B. Ghosh

Systems Approaches to Family Planning Programme Management

Introduction

THE family planning programme may be viewed as an Input-output System (Model I), which is comprised of a programme implementation mechanism (starting from the state level headquarters down to the peripheral units) with staff, supplies of contraceptives, medicines and equipments, mass education activities, logistic support (viz., transport, building etc.) as *inputs* to the system. The *output* of the system comprises of programme achievements in terms of acceptance of family planning methods or generation of contraceptive^ knowledge. Acceptance of small family norm by the society leading to reduction of birth rate to a pre-assigned extent is the targeted output. The family planning programme can also be viewed as a Marketing System (Model II) for the sale of family planning service as a commodity [1]. The prospective 'buyers' are the couples with wives in reproductive ages and the programme operators (the branch of the Government dealing with the family planning programme) are the 'sellers'. The 'distribution channel' consists of the family planning centres and commercial outlets. The 'price' charged for service is zero, negative or a nominal positive amount. The 'profit' is in terms of extent of reduction in birth rate brought about by the family planning programme.

Target Setting

The first step in the population planning exercise is to lay down the objective of the programme. In an antinatal programme the objective may be

stated quantitatively, in terms of reducing the birth rate from B_1 in year T_1 to B_2 in year T_2. The implied number of births averted (say B*)* is the targeted output in Model I and the implied family planiing service case-load is the targeted sale in Model II. The approach usually adopted is to distribute *B* in the tri-dimensional space of method, time and region and than to translate it in terms of number of acceptors or number of pieces of contraceptives distributed. If *Nijk* is the number of acceptors of method *i* in year j in region *k* then in sub-regions of *k, Nijk* get distributed in a similar fashion. Population is normally a decisive criterion in target allocation over geographical regions. This approach of target setting may suffer from a number of inadequacies and deficiencies. Let us take an example [3]. In 1960-70 only 34.3 per cent of the target for sterilization was achieved in West Bengal. The district of Birbhum achieved 59.5 per cent (maximum) while Malda could achieve only 9.2 per cent (minimum). Only 4 out of 18 districts could achieve at least 40 per cent of the sterilization target. These data may be interpreted by a programme administrator, unaware of the target setting mechanism, to spot districts whose performances were not upto the desired level. But the data may as well suggest that targets were probably unrealistically high in some of the districts. Consider, for example, monthly target achievements in Calcutta, Hooghly and Cooch-Behar districts considered 'best', 'average' and 'worst' in 1969-71. There was considerable variation in monthly achievements in these districts. The targets could not serve as guide for action since it was no doubt impossible to achieve so much as to raise the cumulative percentage target achievement for Calcutta from 29.4 upto November 1969 (9 months) to 100.0 upto March i.e., in four months' time. For Hooghly, the targets necessitated achievement to be raised from 20.9 to 100.0. Monthly targets should be so set that they are capable of being achieved with most sincere efforts. The targets should be raised gradually to move towards a progressively higher achievement. This would make the targets more dynamic and meaningful. The people may take them more seriously and try to achieve them. The mechanics of fixation of operational targets is not difficult to evolve.

We will now consider an Operational Research approach in family planning target setting [2]. The technique consists of choosing the method-mix to maximise the number of births averted when there is a fixed allocation of funds for the family planning programme. Suppose in an area we have :

E — Number of Eligible Couples

$D(V)$ = Number of Doctors available for doing vasectomies
$D(T)$ = Number of Doctors available for doing Tubectomies
$D(I)$ = Number of Doctors available for doing *IUD* insertions
H = Number of Tubectomy beds available
W = Number of working days/year
v = Maximum number of Vasectomy cases a Doctor can handle per day
t — Maximum number of Tubectomy cases a Doctor can handle per day
i = Maximum number of *IUD* insertions a Doctor can handle per day
h = Average number of hospitalisation days needed per Tubec tomy case
e = Proportion of Eligible couples already protected by Vasec tomy, Tubectomy or *IUD*
$C(V)$ = Variable cost of one Vasectomy operation
C(T) = Variable cost of one Tubectomy operation
C(I) = Variable cost of one *IUD* insertion
C(f) = Fixed cost.

Suppose further that a representative survey has revealed the following preference ratios for the methods among the eligible couples in need of protection :

Vasectomy : $p(V)$, Tubectomy : $p(T)$, *IUD* : $p(I)$, and

None/others : $p(N)$, so that $p(V) + p(T) + p(I) + p(N) = 1$.

Let $b(V)$ = Average number of births prevented by 1 vasectomy operation over K years
$b(T)$ = Average number of births prevented by 1 tubectomy operation over K years
$b(I)$ — Average number of births prevented by 1 *IUD* insertion over K years.

K may be chosen to be 20 years, for example.

A number of constraints delimit the potentials of the programme viz.,

(i) Capacity constraints ;
(ii) Preference constraints ; and
(iii) Budgetary constraints.

Capacity constraints :

$V \leqslant W.\ v.\ D(V)$ (Availability of Doctors)
$T \leqslant WtD(T)$ (Availability of Doctors)
$T \leqslant \frac{HW}{h}$ (Availability of Beds)

i.e. $T \leqslant \text{Min} \left\{ WtD(T) ; \frac{HW}{h} \right\}$

$I \leqslant WiD(I)$ (Availablility of Doctors).

Preference constraints :

$V \leqslant (1-e)\ E\ p(V)$
$T \leqslant (1-e)\ E\ p(T)$
$I \leqslant (1-e)\ E\ p(I)$

Budgetary constraints :

$$\text{Total cost} = T(C) = C(f) + Vc(V) + Tc(T) + Ic(I) \leqslant P,$$

where P = Plan allocation for family planning in the area.

The objective function is

B = Number of births prevented over K years
$= V\,b(V) + T\,b(T) + I\,b(I).$

The target setting problem can then be stated as follows :

$$\text{Maximize } B = V\,b(V) + T\,b(T) + I\,b(I)$$

such that

$$c(f) + Vc(V) + Tc(T) + Ic(I) \leqslant P.$$
$$V \leqslant \text{Min}\ \{WvD(V) ; (1-e)\ E\ p(V)\}$$
$$T \leqslant \text{Min} \left\{ WtD(T) ; \frac{HW}{h} ; (1-e)\ E\ p(T) \right\}$$
$$I \leqslant \text{Min}\ \{WiD(I) ; (1-e)\ E\ p(I)\}$$

and $V \geqslant 0, \quad T \geqslant 0, \quad I \geqslant 0.$

This problem can be solved for V, T and I by Simplex algorithm or other

methods for tackling linear programming problems [27]. In this formulation we have not considered explicitly the case of conventional contraceptives such as condom. Demand for conventional contraceptives (C.C.) should be forecasted by the usual methods of sales forecasting like moving average method, exponential smoothing method etc. (See Reynolds *et. al,,* for a new method of estimating future case loads) [4]. If desired, some additional margins may be added to the forecasted figures, or else the forecasted figures should be considered as the targets for distribution af C.C. Unrealistic targets set for C.C. may result in indiscriminate distribution of contraceptives which will not serve the cause of the family planning programme. To account for the expected cost of *CC* distribution as per targets set in our model, p should be replaced by p' where $p' = p - TC\ (CC)$ and $TC\ (CC)$ is the expected total cost of *CC* distribution if *CC* target is achieved.

Suppose BVTI=Max (B) i.e. the maximum possible number of births averted by the best method mix, *BCC* is the number of births prevented through use of *CC,* and *BD* is the required number of births to be prevented to achieve the demographic objective, then $BG - BD - (BVTI + BCC)$ may be defined as 'Programme Deficiency'. The deficiency is due to inadequacy of programme inputs and/or lack of sufficient motivation among the eligible couples. An ideal target setting mechanism would include a set of recommendations for bridging the gap optimally and to ensure that this gap reduces as the programme matures. Perspective plan of family planning programme should be undertaken to determine the requirements of various inputs to the system for achieving the planned outputs. The Operational Research approach just outlined may help the policy-maker to decide on how the inputs should be varied to achieve optimally the demographic objectives.

Allocation of Resources

Availability of resources (inputs in Model I) is a limiting factor to the fulfilment of targets. The planner and policy-maker is morally obliged to allot resources that should enable the programme administrator to achieve the targets. We have already disccussed how availability of resources may need to be adjusted to achieve the targets. It has been often inferred from exercises in cost-benefit analysis '. . . that it is difficult to undertake any calculation of the economic gains that might be realized from population control which does

not point to spectacular benefits' [5]. This is true for India as well [6]. It is at times contended that in a country like India population control projects should get priority over any capital-intensive project [7]. Should this be true the family planning programme should not be denied funds requested for making a serious bid to achieve the target output. This does not mean that the we can afford to spend the funds or deploy the resources in a wasteful manner. How should then the allocation of resources be optimized ? One approach which readily suggests itself is to relate it to the regional targets. It may be worthwhile to attempt to develop an Operational Research model for allocating the available financial resources to various regions to maximize the programme output [3]. An Operational Research approach has been developed for optimum allocation of resources to various channels of the Programme [8]. A conceptual framework for a programme-oriented cost evaluation system has also been suggested for optimal allocation of resources in family planning programme [9]. Resource management can be described to comprise : (i) Formulation of objectives; (ii) Exploration of alternate ways of attaining objectives; (iii) Pre-evaluation of alternatives; (iv) Allocation of the right mix of resources; (v) Evaluation of activities through a well-defined feedback and control mechanism and (vi) Post-evaluation of programmes for taking corrective measures. Other approaches to allocation of resources include simulation models such as family planning policy game [10] and POPSIM[11].

Programme Implementation

The establishment and activation of good programme implementation mechanism, PIM (Model-I) and its able management (management of sales operation in Model-II) are vital for the success of the family planning programme. Let us try to understand PIM with India as an example. PIM in India, in its simplest terms, has the shape as shown in Chart I.

Family planning programme is sponsored and financed almost wholly by the Government of India in most of the Indian states. The population policy is decided by the Government of India, general guidelines are provided by the Central Department of family planning but the management of a state programme is the responsibility of individual states. There is a State Family Planning Bureau (SFPB) in every state to plan and direct implementation of the

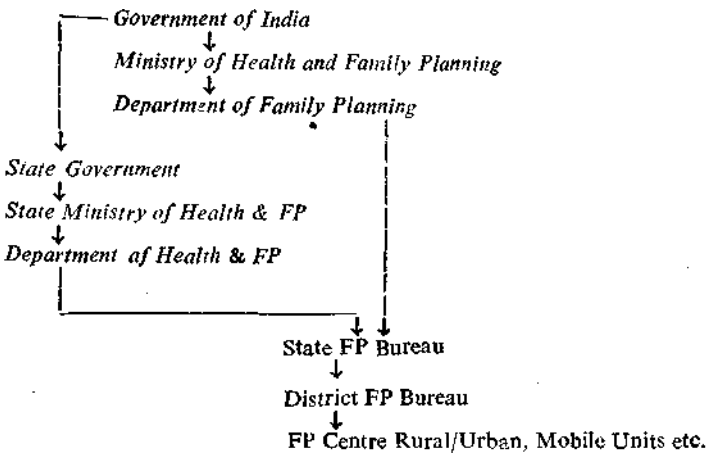

Chart I. *Family planning programme organisation in India.*

programme. District Family Planning Bureau is the counterpart of SFPB at the district level and Primary Health Centre (PHC) at the block level. A rural family planning centre (RFPC) is located in a PHC if a PHC exists in the block otherwise it operates on its own. There is supposed to be one sub-centre for every 10,000 rural population, An urban family planning centre (UFPC) has been set up for every 50,000 population in addition to state units located at hospitals [12]. There are some mobile units for *IUD* insertion and sterilisation attached to the district family planning bureaux. Some rural and urban family planning centres are run by local bodies or voluntary organisations with or without financial assistance from the Government. As of 1st April, 1972 India has 5204 RFPCs, 32,157 sub-centres, 5780 non-government rural institutions engaged in family planning. In addition there are 1908 UFPCs under government or non-government set up and 2333 other urban institutions doing family planning work [13]. The Government also has a countrywide commercial Nirodh distribution programme and contraceptive depot bolder scheme etc.

The operations management of such a gigantic programme implementation mechanism is indeed a stupendous task. How is this task actually performed ? The usual delays due to bureaucratic procedures are part of this mechanism as well. The situation is more involved because of the dual administration by centre and the state. A scheme prepared by the central department may not suit the local conditions in a state, nevertheless it is sought

to be implemented. Even if a state department is convinced of the efficacy of some other approach to the problem it may not secure endorsement from the centre. The central department should be equipped with a system of controls for taking the programme in the right direction. The state department being closer to the periphery must help the district bureaux to manage the day-today programme with utmost efficiency. The family p lanning centre should be equipped with trained people and a system of operation that optimises the effectiveness of staff and other inputs to the programme. Alternative organisations of the family planning programme depending on the package of other services (such as maternal and child health and nutrition) to be blended with family planning have been tried out in India and abroad e.g., Johns Hopkins University's Narangwal Study and RTI Study using POPSIM. It is worthwhile to make efforts to improve upon the programme implementation mechanism through research and evaluation.

Evaluation

Evaluation has been denned variously as (i) the process of determining the value or amount of success in achieving a pre-determined objective (or a hierarchy of objectives), (ii) the application of social science techniques in the appraisal of social action programmes, (iii) assessing the savings accruing to the economy because of births prevented in the long run, (iv) determination of programme objectives, identification of component parts of the programme, formulation of functional inter-relationships between component parts etc. to ascertain patterns necessary for optimum programme achievements[14]. It has been recommended that each nation should establish a long-range and integrated programme of evaluation and review which will (a) measure the level of fertility and changes in the level of fertility, and (5) provide a prompt and steady flow of information with which to develop and improve the national family planning programme [15]. As an example let us consider the family planning evaluation system now existing in India [18]. An evaluation unit is supposed to exist at the following levels : Central Department of Family Planning : Planning Section; State Family Planning Bureau: Demographic and Evaluation cell; District Family Planning Bureau : District Evaluation cell. It is reported that '. . . snags hindering efficiency exist at all levels'.

An improved system embodying the activities of (i) programme analysis, intelligence and evaluation; (ii) cost studies and research information, and

(iii) perspective planning, is mooted for removing the deficiencies of the existing system. Research in family planning evaluation is at present being carried out by various governmental, autonomous and private agencies. The evaluation system of the department of family planning is primarilv engaged in compilation of service statistics and some field research but with little impact on the programme management function at or below the state level.

Programme Evaluation, Implementation and Improvement

Evaluation of family planning programme may be split into two broad categories: (i) Demographic Evaluation and (ii) Administrative Evaluation [16]. Demographic evaluation is concerned with the assessment of the impact of the programme on the birth rate, or fulfilment of other intermediate or immediate objectives, such as growth in Knowledge, Attitude and Practice (KAP) of Family Planning. The need for demographic evaluation of the programme output cannot be over-estimated. The results of studies yielding demographic characteristics including fertility behaviour are very important ingredients for policy decisions by the programme administrators. It is needless to say, however, that demographic evaluation does not bother itself with the task of monitoring the implementation of these policy decisions, administrative (or operational) evaluation intends to fill this gap.

The family planning programme has two important components : (i) Motivation, and (ii) Service. If one of the components is lacking the other is bound to be wasted. Which of the components should be emphasised, where and when has to be worked out in collaboration with the concerned staff and the programme should be administered accordingly. There is need for evaluation of the motivational programme both from the benefit and the cost points of view. Gaps in the service facilities can be bridged after discovering them. The quality of service, information system, supply position, staff position, funds for incentive payment, transporation etc. are important considerations for efficient service. The follow-up action needed on the basis of acceptors' data may be arrived at through appropriate analyses of the acceptors' data : demographic analysis and programme operation analysis.

A Follow-up Action System (FUAS) at the state level, based on the concept of management by exception is depicted in Chart II. The system conceptua-

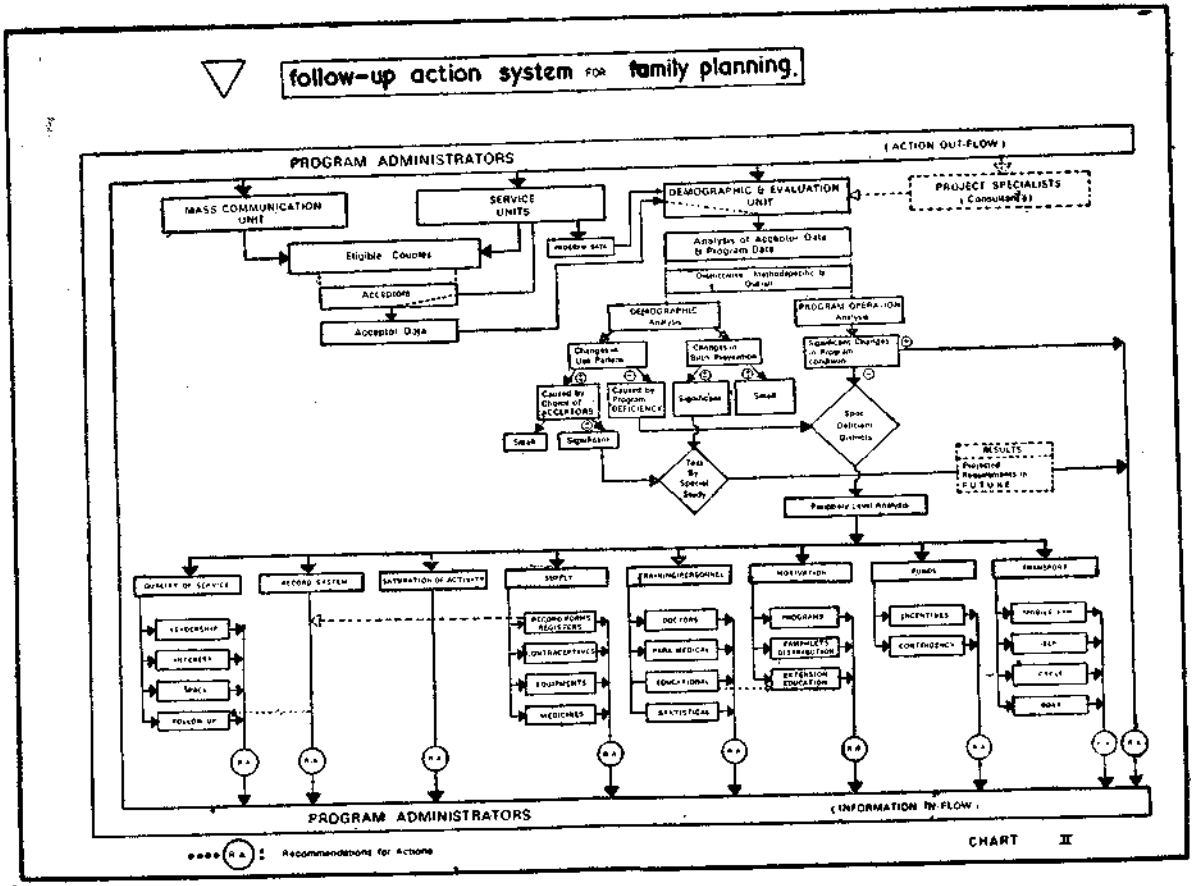
follow-up action system FOR family planning.
PROGRAM ADMINISTRATORS
(ACTION OUT-FLOW)
MASS COMMUNICATION UNIT
SERVICE UNITS
DEMOGRAPHIC & EVALUATION UNIT
PROJECT SPECIALISTS (Consultants)
Eligible Couples
Acceptors
Acceptor Data
Analysis of Acceptor Data by Program Data
DEMOGRAPHIC Analysis
PROGRAM OPERATION Analysis
Changes in Use Pattern
Changes in Birth Prevention
Caused by Choice of ACCEPTORS
Caused by Program DEFICIENCY
Significant
Small
Test By Special Study
RESULTS Projected Requirements in FUTURE
Periphery Level Analysis
QUALITY OF SERVICE
RECORD SYSTEM
SATURATION OF ACTIVITY
SUPPLY
TRAINING/PERSONNEL
MOTIVATION
FUNDS
TRANSPORT
LEADERSHIP
INTEGRITY
SPACE
FOLLOW UP
RECORD FORMS REGISTERS
CONTRACEPTIVES
EQUIPMENTS
MEDICINES
DOCTORS
PARA MEDICAL
EDUCATIONAL
STATISTICAL
PROGRAMS
FAMILIES DISTRIBUTION
EXTENSION EDUCATION
INCENTIVES
CONTINGENCY
VEHICLE
SELF
CYCLE
BOAT
PROGRAM ADMINISTRATORS
(INFORMATION IN-FLOW)
RA : Recommendations for Actions
CHART II

Chart II.

lized in the chart hopes to achieve the following objectives :

(i) to detect spontaneous shifts in use-pattern;

(ii) to detect spontaneous shifts in programme conditions;

(iii) to relate (i) and (ii) above and thus *(a)* sustain favourable to programme or *(b)* prevent unfavourable to programme;

(iv) to identify the favourable changes that could possibly be perpetuated with significant contribution to the success of the programme;

(v) to project requirements of programme inputs;

(vi) to identify areas and aspects of the programme requiring immediate attention; and

(vii) to attain, on the whole, desired level of success in the programme.

The usefulness of the conceptual framework of the Follow-up Action System (FUAS) for family planning was appreciated by the state-level programme administrators and policy-makers who approved FUAS as the model evaluation system in an Indian state. If the information system of the programme is good enough for us to calculate accuarately the number of births prevented in various regions and by various methods of contraception, then FUAS helps us to improve the programme by instituting corrective actions in time. We must, therefore, re-design the information system appropriately with emphasis on programme improvement. Further it has to be admitted that computation of births prevented at all the required levels is a time consuming affair and cannot possibly be undertaken every month without substantially augmenting the resources normally available with a Demographic and Evaluation Unit of a state family planning bureau. A scheme of analysis utilising the performance statistics and with principles similar to FUAS has already been suggested [17]. This approach consists of comparing current month's performance with last month's performance at the state level, district level and at the family planning centre level for selected districts. A series of reports is designed to be a tool for programme management rather than just an administrative document to be filed. The system's methodology has been further perfected to take care of seasonality in performance variation and a simple approach for locating the factors causing change for better or worse has also

been proposed [19]. Introduction of any such system should be preceded by a 'diagnostic survey of family planning centres' to determine the current status of the programme implementation mechanism [20].

A Cost-Accounting System has been evolved and introduced in the Louisiana family planning programme [24, 25]. The system generates weekly output for a standard cost accounting system intended to provide a measure of cost-efficiency in the delivery of family planning services at each clinic. This system is found to be a very 'useful tool for sensing week-to-week anomalies, clinic-to-clinic variations, and provides a clear incentive to the clinics for improved efficiency'.

We will now describe a systems approach (Decision Information System, DIS) for running a family planning centre with greater efficiency and pro-puctivity evolved and experimented with in a limited way in India [21]. Every family planning centre in India is required to maintain an Eligible Couple Register. This register is an important record at the disposal of the pro-gramme administrators, and if properly maintained and utilised for pro-gramme planning and implementation (especially in getting priorities for home visits) at the periphery level, will certainly ensure greater success of the programme. The eligible couple register in its usual form seems to have failed to attain its objective [20, 22].

One of the causes of this failure is possibly the very form of register itself. Studies undertaken to test the usability of an Eligible Couple Form in place of the register indicated that the former would be a better record of the eligible couples [23]. An added feature of this new system is that it combines in-formation on family planning and maternal and child health (MCH) and thus is very useful for planning and rendering of family planning services integrated with MCH care. One form having two sides is used for each eligible couple. The front side is used for recording details of identification particulars of the couples, age (present and at marriage) of husband and wife, pregnancy history with order of termination, sex and type of termination, immunisation status of children, family planning practice (past, present and interested methods) and desire for additional children. The reverse side of the form is used for recording extracts of information collected in the front side and also additional information on family planning method performance-

satisfaction, presence of complication and its severity and reason for discontinuation, if discontinued. The form is first filled in at the time of initial visit to the household i.e. initial registeration. During follow-up visits relevant informations are updated.

Before starting the initial registration an outline map showing all the important places of the area is prepared. At the time of initial registration all households are numbered and shown in the map. Each field-worker maintains a map of the area assigned to her. This map helps her to locate the eligible couples for follow-up visits in the future. The female field-workers are required to contact the eligible couples in their homes, collect the necessary information and render service or advise on MCH or FP aspects. At the time of initial registration additional number of fieldworkers are provided to the F. P. Centre to enable it to complete the initial registration within a reasonable period of time. As soon as such initial registration in the area is completed the eligible couple forms are sent to the analysis section in batches. The information is first transferred from the forms to punch cards and is subsequently subjected to detailed analysis using an electronic computer. The analysis of the information contained in the forms is undertaken to generate two kinds of statements : Statements (Operational); and Statements (Research).

Statements (Operational) are used for providing reports to all concerned with administration and evaluation of the programme so that corrective action is initiated for removing conditions unfavourable to the programme and also to plan appropriate actions so that the programme generates satisfactory outputs. The contents and purposes of each kind of operational statements are presented below :

A. *Priority List*

The couples to be visited for follow-up in the first month after completion of initial registration and also in subsequent months are scheduled on the basis of considerations for priority of family planning service. The eligible couples can be classified under the following priority groups :

P_1 : Set of couples suffering from severe complication or discontinued FP.

P_2 : Set of couples with wife of LPT ≤ 3 but not using FP, nor used FP previously. (LPT : No. of years since Last Pregnancy Termination).

P_3 ; Set of couples with wife of LPT ≤ 3, using temporary method but not suffering from severe complication.

P_4 : Set of couples with wife of LPT ≥ 3, not practising FP, nor used FP previously.

P_5 : Set of couples with wife of LPT ≥ 3, practising temporary method, but not suffering from severe complication.

P_6: Set of couples using permanent method and not suffering from 'severe' complication. (See Chart III)

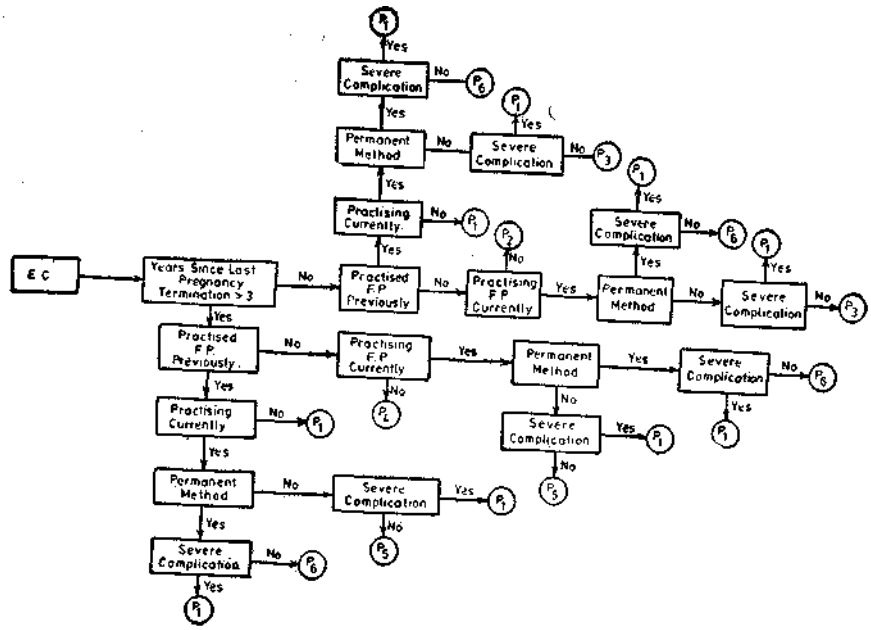

Chart III. Chart Showing Priority Rules of Eligible Couples.

The number of couples to be scheduled for follow-up visit in a month is determined on considering the maximum work-load that the field-worker can carry. The frequency rule of follow-up for couples under various priority, groups is determined accordingly. The Priority List is prepared

B. *Pregnancy List*

Lists of couples with wife pregnant *(a)* less than 3 months, and *(b)* more than 7 months are prepared *one time* after initial registration so that proper intra-natal care can be provided to the mothers who need them most.

C. *Immunisation Demand List*

It is essential for the programme to ensure that the children of the sterilized couples survive, so a list of sterilized couples (with at least one child not having immunisation) is prepared along with a statement of the number of living children requiring immunization against Small Pox, Triple Antegen/TABC and Polio Vaccine. This list enables the Health Center to plan their immunisation programme keeping the demand in view and to approach the listed couples who should be visited on a priority basis.

D. *Vasectomy Demand List*

The list of couples expressing interest in undergoing vasectomy operation is prepared along with some relevant information including current family planning practice. This list enables the programme administrators to estimate the level of motivation for acceptance of vasectomy and take appropriate action such as arranging a special vasectomy camp if demand is high, or sponsor special motivation drive or institute research enquiries if level of demand is low.

E. *Tubectomy Demand List*

The facility for tubectomy operations is not easily available in the rural areas of India, in general, except recently through special tubectomy camps. The demand list enables the programme administrator to locate the camp and also to have an idea of the level of demand for tubectomy operations and decide which couples should be contacted for this purpose without much difficulty.

F. *IUCD Demand List*

The IUCD programme is currently in a deteriorating condition. It is of utmost value to be able to locate the couples who are still willing to accept

B. *Pregnancy List*

Lists of couples with wife pregnant *(a)* less than 3 months, and *(b)* more than 7 months are prepared *one time* after initial registration so that proper intra-natal care can be provided to the mothers who need them most.

C. *Immunisation Demand List*

It is essential for the programme to ensure that the children of the sterilized couples survive, so a list of sterilized couples (with at least one child not having immunisation) is prepared along with a statement of the number of living children requiring immunization against Small Pox, Triple Antegen/TABC and Polio Vaccine. This list enables the Health Center to plan their immunisation programme keeping the demand in view and to approach the listed couples who should be visited on a priority basis.

D. *Vasectomy Demand List*

The list of couples expressing interest in undergoing vasectomy operation is prepared along with some relevant information including current family planning practice. This list enables the programme administrators to estimate the level of motivation for acceptance of vasectomy and take appropriate action such as arranging a special vasectomy camp if demand is high, or sponsor special motivation drive or institute research enquiries if level of demand is low.

E. *Tubectomy Demand List*

The facility for tubectomy operations is not easily available in the rural areas of India, in general, except recently through special tubectomy camps. The demand list enables the programme administrator to locate the camp and also to have an idea of the level of demand for tubectomy operations and decide which couples should be contacted for this purpose without much difficulty.

F. *IUCD Demand List*

The IUCD programme is currently in a deteriorating condition. It is of utmost value to be able to locate the couples who are still willing to accept

IUCD. The IUCD demand list enables the programme administrator to bring the interested couples under the purview of the programme 0n a priority basis and then try to motivate other non-practising couples to accept family planning.

G. *Monthly Follow-up List*

The list of couples scheduled to be followed up this month is prepared, based on priority rules and frequency rule applicable to the priority group.

H. *Revised Priority List*

The Revised Priority List is prepared in recognition of the changes that might take place in the priority of the couple through acceptance of sterilisation or other family planning methods, child birth or merely passage of time.

I. *Missed Appointment List*

The list of couples scheduled to be visited last month but not visited by the field worker is prepared in order to find out why the field worker could not visit these couples—whether because of excessive work load or other reasons—and advise the field worker what should be done. This list helps us to evaluate the field worker in some way and to have some control on her activities.

J. & K. *Family Planning Practice*

For each worker and for each village the number of eligible couples, percentage of couples practising each method, percentage of couples pregnant and percentage of couples under various priority groups are analysed. The statement (J) prepared every month enables the programme administrator to have a concurrent evaluation of the programme. The progress of the programme from month to month is watched by looking at this statement. The statement (K) is prepared specially in respect of couples who were not practising any family planning methods but accepted some methods last month. This statement is useful for evaluting the activities of the field-workers.

L. *Family Planning Method Performance*

This statement enables us to know how each P.P. method is performing especially in terms of failure such as pregnancy, complication and discontinuance of methods. This helps the programme administrators to initiate appropriate enquiries and corrective action to correct the situation if it is bad.

M. *WorkerwisejFP Centre-wise Performance*

This statement enables the programme administrator at District and State level to assess the work of the P.P. Centre and the contribution of each field-worker to the achievement of the programme.

Statements (Operational) are prepared monthly to help the programme administrators and policy-makers on a concurrent basis to run the programme with utmost efficiency. The statements (Research) are prepared once after completion of initial registration and subsequently at predetermined intervals (such as 1 year after initial registration) for providing detailed evaluation of the programme.

The Decision Information System (DIS) described above- is judged to be of considerable help to the programme administrators, policy makers and researchers. The system could also be adopted for trying out alternative service packages. The main criticism against this approach is perhaps the huge cost to be incurred for installing and maintaining it. The benefits generated by the system may of course outweigh the cost implications. If cost is really prohibitive a simpler system using hand punch machine, hand-punch cards and needle pointers could be tried. A very sophisticated model for managing a family planning system has been evolved at M.I.T. [26]. This model has been designed to be used by managers of family planning systems to improve understanding, forecasting, and planning.

Conclusion

The systems approaches to the management of family planning programme are useful in gaining better understanding of the programme and in improving its status through feedback of the knowledge thus acquired. Since population poses a serious problem in many countries it is essential that best possi-

ble efforts are made to tackle it. Systems approach is one of the new approaches found useful by the problem solvers. Needless to say that the potentiality of this versatile approach deserves to be put to a serious test in the field of population and family planning programme management.

References

1. Ghosh, B., 1970, *The Family Planning Programme from the Management Science Viewpoint,* Indian Institute of Management, Calcutta.
2. -_____, 1972, *O.K. and Systems Approach in Family Planning,* Paper presented at a special meeting of the Operational Research Society of India, Calcutta Branch.
3. _____, 1970, *Project Proposals for Program Management and Evaluation,* Working Paper submitted to the Government of West Bengal, The Ford Foundation.
4. Reynolds, J. and Ramprasad, R., 1970, A Method for Estimating Future caseloads of Family Planning Programs, Manual 3, Division for Program Development and Evaluation, International Institute for the Study of Human Reproduction, Columbia University.
5. Ohlin, G., 1967, Population control and economic development, *OECD,* Paris.
6. Mehta, R., 1971., *Review and Analysis of Cost-Benefit Studies,* Department of Family Planning, New Delhi.
7. Seal, K. C., 1972, *On Optimum Allocation of Resources among Population Control and Capital Investment Projects,* Paper Presented in a Seminar of Demographers, Department of Family Planning, New Delhi.
8. Kumar, R. 1972, Optimizing the cost of allocation of contraceptive methods for achieving a given target, *Opsearch, 9* (3-4).
9. Mehta, R., 1972, *Optimal Allocation of Resources in Family Planning Programs,* Paper prepared for ECAFE-Expert Group Meeting on Socio-Economic Returns of Family Planning Programs. Bangkok.
10. Moreland, R. S., 1971, The Carolina Population Center Family Planning Policy Game, Working Paper No. 10.
11. Shah, B.V., 1972, *User's Manual for Popsim,* Research Triangle Institute.
12. Programme Evaluation Organisation, Planning Commission, Government of India, 1970, *Family Planning Programme in India—An Evaluation.*
13. Department of Family Planning, New Delhi, 1972, *Programme Information 1971-72.*
14. United Nations, 1970, *Evaluation of Family Planning Programme.*
15. Bogue, D.J. (ed)., 1970, *Family Planning Improvement through Evaluation.*
16. Ghosh, B., 1970, *Evaluation for Efficient Management of the Family Planning Programme,* Working Paper, The Ford Foundation.
17. __' 1971, *An Integrated System for Family Planning Programme Implementation and Review,* Working Paper, The Ford Foundation.
18. Planning Division, Department of Family Planning, 1972, Systems approach for evaluation of family planning programme in [India, *All India Seminar on Family Planning Problems in India, IIPS, Bombay.*

19. Ohosh, B., 1972, *A System for Operational Evaluation and Improvement of the Family Planning Programme,* Working Paper, Operations Research Group, Baroda.
20. Demographic & Evaluation Cell, SFPB, West Bengal., 1972, *Report on the Status of the Family Planning Programme in Birbhum and Howrah Districts,* Paper 1 of Diagnostic Survey of Family Planning Centres, 1971, presented by B. Ghosh.
21. Ghosh, B., 1972, *A Decision Information System for Planning Implementation and Evaluation of the Family Planning Programme,* Working Paper, The Ford Foundation.
22. Freedtnan, R , 1969, *Comments on Evaluation of the West Bengal Family Planning Programme,* The Ford Foundation.
23. Mosley, K.T. and Dey, G.C., 1972, *A Field Test of a Record for Eligible Couples,* State Family Planning Bureau, West Bengal.
24. Beasley, J., 1973, *The Lousiana Family Planning Programme,* Readings in Family Planning and Population Program Management.
25. Blumstein, A. and Helbig, D., 1973, *Impressions of the Louisiana Program,* Readings in Family Planning and Population Program Management.
26. Urban, G. L., 1974, A model for managing a family planning system, *Operations Research* 22(2) (March-April 1974)
27. Hadley, G., (1971), *Linear Programming.*