

Simulation for Result-oriented Planning of Education

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Abstract

The existing situation analysis of education sector management points out that there is an input rather than output-oriented planning system in Georgian education. This system doesn't allow improving outcome, based on the limited resources. Thus, it is impossible to evaluate costs needed to achieve defined objectives.

The goal is to create such system, that will include logical steps or business processes connecting resources and outcome. These processes should create conditions, that resources related to defined priorities would be aimed at achieving education system goals in existing conditions of limited resources.

Particularly, these processes should include:

- Elaboration of possible strategies of development
- Definition of performance indicators and objectives
- Collection and processing information
- Definition of different scenarios of development (programs, plans and actions)
- Making up the draft budget of different scenarios

The simulation model for generation and assessment of different scenarios of policy, decisions, actions, activities must become necessary component for realization of such education planning system. This computer model will provide technical and methodological assistance in formulation and evaluation of credible educational plans and programs.

The paper views the example of creation and using of simulation model in education.

Key Words: Management Points; Elaboration; Simulation Model; Assessment; Evaluation.

Planning is a management function, concerned with defining goals for future organizational performance and deciding on the tasks and resources to be used in order to attain those goals.

Educational planning can be defined as an intellectual process to identify the efficient measures to accomplish educational goals in terms of the future society.

Here, a number of essential features of good planning are immediately apparent:

- a forward view
- establishment of targets
- development of means by which these targets may be realized
- direct relationship with resource allocation, having first identified the aims and objectives

The plan that results from planning process details the goals of organization and specifies how it is intended to attain those goals. The cluster of decisions and actions that are taken to help organization attain its goals is its strategy. Thus, planning is both a goal-making and strategy-making process.

As a rule planning is a three-step activity. The first step is determining the organization's mission and goals. A mission statement is a broad declaration of an organization's overriding purpose.

The second step is formulating strategy. Managers analyze the organization's current situation and then conceive and develop the strategies necessary to attain the organization's mission and goals. The third step is implementing strategy.

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In a large organization like system of education, planning usually takes place at different levels of governance: education sector, levels of education (pre-school, general, vocational, higher education), regional, educational establishments.

Plans differ in their time horizons, or intended duration. Managers usually distinguish among three types of plans: long-term plans, with horizon of five years or more; intermediate-term plans, with horizon between one and five years; and short-term plans, with horizon of one year or less. Typically in such large system as education, system level goals and strategies require long and intermediate-term plans.

The question of resources necessary for the implementation of the plans should also be debated and resolved. It is not only about sufficient allocation of resources, human and/or financial, but also their rational and efficient utilization. What measures have been taken in order to ensure a more efficient management of resources? How could the quality of educational services be improved? What is important here is not only to make some savings on the costs but also, and above all, to use the allocated funds in a more equitable, transparent and efficient manner.

Educational financing is about the financing in the sector of education as a public enterprise. Recently, however, it is acknowledged that education is not a purely public good provided by public schools. Thus educational financing should be concerned with private education as well as non-formal education.

The failure to link policy, planning and budgeting is the single most important cause of poor budgeting outcomes in developing countries. That is the view of the World Bank in its Public Expenditure Management Handbook (World Bank, 1998). The implementation of a Medium Term Expenditure Framework (MTEF) is increasingly being accepted as an appropriate response to the problem. Medium-Term Expenditure Framework (MTEF) is annual, rolling three year-expenditure planning. It sets out the medium-term expenditure priorities and hard budget constraints against which sector plans can be developed and refined. MTEF also contains outcome criteria for the purpose of performance monitoring. MTEF together with the annual Budget Framework Paper provides the basis for annual budget planning.

According to the World Bank's Public Expenditure Management Handbook, "The MTEF consists of a top-down resource envelope, a bottom-up estimation of the current and medium-term costs of existing policy and, ultimately, the matching of these costs with available resources... in the context of the annual budget process." The "top-down resource envelope" is fundamentally a macroeconomic model that indicates fiscal targets and estimates revenues and expenditures, including government financial obligations and high cost government-wide programs such as civil service reform. To complement the macroeconomic model, the sectors engage in "bottom-up" reviews that begin by scrutinizing sector policies and activities (similar to the zero-based budgeting approach), with an eye toward optimizing intra-sectoral allocations.

Table. The Six Stages of a Comprehensive MTEF	
Stage	Characteristics
I. Development of Macroeconomic/Fiscal Framework	! Macroeconomic model that projects revenues and expenditure in the medium term (multi-year)
II. Development of Sectoral Programs	! Agreement on sector objectives, outputs, and activities ! Review and development of programs and sub-programs ! Program cost estimation
III. Development of Sectoral Expenditure Frameworks	! Analysis of inter- and intra-sectoral trade-offs ! Consensus-building on strategic resource allocation

IV. Definition of Sector Resource Allocations	! Setting medium term sector budget ceilings (cabinet approval)
V. Preparation of Sectoral Budgets	! Medium term sectoral programs based on budget ceilings
VI. Final Political Approval	! Presentation of budget estimates to cabinet and parliament for approval
Source: PEM Handbook (World Bank, 1998: 47-51)	

Using MTEF allows forming output rather than an input oriented planning system in Georgian education. In conditions of input oriented system it is impossible to evaluate costs needed to achieve objectives. Thus it is not sufficient to make annual budget based on the previous year's corrections, even in the case of growing budget. The task of implementation of more result oriented planning and budgeting process was defined by "Economic Development and Poverty Reduction Program" on July 2003, which based on consultations with civil society and donors. The goal is to create such system, that will include logical steps or business processes connecting resources and outcome. These processes should create conditions, that resources related to defined priorities would be aimed at achieving education system goals in existing limited conditions.

Particularly, these processes include:

- Elaboration of educational sector's strategy
- Definition of performance indicators and objectives
- Collection and processing information
- Definition of programs, plans and actions of the Ministry
- Contributing to the MTEF
- Drafting budget and submitting annual budget request.

Elaboration of educational sector's strategy - periodical renewals of Ministry's politics should be implemented, which allow us to elaborate sector developing programs on the basis of long-term vision. This process of policy renewal could embrace three, five or more year's strategic plans including development priorities as well as provision plans for the same period with the adequate resources and funding sources. Sector priorities, expected results and objectives are considered in the strategic plan. Education sector policy, strategy carrying out this policy, appropriate programs and actions with necessary funds should be connected to each other in such plan.

Definition of performance indicators and objectives – each strategy should be connected to indicators or attainable goals within the period of strategic plan. To monitor the implementation process the set of performance indicators related to strategic plan's priorities should be established. These indicators should be measured at least annually and the progress should be reported. The results should be presented in terms of wide outcomes, intermediate outcomes, utilized resources and processes improvement and how programs contribute in achieving policy objectives. These indicators should be decomposed by geographical principles as well as by groups of incomes. This will simplify the problem of evaluation of indicators improvement. Implementation of performance indicators gives an opportunity to set the goals or to define the change value of indicator, which has to be achieved for the concrete period of time. On that basis it will become possible to present the priorities and objectives in quantitative view and connect resources and financing to the concrete attainable results.

Collection and processing information – the system of collection of information on realization is essential for connecting utilized resources and planned objectives. Existence of such kind of system enables to compare performed tasks and achieved goals of different structures.

Definition of programs, plans and actions of the Ministry – the quality of education sector plan depends on clearly defined programs and tasks of Ministry and effective system of allocation of costs. It clarifies how resources are utilized and where they are tight connected with goals to be achieved. It is necessary to prepare the planning procedure. These rules will regulate the planning and budgeting process, define decision making points and reporting system, distribute responsibilities, determine task implementation schedule, and provide gathering of corresponding structured timely information and management process of information usage.

Contributing to the MTEF . A key step in connecting budget allocations to medium term planning priorities is the development of a medium term expenditure framework (MTEF). MTEF cover a three year period, with the first year covering approved plans and budget, and the subsequent years plans and sector recourse envelops. Ministry of Finance is providing spending ceiling to Ministry of Education and Science, not only for coming year but also for subsequent years. The first of these ceiling will subsequently become education sector ministry's initial ceiling for next annual budget preparation round. The two 'out-year' ceilings indicate the future budget allocations provisionally assigned to meeting education sector targets, and are for planning purposes only. This is rolling MTEF, and a year later the same process will be repeated, with MTEF being updated and rolled forward as part of the cycle for preparing the next annual budget. a key role of the MTEF is to bring all recourse available to the sector together into one document. This includes both government recourses, direct support to government programs by external funding agencies, and externally funded projects.

Drafting budget and submitting annual budget request. Budget ceilings are issued early in the budget process, to focus information provided in ministry budget requests. Ceilings are the first step in two part process, with Ministry of Finance making final budget allocation between competing ministries on the basis of their post-ceiling submissions. Thus, the spending ministry has to prepare the draft budget on the basis of there strategic plans and performance indicators system. For this it is necessary to introduce a more results-based budget process. Draft budgeting process should adequately reflect policy decisions of the Ministry Flexible planning and budgeting process focused on goals, set of different-terms plans, system of performance indicators and evaluation methods of expenditures are prerequisites of making up results oriented budget. The cost of ongoing programs should be separately identified in the MTEF and taken as baseline for preparation of annual budget.

While the costing of the activities for a specific programme or project may be relatively easy if the budgeting elements and criteria are already in place, the budgeting of an education action plan can be much complex, especially when it involves making the projection of several years' expenditure.

In any case, a credible multi-year projection of resources can be hardly estimated without a computerized simulation model. A computer model is elaborated on the purpose and use of the simulation techniques for the design of policy options, the formulation of an education development plan and the evaluation of the required multi-year educational expenditure.

As early as the plan's preparation phase, simulations can enable upstream forecasts of recurrent expenditure and investments for the education sector in accordance with educational policy orientations. The government, as a result, can have advance information on the annual costs for implementing its reform and development plan, foresee budgetary gaps in relation to the State financing in a given period, and identify the fields for which additional investments should be sought from the national private sector and/or from external partners.

Simulation modeling contributes to and benefits from the medium term expenditure frameworks (MTEFs). MTEF aims to ensure the consistency of the budgetary allocations with overall fiscal objectives and domestic resources and thus to improve the realism of sector budgets. Its significance is particularly important in our country where a large gap between stated policies and actual domestic resources often leads to *ad hoc* budget cuts in plan implementation. Based on

the MTEF budget ceiling for the sector, education simulation model forecasts the domestic resources likely to be available for the education sector, anticipates their use by budget category and order of priority and in turn contributes to fine-tuning the sector expenditure framework in consistency with overall macro-economic and fiscal perspectives.

Subsequent use is facilitation in setting up annual and multi-annual budgets, that is to say, the short-term technical and financial programming of administrative and financial actions. The formulation of short-term objectives – over one or two years – is carried out on the basis of the achievements and forecasts of the action plan. The simulation makes it possible to specify new anticipated achievements and their costs, which facilitates the programming of recurrent and capital expenditure. Estimates of national annual expenditure are provided by level of education and by category of expenditure. According to the level of de-concentration and/or decentralization, such expenditure can be disaggregated by region, by education level and by type and category of expenditure. National authorities, taking into account the objectives and the potential for development of each region, can take corrective measures necessary to balance budgetary programming. At the time of short-term budgeting, it is necessary for the simulation model to take into account significant parameters which have an impact on the cost of education, such as inflation, salary increases and the cost of educational goods and services.

However, a simulation model is a tool which can help foresee the *probable* evolution of an education system in the more or less distant future by means of a more or less limited number of baseline data and hypotheses of development. The simulated results will be probable, but *not sure*, because the future of a system also depends on unforeseen hazards and uncertainties which have an impact on the evolution of phenomena. This explains the need to update the baseline data and parameters as the implementation of the development programme advances. The baseline data and the hypotheses retained for the development of the simulation model are inevitably limited in number and consequently can not take into account all the parameters, be they identified or not, which regulate the evolution of an educational system.

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