The extent of effectiveness of management control reports has not matched the great promise generated by the development of concepts of management planning and control, and advances made in data processing in the last decade. The primary reason for this gap is the monetary orientation of such reports. Analyses of current theory and practice indicate that while the requirements of non-monetary or operational data for control has been recognized, they have not been translated into an operational and managerial framework. Recent studies of Hofstede, Sord and Welsch, and Bhattacharyya and Camillas have highlighted the need for integrating monetary and non-monetary data into a common framework. They have also suggested operational and managerial guidelines for designing management control reports reflecting the critical variables at various levels of management. In this article, the nature of such variables has been analysed in some detail and illustrated, assumptions for designing effective management planning and control reports have been formulated, and a conceptual framework has been suggested.

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The widespread application of electronic data processing, which began in mid-sixties, has significantly contributed to excellent logistical support for much quicker data processing and expeditious reporting. More importantly, EDP has made it possible to analyse performance data by way of various permutations and combinations of managerial variables, e.g., products, locations, customer groups, functions—marketing, production, purchase, etc. Management

1 Possibly the first study which generated this understanding was the General Electric Project.
reports for analysis of performance data for planning, decision making and controlling has reached new level of sophistication, hitherto not feasible on manual basis. Given all these developments, it would be reasonable to expect that management reporting systems would attain near-ideal level of effectiveness and efficiency and make significant contributions to the total management task of attaining the organizational goals.

Most thinkers and practitioners who are knowledgeable about the realities in this regard in the business world have, however, come to the conclusion that these expectations have not been substantially fulfilled. Many analysts attribute such relative ineffectiveness of the management control reports to organizational considerations. Amongst the major reasons identified by them are:

1. Inability (or unwillingness) to process meaningfully the control data generated and to take toughminded remedial action based on systematic review and follow-up in a climate of mutualty and collaborative action.
2. Absence of a properly organised controller's department or the ineffectiveness of the controller, where such a setup exists.
3. Lack of management support to the management control system stemming from top management styles and values or inability (or possibly, unwillingness) to use quantitative data for planning and controlling.

Much has been written on these very real problems of management which need continued future attention on the part of behavioural scientists and management thinkers. Perhaps Marvin Bower of McKinsey and Co. Inc., the world renowned firm of management consultants, puts this issue in the most fundamental terms when he identifies these problems as indicative of "unwillingness to manage." The present article does not propose to explore these issues. It limits its examination of ineffectiveness of management control reports to the other major consideration—systemic problems in the areas of design and administration. It is hypothesized that such ineffectiveness—or systems failure—arises because:

1. Control reports are usually oriented towards monetary performance and, therefore, focus wholly or primarily on monetary data ignoring that management control depends as much on insights relating to "means" as knowledge of "ends." The assumption seems to be management control and accounting data are identical.
2. Management control reports are poorly designed and seem to follow textbook prescription of cost classifications and variance analysis and overwhelming concern that all data should be precise and mutually reconcilable in a neat financial accounting sense. Moreover, in most situations they fail to match the requirements of differing planning and control data needs at different management levels.
3. The financial data in the management control reports are developed on the basis of generally accepted accounting principles which are based on external and statutory reporting considerations arising out of Companies Act rather than management usage. In other words, the basic objective is to develop periodic "score-keeping" profit and loss accounts and cost statements rather than provide a cutting edge to management's desire for identifying what is wrong, what can be done, what needs to be done and who should do it.
4. The cost data in management control reports tend to follow excessively finely tuned classifications required for esoteric variance analysis which provide little or no help in managerial analysis of performance data.
5. Most management control systems are designed, implemented, and administered by professional accountants (or in recent years, computer specialists), who are basically functional or systems specialists. Such professionals are primarily concerned with financial accounting, tax, finance, etc., of data processing. Such an orientation possibly hinders the development of adequate understanding and insights relating to critical operational variables and the total management framework whereby the strands of individual functions can be woven into a total managerial fabric in the context of management planning and control.

Practising managers would have very little difficulty to relate these dimensions to the effectiveness and efficiency of management control reports in real situations. The problem, then, is not one of lack of concepts or a sustaining framework but one of failure of systems design and administration. This article probes these problem areas, identifies causes which contribute to the problems, and suggests what designers and managers can do to resolve these problems.

Problem Areas

In beginning our analysis of the problem areas, we assume that management control reports in most organizations are prepared with reference to annual budgets. The organizational budget sets the financial performance goals for the organization and for the various functions (marketing, production, etc.), product groups and product lines, regions, etc. These targets are then broken up into smaller period (monthly or quarterly) budgets which in aggregate match the desired level of performance for the total
organization. The control reports at the lowest level, i.e., at the operational level, are designed around measurement of performance of individual responsibility centres with reference to their budgets and highlight the variances. The operational level reports for these responsibility centres, e.g., production shops, functional departments, marketing territories, and productlines, are then aggregated into product group, functional or regional reports to provide similar kind of management control information, comparing targets with actual performance for executive management heading such operations. These executive management level reports are in turn aggregated for the entire organization to provide the top management control reports again comparing actual performance in relation to organizational targets, relating to sales, cost of production, gross margin, overheads, profit before tax, profit after tax, rate of return on investment, cash flow, etc. This modular concept of budget-related control reports, which is built up by aggregating successively the modules at operational management and executive management levels to generate organizational control report, is almost universal in its application.

People in the business world as also academics rightly claim the tremendous contribution made to the management process by such planning and control (based on budgeting and reporting). These claims are based on the following premises:

1. The budgetary control system forces the corporate management to translate the long run organizational objective into specific financial terms.
2. It brings in the discipline of formalized and systematic setting of targets consistent with the potential.
3. It forces the management to break up the organizational tasks into functional, productive, and regional performance targets. The organizational targets are broken up into more specific financial targets of achievement for the lowest level responsibility centres, i.e., production shops, functional departments, territories, productlines, etc., thereby providing a means of monitoring the achievement of the total organizational objective by way of controlling the performance of all the responsibility centres.
4. It allows management at all levels to continuously measure the performance, relate performance to the desired level of achievement, identify areas of shortfall, and take remedial action.
5. It allows reporting by exception at all management levels, pinpoints responsibility for performance, and focuses management attention sharply on variances ensuring that their attention is not diffused over areas in respect of which performance is satisfactory and requires no remedial action.

Notwithstanding the great achievements of the budgetary control system, many thinkers have identified the reasons why such budget based management planning and control is ineffective in many situations. Some of the reasons identified are:

1. The problem of directing activity towards a goal by way of generating the required individual motivation: This problem is ignored by and large in the case of cost accounting and budgeting excepting in so far as it deals with the issues such as understanding (or the lack thereof) of accounting reports by others. (Slidry, p. 12)
2. The problem of setting up standards of achievement to be reflected in the target: There is considerable doubt whether performance, measured by budget variances, serves as output measure of the effectiveness of the system. (Hofsteede, p. 122)
3. Budget pressures lead to many human problems and tend to place the concerned managers under tension. This tension may lead to inefficiency, aggression, and perhaps complete breakdown. (Argyris, p. 25)
4. Budgets tend to make managers see only the problems of their own department.
5. In many situations, variances are not susceptible to effective managerial action because of the multifunctional nature of most remedial tasks. (Bhattacharyya and Camilus)
6. Budgets are not backed up, in most situations, by action programmes identifying what requires to be done, who will do it and by what time such action should be completed. (Bower)
7. The lower level supervisors/managers are concerned with achievement of operational tasks; usually they do not feel that the budgeting process is fair, relevant, and useful to them. (Sord and Welsh)

The Stranglehold of Monetary and Accounting Data

There are other studies which have highlighted many deficiencies of most budgetary control systems, in behavioural as well as in operational terms, which significantly reduce the effectiveness of such systems. These problem areas have in the past received considerable attention and new responses are being continuously evolved for overcoming such problems. However, it is contended that one of the major problem areas in the budget had not been

2 According to the Argyris study, the operational managers think that budgets never show the reasons why they have never been met. "I think the budget boys think things are simple—just add up the figures. But factory knows all the things that could easily affect them. These factors are important to us. There are so darn many extenuating circumstances about each budget. But the budget people just don't see these circumstances."
identified in any of these studies, and it requires attention of the systems designers, corporate management, academicians, and researchers who are concerned with developing a more effective framework for management planning and control. Briefly stated, this problem arises because most budgetary control systems (and, therefore, the management control reports) are almost entirely framed in monetary terms. Budgets in most situations deal with financial targets highlighting the required performance in monetary terms—sales, cost, gross margin, overheads, profit after tax, return on investment, cash flow, etc., thereby failing to pay attention to five major dimensions:

1. While money has the great merit of providing a common denominator for purposes of measurement, it essentially represents one of the several outputs of managerial action. Effective management planning and control should focus on critical variables at all management levels which determine management success and effectiveness rather than merely report one of the output. In other words, planning and control should be as much concerned with the process and means as with the ends.

2. The executive management level managers heading functions, regions, or product groups are basically concerned with monetary performance in respect of their own activities. This is rightly so because they are held responsible for translating the long term organizational goals into medium and short term (usually annual) targets of financial performance. However, this assumption is not valid either in relation to corporate management concerned with the thrust and direction of the organization as a whole or operational management who are charged with the responsibility of carrying out specific short term tasks effectively and efficiently. The data for target setting (i.e., planning) and controlling, therefore, should reflect such appropriate weightages between monetary and non-monetary dimensions at different management levels.

3. Financial data, comparing actual performance with financial targets, do not provide any indication relating to the contributory factors leading to such results. Invariably, a further ad hoc analysis requires to be made for such financial variances in operational terms (e.g., wastages, rejections, machine and labour productivity, utilisation, market share, and price) or in relation to external factors (e.g., market condition, competitor behaviour, availability of raw materials, inputs like power, and regulatory measures).

4. An excessively fine tuned accounting oriented managerial analysis shifts managerial attention from critical variables and leads to rationalisation of inadequate financial performance based on factors which are not either reflected in the targets or reported in the control reports.

5. It is seemingly assumed that all managers, irrespective of their professional background and management level, are versed in the art of financial analysis. Since profit, cash-flow, return on investment, etc., are the desired outputs, it also seems to be automatically assumed that all managers understand the sophisticated financial analysis reflected in the budget and control reports.

**Past Inhibitions of Theory and Practice**

It might be useful at this stage to analyse briefly why management planning and control systems, in most situations, have been equated with the financial budgeting based reporting system or as Dearden (1973) calls it "financial control systems." He views economic or monetary resources as only a subset of the total resources of a company and defines "economic resources as those resources traditionally measured by the accounting system." He postulates that "the financial control system, then, is a subset of the total management system."

A survey of the current literature indicates that thinkers in this field and designers of systems have almost invariably limited the scope of their work and writing to monetary control systems. Anthony who begins by defining management control as the "process by which managers assure that the resources are obtained and used effectively and efficiently in the accomplishment of the management's objectives," goes on to assume that such systems have an underlying financial structure and underpinning. He says:

> Since the management control process encompasses the totality of the organization, management control systems, with rare exceptions, have an underlying financial structure; that is, plans and results are expressed in monetary units. Money is the only common denominator by means of which the heterogeneous elements of outputs and inputs (e.g., hours of labour, type of labour, quantity and quality of material, amount and kind of products produced) can be combined and compared. (Anthony, 1965, p. 41)

In rationalizing the above assumption, he says:

> A management control system is ordinarily built around a financial core, since money is the only common denominator for the heterogeneous elements of inputs and outputs. (Anthony, 1965, p. 78)

However, Anthony allows that the two extreme parts of the management planning and control system, i.e., strategic planning and operational control, might require non-financial and non-monetary data. According to him:

> Operational control data are often nonmonetary. They may be expressed in terms of man-hours, number of items, pounds of waste, and so on. Each operational
control system is designed for a limited area of application, so that it is feasible to use the basis of measurement that is most appropriate for that area. (Anthony, 1965, p. 78)

In analysing the nature of the strategic planning process, he comments:

Strategic planning relies more heavily on external information, that is, on data collected from outside the company, such as market analyses, estimates of costs and other factors involved in building a plant in a new locality, technological developments, and so on. (Anthony, 1965, p. 43)

However, having made these gestures towards the possible claims of data of nonmonetary nature for strategic planning and operational control, Anthony feels it necessary to return to his theme that money should be the only basis for management control system. He rationalizes his position in the following manner:

Although management control systems have financial underpinnings. It does not follow that money is the only basis of measurement, or even that it is the most important basis. Other quantitative measurements, such as enrollment, grades, market share, yields, productivity measures, tonnage of output, and so on, are useful. So are non-quantitative expressions of quality, ability, co-operation, and other attributes. We simply mean that, in most organizations, money is the only denominator that can relate the various pieces to one another and that a financial structure is therefore essential to the management control process. (Anthony, 1965, p. 42)

In another context, he adds:

Moreover, in management control system, nonmonetary information should be reconcilable with monetary information. Information on the number of personnel should be relatable to information on the cost of personnel, for example. (Anthony, 1965, p. 43)

This article questions the validity of Anthony's assumptions on three counts:

1. The management process, and for that reason management control system, cannot be assumed away to relate solely to money, i.e., the end and not variables which lead to such ends, i.e., the means.
2. It is necessary to design the three distinct parts of an integrated management planning and control system representing a continuum—strategic planning, management planning and control, and operational control—with different underlying structures, some in terms of emphasis on money and others in terms directing attention to external information and operational data.
3. It is unnecessary to assume that all nonmonetary information should be reconcilable with the monetary information in the management control reports for purposes of management control (as distinct from requirements of accounting).

Several authors reflect the obsession with monetary structure of control systems though their views are normative (as distinct from the conceptual base of Anthony's reasoning). For example, Welsch describes the purpose of performance report as follows:

1. Comparison of actual and planned costs, revenues, assets, liabilities and equities to determine the extent to which the profit plan was met or exceeded (performance measurement).
2. Analysis of variations between actual and plans to determine causes and to provide a basis for corrective action. (Welsch, pp. 83-84)

The illustration of a performance report provided by Welsch (p. 341) is entirely composed of financial data relating to direct material, direct labour, departmental overheads—all in monetary and cost accounting terms. The interesting thing is that while it provides a great deal of variance analysis in monetary terms, it is not considered necessary to highlight the critical operational factors which lead to such variances.

Robert Deming (p. 216), who conducted his research under Robert Anthony relating to characteristics of effective management control based on an in-depth study of a large industrial organization came to the conclusion that performance report should be in economic terms:

The committee stressed the importance of designing a management control system which contained certain economic fundamentals. These were 1) cost-price-volume relationship, 2) segregation of fixed from variable costs, and 3) an elemental cost system which easily provided different costs for different purposes. The author added a fourth, flexible budget reporting and controlled transfer of budgeted funds.

Deming, in spite of his detailed research, obviously found it easier to explain effectiveness in "cookbook" terms rather than probe the process of management control.

Similarly, another renowned author Robert Beyer from the field of public accounting equates the whole process of planning and control with profitability accounting.

Some Recent Research Findings

Fortunately, researchers who were involved in analysing and probing the nuances of the
effectiveness of the management planning and control process in the marketplace situation or practising managers, who are charged with the responsibility of making the management control process effective, did not take the narrow and constricting view reflected in the works of Anthony, Welsch, Deming, Beyer, et al. Hofstede brought this basic dilemma up in his research findings by holding the view that

the objective of the periodic reports is not only that they are understood but also that they are used. There is some correlation between understandability and attitude indicating that understandability of reports is a hygienic factor in budget system. (Hofstede, p. 202)

He dramatized his viewpoint by the following quote from a manager whom he interviewed:

I pass the report on to the foreman with a number of questions on a slip of paper. They take it to the budget accountant to find out where the figures come from (second-line manager). (Hofstede, p. 202)

He identified that one of the factors contributing to this lack of understandability relates to the monetary or accounting underpinning of the management control systems, based on the following reasoning:

The accountant’s language is different from the manager’s language and this impairs the understandability of feedback information by the manager. (Hofstede, p. 214)

In support of his arguments, he quoted the comments of a manager receiving such reports and a staff executive concerned with the preparation of such reports:

The only way to improve the understandability of these reports is to make us all accountants. Just forget about it (second-line manager). (Hofstede, p. 214)

They do not understand it fully, because the results are published in accounting jargon. We have made it too difficult (staff interviewee). (Hofstede, p. 214)

The greatest contribution made by Hofstede in this area was his distinction between accounting information and management information. He recommended:

Design the management information system yourself after thorough discussion about what line managers at various levels, down to the foreman level, need to know and what you can supply. Do not use reports that serve for accounting consolidation simultaneously for management information. Give more detailed information to lower management levels and more general information to higher management levels. (Hofstede, p. 299)

The validity of Hofstede’s hypothesis was established by the study of Sord and Welsch based on their examination of management planning and control systems in 112 companies. They came to the conclusion that managers and supervisors find very little of relevance in management control reports as is evident from some of the comments quoted in their study:

Provide me with more adequate, accurate and timely facts about the working situation, so that I may measure performance and progress at predetermined intervals, make comparisons with plans and goals, and have a sounder basis for decisions. (Sord and Welsch, p. 195)

Another supervisor expressed his viewpoint in slightly different terms:

I think our real trouble is due to the fact that a great majority of the planning personnel have actually lost contact with shop conditions and people. This condition leads to loss of confidence by the people in the shop and results in confusion and costly improvisation and changes. (Sord and Welsch, p. 207)

The research findings of Hofstede and those of Sord and Welsch were in a sense implicit in the finding of the practising managers relating to the effectiveness of management planning and control [(process. W.F. Oswalt, General Manager—General Purpose Control Department of the Industrial Power Component Division of General Electric Company, stated in blunt terms:

To a degree undreamed of by most accountants, however, the engineers and manufacturing people accept or reject projects based upon analyses containing these accounting short cuts, and there appear to be an appalling number of cases where the accountant himself does not recognize either that these decisions are being made or that they are made in blind acceptance of these average short cuts. (General Electric Study, p. 19)

Perhaps the most valuable contribution that the General Electric Study made was in developing understanding that accounting based reports for relatively short periods—a month or half year or year—fail to differentiate the management and control implications in terms of balance between short range goals and long range goals. Perhaps an even more lasting fundamental contribution was the evolution of the concept of key result areas most of which
ware articulated in non-financial or managerial terms. To quote Lewis:

To check whether a tentative area was sufficiently basic to qualify as a key result area, this test question was applied:
Will continued failure in this area prevent the attainment of management's responsibility for advancing General Electric Company as a leader in a strong, competitive economy, even though results in all other key result areas are good?

The result of this evaluation produced the following eight key result areas:
1. Profitability
2. Market position
3. Productivity
4. Product leadership
5. Personnel development
6. Employee attitudes
7. Public responsibility
8. Balance between short-range and long-range goals. (General Electric Study, pp. 30-31)

It might be of interest to mention that General Electric has developed quantitative indicators—direct or surrogate—for all items except item 7. More recently, Bhattacharyya and Camillus in their study of 90 large Indian companies found that:

The effectiveness of management control systems should be considered along two distinctly separate dimensions.

These two dimensions are: i. the managerial effectiveness of the system and ii. the technical effectiveness of the system.

The managerial effectiveness of a management control system relates not so much to the financial results and operating performance of the organization but rather to the ability of the management control system to pinpoint and anticipate problems and to provide a vehicle for management action.

The technical effectiveness of a management control system on the other hand would concentrate on the achievement of the organization in relation to specific primarily financial indicators of performance such as sales, production, costs in general and overhead in particular. (Bhattacharyya and Camillus, pp. 39-40)

Bhattacharyya identified the criteria relating to the content of the management reports as follows:

The information thus may have to be necessarily tailored to each organization's unique managerial and operational characteristics. Nonetheless, while each level of management would require financial and nonfinancial information and operational or physical indicators of performance, the relative mix of such information will significantly vary for each level of management. (Bhattacharyya, p. 21)

From the above analysis, it is clear that the management planning and control process encompasses things beyond the mere monetary. How should we then go about designing, implementing, and administering an optimal system which truly subserve the requirements which help optimize the correlation between resources and organizational objectives?

Required Assumptions for Effective Management Control Reports

To reflect the understanding and insights developed from the analysis so far, the following ten assumptions about the factors which constitute the determinants of effectiveness of management Control reports have to be made:

1. The most important assumption relates to the different management levels in an organization and the differing nature of planning and control responsibilities at each level. The three distinctive management levels a systems designer should be concerned about are Corporate Management, Executive Management, and Operational Management. In the light of these roles, the planning and control responsibilities of the various levels of management are set out in Appendix I.

2. The management control reports must reflect the critical variables at the recipient's level of management. We define "critical variables" as those dimensions in the operations of various levels of management which substantially determine their effectiveness. Another way of identifying such critical variables is whether continued failure in these areas would prevent attainment of the desired level of performance even though the results in all other areas are satisfactory. For example, the occupancy rate is the critical variable in the operational management of a hotel organization (the criteria for identifying the critical variables are outlined in the subsequent part of this article). We also need to distinguish the nature of the critical

3 See Bhattacharyya (1976, pp. 9, 10, and [22) for a detailed discussion and identification of differing needs of information at different levels.
variable at each management level. For this reason they are termed as Key Results Area for Corporate Management with their focus on long term effectiveness. The corresponding variables for Executive Management is termed as Key Success Factors and is related to the effectiveness and efficiency of the ongoing operations within a shorter time span—usually a year or so. For Operational Management these variables could be Key Indicators of Performance which would relate to critical dimensions of the short term—usually monthly, fortnightly, or even daily-tasks (an illustrative list of such variables is provided at Appendix II).

3. The management control reports must subserve the need for both financial and nonfinancial data of all the three levels of management. In selecting such data, both financial and nonfinancial, some of the basic principles are as follows:

   a. Each manager requires one or two key indicators which clearly measures the success of his operations along with a few other carefully chosen indicators which enable him to analyse the performance in relation to the key indicators.
   
   b. The indicators must be truly critical to the success of the operations of the manager at his level reflecting the characteristics of such operation in terms of marketing, production, finance, personnel, or such other factors which makes his operations "tick."
   
   c. In selecting the indicators, both financial and nonfinancial, careful attention should be given as to whether they are complementary and mutually supportive. However, there is need to overcome past inhibitions that all "numbers" must be mutually reconcilable in the accounting sense. In management planning and control, the major requirement is one of providing understanding and identification of problems, the factors which lead to such problems and alternatives for resolution of such problems, taking remedial action rather than accounting reconciliation.
   
   d. The indicators chosen must be such that they relate to factors which are controllable by the concerned manager and matters in respect of which he can take remedial action. The managerial cost for developing the indicators (or as Westwick4 calls them, ratios), collecting the data in respect of them, processing such data, reporting the results and taking remedial action should be such that they are commensurate with the benefits derived by way of effective management planning and control.

   In regard to item c, it is not the intent that performance indicated by financial statements and management control reports should not be reconciled periodically—say every six months. In fact, this is both desirable and necessary. However, the important thing is that problems of reconciliation created by accounting systems, e.g., elaborate overhead "recovery" systems or delayed processing of materials received due to suppliers' bills being not submitted and accounted for or backlogs in "stores issued" pricing, etc., should not be acceptable as valid reasons for lowering the credibility of management control reports. Accounting systems must come of age by introducing simple systems reform compatible with management control.

   4. The management control reports must provide only data relevant at the concerned level of management planning, decision making, and remedial action and that the data relate to aspects of operations which are controllable at the level of management. In classifying the costs reported, it will also be necessary to differentiate between those costs which are variable with volume of operations, those costs which do not so vary but are susceptible to managerial action at the level, and finally, those overhead costs which can be related to the responsibility centre without any allocation.

   5. Only material data are reported and nonmaterial data, which are either not significant in terms of their impact and effectiveness of operations or which are not susceptible to managerial action, are clubbed together. In other words, the management control reports must reflect an ABC approach to selection of data for management planning and control.

   6. All data both financial and nonfinancial are reported in a single format so that the manager gets a bird's eye view of his total operations. A particular merit of the single format concept relating to management reports is that it enables the manager concerned to see the total picture. It highlights to him the mutuality and interrela-
The total organizational objective must be broken up into discrete and distinct goals, targets and tasks for different management subunits or responsibility centres (Bhattacharyya, p. 16) so that in their totality they contribute to the attainment of the organizational objectives.

8. The reports must be based on a modular structure. This means that the management reports in financial terms for each responsibility centre represent building blocks which are progressively aggregated to derive the management control data for the next level of management, with such other additional nonmonetary (e.g., environmental, technological, functional, and operational) information which is required to serve the distinctive need of information for that level of management. It needs to be emphasized that while financial data will be aggregated at each succeeding level, the nonmonetary data will have to be specifically tailored to the unique requirements of each level developed on the basis of the understanding of critical variables at that level of management. Two distinguishing characteristics of such nonmonetary data are that they supplement the financial data and illuminate their analysis; also, being disparate in nature, they are not susceptible to arithmetical processing like financial data. As noted in Appendix II, some critical variables might be common to more than one level of management.

9. Managers must always be provided with measurement of actual performance, both financial and nonfinancial, compared with the desired level of performance. The structure of the control reports should be such that the variance between the actual and the desired level of performance should be susceptible to easy analysis and identification of the contributing factors which will require remedial action on the part of the corporate management. If the financial and non-financial information are truly complementary in nature, it would be possible to analyse financial variances by relating them to the contributory nonfinancial or operational indicators of performance.

10. The final assumption is that the frequency of generation of management control reports must be tailored to the information needs at that level of management. Obviously, such frequency would be the greatest at the operating management level and would relate to production, marketing, and functional data. They would get reduced successively at the executive management level, where the thrust primarily would be towards financial data reported at monthly or quarterly intervals and at the corporate management level, where the data would relate to overall financial performance, the state of environmental variables and competitive data at longer frequency. The distribution of the management control reports should be such that a manager receives the management control reports only in respect of his own operations and for his subordinates. This will ensure that his ability to analyse the volume of data is kept at a threshold level consistent with the human capabilities of analysing quantitative data. A secondary assumption in this context is that given the building block approach in design, it should be possible for a manager to pursue deviations from desired results to the lowest responsibility centre by calling for such information, when necessary, with the clear understanding that such additional information would be called for by way of exception rather than in a routine way.

A Schematic Framework for Systems Design

The above assumptions can be integrated in terms of a conceptual framework for systems designers whereby the different variables and design choices can be facilitated. This basic

5 The methodology for design and sequential steps in developing reporting formats are described in detail on pages 25 to 33 of Bhattacharyya’s book.
## Tasks of Manager

<table>
<thead>
<tr>
<th>Purpose of Planning System</th>
<th>Purpose of Reporting System</th>
<th>Criteria for Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assign responsibilities to next level of management</td>
<td>Identify goals &amp; tasks requiring managerial achievement</td>
<td>Measure &amp; communicate actual performance in relation to desired performance</td>
</tr>
<tr>
<td>Allocate resources for achieving mission</td>
<td>Specify input-output assumptions</td>
<td>Relevance for decision making and remedial action, and controllability of results reported</td>
</tr>
<tr>
<td>Monitor mission achievement</td>
<td>Analyse and identify key areas for success</td>
<td>Motivate managers to act in the interest of the organization by better self-management</td>
</tr>
<tr>
<td></td>
<td>Determination of critical variables on which plan is formulated</td>
<td>Diagnose deviations from benchmark levels in respect of critical activities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prompt reporting for remedial action and generation of meaningful data for future planning</td>
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</table>

Framework for designing management planning and information system could be represented in the matrix form shown above.

Somewhat similar assumptions regarding the interface between management planning and control are also implicit in the writings of some scholars in this field who have taken position that management structure, planning and control are part of a continuum, e.g., Vancil and Bruns at Harvard Business School, Lorange at Sloan Business School.

### Some Illustrations: Control Reports and Key Indicators

Appendices III-V highlight three illustrative sets of management control reports designed reflecting the various considerations outlined earlier—one each relating to two engineering organizations—one at corporate management and the other at executive management levels and another relating to operations management, e.g., factory performance statement for a sugar factory.

### Conclusion

In designing management control reports, it must be kept in view that finally their effectiveness is governed by at least four other dimensions which are not related to the design variables. These nondesign factors, which are beyond the scope of present article, relate to:

1. How effectively the plans are formulated and developed in the light of the strategic and tactical context of the organization, keeping in view its competitive and regulatory environment and its own strengths and weaknesses?

6 Illustrations of formats based on these considerations for telecommunication operations are available in *Telecommunications*, XXV, June 1975, pp, 37-40, setting out the formats designed by the author and his colleague. Professor J. C. Camillas.
2. How well administered is the formulation, settlement and review processes incorporated in the management planning and control system, particularly in terms of the behavioural requirements of participative process which substantially determine the effectiveness of such systems?
3. What are the styles and values of management at various levels in terms of using formal planning and control as a dynamic managerial tool?
4. Finally, how effective is the controller’s organization, particularly given the requirements of professional and managerial capabilities of the controller himself, his operating style, relationships with various levels of management and the effectiveness of the work organization in his department?

If an organization pays pointed attention to these administrative and managerial factors and designs its management control reports in the light of the various dimensions highlighted earlier, it is reasonable to assume that such reports will contribute substantially and significantly to the success of its operations.

References


### Appendix I Planning & Control Responsibilities at Different Levels of Management

<table>
<thead>
<tr>
<th>Membership</th>
<th>Planning Role</th>
<th>Control Role</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Formulating</td>
<td>Approving</td>
</tr>
<tr>
<td><strong>CORPORATE MANAGEMENT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managing Director, Functional Directors, Product Group/Operations Directors, Functional &amp; Product Group Department Heads not represented at the Board level</td>
<td>1. Strategic Plan (Setting out long-term objective &amp; strategy)</td>
<td>1. Approving Profit Plan/Programme (Broken up in terms of short term targets of achievement)</td>
</tr>
<tr>
<td></td>
<td>2. Action Plan (Translating the strategic plan into quantified targets of achievement)</td>
<td>2. Approving Contingent Plans &amp; Action Programmes (Short term)</td>
</tr>
<tr>
<td></td>
<td>3. Action Programme (Setting out long-term strategic and tactical actions to be taken)</td>
<td></td>
</tr>
<tr>
<td><strong>EXECUTIVE MANAGEMENT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product Group Directors, Operations Directors, Functional &amp; Product Group Dept. Heads, All Regional Managers and Executives heading profit centres with multi-functional responsibilities</td>
<td>1. Profit Plan/Programme for the organisation unit</td>
<td>1. Approving Annual Plans for Product lines/Regions/Functions/Units (re. 1 above)</td>
</tr>
<tr>
<td></td>
<td>2. Contingency Plans</td>
<td>2. Contingent Plans Plans &amp; Action Programmes (re. 1 above)</td>
</tr>
<tr>
<td></td>
<td>3. Action Programmes (re. 1 above)</td>
<td>3. Action Programmes (re. 1 above)</td>
</tr>
<tr>
<td><strong>OPERATING MANAGEMENT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Productline Managers, Regional Managers (heading product group sales), Production Managers, Functional Managers in regions heading service activities</td>
<td>1. Profit Plan/Programme/Operational Plan for their respective productline, production unit, regional sales activity or function</td>
<td>1. Approving Responsibility Centre Plans/Programmes forming part of productline, production unit or regional sales activity plan</td>
</tr>
<tr>
<td></td>
<td>2. Contingency Plan (re. 1 above)</td>
<td>2. Action Programme (re. 1 above)</td>
</tr>
<tr>
<td></td>
<td>3. Action Programme (re. 1 above)</td>
<td></td>
</tr>
</tbody>
</table>

## Appendix II An Illustrative List of Critical Variables

### Some Key Results Area for Corporate Management

| 1 | Return on Investment (ROI) |
| 2 | Profit After Tax/Sales |
| 3 | Sales/Gross Assets (Turnover of Assets) |
| 4 | Price/Earnings Ratio |
| 5 | Profit After Tax/Price/Earnings Ratio |
| 6 | Profit After Tax/Interest Paid (Interest Cover) |
| 7 | Capacity Utilization Percentage |
| 8 | Value Added per Employee |
| 9 | Changes in Market Share (Compared to previous period) |
| 10 | Orders Outstanding as Number of Days’ Sales |
| 11 | Receivable as Number of Days’ |
| 12 | Finished Goods as Number of Days’ Sales |
| 13 | Raw Material as Number of Days’ Consumption |
| 14 | Payables as Number of Days’ Purchase |
| 15 | Capital Expenditure/Depreciation |
| 16 | Research & Development as Percentage of Total Discretionary Expenditure |

### Some Key Success Factors for Executive Management (FOR EACH PRODUCT GROUP)

| 1 | Rupee Contribution per Unit of Sales |
| 2 | Rupee Contribution/Product Assets |
| 3 | Rupee Contribution/Advertisement and Selling Expenses |
| 4 | Order Book as Number of Days’ Sales |
| 5 | Orders Obtained/Quotations Made |
| 6 | Receivables as Number of Days’ Sales |
| 7 | Finished Goods as Number of Days’ Sales |
| 8 | Advertisement & Selling Expenses/Sales |
| 9 | Payables as Number of Days’ Purchase |
| 11 | Total Purchase Price Variance as Percentage of Budgeted Purchase |
| 12 | Plant Capacity Utilization |

### Some Key Indicators of Performance for Operational Management

| 1 | Actual Production as Percentage of Production Capacity |
| 2 | Work-in-Progress as Percentage of Total Production |
| 3 | Rejection as Percentage of Total Production |
| 4 | Repairs and Maintenance as Percentage of Total Production Costs |
| 5 | Downtime as Percentage of Total Machine Hours |
| 6 | Rework Percentage |
| 7 | Overtime Hours to Total Hours |
| 8 | Labour Productivity Index |
| 9 | Machine Productivity Index |
| 10 | Overhead Cost per Employee |
| 11 | Goods Returned: |

### Notes:

1. Some of the indicators are important enough to be reported at two levels of management.
2. The Key Results Area for Corporate Management will include critical indicators of external environment and competition. These will be unique for each enterprise.

### Sales

| 10 | Raw Material Inventory as Number of Days’ Consumption |
| 12 | Complaints: |

| -Number |
| -Value |
| -as Percentage of Goods Sold |

| 12 | Complainants: |

| -Number |
| -Value of goods in respect of which complaints have been received -as Percentage of Total Sales |
## Financial Performance

Rs. in lakhs (up to two places of decimals)

<table>
<thead>
<tr>
<th>This Month</th>
<th>Budget 1976-77</th>
<th>Year to Date</th>
<th>This Month</th>
<th>Budget 1976-77</th>
<th>Year to Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual</td>
<td>Variance</td>
<td></td>
<td>Actual</td>
<td>Variance</td>
<td></td>
</tr>
</tbody>
</table>

1. Margin on direct sales
2. Rebate on commission
3. Export earnings
4. Total earnings (1+ 2+ 3)
5. Penalties
6. Rewards

7. Contribution before divisional expenses

<table>
<thead>
<tr>
<th>B. Operating Expenses</th>
<th>Previous Month</th>
<th>Monthly Average</th>
<th>Year to Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual</td>
<td>Variance</td>
<td></td>
<td>Actual</td>
</tr>
</tbody>
</table>

8. Personnel related expenses

- Travelling & conveyance
- Sales promotion & product advertising
- Net distribution cost
- Other direct expenses

9. Sub total

10. Inventory carrying charges
11. Interest charged
12. Interest earned
13. Total

14. Expenses

- Interest & inventory carrying charges
- Total

15. Total Expenses (incl. sales sections)
16. Adjustments (specify)

0. Contribution

---

**Operational Indicators**

1. Direct Sales
2. Order booking

3. Indirect Sales
4. Order backlog

---

(C) stands for Unfavourable Variance

NA stands for figures Not Available.

---

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## Operational Indicators

### Performance Report for Divisional Manager

<table>
<thead>
<tr>
<th>Year to Date total</th>
<th>Rs. in lakhs (up to two places of decimals)</th>
<th>Bombay</th>
<th>Calcutta</th>
<th>Delhi</th>
<th>Madras</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual</td>
<td>Variance</td>
<td>Actual</td>
<td>Variance</td>
<td>Actual</td>
<td>Variance</td>
</tr>
</tbody>
</table>

#### 1. Direct
- Order booking
- Sales
- Order backlog

#### 2. Indirect
- Order booking
- Sales
- Order backlog

#### 3. Customer's outstanding including progress bills etc.
- Total
  - No. of days' sales
- Progress bills etc.
  - Total including progress bills etc.
    - Bills discounted (included in above)

#### 4. Finished goods inventory
- Total
  - No. of days' sales at cost

#### 5. Unadvised
- Pure advance
  - Rs.
- % of adjusted order backlog
- Advance against progress bills etc.
- Total

#### 6. Extraordinary credit

#### 7. Collections
  - Variance shown is from target

---

*Total includes Divisinal Stock (Actual: Rs.; Variance: Rs.)*
# Consolidated Monthly Factory Performance Statement for the Month of...

**distribution**: unit manager  
**copy**: chief executive (sugar division)  
**total investment**:  
**No. of workers**:  
**Date due**: 10th of the following month

### A. Production Transferred a. Sugar

| 
| This Month | C. Cane Analysis | Up to this month |
| --- | --- | --- | --- |
| 1. Quantity (in quintals) | Budget | Actual | Variance | Sugar Balance |
| 2. Value (at 'standard variable cost) | | | | 1. Sugar in Cane |
| % of actual production to budgeted prodr. | | | | 2. Sugar In Bagasse |
| Standard variable cost per quintal | | | | 3. Sugar in Mixed Juice (1+2) |
| Actual variable cost per quintal | | | | 4. Sugar in Filter Cake |
| Closing stock (quintals) | | | | 5. Sugar in Final Molasses |
| Closing stock as a % of production | | | | 6. Sugar undetermined |

### B. Variable Expenses

| 
| This Month | C. Cane Analysis | Up to this month |
| --- | --- | --- | --- |
| 1. Mixed Juice | Qty. Rs. | Qty. Rs. | Qty. Rs | 1. Capacity Utilisation % |
| 2. Lime | | | | 2. Total cane crushed (in loni) |
| 3. Sulphur | | | | 3. Total hours cane crushed |
| 4. Superphosphate | | | | 4. Average rate of crushing per 24 operating hours |
| B. Caustic Soda | | | | 5. No. of days cane crushed |
| 6. Other Chemicals | 6. Total area registered (acres) | | | 6. Total area registered (acres) |
| 7. Total Processing chemicals (2-6) | 7. Total new areas registered (acres) | | | 7. Total new areas registered (acres) |
| 9. Mill Extraction | 8. Yield per acre registered (in tons) | | | 8. Yield per acre registered (in tons) |
| 9. Other variable expenses | | | | 9. Mill Extraction |
| 10. Reduced Mill Extraction | 10. Reduced Mill Extraction | | | 10. Reduced Mill Extraction |
| 12. Reduced Overall Extraction | | | | 12. Reduced Overall Extraction |
| 13. Overall Extraction | | | | 13. Overall Extraction |
| 14. Reduced Overall Extraction | | | | 14. Reduced Overall Extraction |
| 15. Total Sugar bagged (quintals) | | | | 15. Total Sugar bagged (quintals) |

---

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## Kothari Sugar & Chemicals Ltd.

### This Month

<table>
<thead>
<tr>
<th>Total</th>
<th>Cane Purchases</th>
<th>Cane Crushing</th>
<th>Boiling House</th>
<th>Engineering Sec</th>
<th>Administration</th>
</tr>
</thead>
</table>

1. **Power**
2. **Steam**
3. **Lubricants**
4. **Turbine spares**
5. **Carriage chains**
6. **Centrifugal liners**
7. **Laboratory chemicals**
8. **Other stores/fr spares**
9. **Casual labour**
10. **Overtime**
11. **Travelling & conveyance**
12. **Vehicle expenses**
13. **Other controllable Admin. Exp.**
14. **Other controllable expenses**

**Total Controlable Expenses**

**Relatable Fixed Expenses**

1. **Salaries**
2. **Wages**
3. **Insurance**
4. **Depreciation**
5. **Other fixed expenses**

**Total Fixed Expenses**
# Corporate performance statement for the quarter ended

## Part B

### I. Market Share & Price Levels

<table>
<thead>
<tr>
<th></th>
<th>This quarter</th>
<th>Up to this quarter</th>
<th>Up to this quarter last year</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Eastern</td>
<td>Major competitor</td>
<td>Others</td>
</tr>
<tr>
<td>A. Local Market</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Home Model</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Average price</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Share of mkt.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Luxury Model</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Average price</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Share of mkt.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Industrial</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- Average price</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>- Share of mkt.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>d. Total Local Market</td>
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<td></td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>B. Export Market</td>
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<td></td>
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</tr>
<tr>
<td>C. Total Market</td>
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</table>

### II. Indicators Of Performance

<table>
<thead>
<tr>
<th></th>
<th>This quarter</th>
<th>Up to this quarter</th>
<th>Up to this quarter last year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Profit/sales</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Sales/Investment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Return on investment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Inventory as average days sale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Credit days allowed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. Credit days received</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. Debtor/Supplier</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>h. Current Assets/Current Liabilities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i. No. of complaints and sales value of products complained</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>j. Man-days lost (due to absenteeism)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K. No of people left</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. No of persons trained - Officers - Others</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>m. New products introduced</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n. Capital Expenditure/Depreciation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o. % Growth in sales (compared to last period)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p. Productivity Value added (Total sales goods &amp; services purchased)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>q. Wages &amp; depreciation</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### III. Economic Indicators

<table>
<thead>
<tr>
<th></th>
<th>This quarter</th>
<th>Up to this quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Average money supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- beginning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- ending</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Cost of living index</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- beginning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- ending</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Consumer price index</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- beginning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- ending</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. % Increase or decrease in production of goods processed by Eastern products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goods A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Estimated next 12 months production</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goods A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Part A relates to the quarterly financial performance statement relating to total organisational sales, gross margin, profit, profit before and after tax, cash flow (with brief details for each division).


* Name of the company has been disguised.