sep '80	Mar '80 Mar '80	Design cost - £15K Production trials - £8K Sample costs - £10K		.9 .8 .7	
3. Gain order for Z-pan range from De Brit etc.	Apr '80		Turnover - £150K in 1980 £450K in 1981 Contribution - £57K in 1980 £170K in 1981		.9 .7	

The M-Plan's financial schedules have undergone considerable development over the past five years. They now represent concise statements which fulfil the minimum requirements of Finance Division's computer based consolidation model. Discussion with the divisions (7.4.12) however, suggests that there is still much repetition in the schedules. Some divisions have suggested that the Head Office financial requirements should be condensed down to a maximum of two or three pages of detail and the computer consolidation model should then be used to develop the repetitive detail. By adopting this approach, the unhappy mix between financial and management accounting detail, which some divisions mentioned (7.4.12), would be largely removed. The quantitative shadow of the Plans could then concentrate on management accounting detail which, as it is not required for Head Office consolidation, could be submitted in its divisional form. To some extent this would alleviate the problem broached by several divisions that the Plan took too long to construct because of the host of requirements from Head Office.

The shifting of emphasis towards divisional management accounting data may help to turn the Plan into a divisional document, rather than being a multi-role document. The divisions should be allowed to submit what they like to support their case, although guidelines such as suggesting that they might provide annual product profitability/gross contribution schedules, might be of some help. Divisions not supplying sufficient data, in the eyes of the Centre, would merely be asked to resubmit.

A further discipline that will be imposed on the divisions in the Budgetary Planning System is the provision of "actual" data for the year previous to the latest estimate. The provision of such data is not only useful from a central viewpoint in terms of analysis, but should also be of help in developing the Plan, in that divisions will be forced to examine at least one point of reality. Also divisions will be asked to supply broad probability ranges around key financial data such as profitability, turnover and cash flow. These ranges will link into the ranges around the goals and objectives in the Strategic Plan.

Finally, because of the length of time it takes to construct a Plan, it is recognised that environmental changes can make it unrealistic before it is even implemented. Where such a substantial shift in the environment occurs, before consolidation and approval by the Main Board (that is, December), divisions should be allowed to submit revisions.

The financial schedules should show all relevant costs and revenues derived from the action and the subjective probability assessments should broadly indicate management's uncertainty concerning the timing and financial implications.

9.12 Submission of the Plan to Head Office

Once the Plan has been completed and agreed by divisional management, it is submitted to the relevant trading group HQ and to Head Office for vetting and consolidation.

9.12.1 Vetting of the Plans

Research evidence (Kirby Warren, 1966, p.51) suggests that if top management do not differentiate between good and bad planning, there will be little incentive for divisional management to devote sufficient time and trouble to planning. Likewise, Dyson and Foster (1980) found the depth of plan evaluation to be one of the criteria for efficient strategic planning. If the Management by Exception principle is to operate, some vetting is required before the Plan is made operable and funds are committed to it. Once agreed, so long as the Plan is being efficiently implemented, the division should be allowed complete autonomy.

One of the present requirements for a Plan vetting process is derived from the fact that Management Planning in Dunlop simply is not good enough. Under the Budgetary Planning System, as planning becomes more effective, through superior systems and education, the need for vetting will be reduced somewhat and the process will become more of a communications exercise.

Research into 120 US companies by Gluck et al (1980) described the concept of the plan challenge as

"ritualistic formal planning meetings that neither informed top management nor helped business managers to get their job done".

Allen (1980) believed that the concept of a plan challenge was symptomatic of a low level type planning. He suggested that the Corporate Planning Department should concern themselves more with determining how corporate resources should be allocated in support of the business plan. He also argued in favour of better feedback from the Centre on divisional strategies and objectives. However, if corporate resource allocation is to be efficient, Corporate Planning must have a clear idea of how realistic the Plans are, and this requires a formal communications channel (Kudla, 2.6). For this communications channel to exist, trading groups and Corporate Planning must be able to review the Plans and be able to put queries forward in a formal meeting with the divisions.

Determining whether a Plan is realistic is largely a subjective matter which relies heavily on the knowledge acquired by the particular Planning Consultancy Team. Originally, no guidelines were given for reviewing the Plans, but in 1979 the author developed the guidelines currently used by the Corporate Planning Department (Appendix F2). The aim of these guidelines was to give objective criteria on which to base a review of a Plan's realistic implementation of a strategy, thus strongly linking in with the concept of Budgetary Planning.

Once the Plan has been reviewed, a formal meeting will be convened between the division, the trading group and Corporate Planning to allow the division to emphasise and clarify any points. Divisions who have not produced sufficient data in their Plan will be heavily challenged on this aspect and may be asked to resubmit. Likewise, divisions who are consistently poor forecasters (after taking into account inherent variability) can also expect particularly detailed questioning. Most divisions, however, should view the meeting as an opportunity to gain support from the Centre for the Plan.

9.12.2 Contingencies

Divisional contingencies will always exist, hidden or not, if divisional management think there is a need for them. Budgetary Planning accepts this fact and encourages divisions to communicate their contingencies as a means of expressing their uncertainty about the Plan's forecasts. Central contingencies are more of a problem.

In an ideal situation, they would not be required; all divisions would produce forecasts which were not biased, and hence on a consolidated basis would give an accurate overall picture. Section 6 shows how permanent optimism frequently exists in divisional forecasts and Budgetary Planning uses this to supply the motivational element required in the forecasts. This optimism, displayed in the form of bias, would hopefully only be apparent on a consolidated basis. If the optimism were apparent on a divisional basis, then the divisional variance analysis ought to reveal it and the divisional management ought to remove it.

The setting of contingencies, therefore, would often be required at a consolidated level to allow for accurate financial planning. The actual setting process is a difficult and, all too often, subjective task. Budgetary Planning aims to bring more objectivity to this process, primarily by the use of forecast credibility. So, for example, if a trading group had consistently, on a consolidated basis, achieved what it had planned, then there would be no need to impose a contingency. Divisions who showed considerable inherent variability, however, could expect to contribute to the requirement for a Group contingency.

One technique that could be gainfully employed in central contingency setting on a consolidated basis is linear transformation (5.6.8). Corporate Planning/Finance Division should use this technique as a starting point for setting any contingencies.

9.13 Turning the Plan into Action

Hussey (1978) rightly suggests that planning is a prerequisite for action, as opposed to a substitute for it. As a central aim of a Budgetary Plan is to implement the Strategic Plan, action is a very important element of this type of planning system. According to Vatter (1969) the test of a good plan must be whether it is turned to action. To some extent this can be determined by measuring the variance between actual and forecasts, which broadly indicates the degree to which the plan has been turned into reality.

Communication (with its participative inferences) has a role to play in turning the Plan into action. For the participative aspects of planning to be fulfilled, it is desirable that those who are required to implement the Plan are consulted during the construction stages on how it should be done. They will then be fully aware of what is required of them in the implementation stages. Under such a system, planning would not be something done by an amorphous department of planners, but by the line management themselves. The objective of this is to obtain a firm commitment, at the very start of the planning process, towards implementing the Plan. According to Alhquist (1974)

"the key to effective action is that the plans should be prepared by the people who have to carry them out and (they should) see them as achievable....."

By developing concise Plans, which follow a logical sequence of events, lower management can implement them on a step by step basis. These plans, for implementation by lower management, usually take the form of action schedules in a Budgetary Planning System and are the key to turning the Plans into action.

The monitoring and control system has a role to play in ensuring that the action schedules are implemented. Monitoring helps to show top-down commitment to action and thus may help to encourage implementation. Similarly, making lower management aware of the fact that top management are using the Plan to run the business may encourage action.

Each department should have its own personal action schedule which should be regularly monitored. These should include the following: a summary of the required activity; the objective to be achieved; a process for monitoring and controlling, including timings and responsibilities; and the effect this action has on resources. These departmental action schedules should then be consolidated to a key action schedule, which will appear in the Plan for the whole division.

There can be little doubt that in order for the Plan to be considered efficient, considerable emphasis needs to be placed on action. Developing good tactics to implement good strategies and to achieve the objectives is all well and good, but the mechanism for implementation must exist and work efficiently if those objectives are to be achieved.

9.14 Control

Plans do not control themselves, and merely constructing them does not ensure their effective implementation. Some form of monitoring needs to take place to enable, when necessary, corrective action to occur.

Budgetary Planning places the responsibility for divisional monitoring of the Plan on the Planning Committee. They are not only responsible for reviewing deviations from the Plan, but also for proposing any corrective or remedial action that may be necessary. Likewise, they have an educational role to ensure that managers who receive control data understand its meaning.

Although control is a fundamental part of Budgetary Planning, it should not be stressed too heavily. Control should not divert management from the prime aim of planning, which is to achieve the desired objective. If control is stressed too heavily, there is a danger that it will become an end in itself.

"for a long time, in many companies forever, realising the budget figure becomes more important than what the budget is supposed to measure, namely economic performance" (Drucker, 1964, pp.288-289)

The fact that much of the Plan data is open to manipulation (7.4.11) suggests that, where control is heavily stressed by the system, divisional management will, via various means, get the desired performance.

More important than measuring the size of the deviation, is tracing the problem or opportunity that has caused that deviation (Sord and Welsch, 1958, p.245). Essentially, deviations come from two sources - faulty planning or faulty implementation. Budgetary Planning places the responsibility on the Planning Committee to try and ascertain which of these elements is responsible for any major deviation, so that it can be communicated to the personnel responsible. Whether a divergence is attributed to a lack of foresight or operational inefficiency is largely subjective, but it is important, where possible, to determine the root cause. Faulty operational implementation simply requires remedial action; whereas if it is attributed to faulty planning, the Plan itself may have to be revised with corrected assumptions so that realistic monitoring can take place.

The concept of control in Budgetary Planning is not merely concerned with any divergence in the quantitative aspects of the tactical Plan. It is also concerned with the control of action and the control of strategic implementation. Hussey and Langham (1979) suggested

"the danger is that corrective action may be taken with only the short term implications in mind, and deviations from the long term intentions may lie concealed in the figures." (p.230)

Their solution to this problem is to break the strategy down into twelve or twenty-four monthly action plans which have assigned responsibilities for implementation. Budgetary Planning modifies the present Strategic Plan such that it is broken down into strategic actions which attract responsibilities and can be subsequently monitored. These are, in turn, translated into tactical action schedules. It thus accepts that there is a difference between tactical and strategic control, and that today's bottom line is not all important, it is tomorrow's that counts as well. If control is not concerned with strategy as well as tactics, strategic implementation will be discouraged because long term strategies will be sacrificed for short term rewards (Kudla, 2.5.3).

The central tautology of control is that, by definition, management can only control those things which are controllable. This does not mean that uncontrollable factors should be ignored. In particular, the basic assumptions upon which the Plan is based should be monitored in order to determine how the organisation needs to change to keep itself on Plan.

Control in any planning system can normally be broken down into three components: the monitoring of the deviation; the reporting and investigation of the deviation; and the required corrective action.

9.14.1 Monitoring the Deviation

The Management by Exception principle suggests that management will be allowed full discretion to implement the Plan until an "unacceptable" variance occurs. There are essentially three types of variance; turnover (volume, mix and price), efficiency, and expense¹. From these broad categories, management should isolate the particular variances that are viewed as important for their division, and then concentrate the monitoring system on these. Dyson and Foster (1980) believed

"the value of good monitoring seems so clear that it is perhaps surprising that actual practice is not better. A good monitoring system will, at the very least, ensure that you know what maybe your current position and consquently enable an immediate start to be made in the business of coping with any unforeseen problems"

The key to successful monitoring seems to be knowing what to monitor and when to deem that a level of variance is intolerable. However it is often difficult for the analyst to determine the degree of variance which can be regarded as tolerable. Jones (1974) offers some relatively arbitrary help on this matter. He believes non-recurring variances of between 2-5% must generally be regarded as acceptable (the nature of forecasts being that it is inevitable that some degree of deviation will be present); 5-10% will normally require investigation and above 10% will always call for action, if it does not then there is little point in monitoring it.

1. A comprehensive description of variances can be found in Laidler

More important than the size of the variance however, is the effect it has on the Plan. Thus an overall criterion for investigation might be the level of influence the variable has on achieving the objective.

Jones (1974) outlines a set of criteria by which top management can operate a Management by Exception principle. These include:

1. An examination of the assumptions to see if they are reasonable, unforeseen changes would not mean intervention but may mean amendments to the Plan.
2. Determining if the objectives are set at the right level.
3. Determining if the best tactics were chosen to achieve the Plan.
4. Determining whether there is a lack of, or inefficient, implementation.

These criteria, although useful, are highly subjective and rely heavily on the judgement of management. More objective criteria are described by Henderson and Copeland (1965) who suggest management, consciously or unconsciously, use three factors when interpreting variables to decide whether or not to take action:

1. The probability of the variance being due to random uncontrollable causes.
2. The reward which will result if the variance is investigated, together with the associated probability of this reward.
3. The cost of investigation.

The latter two relate to cost/benefit analysis which, even in its crudest form, has a useful role to play.

Dunlop's approach to this problem under the M-Plan System has been largely subjective and pragmatic (7.4.11). Several authors have suggested that the use of such pragmatic approaches is common. Hofstede's (1968) research suggests that

"rules such as 'investigate all variances exceeding \$5,000 or 25% of standard cost whichever is lower' are common". (p.238)

For Budgetary Planning purposes, however, this is too dogmatic as it takes no account of the relative importance of the variable under consideration. For example, 1% error in profits of £10 million is more important than a 50% error in depreciation of £100,000.

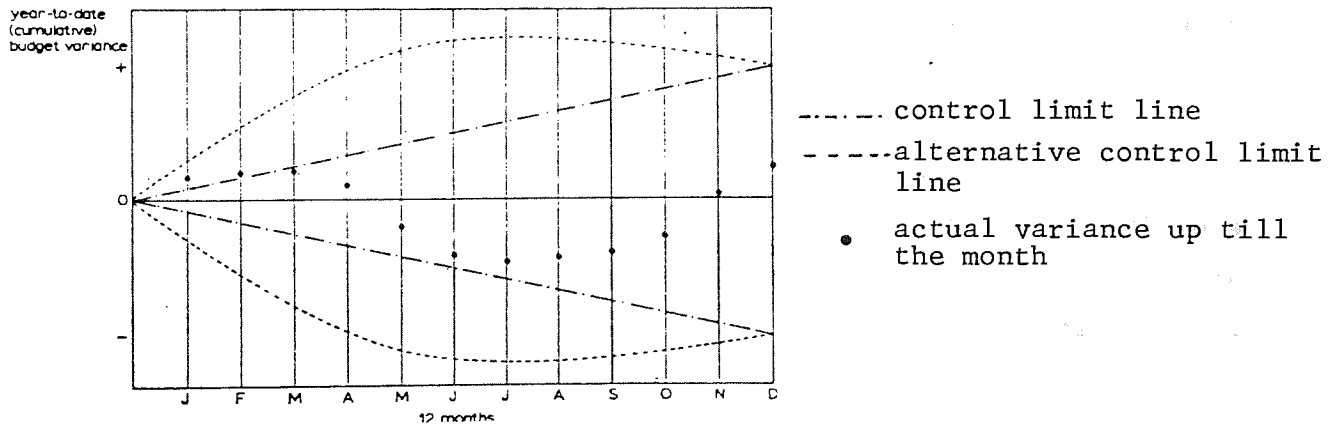
Ideally, a division should employ a system which objectively isolates variances which are not caused by random fluctuations and have had a significant effect on the performance of that division¹. Similarly, the system should take into account that some parameters are inherently more variable than others. Hofstede (1968) suggests that in his literature review

"they all defend the statistical approach to budget variance, so that variances that could be caused by pure chance will not lead to (superfluous) intervention". (p.98)

One way of achieving this would be to use significance tests to determine whether or not a variance is statistically significant. Another method would be to use some form of probability. Platt (in Butler, Kavesh and Platt, 1974) proposes the use of control charts which graphically plot cumulative errors against time. By superimposing a zero error line on this, some indication of the bias present is given. This principle can be extended by adding a confidence band around the zero line, thus displaying if the system

1. Two monitoring systems which could be applicable to certain situations, (e.g. sales monitoring) are: Trigg's (1964) Tracking Signal and the Cusum technique (cf for example, Harrison and Davies 1963).

is out of control. According to Platt, these bands should be set at "k x standard error of past forecasts".¹ As an alternative, Hofstede (1968) suggests using a slightly more sophisticated control chart (figure 9.4). This chart uses a constant percentage control band (dash lines on the graph) or a control band using a percentage tolerance which decreases over the year, thus giving a curved control limit (constant dot lines on the graph). Onto this should be plotted the year to date cumulative variance. Hofstede does not, however, point out that by using such limits, lower management might attempt to distort the figures such that they do not cross the control lines.



Control Limits in a Diagram of Budget Variances

(Reproduced from The Game of Budgetary Control by G.H. Hofstede Tavistock 1968)

1. The standard error is defined as $\sqrt{\sum (e_t - \bar{e})^2}$ where \bar{e} is the average forecast error up to time period T. "k" can be determined by using a probability distribution of past forecast errors, but values of two or three work well as a rule of thumb according to Platt.

9.14.2 Reporting and Investigation of the Deviation

The exact form of a variance report will depend on the information systems in the division and the level to which the variances are to be communicated. The Budgetary Planning System leaves the individual reporting system to the divisions to determine. But for reporting to the Centre, Budgetary Planning uses what is basically the M-Plan System's monthly reporting schedule (Appendix F3) extended slightly to include a summary report of key variances displayed in terms of percentage achievement against Plan. The monthly schedules will also contain a brief front page narrative outlining beneficial and adverse factors which have caused the Plan to drift. This allows the Centre to get an idea of factors affecting the Group Plan as a whole.

The Budgetary Planning System also utilises the current March and September Review system extended to include a one page summary of strategic action and implementation as well as an assessment of the degree to which the Plan has resulted in action (figure 9.5). These reviews would be formally assessed by relevant Planning Consultancy Team.

The timeliness of divisional reports is also a factor to be considered. Over the long term, variances tend to cancel one another and thus to gain effective control time periods should be sufficiently short to reveal any underlining variations. Determining this period is difficult and will probably vary from division to division. However, as variance reporting is expensive in terms of being time consuming, it is unlikely that a full report is conceivable on more than a monthly basis. With some variables, a month is too long for corrective action to efficiently take place. For example sales, being the basis of production and stock calculations, should really be monitored on a weekly if not daily basis. A computer assisted planning system is a great advantage to this type of monitoring.

More rapid feedback also, to some extent, fulfils the participation requirements of the Budgetary Plans as management can regularly assess their performance in relation to their individual targets.

Example of an Action Programme

<p>ACTION PROGRAMME No.4</p>	<p>OVERALL RESPONSIBILITY: Derek Jackman</p>	<p>Supporting Groups: Marketing: P.B.H., J.R.V. Production: R.T.S., S.J.B., D.A.</p>
<p>Strategy No. 2. Attack Argentina with the Johnson upmarket range of products</p>		
<p>TACTICS</p>	<p>Responsibility</p>	<p>Comments</p>
<p>1. Locate distribution and warehouse facilities in the territory</p> <p>Etc.</p>	<p>J.R.V.</p>	<p>The objective of finding existing distribution facilities suitable for our product by 31/4/81 now looks optimistic since Blackson backed out. Negotiations with Vrae are going well and agreement could be reached by mid-May. We have two contingency outlets also on the boil.</p> <p>Etc.</p>

9.14.3 Corrective Action

Essentially, when a variance has been revealed there are three options open to management: a) revise the Plan in the light of the deviation, b) accept the latest estimate of the Plan and thus accept the deviation (if relatively small), c) keep the Plan, but remedy the cause of the variance.

The latter two are preferred solutions, where possible, as to continually change the Plan may result in loss of its motivational elements. It is pointless, however, persevering with a lost cause. If current events have made the Plan unrealistic, then it should be revised. This, in turn, may lead to a revision of the strategic goal and even, in the extreme case, the strategic objective.

One method of ensuring corrective action takes place is to have some form of follow-up procedures on Plan performance (Dew and Gee, 2.2.2). The M-Plan System, as initially conceived, was to have formal follow-up procedure (4.7.3), however, no methodology was ever constructed.

For motivational reasons¹ it is desirable that there are some incentives to encourage achievement of "stretching but obtainable Plans". Indeed, Sord and Welsch's (1958, p.40) research found this to be an important characteristic of successfully budgeting. Similarly, Hartle (1960) and Ferber (1959) thought the existence of follow-up procedures was a positive incentive for accuracy in the forecast.

The follow-up procedures operated under a Budgetary Planning System concentrate specifically on variances in forecasts and variances in the action schedules. This system is operated jointly by the relevant trading group and the relevant Planning Consultancy Team.

1. Motivational theory is a complex area of management science. Several texts adequately describe the theory to date. cf for example, chapter two in C. Handy, "Understanding Organisations", Penguin Modern Management Text, 1976; or W.H. Vroom and E.L. Deci (eds) (1970) "Management and Motivation", Penguin.

In terms of variances in the forecasts, divisions displaying systematic errors will be "punished", so as to encourage accurate forecasting. Divisions consistently producing inaccurate forecasts will be asked to modify their forecasting techniques. An inaccurate forecast in this case will be defined as one which is outside any given significant probability range. Likewise, divisions failing to fulfil a strategy, in terms of implementing the action schedules, will be asked to submit details as to why this has occurred.

The follow-up procedures will not be limited to monthly results, and the March and September Reviews. As soon as the final results are available, trading group HQ should conduct a post-mortem examination of Plan achievement, particularly considering strategic implementation, and then submit a report to the relevant Planning Consultancy Team. This report should not be overly concerned with "excuses" for not achieving Plan, but should rather concentrate on why the factors which caused a "significant" deviation were not planned for.

The problem of finding a suitable medium to act as a reward/punishment incentive is not an easy one to solve. Hofstede (1968, p.213) claims that linking the plans to some financial reward system may lead to distorted figures, and certainly control data is open to manipulation (2.2.3). However, in terms of central systems, there are few alternatives to using the funds allocation based on cash generation and achievement of forecasts. To some extent the present Cash Conservation Scheme operates along these lines, but it is envisaged that the Budgetary Planning System would be concerned with several key variables, not just cash generation.

In terms of divisional follow-up procedures, any incentive schemes which are operating in the division, bearing in mind Hofstede's warning, might be linked to Plan achievement. Plan performance could, for example, be included in personal assessments or the names of those responsible for a variance could be attached to it in a variance report.

The general theme in this area is one of responsibility accounting where those responsible for a variance would be asked to account for

9.15 Chapter Review

Budgetary Planning is a centrally-developed comprehensive system of annual tactical planning. It is constructed in the form of recommendations and covers the whole spectrum of Plan development and subsequent control. It aims at giving divisions specific guidance on all matters of tactical planning, in an effort to produce more objective and efficient Plans.

Essentially, the system is concerned with producing realistic divisional Plans which are oriented to implementing the strategy in order to achieve the desired objective. It achieves this by carefully reviewing the strategic assumptions and current performance trends and then by participatively developing tactical alternatives to fill the gap between the trend and the objective. It thus uses a technique associated with strategic planning, gap analysis, in order to implement the strategy and believes that a division can, to some extent, plan the future rather than merely reacting to it. Strategic action is the key concept in this system. Modifications to the Strategic Planning System ensure that broad and resilient strategies are developed and the methodological link encourages the funds and objective systems to support implementation. The strategies are communicated to all levels involved in Plan developed.

Budgetary Planning promotes a participative approach, where it is applicable, and uses a divisional Planning Committee to assist in developing, and subsequently monitoring, the Plan. It also encourages inter-departmental liaison. Likewise, divisional/Head Office links are improved by instituting Planning Consultancy Teams which specialise in particular markets or divisions.

The System is particularly concerned with forecast accuracy and uses a methodology, both at the Centre and at divisional level, to analyse the variance. Indeed, forecast credibility in general is an important input into the Budgetary Planning decision making process.

A control system is also an important part of Budgetary Planning and the system aims to monitor both the strategic and tactical aspects of the Plans. It is not concerned with producing "excuses" for failure to achieve, but is rather oriented to discovering why the factors which caused the deviation are not planned for. The system also encompasses a formal reward/punishment system which encourages accuracy in implementation.

10

CONCLUSIONS ON BUDGETARY PLANNING

CONCLUSIONS ON BUDGETARY PLANNING

Budgetary Planning is not a rigid system which must be followed, nor is it something that can be installed in every division immediately. It is rather something to be worked towards and developed as circumstances change. By approaching the problem in the form of recommendations, and by demanding the absolute minimum in terms of mandatory requirements, Budgetary Planning remains fairly flexible. Because of this required flexibility, Budgetary Planning avoids involvement in systems which are peculiar to separate divisions, for example, a management information system, or individual forecasting techniques.

Table 10.1 describes how the Budgetary Planning System solves the problems revealed in this research. The left-hand column in the table relates directly to "the Possible Improvements Column" in table 8.2. It is thus possible, by comparing the two tables, to trace a Budgetary Planning solution back to the evidence from the research, as well as the inference drawn from that evidence. Inevitably, this table (as with table 8.2) is bound to be somewhat simplistic, however it does give some idea as to how Budgetary Planning aims to improve tactical planning in Dunlop.

The scope of Budgetary Planning is enormous, it covers, in one way or another, virtually all aspects of running a business. Clearly, it has not been possible to address each and every one of these areas within this research. Inevitably, certain areas are somewhat scantily covered, if they are covered at all.

Of particular note under this heading, is the fact that Budgetary Planning still relies on the efficient operation and support of divisional Operations Planning Systems. These cover such a wide area, and are generally different in each division, that it would be impossible to supply a centrally based system. It is therefore the responsibility of divisional management to ensure that their current Operations Planning System meshes well with Budgetary Planning.

Budgetary Planning is an instrument of, not a substitute for, good management. Indeed, it relies heavily on the competence of management to be creative strategic and tactical innovators. Similarly, such aspects

AREAS FOR POSSIBLE IMPROVEMENT	BUDGETARY PLANNING SOLUTIONS
<p><u>General Philosophies towards the M-Plan</u></p> <ol style="list-style-type: none"> 1. Decide on the primary roles for the M-Plan, and structure the system so that the other roles are subservient, thus avoiding any conflict of roles. 2. Design a system which reconciles as far as possible Head Office's requirements with the requirements of the divisions. 3. Effective aspects of the system should be retained in any redesigned planning system. 4. As 3. 5. The system should aim to maintain the commitment to planning and direct resources which are already allocated to it in the most efficient manner. 6. The system must avoid placing pressure on divisions to produce over-stretching plans which are unachievable. 	<p>The primary role of Budgetary Planning is to translate the strategy into an annual divisional document for operational planning and control (8.2).</p> <p>Budgetary Planning allows for greater flexibility in the System (8.2). An iterative process of S-Plan development (8.3.3) obtains objectives and funds allocations by joint agreement (8.3). Likewise the budgetary schedules are less financially oriented (9.11.2) and therefore are more relevant to operating a division.</p> <p>The basic infrastructure is retained (8). For example, the five year S-Plan and the annual funds allocation.</p> <p>As 3.</p> <p>Budgetary Planning requires a large resource commitment (8.4) but, by more structured and objective approaches to planning, it utilises those resources more efficiently (9).</p> <p>Iteratively agreed strategic objectives form the Budgetary Planning targets (8.3.2).</p>

AREAS FOR POSSIBLE IMPROVEMENT

7. The plan structure should force divisions to make explicit the action they intend to take to achieve the plan.
8. The planning system should encourage divisions to formally consider alternatives.

Participation

9. Encourage increased participation in the plan construction wherever it is appropriate.

10. Increase the decision making role of lower and middle management wherever possible.

11. Develop the system so as to encourage inter-departmental liaison in plan development.

12. As 11.

13. Modifications to the present system in participation terms must be made in the form of recommendations and should be flexible to match the various organisational styles of the divisions.

BUDGETARY PLANNING SOLUTIONS

Action schedules form the apex of the narrative section and are cross-referenced to the Plan analysis (9.11.1). Also, these schedules are monitored (9.14.2) and the system in general, is oriented to action (9.13).

Budgetary Planning encourages the development of tactical alternatives to implement the strategy (9.8).

Budgetary Planning is geared up to participation. For example: introductory team spirit talk (9.4); tactical alternative generation (9.8.1); developing sales forecast (9.9.1); The Planning Committee (8.4.1).

Budgetary Planning employs greater participation in the objective setting (8.3), and from there, throughout the whole system, as described in 9 above.

Multi-departmental / development of the sales forecasts (9.9.1) and a multi-departmental planning committee (8.4.1) are key to the Budgetary Planning System.

As 11.

Participation within Budgetary Planning is proposed almost entirely in the form of recommendations (see 9 above).

AREAS FOR POSSIBLE IMPROVEMENT

BUDGETARY PLANNING SOLUTIONS

Link between strategic and management plans

14. Develop a methodology to link strategies to the M-Plan.

15. Design a system so as to encourage a link and educate management into a strategic way of thinking.

16. Propose a more flexible funding system to help ensure funds are available for the strategy to be implemented.

17. The funding implications of the S-Plan must be checked to see if they are acceptable and within the constraints of the Group before the S-Plan is sanctioned.

18. Provisions should be made for the divisions to bid for any additional funds.

19. The methodology of profit target setting in the M-Plan should link directly to the S-Plan objectives.

20. The S-Plan should be considerably more resilient to change.

Budgetary Planning is closely related to the strategy: preplanning assumptions relate directly to the S-Plan (9.3.3); action schedules relate to the S-Plan (9.11.1) and there is a linking methodology (8.3.7).

The Budgetary Planning System is set up so as to forge a link between the M and S-Plans. For example, the concept of Budgetary Planning (8.3), preplanning information (9.3.3), tactical alternatives (9.8) and action schedules (9.11.1).

The new funds allocation process (9.3.3) is geared to ensuring funds are available for strategic implementation.

The new funds allocation process (9.3.3) includes a vetting procedure by Corporate Planning.

Level 3 in the funds allocation process (8.3.3) is a bidding level.

Objectives in the Budgetary Planning System are derived directly from the S-Plan (9.3.3).

The new S-Plan is broad enough to accommodate a degree of change in the environmental assumptions (8.3.1).

AREAS FOR POSSIBLE IMPROVEMENT

21. As far as possible, parts of the S-Plan which relate to the M-Plan year should be communicated to all management involved in the development of the plan.

22. Every effort should be made through the system to develop strategic planning ability in the divisions. Similarly, the system should encourage divisions to move towards a Planning and Control Theory approach (2.2).

23. Regular monitoring of progress against the S-Plan should take place.

Basic Planning Assumptions

24. The system should encourage funds allocations to be an integral part of plan development from the start of the cycle and allow re-calculation of the plan if basic constraints are not met.

25. The basic assumptions must be seen to be realistic in the eyes of the divisions.

26. The system should encourage profit objectives to be an integral part of the plan development from the start of the plan cycle, and should allow recalculation of the plan if the objectives are not met.

BUDGETARY PLANNING SOLUTIONS

Development of the S-Plan Paper (8.3.2) and presentation at the introductory team spirit talk (9.4) helps to communicate the strategy to other levels of management.

Budgetary Planning encourages strategic thinking to be in the forefront of the division's mind by using better linkages - see 14-20. The Strategic Planning System will be improved and this will help to encourage divisions to make their strategic manipulations, rather than tactical responses, explicit (8.3.1).

The System encourages reviews of strategic assumptions (9.7), strategic performance (9.5.2) and implementation (9.14.2).

The funds constraints are tested in the evaluation of tactical alternatives (9.8.2) and the momentum sales forecast (9.6).

Divisions wishing to use different assumptions from those produced by the Centre, will be at liberty to do so providing the new assumptions are explicitly stated and a reasoned argument for the change is included (9.3.3).

The profit objective are tested in the evaluation of tactical alternatives (9.8.2) and the momentum sales forecast (9.6).

AREAS FOR POSSIBLE IMPROVEMENT	BUDGETARY PLANNING SOLUTIONS
<p>27 The system should encourage divisions to fill "gaps" by creative planning.</p> <p>28. Redesign the format of the economic assumptions to assist in making the conceptual leap between macro level and divisional level.</p> <p>29. Design a system which is either easier to operate or provides information at a time when divisions require it.</p> <p><u>Planning Techniques</u></p> <p>30. Although encouragement should be given in the use of objective forecasting techniques, only divisions themselves are sufficiently close to their markets and their abilities to determine what techniques ought to be used.</p> <p>31. The system should encourage a multiple approach to forecasting techniques.</p> <p>32. The system should be designed to encourage the analysis of uncertainty and risk by using probability assessments.</p>	<p>"Gaps" between momentum and objectives are filled by tactical implementation of the strategy (9.6).</p> <p>A new format for basic economic assumptions has been designed which stresses trends and changes. It also utilises graphs and industrial production breakdowns to help divisions to see the relevance of macroeconomic indicators to their markets (9.3.3).</p> <p>The preplanning information will be sent out a month earlier than at present and any modifications which may be required will follow up until the beginning of September (9.3.3).</p> <p>Forecasting techniques which are producing significantly inaccurate forecasts will be challenged by the Centre (9.12.1). Choice of technique, however, will remain in the hands of the division (9.9.1).</p> <p>The System encourages basic trend analysis in the momentum forecast (9.6) and more objective techniques, as well as consensus approaches in the actual sales forecast (9.9.1).</p> <p>Many of the forecasts will be produced in the form of probability ranges. For example, objectives (8.3, 9.3.3). Also planning consultancy teams will attempt to educate divisions in assessing probability (9.3.2).</p>

AREAS FOR POSSIBLE IMPROVEMENT

33. If any "new" or "sophisticated" techniques are to be introduced, then there should be considerable top-down commitment to getting them accepted.

34. The system should be designed to allow techniques such as computer financial modelling to be incorporated at a later stage.

Financial Projections

35. By relating the plan directly to the S-Plan objectives, and by increasing participation in objectives setting, the problem of objectives being changed by top management could, to some extent, be avoided.

36. Efforts should be made to split motivational targets and financially realistic forecasts.

37. Profit targets should not be centrally imposed.

38. The degree of realism required in the plan should be heavily stressed in the system.

BUDGETARY PLANNING SOLUTIONS

Considerable top-down commitment will be shown for new techniques (9.3.1).

The System is essentially future oriented; by being flexible it can grow and develop. However, it will not operate with full efficiency until computer assisted financial plan modelling is instituted. Parts of the System are already geared up to this step, for example, tactical alternative evaluation (9.8.2) and environmental assumptions (9.7) are ideal for what-if modelling (Appendix D4).

The goals are participatively agreed in the Budgetary Plan (9.3.3), being derived initially from the iteratively agreed S-Plan (8.3.3). This reduces the need for top management to intervene and ask for higher profits.

As profit objectives should be realistically achievable (9.3.3) this should mean that the Plan as a whole should be a forecast rather than a target. However, motivational targets might be required, particularly in the sales forecast, and this can be accommodated by the use of permanent optimism (9.9.1).

As 36.

Realism is consistently stressed throughout the System. For example, objectives (9.3.3), sales forecasts (9.9.1), etc.

AREAS FOR POSSIBLE IMPROVEMENT	BUDGETARY PLANNING SOLUTIONS
39. By avoiding profit targets the requirement for contingencies may be reduced.	The use of realistic objectives (8.3) in the S-Plan should, to some degree, nullify the need for contingencies.
40. Contingencies, if required, should be set after detailed analysis of past variance.	Budgetary Planning offers a comprehensive variance analysis which can be used in contingency setting (9.12.2).
41. If contingencies need to be employed at the Centre, they should be confidential.	Central contingencies are employed only where there is obvious "celestial magnetism" on a Group basis (9.12.2).
42. Objectives should be set so as to be viewed as obtainable by both divisions and the Centre.	Divisions are not "pulled" into including too stretching objectives in the Plan, but agree a contract in the S-Plan (8.3.2).
43. The plan system should allow the development of realistic plans.	Achieving targets which are purposely set at realistic levels means the whole System is geared up to realism (8.3).
44. The use of divisional contingencies should be accepted, but divisions should be encouraged to declare them.	The System accepts that divisional contingencies will exist, but as long as the agreed objectives are achieved they are of no material significance (9.12.2).
45. A closer link between the funds allocation and volume needs to be forged.	The proposed funds allocation links the funds to volume via agreed turnover to working capital ratios (9.3.3).

AREAS FOR POSSIBLE IMPROVEMENT	BUDGETARY PLANNING SOLUTIONS
<p>46. An alternative method of predicting long term funds growth and requirements needs to be found.</p> <p><u>Variance Analysis</u></p> <p>47. Efforts should be made to formalise parts of the system in order to encourage accuracy.</p> <p>48. Improvements need to be made in forecast accuracy, interpretation and use.</p> <p>49. Bias, being systematic, should in theory be eliminable, thus methods should be proposed for divisions and the Centre to trace and analyse bias.</p> <p>50. The system should encourage accuracy rather than optimism.</p>	<p>Major capital expenditure projects and turnover to working capital ratios will be contained in some detail for years 1, 2 and 3, and less detail for years 4 and 5, in the S-Plan (8.3.3). There is, therefore, no need for the budgetary plan to detail years 2 and 3.</p> <p>Budgetary Planning makes specific recommendations which aim to formalise the approach of divisions to their planning. For example, tactical alternative generation (9.8).</p> <p>Budgetary Planning encourages accuracy by asking divisions to conduct a self-analytical review of the forecasts (9.5.3), in which it applies the divisional variance methodology discussed in Appendix C3. Forecast credibility is also a major input into the funds allocation procedure (8.3.3). Similarly, variance analysis is used in the setting of contingencies (9.12.2).</p> <p>The use of Theil's decomposition (5.6.6) and the monitoring of bias in the review by Head Office (9.3.3) and the divisional review of performance (9.5.3), are central to the Budgetary Planning effort to eliminate systematic error.</p> <p>The removal of targets from the annual planning system (8.3.3) and the analysis of forecast accuracy (49 above) should help to eliminate optimism in the forecasts.</p>

AREAS FOR POSSIBLE IMPROVEMENT	BUDGETARY PLANNING SOLUTIONS
<p>51. The Centre should be aware of the types of error which can occur and the effect they might have on their decision making.</p> <p>52. Better forecasting techniques should be encouraged by the system.</p> <p>53. The Centre should use error relationships to monitor, forecast error and improved divisional forecasts.</p> <p>54. Stress should be laid on the forecasting of change.</p> <p>55. In divisions not performing significantly better than a no-change model, the present forecasting techniques should be drastically modified.</p> <p>56. Theil's coefficient should play a major role in determining the relative performance of divisions as it takes into account inherent variability. A comparison of this with absolute percentage error may help in determining risk in funds allocations. It should also be used in determining the forecasting techniques required in various markets.</p>	<p>The use of variance methodology at the Centre should help to determine the type of errors predominating and assessments will be made as to how these errors might affect, in particular, funding decisions (8.3.3).</p> <p>Divisional variance analysis (Appendix C3) will be included as part of the preplanning information (9.3.3), and divisions with poor forecast accuracy will receive recommendations that improvements to their forecasting techniques should be made (9.12.1).</p> <p>Budgetary Planning incorporates the variance methodology discussed in Section 5 and uses, in particular, linear transformation (5.6.8) to improve divisional forecasts at the Centre (9.12.2).</p> <p>Budgetary Planning encourages divisions to consider changes from trends (9.6).</p> <p>Both the Centre and divisions use Theil's coefficient as part of their performance review (9.3.3 and 9.5.3), which should help them to select efficient forecasting techniques (9.9.1).</p> <p>The performance review (9.5.3) compares, <i>inter alia</i>, Theil's coefficient with mean absolute error to determine the inherent variability present in the division's forecast. This is also used as an input into the categorisation procedure to help isolate risk (Appendix B2).</p>

AREAS FOR POSSIBLE IMPROVEMENT	BUDGETARY PLANNING SOLUTIONS
<p>57. Divisions should carefully monitor systematic influences on the error in order that some effort might be made to eradicate them. A learning process, particularly with reference to overestimation, should take place.</p>	<p>By exposing systematic factors via Theill's decomposition, both at divisional level (9.5.3) and at the Centre (9.3.3), divisions are encouraged to reduce the systematic elements in their forecasts.</p>
<p>58. The planning system should be sufficiently flexible to accommodate this error.</p>	<p>Budgetary Planning accepts a certain degree of error will always be present and thus employs probability ranges (9.3.3 and 9.9.1), various funding levels (8.3.3) and resilience testing (9.8.2) to accommodate it.</p>
<p>59. Reward/punishment systems should be devised to encourage divisions to reduce the size of their systematic error.</p>	<p>Divisions will be heavily challenged if they have a record for inaccuracy (9.12.1) and will find it more difficult to obtain funds, particularly at level 3 (8.3.3).</p>
<p>60. The consideration of change in turnover trends should be more actively encouraged.</p>	<p>Consideration of the momentum forecast (9.6), and the subsequent tactical improvements made to the forecast, (9.9.1) helps the division to actively consider turning points.</p>
<p>61. Divisions should be encouraged to consider turning point analysis as part of their plan review process.</p>	<p>The sales forecasting process (9.9.1) asks divisions to explicitly consider turning points.</p>
<p>62. Accurate forecasters should be rewarded, while inaccurate forecasters should be punished.</p>	<p>Budgetary Planning uses a formal follow-up procedure (9.14.3) as part of its control process.</p>

AREAS FOR POSSIBLE IMPROVEMENT	BUDGETARY PLANNING SOLUTIONS
<p>63. Divisions should be encouraged to consider relationships between growth and error.</p> <p><u>Control System</u></p> <p>64. The system should encourage achievement of plan.</p> <p>65. Effective means of objectively monitoring variance, to determine its significance, should be developed.</p> <p>66. By closely linking the S-Plan to the M-Plan, strategic decisions should play a recurring role in the operating of a division.</p> <p>67. Monitoring of a plan should concentrate not so much on which division has not achieved a certain action or objective, but why they did not plan for the event which prevented them from achieving it.</p> <p>68 Reward/punishment systems should be linked to other factors than financial remuneration.</p>	<p>Monitoring optimism in the performance review will take into account the relationship between turnover growth and errors in margin and return (9.5.3).</p> <p>The Budgetary Planning System encourages divisions to link Plan achievement to any incentive schemes that they may be operating (9.14.3).</p> <p>Statistical methods of monitoring variance are proposed in Budgetary Planning (9.14.1).</p> <p>One of the roles of the Planning Committee is to monitor performance against Plan, and via Plan against strategy (8.4.1).</p> <p>Corporate Planning have a role to investigate why divisions did not consider factors which have caused them to fail to achieve Plan (9.14.3).</p> <p>Budgetary Planning uses the Planning Committee to exert pressure on management to achieve their forecasts. However, in the absence of superior methods, it also uses funds as a reward/punishment mechanism (9.14.3).</p>

AREAS FOR POSSIBLE IMPROVEMENT	BUDGETARY PLANNING SOLUTIONS
<p><u>Link with Head Office and Trading Group</u></p> <p>69. The system should accept that it is the task of divisional management to manage their units and the so-called plan challenge should become more of a communications exercise.</p> <p>70. Efforts should be made to increase Corporate Planning's understanding of divisional markets and problems.</p> <p>71. Corporate Planning should take on an educational role.</p> <p>72. Encourage the submission of management accounting schedules in their divisional format.</p> <p>73. The system should be designed to avoid duplication of data and the amount of financial accounting data should be kept to a minimum.</p>	<p>As operational management is abdicated to divisional management, the Plan "challenge" in Budgetary Planning largely concerns itself with Strategic Plan implementation and attempts to determine whether the Plan is realistic. The challenge process allows divisions to communicate their Plans for the next 12 months in detail, so that the Management by Exception principle can operate (9.12.1).</p> <p>The Planning Consultancy Teams aim to greatly increase the contact between Corporate Planning and the divisions (9.3.2) and thus allow divisions the opportunity of explaining their problems directly.</p> <p>The Planning Consultancy Teams have an educational role to play in disseminating information on planning and planning techniques (9.3.2).</p> <p>Divisions are not mandatorily required to submit anything except basic financial data. However, divisions which do not produce sufficient data, specifically of a management accounting type, will be heavily challenged (9.12.1). Submission of management accounting data in its divisional form is actively encouraged in the guidelines (9.3.3).</p> <p>The Budgetary Planning System asks divisions to provide the minimum financial data possible and then uses a computer model to develop the Head Office schedules from this data (9.11.2).</p>

AREAS FOR POSSIBLE IMPROVEMENT	BUDGETARY PLANNING SOLUTIONS
<p>74. Every encouragement should be given to the divisions to submit schedules in their divisional form in order to back up their plan. Divisions who have not supplied sufficient data should be challenged aggressively.</p> <p>75. The system should offer the division the opportunity of making minor revisions to the plan up until it is submitted to MD in December.</p> <p>76. The system should aim to have the maximum degree of flexibility in it.</p>	<p>As 73.</p> <p>Divisions are given the opportunity of making minor modifications to the Plan up until it is consolidated before going to MD (9.11.2).</p>
	<p>Although the planning cycle is relatively rigid, the Budgetary Planning System can be regarded as a series of recommendations. It only mandatorily requires the production of limited financial data. However, if divisions produce a Plan which is not, in the opinion of the Centre, satisfactory, then they will be required to re-submit (9.12.1).</p>

of the System as the Planning Committee or the Planning Consultancy Team depend almost entirely on the calibre of their members for their effective operation.

One area of concern when implementing Budgetary Planning will almost certainly be its large resource requirement, particularly in terms of manpower. At the Centre, systems such as the iterative Strategic Plan development, three levels of funding, and the Planning Consultancy Teams, will all be time consuming. Likewise, on a divisional level, tactical alternative generation and the participative aspects of the Planning System, could well lengthen the Plan development process. This is not the only problem, several other of the recommendations, for example participation, require a fundamental shift in the attitudes of management, which some might be unwilling to make. This is precisely why top-down commitment and encouragement towards Budgetary Planning is so important. It is the author's belief that the only way to make planning successful is to give a firm commitment to it, both in terms of resources and management ideals.

Finally, it must be noted that several of the proposals in Budgetary Planning are in a very primitive stage of development. For example, very little assistance is given on how two parties (the Centre and the division) might arrive at a stretching, yet achievable contract in the iterative S-Plan process. This is primarily a behavioural problem, and is, to a large extent, outside the scope of this research. Also, the proposed reward/punishment process uses, in the absence of a superior alternative, the funds allocation. Whether this is a suitable instrument and exactly how it is to be used, is something for the Main Board to decide.

Experience in the Planning System over several years suggests that the credibility of planning in Dunlop is not high at present. It is the author's belief that, given commitment from central and divisional management, Budgetary Planning could make significant improvements to the efficiency of the corporate planning process as a whole as well as to annual planning.

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