THE FUNCTION OF ACCOUNTING IN SELECTING INVESTMENT PROJECTS

door Dr. C. A. Buningh

When we consider the above subject, it would seem expedient to indicate first and foremost what is understood by accounting, what is understood by investments and what is understood by the process of selecting these investments.

The functions of the accounting section

As this depends on size and form of the undertaking, the function of the accounting section may vary greatly. Therefore it would seem expedient to ask ourselves first and foremost what broad functions can in principle be assigned to the accounting section. If all these functions are entrusted to the accounting section, we in principle call this accounting in a more extended sense. In larger-sized undertakings, however, we shall mostly see a tendency to sever various functions from the accounting function in its narrower sense (here we mean general accounting with its branches). We shall henceforth refer to the accounting function in its narrower sense as bookkeeping. Such a split-up would seem meaningful in every respect as from a viewpoint of characteristics, for instance, functions of a more prospective nature and those more related to policy should aim at targets quite different from the purpose the registration functions of a more retrospective nature aim at. For the latter are of a strong routine nature, whereas the former much more appeal to mental flexibility and fertility of invention. Besides it is in general recommendable to make in largersized undertakings the clearest possible distinction between the control-functions and supporting functions of the accounting section as, if these two functions are mixed, there is a particularly great danger that the operational sector will raise a considerable measure of opposition against the use of the supporting functions because of fears of oppressive ties of control.

The foregoing in particular also applies strongly to the selection of investments, where a clear distinction can be made between:

- the supporting function of the accounting departments (in a more extended sense) aimed at enabling the operational sectors to provide the higher management with an insight as correct as possible into the return to be expected and other benefits to the undertaking that could be obtained by the investments proposed. Besides the supporting function is reflected in the information to the top management itself, which should enable this management to form a judgement on the acceptability of the investment proposals made and make a meaningful choice from alternatives as well as in the information to the delegated managers who on the basis of the information supplied should be informed rapidly and timely about the effectiveness of their own actions.
- the controlling-function aimed at examining whether the investment projects proposed are indeed carried out according to plan and in time and whether the actual returns indeed come up to original expectations. This control-function cannot be dispensed with, if for no other reason than to prevent expected returns being systematically exaggerated in the operational sphere in order to secure a larger share of the investment cake.

In general the following broad distinction can be made as to the functions which can be assigned to the accounting section in principle and play a part in the investment policy:

- the central accounting department, which takes care of the registration and processing of historical data resulting in the profit and loss account and the balance sheet.
- the statistical departments, which also register historical data to produce from these trends and index figures for the future and/or the present.
- the calculation departments, which do the figure work for the preparation and checking of operational actions to be carried out.
- the treasurer's department, which supplies the required financial resources and takes care of bringing the inflow of funds and the spending plan into line.
- the budget department(s), the sales inside service(s), the planning department(s) and other departments which have supporting and advisory tasks in respect of the operational policy to be followed by the entire organisation. As a rule the planning department and the sales inside service supply preponderantly quantitative information which is translated into financial terms by the budget department.
- the economics department, which renders services to the top management as to the creation, laying down and propagation of policy lines based on market trends, socio-economic considerations etc.
- procedure committees of mostly an ad hoc nature, which technically work out certain components of the policy on the strength of authority granted by the management for the purpose; examples are budget, investment- and similar committees.

These are usually constituted of promising employees in the accounting and operational sections, who consider what is to be budgeted, by whom, when and in what details, what basic data of a quantitative and qualitative nature should be at their disposal in this respect, who is to be responsible for the control of the procedure, etc.

As was already stated before, the above functions will in small-sized undertakings mostly be combined in one or more chief functions. It would nevertheless seem expedient, however, to bear the distinction as outlined above, however broad and arbitrary it may be, in mind when stating what the function of the accounting section should be in selecting investments.

The concept of investment

In principle we mostly find a tendency to regard as investments all policy decisions typing up resources for a period of more than one year.

This definition is not based on a theoretical concept of investment, but on recorded practice. Besides a minimum limit in guilders or equivalent currency will usually be set; an investment below this limit being regarded as an expenses item. Dependent on the form of the undertaking, the extent of decentralization, the size of the undertaking and the level at which judgment takes place, wider or narrower limits will be set. Besides there is in many, including the larger-sized, undertakings a tendency to sub-divide investments into two categories, namely:

- investments in large, individualisable projects, which mostly entail an expansion of existing activities (projects)

- investments with a flow character, among which assets that may individually have a long lifetime may be found, but of which we can state that the risk involved in the investment is confined to a relatively short period of time because the lifetime of other, similar objects of investment if the purchase dates are well spread, often expires within a relatively short term. Examples are a car fleet, stocks and the like (programs).

The procedure for the latter kind of investments is that in the undertaking only their total level is centrally controlled with mostly a great measure of decentralization and delegation with regard to allotments within this total level.

It is characteristic of the latter category of investments that they often perform achievements difficult to individualize, so that evaluation is often only meaningful if and in so far this evaluation is directed to the total results of the complementarity which absorbed these individual investments.

Project investments on the contrary often constitute in themselves a complementarity that can be individualized very well and for that reason can also be evaluated very well.

Proposals for program investments should as a rule be made by the operational functions themselves; as a rule their sphere of action also lies within the function. Project investments on the contrary will mostly have to be studied at central and higher levels as these mostly relate to or span many functions may be even undertakings and markets.

What is to be understood by investment selection?

An investment scheme is generally accomplished in several stages, namely:
- the long-term plan
- the annual investment plan
- the final approval of individual investments
- possibly: the individual approval of components of investments already approved of.

The main purpose of the long-term plan are:
- determining the framework within which the decisions to be made should lie
- directing the current of thinking of staff at management level
- educating delegated leaders in longer-term thinking
- fitting the investment plan into the financing budget.

In principle the long-term plan is of an indicative nature. It provides a scheme of action in which short-term plans should be fitted into. Therefore it is only of a normative nature for those plans which, given the required date of completion, should be decided upon at the time when the long-term plan is drawn up.

In other words the long-term plan does not serve to freeze flexibility as to the future, but contrarily to direct and enlarge it. In the larger-sized undertaking the long-term investment plan will for the greater part be designed by the management and its economic advisers and market analysts.

Contributions from the operational sectors of the organisation will as a rule not be evaluated too strictly. They only serve to support the managerial scheme. The function of the accounting section in submitting long-term plans is confined to its own line spheres of responsibility; in addition the accounting section will, for instance, have to take care of the supply of forms to the entire organisation, which should clearly state in what fields suggestions are expected, what direc-

tions and expectations the management has in view as to these fields and what figures from the past could be of support to those who make proposals. The accounting section (economics department) will also have to give its active assistance to the preparation of these managerial directions and expectations. Besides the fitting of the investment budget into the financing plan will sometimes be a matter for the accounting section; but it is not uncommon that a special department (treasurer's department) is charged with this task.

The annual investment plan and the selection of investments in a narrower sense

Within the framework of the long-term investment plan mentioned before, concrete investment budgets are drawn up, on the basis of which the selection of investments for the period concerned (mostly one year) takes place.

In this case two situations may occur, namely:

- the available resources are insufficient to carry out all relatively attractive investments.
- the resources to be obtained from the market are of such an extent that any relatively attractive investment can be carried out in principle.

In the former case the selection of investments takes place by making a choice from the available possibilities of investment as arranged in the order of their attractiveness within the framework of the available resources, while in the latter case the available possibilities of investment are compared with the expense involved in securing the required resources and the additional charges (for risks, profits, etc.) considered necessary. (Here cut off rates are mostly used.) In both cases non-quantifiable factors such as risk expectations and policy considerations of course also play an important part. Besides it will be no uncommon occurrence that for certain projects various other alternatives will be studied as to their relative attractiveness.

The final approval of individual investments or components of investments

In practice there are a number of firms which, after approval of their annual budgets, subject individual budget items to a final test at the moment when construction starts or the purchase takes place. This may be useful if in the annual budget calculations were still insufficiently detailed or new circumstances have arisen, which can still appreciably affect the calculations submitted originally. Besides it is in some undertakings customary to set additional standards of approval for individual expenditures in excess of a certain authorised sum within a budget item approved of. Personally I cannot admire this procedure. In my opinion it is likely to give rise to officialism and a loss in motivation power. I believe that it can even cause feelings of frustration among those responsibilities for the budgets. I consider the authorization of delegated leaders to handle investment projects one of the chief aims of investment policy. This authorization may have strong effects as regards motivation and education.

In addition there are of course many secondary purposes such as contribution to the liquidity budget, assignment of a task, means of control (preferably applied as a possibility of self-control), operational plan for carrying out the investment etc. In order to enable motivation and education to have sufficient play and besides to obtain the best possible adaptation of the investment to local

circumstances, I am a strong believer in a *decentralized* preparation, introduction and application of investment plans. This especially applies to investments of a program nature. Of course the management should *give directions in advance* as to its wishes, expectations, preferences, etc. Besides the top management should reserve the final judgment with regard to the level of program investments permitted, and the final choice and approval of projects.

This requirement of decentralized introduction implies that the matter should be kept intelligible to those who introduce plans, which forms a plea for the *greatest possible simplicity*. Of course the level of the employee who introduces a plan will again play an important part as well as the extent to which within the organisation the matter has been made familiar through education and training. The principle of decentralized introduction of plans also implies, as was already stated, the necessity of evaluation in order to prevent a systematic exaggeration of anticipated returns. This evaluation is often, in my opinion wrongly, omitted. Whether this evaluation will have to include all proposals or to be executed by way of tests, is a question of efficiency, the latter method being most attractive in my opinion. In the selection of investments the comparableness of the proposals made is essential. Care should therefore be taken that the instruments used throughout the entire organisation are *interpreted in the same manner everywhere*.

This requirement is at least as important as the specific choice of the instruments.

Purposeful and systematic information can greatly contribute towards the uniformity of instruments referred to. In preparing the procedure the accounting section will likewise have to take care of an appropriate design of the system and the course of forms (in very large undertakings a separate budget department is sometimes charged with this task). Besides the evaluation work will as a rule be done by the accounting section (sometimes by the economics department, budget department or calculation group). Accounting data will no doubt have to be the main points of support for this evaluation. When we subject the investments proposed from within the organisation to a further consideration, it appears that a very considerable part of the decisions as to investments are in practice taken on the basis of non-quantitative considerations. The opposite extreme is formed by investments exclusively based on return considerations. Between these two groups is a category of investments where non-quantitative as well as quantitative considerations play a part in decisions whether the investment will be approved of or not. Because of the strong influence exerted by policy considerations, decisions as to investments should be made by the executives responsible for the policy followed by the undertaking, that is the top management with its direct advisers. For these reasons it is incorrect to mention only quantitative data when investment proposals are made. Non-quantitative data are often at least of equal importance and they should also be presented in a convenient manner and, as much as possible, in a systematic manner as well.

Investments that cannot be quantified in a meaningful manner can be further sub-divided into three chief categories, namely:

1 investments for the benefit of the main purpose of the undertaking (such as market share, required minimum share in the supply of raw materials and/or services, safe-guarding monopolistic or oligopolistic market positions or other positions).

2 investments aimed at avoiding damage to the name of the undertaking. Examples of these are investments in the social sector such as canteens, investments based on safety considerations, investments based on Government regulations, investments aimed at avoiding nuisance to the population (water and air pollution), gifts to foundations, institutions with good objects and similar facilities in the public or semi-public sphere for the benefit of the name of the undertaking.
3 investments aimed at replacing machines and/or parts constituting a relatively small part of an important complementarity in aggragate makes an important contribution to the productivity of the undertaking (only in the case of replacement of important parts of such a complementarity is calculation of the anticipation return of significance).

As regards the above-mentioned categories a calculation of the return, solely aiming at determining whether the investment will be effected or not, will as a rule not be of significance (this also applies to investments in publicity and research which are also mostly based on policy considerations). However for these investments alternative calculations should often be made as they, the investments, can be accomplished in various ways or with the aid of various machines. Besides a qualitative motivation will often be of importance when these investments are involved (in the case of canteens, for example: the number of employees, expected use of the canteen, distance from home to the employer and the like).In order to prevent much unnecessary work being done in the organisation, it is recommendable to state clearly that for certain categories of investments, where non-quantitative factors are decisive, additional calculations of the return are only appreciated if they are related to possible alternatives.

It is recommendable indeed to instruct the operational staff clearly as to nature and extent of the qualitative motivation required of them for the various categories of investments. The preparation of forms and check-lists suited for this purpose is in my opinion one of the responsibilities of the accounting department (budget department). For the sake of comparableness at higher levels, uniformity in presentation is highly desirable.

It should be observed that if investment decisions are made on the basis of return considerations, the estimated risk plays an important part in addition to the estimated return. A distinction should be made between the risk of wrong estimates in the invested amount (construction price or purchase price, including working capital), the risk of wrong estimates in estimated proceeds and the risk with regard to the standing costs involved in operation. As a rule the estimate of risks cannot be separated from the estimated return.

We shall first review the available media for comparing the return. These methods are:

- the pay-out method. In fact this method is to a not inconsiderable extent a medium for measuring risks[1])
- a return on investment[2])
- a discounted cash flow[3])
- internal rate of return[4])
- incidentally applied methods such as the Baldwin method and one year comparing formular for replacement investments (such as the M.A.P.I.-method).

In my opinion it is generally advisable to make use of a number of simple media for the decentralized submission of investment proposals; the pay-out method (related to the expected lifetime, if necessary) and the return on investment system being the best methods suited for the purpose. Practice confirms that these two methods are highly preferred.

With the aid of these suggestions a number of investment projects can already immediately be decided upon in a positive or negative sense, so that only border-line cases remain. For these border-line cases I prefer the internal rate of return method because of its relative simplicity. But in practice the discounted cash flow system is used on a larger scale.

It should be observed that, whatever system is chosen, uniformity is the first requisite. This applies to the standards of judgment chosen as well as to the bases of calculation. A fault of frequent occurrence in this respect is that if and in so far as future price and cost increases have to be taken into account when investment proposals are made, a great divergency may occur throughout the organisation with regard to the judgment of movements in these fields. In practice we therefore see, I believe rightly, a strong preference for calculation on the basis of the *present* price and cost level, positive or negative premiums only being allowed for clearly asynchronous movements (such as savings in labour costs). This procedure indeed makes it necessary to permit (if investment budgets are used as objects of authorization), the approved sums to be exceeded to a certain limit automatically because of anticipated price rises. In determinig the bases of calculation and controlling uniformity in the organisation, the accounting department (or budget department) no doubt plays an important rôle. As was already stated before, both practice and the writer of this paper strongly prefer the greatest possible simplicity. For that reason I personally consider the application of more intricate methods such as the Baldwin system meaningful in very exceptional

---

[1]) Defined as: $\frac{\text{net invested amount}}{\text{freed depreciation} + \text{net profit after taxation}}$

The number of years found in this manner can be related to the estimated lifetime, if required.

[2]) Defined as: $\frac{\text{average annual net profit caused by the investment}}{\text{invested capital}}$

As regards to the invested capital various other possibilities can be conceived such as the originally invested capital, the average invested capital and other estimate formulae such as 60% of the original investment or related to the original investment increased by the residual value.

[3]) Defined as: the discount percentage at which the sum of the estimated net proceeds during the liftetime of the asset should be discounted in order to make it equivalent to the net investment amount.

[4]) Defined as: the relation between the surplus found by reducing the discounted net proceeds (taking account of the standard of return considered normal for the investment) by the net invested amount and comparing the balance with the total amount of the investment:

$\frac{\text{relative surplus}}{\text{total invested amount.}}$

cases only. The argument that the discounted cash flow method and the internal rate of return system implicity prodeed on the basis that the return percentages found when discounting the investments discussed should also be realised for the funds which become freed, is in my opinion incorrect and irrelevant.

Incorrect because, when these methods are used, only an opinion is given as to the return with regard to the actual demand made on the resources that have been or will be applied for them, and irrelevant because only in case of a great discrepancy between the returns to be expected and the returns made on average in the undertaking there would be a serious distortion of results. If such a discrepancy occurs, it is without further proof clear that the investment will have to be carried out (if the return is very high) or not (if the return is low). In cases of doubt the presumption that re-investment with an equivalent return may take place is no improbability. Besides it may be observed that the uncertainty in future estimates is already very great, while complicated systems alienate executives from results. The use of systems accessible to specialists only gives rise to suspicion and fears of specialistic hobbyism.

To achieve uniformity in the interpretation of the media used, it is recommendable to make use of directions for the formulae of judgment to be used or the distribution of interpretation diagrams, this mostly being accompanied by additional information. In the larger-sized undertaking it is in my opinion recommendable to charge the budget department with the choice of the media used and the preparation of directions of application. This department would then also have a task as to the training and education of those in the undertaking who have to apply them. In somewhat smaller undertakings the accounting department will no doubt have to take charge of this. It should be observed that also in that case the appointment of a special employee in the accounting sphere is advisable in every respect in order so to prevent these important functions being neglected under the pressure of everyday problems. The more intricate calculations in cases of doubt as well as possible evaluations will mostly have to be carried out in the accounting sphere (sometimes by the budget department). No doubt use will then have to be made of an abundance of accounting data.

Occasionally the internal auditing department is found to carry out these evaluations.

For measuring the risk per investment project a great number of media is used such as the above-mentioned pay out time analysis; the key point or break even point analysis; flexible budgeting, which system provides a number of budgets based on varied expectations into which reality is fitted in proportion to outcome; alternate budgeting, under which system the above-mentioned alternatives are weighed as to their probability and a weighed average of the outcome to be expected is determined as expectation of the return; or even simulating (including linear programming).

Some undertakings are used to calculating risks into the expected return. I would most strongly advise against the use of this system as it makes the estimate of risks, which is mostly very flexible, inflexible; places the interpretation of risks in wrong hands (as a matter of fact in those of the calculators instead of those of the managers) and undermines another budget characteristic, the appointment of tasks, for the man who is responsible for the execution. In other undertakings there is a tendency to raise the standard of return in a manner laid down in ad-

vance on account of risks. This system as well makes risks inflexible and basically puts the decision in wrong hands. It would seem to me that for that reason this system is also less efficient. Laying down minimum standards of return *in advance* may indeed limit the number of projects proposed and thus increase the efficiency of the procedure. But it would seem to me that the most correct method is to specify risks sub-divided according to the consequences they may have and to eventually supply as additional information, if the number of main variables is not too great, break-even point analyses (considering aging, price and/or volume) and/or alternate budgeting. It would seem to me that the pay-out time analysis is meaningful as extra information in practically all cases.

The use of automatic aids in accounting enables alternative calculations to be made also in the case of a greater number of main variables. This may be useful for deepening the insight of staff employees charged with the processing of the material. But care should be taken that no specialistic hobbyism occurs, while in my opinion it should no doubt be unwise to submit too great a number of alternatives to those who are charged with taking final decisions.

Also as to how risks should be described or catalogued, the accounting department (or budget department) will, as was already stated, have an important responsibility in designing efficient forms. The use of efficient forms and the timely supply of information required for making proposals is therefore one of the chief functions of the accounting section. Timeliness is an important factor in order to prevent a run on the accounting section during the term of the investment selection procedure and to control the duration of the procedure. The accounting section will also mostly be entrusted with the control of the procedure. As for the figure work I personally prefer, as may appear from the foregoing, this being done by the persons responsible for the execution of investments in order so to enliven the matter for them and make them better aware of the many facets attached to any investment. In the calculation and evaluation of cases of doubt and large projects the accounting section will on the contrary again play a preponderant rôle although also in these cases close consultation with those concerned, in order to make the matter intelligible to them is required.

Summarizing the above it may be stated that the functions of the accounting section in its wide sense in investment policy are of very great importance. The preparation of the investment selection as well as the supply of the required basic material of a quantitative and qualitative nature is almost certainly one of its responsibilities.

When investments are suggested for selection from within the organisation, the accounting section also plays a supporting and advisory rôle, be it that it should be stated clearly that the responsibility for the suggestions should continue to rest completely with those who are finally responsible for he realization of what they suggested through investment proposals. A warning is no doubt in place here as in many smaller and medium-sized organisations the accounting section is likely to take the seat of the excutive sections without realising that in fact it also takes over the responsibility for the execution.

It should also be emphasized that investment policy should continue to be *policy*. This implies that numerical data may never obscure the insight into an often very strongly nuanced reality. Care should therefore be taken that the figures are not presented in an unduly suggestive or absolute form. The function

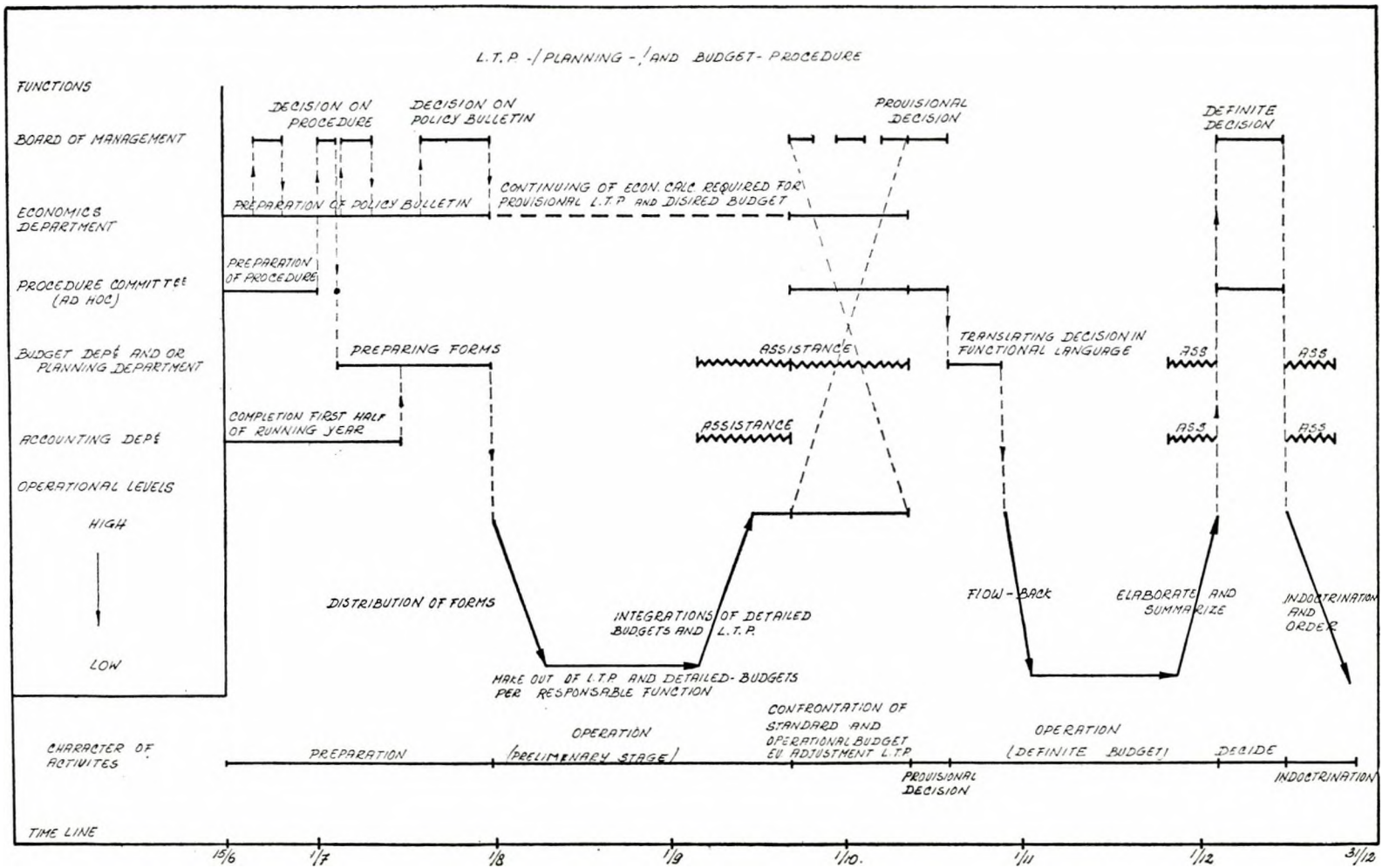
of the accounting section is to support a policy, but taking over this policy from the management would be absolutely wrong.

A warning should also be given against forcing this support upon the operational sectors too strongly as this is likely to give rise to feelings of frustration based on a supposed hollowing out of own tasks and responsibilities. But keeping a check on the realization of expectations expressed when investments were selected forms completely part of the function of the accounting section in its more extended sense.

My general impression is that in the smaller and medium-sized undertakings in the Netherlands the systematic selection of investments is still applied on a much too small scale, so that, apart from the absence of this important instrument, their top managements are also deprived of a possibility to become better alive to the development of their own markets, the development of technological processes, etc.

In larger-sized undertakings on the contrary it occasionally occurs that, encouraged by concentrations of staff skilled in accounting and finance, the selection of investments tends to be made a purpose in itself too much with as a rule too strong emphasis being laid on the material of conviction that can be measured quantitatively. A consistent classification of non-quantitative material is not seldom omitted also in these large undertakings.

You will find a possible procedure for the selection of investments, long-term planning, planning and budgeting in larger concerns on the enclosed diagram. It is more or less an average of the systems as found by me in a number of international concerns. It is my personal experience that such a system can be applied excellently and contribute greatly to the acceptance of media of control by the operational sectors and the motivation of the operational sectors in management.


L.T.P -/ PLANNING -/ AND BUDGET- PROCEDURE
FUNCTIONS
BOARD OF MANAGEMENT
ECONOMICS DEPARTMENT
PROCEDURE COMMITTEE (AD HOC)
BUDGET DEPT AND OR PLANNING DEPARTMENT
ACCOUNTING DEPT
OPERATIONAL LEVELS
HIGH
LOW
DECISION ON PROCEDURE
DECISION ON POLICY BULLETIN
PROVISIONAL DECISION
DEFINITE DECISION
PREPARATION OF POLICY BULLETIN
CONTINUING OF ECON. CALC REQUIRED FOR PROVISIONAL L.T.P AND DISIRED BUDGET
PREPARATION OF PROCEDURE
PREPARING FORMS
ASSISTANCE
ASSISTANCE
TRANSLATING DECISION IN FUNCTIONAL LANGUAGE
ASS
ASS
ASS
ASS
COMPLETION FIRST HALF OF RUNNING YEAR
DISTRIBUTION OF FORMS
INTEGRATIONS OF DETAILED BUDGETS AND L.T.P.
MAKE OUT OF L.T.P AND DETAILED- BUDGETS PER RESPONSABLE FUNCTION
FLOW - BACK
ELABORATE AND SUMMARIZE
INDOCTRINATION AND ORDER
CHARACTER OF ACTIVITES
PREPARATION
OPERATION (PRELIMINARY STAGE)
CONFRONTATION OF STANDARD AND OPERATIONAL BUDGET EV. ADJUSTMENT L.T.P
OPERATION (DEFINITE BUDGET)
DECIDE
PROVISIONAL DECISION
INDOCTRINATION
TIME LINE
15/6
1/7
1/8
1/9
1/10.
1/11
1/12
31/12