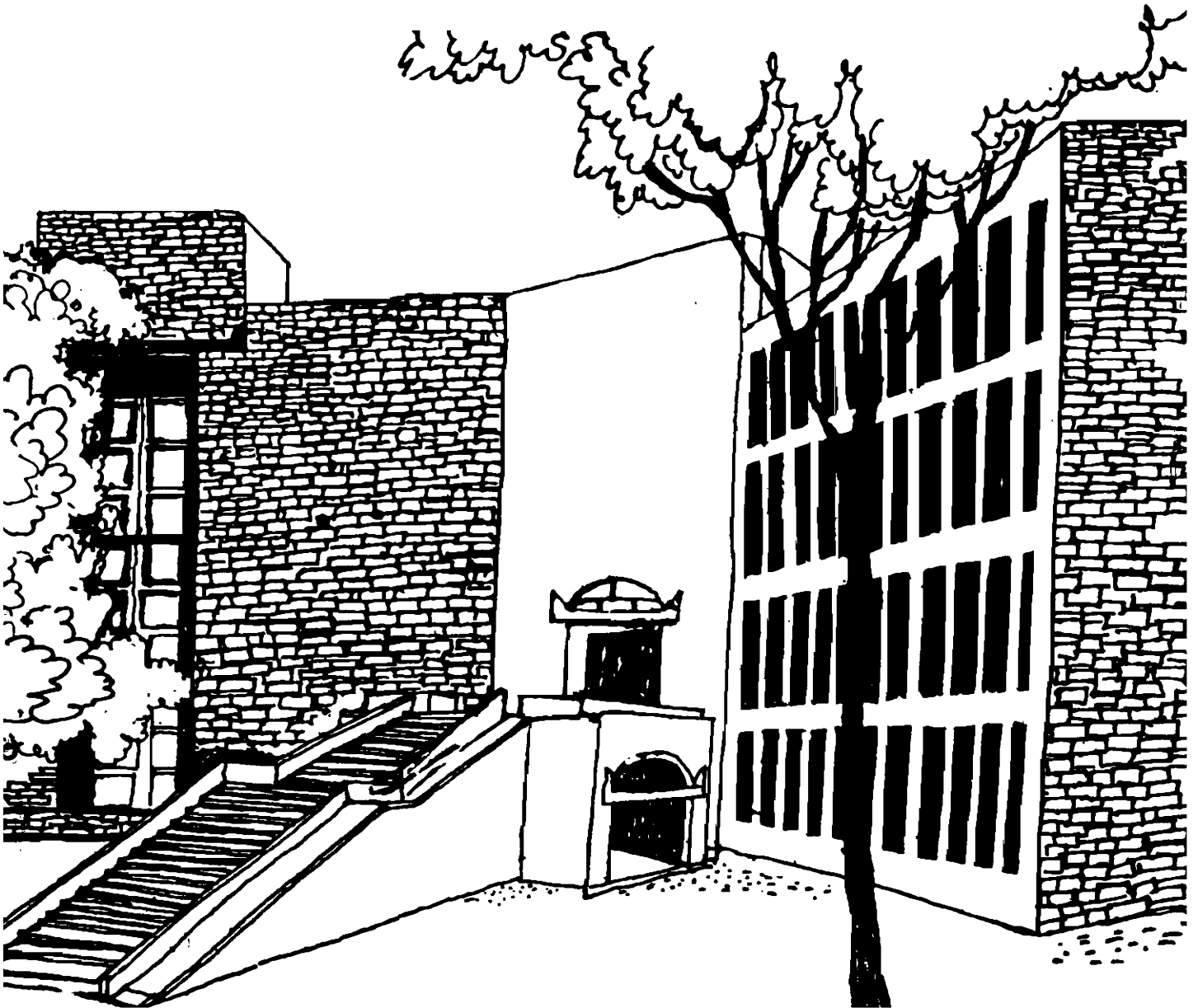




# Working Paper



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# Technical Report

INFORMATION SYSTEMS FOR CONTROL  
OF DEVELOPMENTAL ACTIVITIES

A Conceptual Framework

by

J.C. Camillus

V.N. Asopa

Mohan Kaul

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INDIAN INSTITUTE OF MANAGEMENT  
AHMEDABAD

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ABSTRACT (within 250 words).

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This matrix recognizes the importance of developmental objectives and requires  
an identification of programmes intended to serve each objective or set  
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J. C. Camillus  
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## A B S T R A C T

The paper reviews the district environment and emphasizes the importance of information and control systems for better planning and implementation of developmental programmes.

A conceptual framework for the design of information systems for the control of developmental activities at the district level of government is proposed. The framework developed recognises the special attributes of developmental activities which demand a departure from the traditional planning and control frameworks employed in commercial situations.

A three-dimensional matrix for identifying and organizing the universe of information required for control of developmental activities is proposed. This matrix recognises the importance of developmental objectives and requires an identification of programmes intended to serve each objective or set of objectives. It further specifies the parameters in relation to each programme which are required for decision-making and takes into account the implications of the functions and hierarchical levels of officials in terms of their information needs.

INFORMATION SYSTEMS FOR CONTROL  
OF  
DEVELOPMENTAL ACTIVITIES  
A Conceptual Framework

1           INTRODUCTION

1.1           Developmental activities intended to achieve national goals and objectives formulated by the political machinery essentially consist of the generation and management of scarce resources. "Development" is of necessity and by definition an action-oriented, time-bound activity focused on the achievement of programmed objectives.<sup>1</sup> While it is a complex matrix in which political, economic, social and administrative factors blend together, it is also very much an activity which is amenable to the application of managerial techniques.<sup>2</sup> In terms of developing a framework for applying information and control techniques so as to provide for better management of developmental activities it would first be necessary to attempt to arrive at an understanding of the process and nature of "development".



1.2 The process of development involves:

- i) identification of time-bound goals based on a detailed analysis of feasibility within the context of political and social values;
- ii) formulation of policies and programmes for achieving the planned goals;
- iii) provision of organizational logistics and personnel to implement the programmes;
- iv) directing and administering the organizational resources towards the desired objective; and
- v) monitoring the end results so as to measure actual performance in relation to planned achievement, with the intent of remedying shortfalls to the extent possible and further improving the entire process of development.

1.3

Of late, the participation of citizens in the process of development is an added dimension prompted by the recognition that, hitherto, planning and control of developmental activities has been an undesirably elitist and overly centralized exercise.<sup>3</sup> In India, the experiments with democratic decentralization typified by the grass-roots, Panchayati Raj institutions represent a major effort towards democratization of the developmental process.<sup>4</sup>

The demonstrated potential of the new democratic institutions at the level of the village, the block and the district, in terms of successfully operating and implementing developmental programmes, has resulted in a trend towards district level planning from regional planning which has till recently been the primary source of developmental goals and policies.

1.4 In addition to increasing people's participation in the planning and implementation of developmental programmes at the district level, several other reasons for promoting district planning have been suggested<sup>5</sup> including:

- i. District plans should help in reducing intra-district imbalances by promoting investment in the more under-developed geographical areas in the district.
- ii. District level planning with its greater specificity should act as a catalytic agent in facilitating the flow of resources to investment needs and may even ensure that factor activation in relation to certain activities results directly in investment.
- iii. District level planning should create a wider framework of socio-economic overheads, result in conservation of scarce resources and consequently increase efficiency in production.

1.5

Decentralizing development to the district level has not always lived up to its promise. The limited experience with district-based planning of developmental activities in the more developed states in India has fallen short of expectations for a variety of reasons<sup>6</sup> including:

- i. Formal mechanisms for identifying the real needs of districts, in particular the needs of the more vulnerable sections, are absent. Consequently, the specific characteristics of each district and areas within the districts are not given due consideration when prioritizing programmes.
- ii. The methodology of planning has often been faulty.
- iii. Attitudinal problems, both of citizens and administrators, have been encountered but often ignored.
- iv. Technical and managerial competence particularly of an integrated and multi-disciplinary nature is often lacking.
- v. Problems of communication, sequencing and coordination of activities between agencies and different hierarchical levels have been ubiquitous.
- vi. The pressure of routine, day-to-day tasks of developmental administrators leads to inadequate attention being given to developmental programmes.
- vii. Managerial tools and techniques, organizational structure and staffing patterns employed are almost always unsuited to the very special requirements of developmental activities. In particular, information and control systems for directing and monitoring performance have been conspicuous either by their absence or lack of effectiveness.

1.6 This research study focuses on the last factor mentioned above, namely the information and control system. The importance of information and control for better planning and implementation of developmental programmes cannot, in our opinion, be over-emphasised. With regard to the planning activity, for instance, the information and control system can:

- i) ensure that planning is realistic by providing the means to hold administrators to their commitments incorporated in the plan document;
- ii) improve on-going planning by highlighting issues that merit attention;
- iii) enhance the quality of subsequent planning exercises by providing insights into the validity of assumptions made in past plans and by suggesting alternative and better ways of attaining desired objectives; and
- iv) influence administrative attitude towards risk aversion and innovation when framing plans.<sup>7</sup>

1.7 A major problem encountered in relation to managerial effectiveness in the governmental situation is the lack of continuity of individuals in specific positions. The importance of the information and control system takes on an added dimension of importance in this context as a well-designed system can greatly assist fresh incumbents in administrative positions to more effectively assume and discharge their responsibilities.

2            OBJECTIVES OF THE STUDY

2.1            Given the importance of developmental activities, in terms of the values prevalent in the country, the potential benefit to the more disadvantaged segments of society, and the sheer magnitude of resources<sup>8</sup> committed to these endeavours, any effort to improve the management of resources engaged in developmental programmes holds the promise of immense potential benefits. Limiting the focus of this research study to the information and control system elements in the process of managing development has been a decision based on several considerations. The methodology of identification and statement of objectives, formulation of programmes to achieve these objectives, prioritization of these programmes,<sup>and</sup> the allocation of resources to the programmes selected, have been the focus of most research in the area of the management of development.<sup>9</sup> However, while the efforts in this area have been considerable, experience has indicated that it is in the implementation of programmes that developmental activities fall short of expectations.<sup>10</sup> In terms of enhancing effectiveness and efficiency of implementation, the information and control system can play a vital role.<sup>11</sup>

- 2.2 Furthermore, as indicated in paragraph 1.4, better designed information and control systems can, over a period of time, improve even the planning process.<sup>12</sup> It has also been the experience in commercial organizations that streamlining of the information system often results in an identification of other problem areas such as inappropriate organizational structure<sup>13</sup> and their subsequent improvement.
- 2.3 In the light of the above, it appears apodeictic that the design of the information and control system adopted can facilitate implementation of planned programmes and highlight impediments of a basic nature which might not otherwise be observed. Over a period of time, well-designed systems should bring about a significant, qualitative difference in the nature of the planning and decision-making functions of administrators entrusted with the responsibility for specifying and achieving developmental objectives.
- 2.4 In the context of the above understanding of the importance of the information and control system, the objectives of the on-going research study being conducted by the authors were stated as follows:

- i. To develop a conceptual framework for the design of information systems for the control of developmental activities at the district level of government.
- ii. To operationalize the conceptual framework by:
  - a) identifying the design features that can be manipulated to achieve the desired ends;
  - b) delineating the situational parameters that should influence the precise form that each of the identified design features should be given; and
  - c) specifying the relationship between the situational parameters (independent variables) and design features (dependent variables).

2.5 This paper pertains to the first of the above two objectives, namely the development of a conceptual framework for the design of information systems for control of developmental activities. The original intention of identifying the various design features in a comprehensive manner was, very early in the research, given a rather limited focus. Features such as the role of the District Development Officer in terms of the control function, the time-span and frequency of reports, the responsibilities of various officials at different hierarchical levels in relation to the control function, etc., were found to be

rigidly specified as part of the bureaucratic procedures in existence. As such, the major variables in relation to developing a conceptual framework were limited primarily to the content of the reports which constitute the basis of the information system. At present, financial controls on expenditure appear to take predominance. Thus, the framework that is presented in this paper is in the context of the existing constraints.

2.6 Before developing a framework for designing information systems for the control of developmental activities at the district level of government, it would be necessary to ensure an understanding of the district environment and, in particular, the organizational responsibilities and authorities of administrators engaged in development administration at the district level. The district environment and the organizational structure varies from state to state. However, for the purpose of this study, the district environment in Gujarat State, is described below.



3            DISTRICT ENVIRONMENT<sup>14</sup>

- 3.1            Development administration in Gujarat at the district level is primarily effected through the Panchayati Raj system. Exhibit I broadly describes the organizational pattern and Exhibit II details the flow of authority and the specialized activities of officials engaged in developmental activities at the district level. Hierarchical authority and power are the basis of organizational relationships. The system tends to demand unquestioning obedience of subordinates to superiors, though at the higher levels this characteristic is somewhat less marked. Basically, three levels in the district organizational hierarchy are identified, namely the district, the taluka and the village levels.
- 3.2            At the state level, the Development Commissioner's Office is the primary coordinating authority for developmental activities. The district level system adheres to the pattern set under the British rule. The institution of Panchayati Raj in Gujarat and Maharashtra, has been accompanied by a separation of developmental activities from what has been recently defined as "maintenance"<sup>15</sup> activities. Generalist officials head the maintenance and develop-

mental functions in the district. These officials are assisted by the number of technical specialists and other staff.

- 3.2.1 The overall responsibility for decision-making within the district rests with these generalist officials. The generalist official in charge of the developmental activity is designated as the District Development Officer and the official in charge of the maintenance **activity** has been traditionally known as the Collector. The District Development Officer (DDO) often belongs to the IAS cadre, which fact tends to give him a nationwide orientation. Because of the DDO's national perspective, the norms governing his behaviour are often different from those of his subordinates. His cultural orientation and the values to which he subscribes are at variance, if not incompatible, with those of the subordinate staff. In addition to being shifted from a particular district, it is not unlikely that he be given charge of maintenance activities in fresh postings. Furthermore, the post of Collector is generally more prestigious and is attributed a higher status than that of DDO.

- 3.3 The DDO has a fairly large number of specialists reporting to him. However, direct communication between these specialists and their parent departments at the state level is not only viewed as legitimate but, from the perspective of the state level departments, is perceived as desirable.
- 3.4 The subordinate staff, in contra-distinction to the DDO, belong to the state services. While under the administrative control of the DDO, the supporting staff members report functionally to their superiors in the state level departments. A further linkage exists in relation to the District Panchayat who also have a say in the functioning of these subordinate staff.
- 3.5 The District Panchayat, also known as the Zilla Parishad, consists of elected representatives of Taluka Panchayats and certain nominated members. The DDO is the executive officer of the District Panchayat and is administratively responsible to the President of the District Panchayat, who is known as the Zilla Pramukh. As indicated in Exhibit I, the District Panchayat has seven committees. These committees and the general body of the District

Panchayat identify programmes and projects. In practice, the state exercises its authority in terms of allocating funds to various developmental programmes. The execution of these projects and implementation of programmes is the responsibility of the DDO in his capacity as the executive officer of the District Panchayat.

- 3.6 At the taluka and village level, the structure, at least superficially, displays the same separation between the administrative channel and the Panchayati Raj institutions as is seen at the district level. The administrative head at the taluka level, namely the Taluka Development Officer (TDO) does not belong to an all-India service. At the taluka level, hierarchical authority becomes even more pronounced and discretionary powers are further limited.
- 3.7 In terms of actually implementing programmes and projects, execution is the direct responsibility or task of the village level staff. Political pressures and the concomitant reward and punishment system play an even more obvious role at this level.

- 3.8 The village level Panchayats, each headed by a Sarpanch, have only three committees specified. However, other committees are sometimes created, if necessitated by the nature of programmes being implemented in the village. At the taluka level, the Taluka Panchayat is a miniature reflection of the District Level Panchayat in terms of its committees and its relationship with its executive officer; in this case, the TDO.
- 3.9 The flow of information follows the channel of the organizational structure, and most information at the base level is generated by the Talati and the village level worker. The Talati, sometimes known as the village accountant, maintains the records at the village level, functions as a revenue official and is, in addition, Secretary to the Village Panchayat.

4            ASSUMPTIONS MADE

4.1            In developing the framework, the information required for planning was not explicitly identified nor examined. This was because it was assumed, on the basis of experience with other organizations<sup>16</sup>, that information required for planning stems primarily from:

- i) the values, ideologies and priorities of the decision-makers involved in the planning process;
- ii) the characteristics of the specific geographic area and situational social parameters; and
- iii) the past performance and progress of on-going programmes.

4.2            The values of decision-makers and situational characteristics of districts do not lend themselves to ready generalizations. The information relating to past performance and progress of on-going activities which is required for planning would, however, be provided by data generated by the information system intended for controlling implementation of programmes, which is the focus of this study.

- 4.3 The second assumption, or rather reality, which gave a specific orientation to the study is that planning and control systems for developmental activities would differ considerably from the traditional frameworks<sup>17</sup> which are employed in the commercial situation. The characteristics of developmental activities which would lead to the necessity for a somewhat different conceptual framework from the commercial situation include:
- i. The existence of multiple objectives in contradistinction to the systemic, single objective which exists in the commercial situation - namely profit.
  - ii. The possibly conflicting nature of these multiple objectives; at least to the extent that resources employed in serving one objective may result in reducing the level of achievement in relation to another of the objectives which might exist. However, in terms of the conceptual framework to be employed, it is assumed that the planning process specifically identifies the level of resources to be committed to the achievement of each of the several objectives as well as the level of achievement given a particular level of resources.
  - iii. The difficulty of defining and quantifying measures of effectiveness in relation to the objectives. In fact, much attention needs to be paid to the identification of the relevant parameters for measuring performance in relation to objectives. This is considerably different from the commercial situation where performance parameters are clearly identified and the planning process focusses essentially on the level of achievement in relation to each of the parameters.

- iv. The difficulty of specifying meaningful time boundaries within which levels of achievement in relation to specific objectives are to be obtained. Such assessments are often necessarily subjective, though of course dependant on the availability or paucity of necessary resources.

4.  
4.4

There are several other characteristics of developmental activities which influence the design of planning and control systems in directions different from practices in commercial organizations. These include the following:

- i. Activities and resources are tied together even more closely to the extent that selection of a particular activity may result in more or less resources being made available.
- ii. Competition is absent, generally speaking, in terms of the services provided to the beneficiaries but competition exists between developmental activities for resources.
- iii. Political ideologies, personalities and similar external forces exert a much greater influence on policy decisions.
- iv. A lack of clarity in organizational structure and reporting relationships is more common in the developmental situation than in the commercial situation.
- v. Benefit-cost analyses are highly subjective and the application of quantitative techniques for optimising performance is made even more difficult by the existence of multiple, sometimes conflicting objectives for handling which purely objective techniques are, as of now, not available.



- 4.5            However, the first four characteristics of developmental activities, listed in 4.3 are more relevant to the conceptual framework to be designed as a result of the focus on control rather than the planning process.
- 4.6            The third major assumption which was made in developing a framework for information systems for control of developmental activities was that the planning process and organizational structure are such that each objective or set of coherent objectives is sought to be served by a discrete programme or schema to which resources such as finance and personnel are specifically allocated as a consequence of the planning process. The identification of programmes serving specifically stated objectives is essential, if the framework that is proposed is to be meaningful.
- 4.7            The output of the planning process, therefore, is assumed to provide:
- i)    a clear statement of objectives which are sought to be served;
  - ii)   an allocation of resources to each of the objectives or to each set of coherent objectives;
  - iii)  an identification of activities which are to be performed in order to achieve the objectives which are specified; and
  - iv)   a specification of the time limit for achievement of the planned targets.

5 DEVELOPING THE FRAMEWORK

5.1 In terms of developing a total information system for control of developmental activities at the district level of government, the basic proposition that is being put forward is that it should be possible to identify the universe of information from which items relevant to various levels in the hierarchy and to particular executives on each level, can be selected. Of course, in addition to identifying the universe of information and selecting relevant items from this universe for each official, the control system would not be complete without specification of the review and follow-up process to be employed for monitoring actual versus planned performance and for ensuring remedial action. In addition, several other operational aspects would need to be specified, including the formats of the reports to be employed, the method of preparation of the reports, the time-span and frequency of reports, the time-lag permissible between completion of the period being reported upon and presentation of the reports, the approaches to developing standards of performance, etc. However, these details can best be specified in relation to an actual situation as the nature of programmes, the organizational structure, the competence of officials and their attitudes would all

influence the optimal forms of these design features. It would be the primary effort in the second phase of the research study to develop an operational framework which would facilitate the task of the designer of the information and control system when considering the above mentioned design features. However, at this preliminary or conceptual level, the prime focus is the specification of a framework for identifying the universe of information, which in any case is the critical and most important step in the design of an effective and efficient information and control system.

- 5.2 Specification of the universe of information, a concept similar to identification of the integrated data base necessary for computerised information systems<sup>18</sup>, is by itself inadequate as it is necessary to further specify the way in which this universe of information needs to be organised in order to assist the decision-making process. This specification of the organization of the information has a further advantage in that it results as a consequence in the development of very specific guidelines relating to the appropriate content of the integrated data base, in other words, the required elements of the universe of information.

5.3 The first step, therefore, in developing the required framework would usefully be the specification of the manner in which the integrated data base should be organized to ensure its most effective utilization. The use to which the information is to be put is the prime criterion on the basis of which the universe of information should be organised. Information by itself is of no value and assumes importance only to the extent that it assists in decision-making in relation to the planning and control functions of management. Thus it would be necessary to visualize the nature of decisions that are likely to take place and then arrive at a specification of the structure of the universe of information.

5.4 In commercial organizations, the focus for decision-making is clear - achieving a satisfactory level of profits, which is the prime if not sole objective. Consequently, the critical parameters, derived from the prime objective, which the information system needs to focus on follow, namely, profits, sales and investment. In the developmental situation, this sharp focus is not available as a result of:

- a) the absence of objectives which are common to all districts and programmes; and
- b) the existence of multiple objectives.

5.5 The first dimension along which the universe of information therefore needs to be structured is that of the objectives relevant to the particular district. The assumption has been made earlier that, in addition to the formal statement of objectives, programmes intended to achieve these objectives are also to be specified as part of the output of the planning process. Thus, it would be both meaningful and practical to segment the universe of information into categories pertaining to each of the programmes in the district as the programmes relate to a specific objective or coherent sets of objectives. This segmentation is illustrated in figure 1.

FIGURE - 1

P R O G R A M M E S

1	2	-	-	n

INTEGRATED

DATA

BASE

5.6 In addition to the segmentation along the dimension of the programmes, it will be further necessary to have some idea of the parameters in relation to each of the programmes which would need to be included in the universe of information in order to facilitate decision-making.

5.6.1 One of the major concerns of developmental administrators is the level of resources committed to each programme and this therefore gives us one set of parameters which very definitely needs to be explicitly identified. This set of parameters of resources or inputs to the programmes should be provided in both financial and physical terms and are readily available in relation to most programmes.

5.6.2 The second set of parameters which would doubtless be of importance in relation to each programme is the extent to which the objectives of the programme are being achieved. This set of parameters which may be referred to as effectiveness parameters would, therefore, also require explicit identification.

5.6.3 In addition, programme administrators would need to know the level of activity in relation to each programme. This gives rise to the third set of required parameters, which we shall call activity level or workload parameters.

5.6.4 Also, most programmes have very definite physical outputs and decisions relating to the programmes would necessarily have to consider these physical outputs in terms of understanding and evaluating performance. Thus, a fourth set of parameters becomes required, namely, the output parameters.

5.6.5 Again, in terms of understanding and evaluating performance, the relationship between physical outputs or effectiveness and inputs or the level of activity would be of importance in terms of decision-making. This further set of "efficiency" parameters would essentially be a combination of the above defined sets of parameters.



5.6.6 Finally, a sixth set of parameters would be of importance, namely the benefit that is being derived from each programme. While this set of parameters would also need to be identified in the universe of information, it must be recognized that measures of benefit are of greater importance for purposes of planning, rather than control.

5.6.7 Thus, the universe of information or the integrated data base would resemble a two-dimensional matrix with one dimension being the programmes and the second being the sets of parameters necessary for decision-making in relation to the programmes. This matrix is illustrated in Figure 2.

FIGURE - 2

		1	2	-	-	n
P	Resources/ Input					
A						
R	Activity Level/ Workload					
A						
M	Output					
E						
T	Effective- ness					
E						
R	Efficiency					
S						
	Benefit					

INTEGRATED DATA BASE

5.7 The two-dimensional matrix into which the integrated data base has been structured, is in itself a very powerful tool. It is somewhat analogous to the "cross-walk" matrices employed by programme budgeters. Those cross-walk matrices are employed to organize financial information along two dimensions, namely:

- i) the natural or traditional account heads; and
- ii) the programme heads of expenditure.

An illustrative "cross-walk" matrix is diagrammed in Figure 3.

FIGURE - 3

		PROGRAMMES				
		Health	Educa- tion	Slum Clea- rance	Etc.	Total
N A T U R A L  A C C O U N T  H E A D S	Salaries					
	Supplies					
	Travel					
	Telephone & Telex					
	Etc.					
	Total					

ANALOGOUS "CROSS-WALK" MATRIX

5.8 Such matrices are of very great use both in the planning process as well as in the control process as they provide a bridge between the traditional accounting-based controls that have been exercised in the past and the objective-related, programme-based budgeting which is presently thought most appropriate for the control of non-profit activities. The two-dimensional matrix which has been proposed for structuring the integrated data base constituting information for control of developmental activities, is again obviously a powerful tool available to administrators. It provides an objective-related and comprehensive set of parameters which would be both necessary and extremely useful in terms of implementing, evaluating and improving on-going developmental activities.

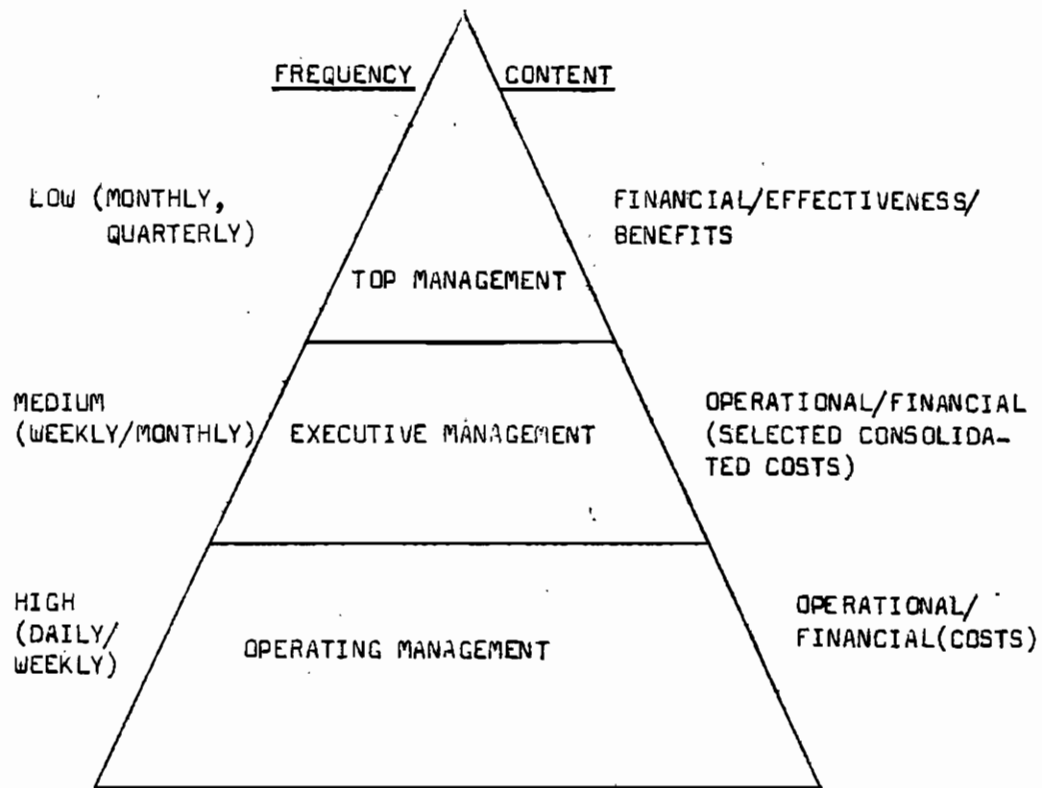
5.9 However, a major additional requirement is that this integrated data base now needs to be tailored to the perspective of the officials engaged in developmental activities. It is both unnecessary and undesirable for any individual official in the district to be fed with the total package of information, however well structured, identified in the proposed matrix.

5.10 The need to tailor information<sup>19</sup> to the requirements of a particular official is directed by two major considerations, namely:

- i. To ensure comprehension of the information provided. Total information provision is likely to be less meaningful and less understandable than pointed, relevant indicators which relate only to critical activities or operations and the effectiveness with which they are executed.
- ii. To minimize the cost of the information system which is quite considerable. This cost is comprised of not only the direct out-of-pocket cost of collecting, collating and presenting information, but also the extremely significant opportunity cost of the time which executives would have for other activities if filtered relevant information is provided, rather than large masses of data which have to be painstakingly scrutinized and analysed in order to understand the level of performance in relation to each programme.

5.10.1 The concept of tailoring the frequency and content of information going to various hierarchical levels is highly refined in the commercial situation and can easily be translated to the developmental situation. In its essence, the concept of tailoring the content and frequency of information to the hierarchical level of a manager is illustrated in Figure 4.

FIGURE - 4



5.10.2 As indicated in Figure 4, it is necessary to segment the hierarchical level in an organization into three categories namely:

- i. Top management - those executives who are responsible for the organization's performance in its entirety.
- ii. Executive management - those executives who are responsible for specific functions or programmes within the organization or for all functions or programmes within a limited geographic segment of the organization. /total
- iii. Operating management - those executives who are concerned with specific day to day operating tasks within each programme or function.

5.10.3 The above segmentation of the organizational hierarchy is essentially derived from and intended to be consistent with the categorization of planning and control activities proposed by Anthony<sup>20</sup>. Anthony's three categories of planning and control activities are intended to differentiate between the inherently different nature of planning and control activities at different levels in any organization and also to emphasise the integrated nature of planning and control activities.

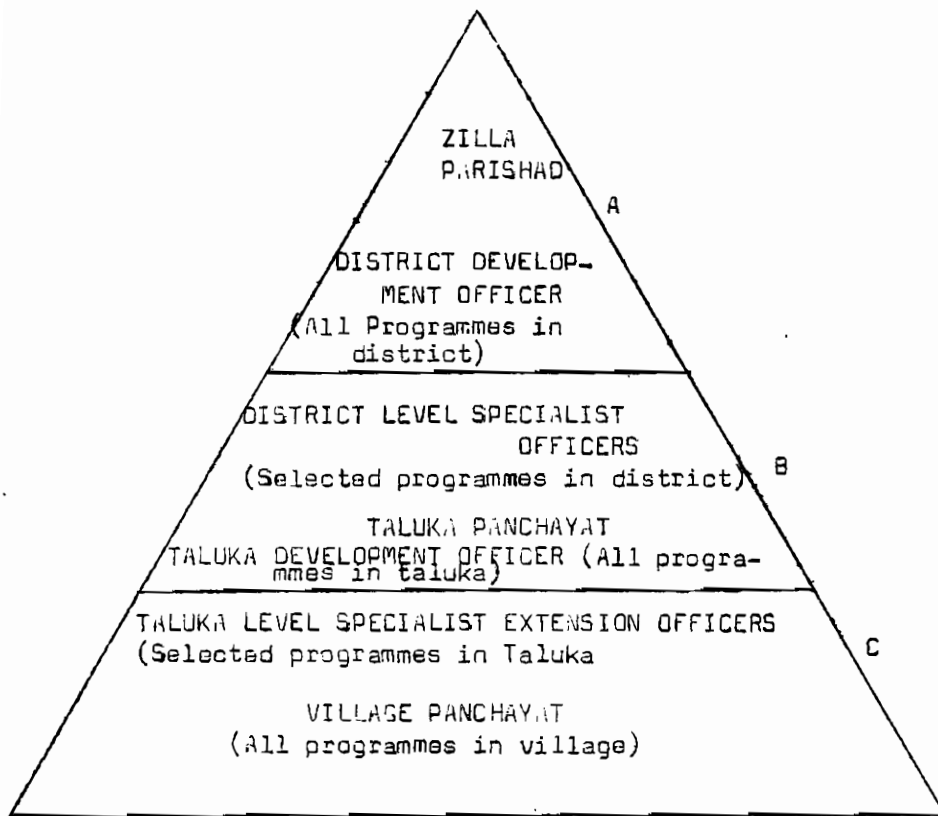
5.10.4 The frequency with which information is needed by these various levels changes as indicated in Figure 4. The



frequency is much greater at the lower levels, namely operating management, and reduces as one goes up in the hierarchical levels.

- 5.10.5 The content of information also changes from an operating (workload and efficiency) focus to a greater emphasis on financial and effectiveness indicators at the level of top management.
- 5.11 The above concept is directly transferable to the district development situation. Here, in the district, top management would essentially consist of the district level officials, in particular, the Zilla Parishad and the DDO. Executive management would be represented by the TDO, the Taluka Panchayat and by technical/supporting staff at the District level. Operating management would be comprised of the Village Panchayat and taluka level specialist officers. This segmentation of the district organizational hierarchy is diagrammed in Figure 5.

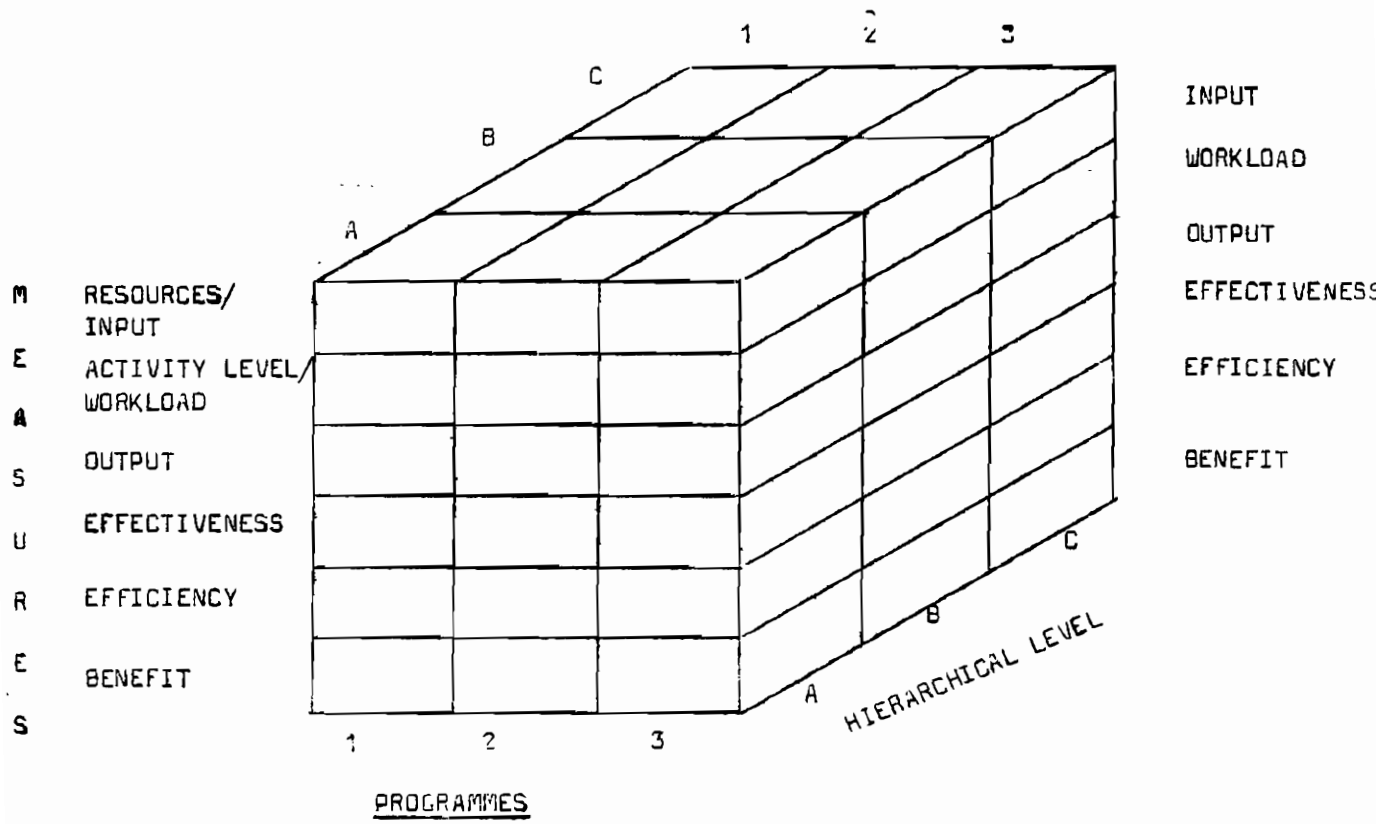
FIGURE - 5



SEGMENTATION OF DISTRICT ORGANIZATIONAL HIERARCHY

5.12 To revert to the two-dimensional matrix which has been suggested, keeping the guidelines for tailor- in mind ing information to the organizational level of the various officials, it would now be useful to introduce a third dimension for structuring the integrated data base, namely the organizational hierarchy. This three-dimensional matrix is illustrated in Figure 6.

FIGURE - 6



INTEGRATED DATA BASE

5.13 It must be borne in mind that in addition to the hierarchy, which is explicitly identified, the third dimension implicitly takes into account the functional responsibility of each official, thus, further refining the information which needs to be fed to him. The third dimension, therefore, is intended to focus the total information and filter it so that only those measures relating to each programme or geographical area which are of relevance to a particular official are provided to him. Thus, if there are officials in the district who are concerned with only one programme, then, indicators relating to all other programmes may be avoided. On the other hand, it is possible that the DDO or Collector would be responsible for all programmes and here the effort should be at two levels:

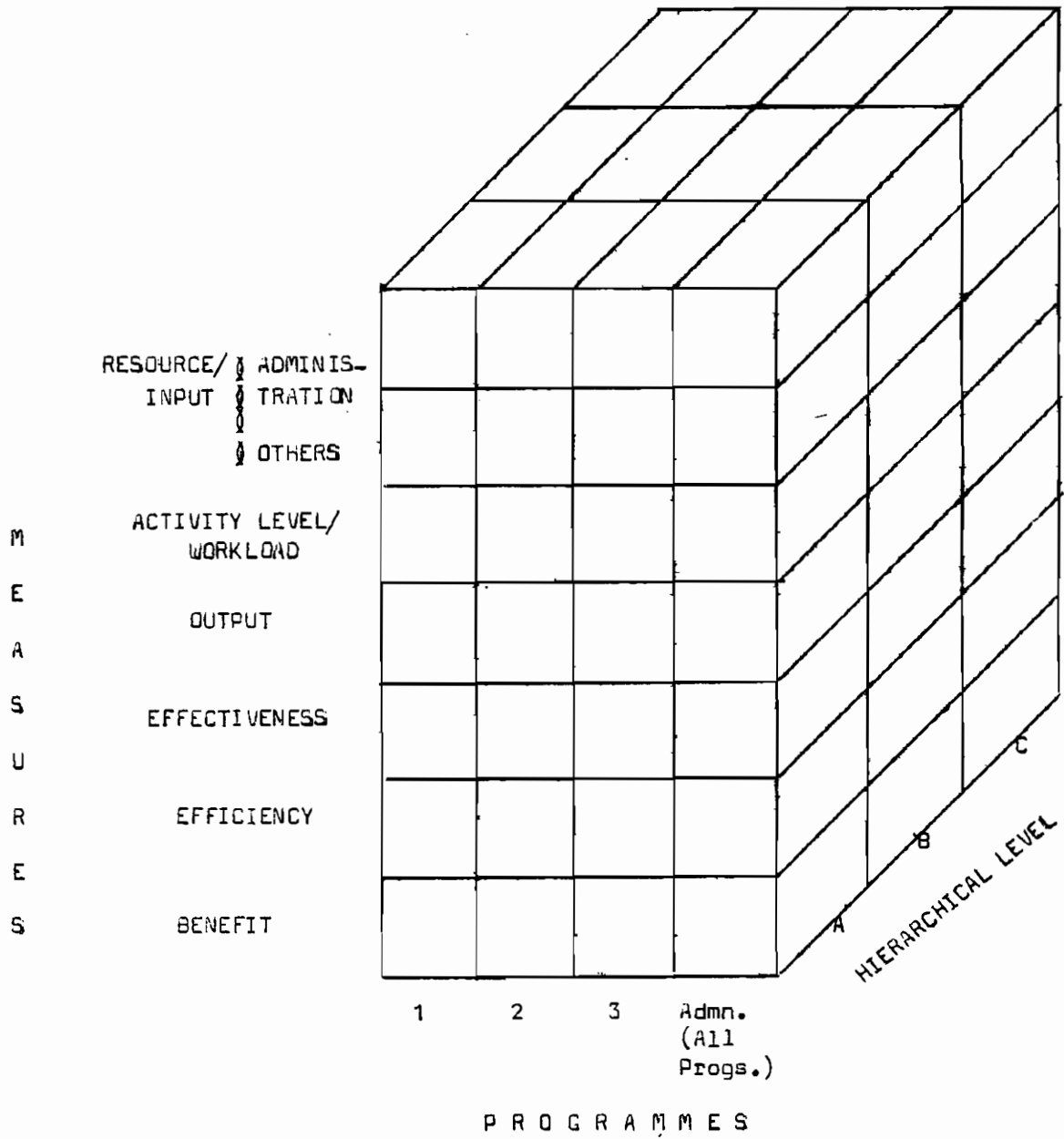
- i) to identify those sets of parameters which are of relevance to the Collector/DDO; and
- ii) within such sets of parameters to identify the specific measures which the collector/DDO needs to receive.

5.14 To illustrate, while the official in charge of a nutritional programme may receive all measures such as those of input/resources, level of activity/workload, output,

effectiveness, efficiency and benefit relevant to the nutritional programme, he would not receive any indicators relating to any other programme in the district. The DDO/Collector on the other hand may receive information relating to all programmes but only selected measures relating to input, effectiveness and benefit of each programme.

- 5.15 There is one area, which is quite significant which needs to be specially dealt with in **relation** to the above conceptual framework - namely, the administrative activities which cannot be directly linked to any particular programme. It is necessary that administrative costs which are not directly relatable or rationally allocable to the various programmes be treated as a separate programme category. The allocable (on a rational basis) administrative costs or those which can be directly related to the various programmes would be one of the measures of the input or resources committed to the programmes. Thus, specifically taking into account and highlighting the administrative cost the matrix would be modified as shown in Figure 7.

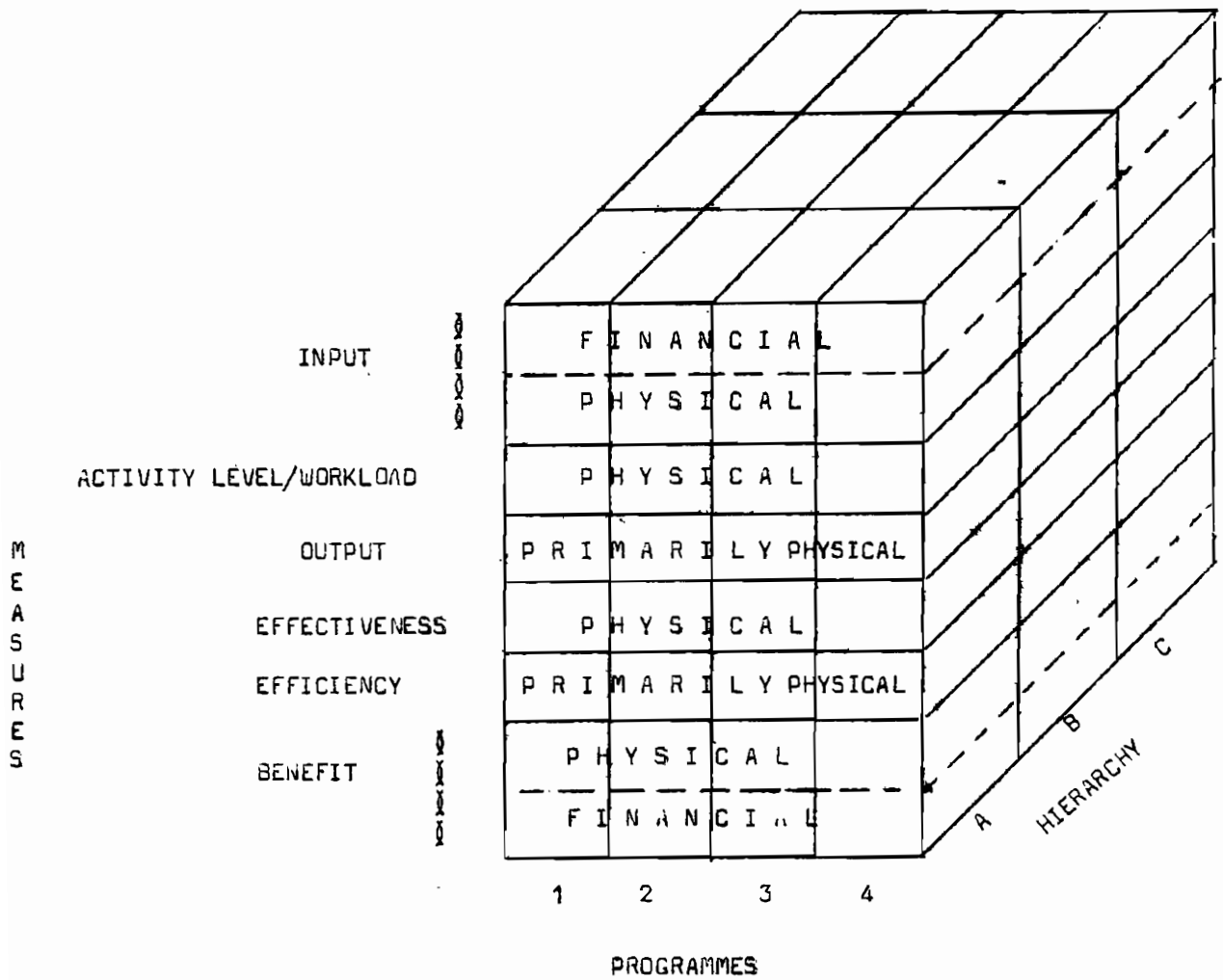
FIGURE - 7



5.16 It must be emphasized that some of the sets of parameters employed should include both financial and physical measures of performance. For instance, inputs in monetary terms as well as physical quantities such as number of personnel, vehicles, quantities of supplies and similar physical indicators would be necessary for better understanding and evaluation of the programme. In fact, financial indicators are somewhat less relevant to certain sets of parameters as indicated in Figure 8.



FIGURE - 8



RELATIVE IMPORTANCE OF PHYSICAL AND FINANCIAL MEASURES

5.17 To illustrate, typical measures in relation to a nutritional programme<sup>21</sup> are given in Exhibit III. The issue being addressed by the programme was that a segment of the population of a state was experiencing nutritional deficiencies. The objective of the programme was:

To reduce to the extent that resources permit, the nutritional deficiencies of the most vulnerable segments of the "at risk" population in the state.

5.17.1 After analysis of available resources, the nature of nutritional deficiencies and identification of the most vulnerable segments of the population likely to experience nutritional deficiencies, the programme target was stated as:

To increase the nutritional intake of all infants upto 3 years, pre-schoolers aged 3-5½ years, and pregnant and nursing mothers by 500 calories per working day of the programme.

5.17.2 In the context of this understanding of the objective of the programme and keeping in mind the nature of activities planned, the measures suggested in Exhibit III were developed.

6 CONCLUSION

6.1 Certain elements necessary for implementing the above framework, though they have been long known to developmental administrators, have as yet to be implemented effectively and comprehensively with regard to the control of programmes at the district level. For instance, it has for several years been suggested that in relation to each programme, parameters of input/resources, workload/activity level, output, effectiveness, efficiency and benefit be developed. There are very few programmes for which an effective exercise of this nature has been carried out. The existing situation is particularly regrettable as approaches to development of the various parameters have by experience been proved to be a relatively simple exercise which any district level official should be able to carry out competently.

6.2 The logical clarity of the framework that has been proposed perhaps does not require reinforcement. The practical applicability of the framework might however require to be demonstrated. With regard to the

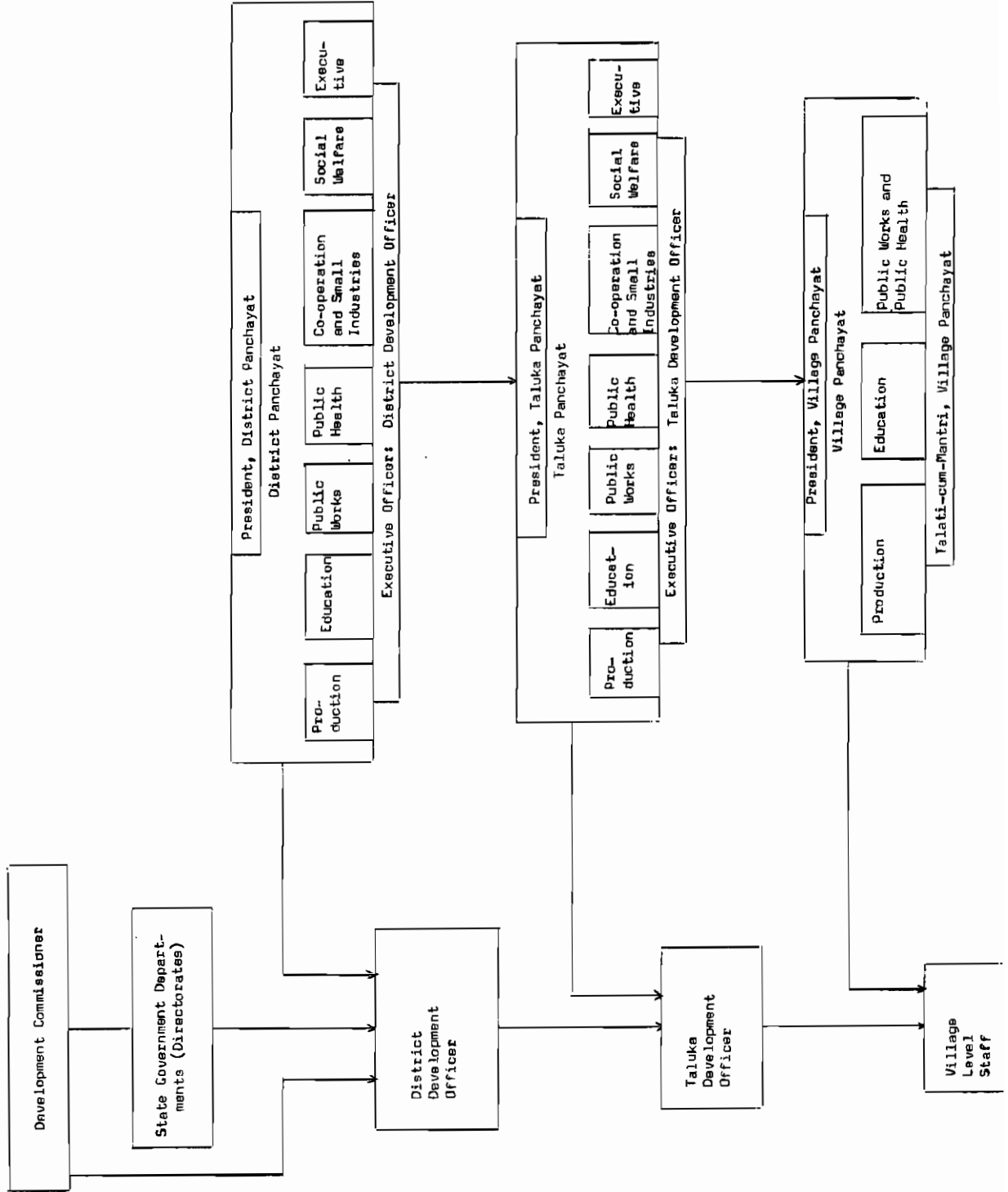
three dimensions of the suggested matrix, the process of development of parameters in relation to each programme has been implemented.<sup>22</sup> The existence of projects or schemes equivalent to the "programmes" concept is very much a reality. What remains therefore in order to substantiate the utility and validity of the framework is the third dimension, namely the exercise of tailoring the universe of information identified to the needs of the individual officials engaged in developmental activities. This exercise would form one of the prime foci of the second phase of the research study, which in addition would also seek to identify situational characteristics of districts and programmes which would have relevance to the exercise of tailoring information to the individual needs of specific officials.

6.3 Finally, it must be emphasised that there may be practical impediments to the applicability of the framework resulting from an irrational organizational structure, ineffective review and follow-up process, sub-optimal and inadequately detailed planning exercise and other such basic problems. Recommendations regarding how such basic problems can

: 4. 1

best be overcome in order to facilitate effective and efficient control of developmental activities will again constitute a major portion of the second phase of the research study. Despite the above reservations, it must be reiterated that any improvement in the information and control system must necessarily result in more effective implementation of programmes and in reducing the severity of the basic problems facing developmental administrators.

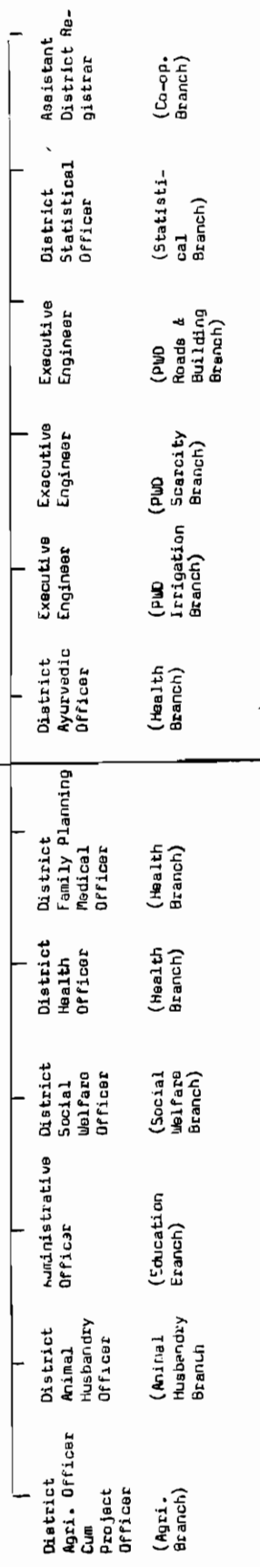
EXHIBIT 1: ORGANIZATION OF DEVELOPMENT ADMINISTRATION AT THE DISTRICT LEVEL



District Development Officer (DDO)

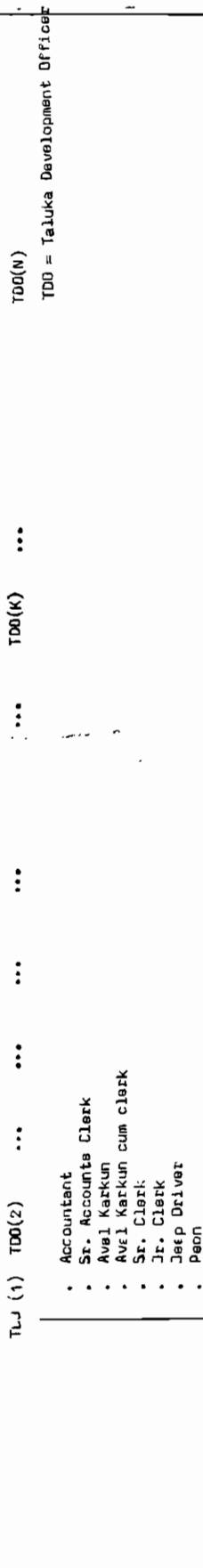
- Deputy District Development Officer (Establishment - Revenue)  
 Deputy District Development Officer (Establishment - Plan)  
 Deputy District Development Officer (Establishment - Panchayat)  
 Accounts Officer (Establishment - Accounts)
- DDO Office Staff  
 : Chitnis  
 : Stenographer  
 : Peon

DISTRICT LEVEL



(N Number of Talukas)

TALUKA LEVEL



VILLAGE LEVEL

\*Courtesy Professor V. R. Gaikwad of the Indian Institute of Management, Ahmedabad.

Neil C. Churchill, John H. Kempster and Myron Uretsky, Computer and Information Systems for Management: A Survey, (New York: National Association of Accountants, 1969).

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19. J. C. Camillus, "Practical Considerations in Designing Management Information Systems", Telecommunications, XXV, (1), (June 1975).
20. R. N. Anthony, Planning and Control Systems: A Framework for Analysis, (Boston: Division of Research, Graduate School of Business Administration, Harvard University, 1965).
21. Case Studies - "Jalabhumī Nutritional Programme" (A) and (B), (Ahmedabad: Indian Institute of Management, 1975). (Mimeographed.)
22. The work done in connection with the Tamilnadu Nutrition Project is an excellent example of such an exercise. For details see: Chapter VI of Part II, Section D of Vol. II of The Tamil Nadu Nutrition Study, prepared by Sidney M. Cantor Associates Incorporated, (July, 1973).



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16. S. K. Bhattacharyya, "Strategic Planning: Some Operational Considerations". Economic and Political Weekly, VII, (22), May 27, 1972).
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18. Sherman C. Blumenthal, Management Information System: A Framework for Planning & Development, (New Jersey, Prentice-Hall, 1969).

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10. L. C. Gupta, "Decentralised Implementation: Some Administrative Problems", Indian Journal of Public Administration, XI, (2), (1965), pp.251-273.
- R. Haldipur and V. R. K. Paramahansa, (eds.), Local Government Institution in Rural India, (Hyderabad: National Institute of Community Development, 1970).
11. R. Ackoff, "Management Misinformation Systems", Management Science, XIV, (4), (Dec. 1967), pp.147-150.
- C. S. Parthasarathy, "Monitoring and Information System for Plan Implementation", Indian Journal of Public Administration, XIX, (3), (July-Sept., 1973), pp.378-392.
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12. National Council of Applied Economic Research, District Planning - Moradabad, (New Delhi: National Council of Applied Economic Research, 1968).
13. J. C. Camillus, "Management Information Systems and the Corporate Organizational Structure", Paper presented at the Seminar conducted by the Bureau of Public Enterprises on Management Information Systems in the Public Sector, 1972. Published in The Chartered Accountant, July 1973.
14. V. R. Gaikwad, Panchayati Raj and Bureaucracy: A Study of the Relationship Patterns, (Hyderabad: National Institute of Community Development, 1969).

7. J. C. Camillus, "Formal Planning: Creativity vs. Control", Paper presented at the Fourth Annual Workshop of Planning Executives held at the Harvard Business School, Published in Formal Planning Systems, Richard F. Vancil (ed.), (1971).
8. The pattern of developmental expenditure of central government vis-a-vis total expenditure for the year 1969-74 is given below:

(Rs. in millions)

Year	Total Expenditure	% variation over the previous year	Developmental Expenditure	% variation over the previous year
1969-70	49250	+8.8	23520	+5.2
1970-71	55760	+13.2	26590	+13.1
1971-72	67100	+20.3	31260	+17.6
1972-73	78490	+17.0	39490	+26.3
1973-74*	83100	+5.8	38470	-2.6

\*These figures are revised budget estimates.

Source: Reserve Bank of India, Report on Currency and Finance, 1973-74 (Bombay: Director of Publications).

9. D. J. Alesh, "Improving Decision Making About Priorities in State Government", (Rand Corporation; September 1969), P-4187.

4. C. N. Bhalerao, "Changing Pattern of Development Administration in the District", Indian Journal of Public Administration, (Jan.-March, 1966).  
Henry Maddick, Panchayati Rai: A Study of Rural Local Government in India, (London: Longman, 1970).  
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Y. Raghaviah, "District Planning and Development Administration, A Case for Unified and Integrated Approach", Indian Journal of Public Administration, (Oct.-Dec., 1967).
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D. R. Gadgil, District Development Planning, (Poona: Gokhale Institute of Politics and Economics, 1967).  
P. C. Mathur, "Report on Formulation and Implementation of District Plans", Journal of Lal Bahadur Shastri Academy of Administration, (Spring 1973).  
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Planning Commission, Guidelines for the Formulation of District Plans, (New Delhi: Government of India, 1969).  
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6. Discussions with officials of the Gujarat Government resulted in identification of these reasons. Further analysis is available in:  
The Public Administrator, (June 1974), op. cit.

- G. Black, "Systems Analysis in Government Operations", Management Science, XIV, (2), (Oct. 1967), pp.841-48.
- Yehezkel Dror, "From Management Science to the Improvement of Public Policy Making: Israel", (Rand Corporation), P-4050.
- Yehezkel Dror, "Systems Analysis for Development Decisions: Applicability, Feasibility, Effectiveness and Efficiency", (Rand Corporation, Aug. 1969), P-4159.
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- Saul M. Katz, "Exploring a Systems Approach to Development Administration" in Fred W. Riggs (ed.), Frontiers of Development Administration, (Durham: N. C. Duke University Press, 1970).
- John W. Kendrick, "Exploring Productivity Measurement in Government", Public Administration Review, XXIII, (2), pp.59-66.
3. Since district level plans are scrutinized and the allocation of funds is decided upon at the State level, there is considerable divergence between the plan suggested by the district level administration and the plan finally approved at the State level. There is a widespread feeling at the district level that the formulation of plans at this level is more ritualistic than meaningful. See:
- Indian Institute of Public Administration, The Public Administrator, (June 1974), Special Number of District Planning Seminar held at Bombay, November 18, 1973.

NOTES

1. Development administration has been defined in many ways. Different authors have emphasized different aspects of the administrative processes involved in management of development activities. For details see:

J. N. Khosla, "Development Administration - New Dimensions", Indian Journal of Public Administration, XIII, (1), (Jan.-March, 1967), pp.16-31.

John D. Montgomery, "A Royal Invitation: Variations on Three Classic Themes", in John D. Montgomery and William Siffin (eds.), Approaches to Development, Politics, Administration and Change, (New York: McGraw Hill, 1966), p.276.

U. A. Pai Panandikar, "Development Administration: An Approach", Indian Journal of Public Administration, X, (1), (Jan.-March 1964), pp.35-38.

Edward W. Weidner, "Development Administration. A New Focus for Research", in Ferrel Heady and Sybil L. Stokes (eds.), Papers in Comparative Public Administration, (Michigan: Institute of Public Administration, University of Michigan, 1962), p.99.

2. It is generally recognized that the administrative tools, techniques, organizational structure and staffing patterns are not particularly conducive to effective and efficient development administration. Adoption of advanced managerial techniques such as project planning and management, programme budgeting, etc., can considerably improve the management of development activities. Two important aspects of project management are (a) time targets for attainment of results and (b) cost-benefit ratios to provide a rational basis for undertaking developmental activities. More recently, information systems for control of developmental activities have acquired much importance. See:

EXHIBIT III

MEASURES RELATING TO A NUTRITIONAL PROGRAMME\*

<u>INPUT:</u>	<u>PHYSICAL</u>	- Quantity of Food - Number of Personnel - Number of Feeding Centres
	<u>FINANCIAL</u>	- Cost of Food - Administrative Costs - Food Procurement Costs - Storage Costs - Transportation Costs - Food Preparation Costs
<u>ACTIVITY: LEVEL</u>	<u>PHYSICAL</u>	- Quantity of Food in Distribution Centres - Number of Beneficiaries (Category-wise) - Consumption per Feeding Centre
	<u>FINANCIAL</u>	- NIL
<u>OUTPUT:</u>	<u>PHYSICAL</u>	- Identical to ACTIVITY LEVEL measures, as the programme is essentially distribution-oriented.
	<u>FINANCIAL</u>	- NIL
<u>EFFECTIVENESS:</u>	<u>PHYSICAL</u>	- Intake of calories per Beneficiary (Category-wise) - Percentage of Target Groups covered
	<u>FINANCIAL</u>	- NIL
<u>EFFICIENCY:</u>	<u>PHYSICAL</u>	- Beneficiaries per Tonne of Food Input
	<u>FINANCIAL</u>	- Calories per Beneficiary per Rupee of Input
<u>BENEFIT:</u>	<u>PHYSICAL</u>	- Longer Life (Measured by Mortality Records and Records of Nutrition-Related Illnesses)
	<u>FINANCIAL</u>	- NIL

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\*Source: Case studies entitled "Jalbhumi Nutritional Programme (A) and (B)", (C) Indian Institute of Management, Ahmedabad, 1975.