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Cost Efficiency and Cost-Benefits Relationship Analysis in the Romanian Education System

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Abstract: For reaching a certain level of performance, it is not absolutely necessary to have additional amounts of money, but an amount distribution in a more efficient manner between school units, or their reorganization. One of the important ways to reduce the base cost and in the same time to reach a high level of preparation for students is efficiency growth. In other words, the best way to grow student performance in lack of cost growth is to grow the productivity through management methods specific to teaching activities.

Keywords: cost, cost efficiency analysis, cost-benefits analysis, overall cost, direct costs, indirect costs, education system
JEL classification: I22, I26, M40

Introduction

The deffinitory element in the managerial decision making is not the cost value, but the understanding of behavior and cost relevance for some speciffic decisions, also the cost variation effects on proffit and taxing it.

The cost is directly tied to a target that must be reached and it must not be confused to expence that is specific to a cetrain timeframe and requires financial

result determination. The cost area is delimited by productive activities, the distinctiveness to expenses that reffer to all entitie activities being obvious in this case.

Regarding the cost identification and analysis, a cost classification is necesary, based on several criterias: cost nature, cost relationship to calculation object, cost behavior, relevance degree in decision making, timeframe to witch it reffers.

Because the cost is a key component in price determination, the financial result, demand and supply , the cost behavior analysis is defining for control processes, planning and decision making. In cost information lack, it is not possible to calculate the rentability threshold, budget control, manager performance appraisal, etc.

1. Cost-benefit analysis

Cost efficiency analysis (CEA) is based on the correlation between an education program costs and key outputs or benefits. Cost-benefit analysis (CBA) makes a step forward compared to cost efficiency analysis, performing comparison between costs and benefits in currency terms. Both methods can be applied at any time (before, after or during an education program implementation) and represent the main instruments of efficiency appraisal.

The CEA method targets the identification and currency quantification of a certain education program costs and it is based on the relationship between specific program costs and program efficiency. A pointer given by this method is the cost efficiency report, defined by the division of the total cost to the units that appraise efficiency, where through the units that appraise efficiency are individualized the quantifiable sizes of the main outputs of the program.

Considering the students poor bachelor degree results in the last years, we will consider as a practical example for applying these methods, the implementation of a program for raising the graduation rate for the bachelor degree exam. In this context, an important output of the program will be the raise of the graduation rate for the bachelor degree exam in comparison with the previous years.

The cost-benefit analysis starts from identifying and quantifying program costs and calculating the net benefits of the program, obtained through calculating the differences between total benefits and total costs.

Both applied methods are of a social-economics nature (and not financial), considering these costs and monetary and non-monetary benefits that can be associated to individuals in society. In the same time, the negative effects of the program are considered to be the costs and they are included in the calculations. Value for society appraisal considers all the costs and benefits associated to all social classes subjects (students, contributors, community, economical entities, superior learning institutions, or other groups or entities affected by the program implementation). Through comparison with the financial approach, we consider this type of approach for the two methods more suitable because it offers a wider and more complex perspective regarding high level education performance which has more components that define it.

Applying the two methods means going through a process that includes several steps that we will look into details further on.

2. Analysis framework delimitation

Analysis framework delimitation must start from presenting the existent situation before the implementation or projecting program. In our situation, bachelor degree exam graduation rate in Bucharest is considered as an average of previous years, respectively 40.79% private high schools and 58.63% public high schools.

In both methods, costs and benefits that have to be considered are the ones that must produce above the level of those costs and benefits that exist at the staring moment of the analysis, their name being incremental or margin benefits or costs.

The raise of graduation rate program for the bachelor degree exam implies offering extra hours in high school for studying domains that the exam includes. The program implementation costs will be created from direct costs for didactic personnel salaries, space utilization costs (heating, electricity, rents, etc.) and didactic materials utilization and computer equipment costs and indirect costs regarding the program implementation personnel leading the team and other indirect administrative costs. The program timeframe is set to be 3 years, and the information that we wish to obtain through the two analysis are correlated to program suitability and the continuation or expansion in several learning units.

The initial state, that precedes the program implementation is characterized by the educational activities that occur in the analyzed high school until the moment it begins.

3. Setting the considered costs and benefits

Regardless if we are talking about political education or an educational program, there is a high number of gainers or individuals or group of individuals affected by costs and benefits. Their delimitation must be made in relation to their applicability area of the program, in our case this being Hyperion High School.

4. Costs and benefits identification and classification

Cost and benefit identification and classification for the analyzed program was made in relation to several classification criteria presented in table 1.

Table 1. Cost and benefit classification criteria

Crt. No.	Classification criteria	Description
1	Real costs and benefits	- Costs and benefits that can be quantified for society - Real benefits reffer to saved or earned summs, population level of education growth, earnings growth and lowered taxes, time economy, living standards growth, etc.
	Transfered costs and benefits	- Costs and benefits that affect resource distribution in society
2	Direct costs and benefits	- Costs and benefits that are directly relationed to the main objectives of the program (personnel costs, program required space costs, equipment and material costs, etc.)
	Indirect costs and benefits	- Costs and benefits that are unintentionally produced as an output for the program implementation

3	Reachable costs and benefits	- Identifiable and quantifiable costs and benefits
	Unreachable costs and benefits	- Costs and benefits that cannot be identified or quantified in monetary terms
4	Financial costs and benefits	- Costs and benefits that can be instantly identified in monetary value
	Social costs and benefits	- Costs and benefits that cannot be quantified in currency but have a value for society

Source: own processing

Table 2. Costs and benefits by category

	Costs and benefits:							
Cost or benefit category	**real**	**transfered**	**direct**	**indirect**	**reachable**	**unreachable**	**tax**	**social**
Didactic personnel salaries	X		X		X		X	
Location utiliazation costs	X		X		X			X
IT equipment aquisition	X		X		X		X	
Didactic materials aquisition	X		X		X		X	
Location maintainance	X			X	X		X	
Consumables	X		X		X		X	
Volunteering personnel	X			X	X	X		X
Family opportunity costs	X			X	X			X
Student opportunity costs	X			X	X			X
Program implememtation consultancy	X		X		X		X	
Graduation growth			X		X			X
Student self esteem growth				X		X		X
lowering social issues				X	X	X	X	X

Source: own processing

5. Costs and benefits projection during the program lifetime

After costs and benefits identification and classification of the program it is necessary to establish a timeframe in which the proposed program has to take place. For the analyzed program, the period in 5 years. Considering the program extent, it is necessary to forecast the impact that it has during the lifetime, and costs and benefits constancy appraisal or indexing them regarding certain indexes.

For the analyzed program, most costs that are identified at the program implementation moment will continue to exist during its ongoing, the raisings mainly being due to inflation.

6. Costs monetary quantification

Costs and benefits monetary quantification is necessary in total cost determination of the proposed program. The difficulties of this step stands in unreachable costs monetary quantification.

After the monetary quantification, the program costs must be budgeted by categorizing them as it follows: capital costs, submerged costs, indirect costs, unmounted costs, etc. The program specific cost quantification is presented in table 3 for the 5 year timeframe. For each year, a cost value raise was considered to be generated by inflation.

Table 3

Program monetary costs quantification

EUR	1st year	2nd year	3rd year	4th year	5th year	TOTAL
Before project costs						
Consultancy	50000	10000	0	0	0	60000
Computer equipment	5000	0	0	0	0	5000
Capital costs						
Classrooms	0	0	0	0	0	0
Computer equipment	6000	6000	6000	6000	6000	30000
Didactic materials	5000	5150	5304.5	5463.635	5627.544	26545.68

Salary costs						
Didactic personnel	216000	222480	229154.4	236029	243109.9	1146773
Other direct costs						
Maintenance costs	10000	10000	10000	10000	10000	50000
Consumables	6000	6000	6000	6000	6000	30000
Travel costs	4500	4635	4774.05	4917.272	50647.9	23891.11
Administration generated costs						
Administration	3000	3090	3182.7	3278.181	3376.526	15927.41
School total costs	**305500**	**267355**	**264415.7**	**271688.1**	**279178.8**	**1388138**
Student social costs	5000	5150	5304.5	54636.35	56275.44	265456.8
TOTAL COST	**35550**	**31885.5**	**31746.07**	**326324.5**	**335454.2**	**1653594**
Number of participants 50	50					
COST PER STUDENT	**711**	**637.71**	**634.9213**	**6526.489**	**6709.084**	**33071.89**

Source: own processing

7. Benefits quantification

Opposite to cost monetary quantification that is realized in the same way for the two used methods, the benefits quantification is realized differentially.

The starting point for the benefits identification must be the objectives which were established before the beginning of the program. In our case, the main benefits are tied to the graduation percentage of students in the bachelor degree exam and the performance improvement reported to past years averages.

The last step is the identification of the benefits reporting to the considered efficiency units, which in the analyzed situation are represented by the number

of students which improve their performance, from the total students enrolled in the program.

Cost efficiency analysis is not about all benefit monetary quantification, being necessary to identify at least one benefit that can be appraised in monetary terms. From this perspective, we consider a cost-benefit analysis more relevant from a financial point of view. When a social point of view program characterization is desired, it is obvious that a cost efficiency analysis shows all the benefits of the program in detail, for example the utility of the introduction necessity. In case of program financing necessity from various sources, cost-benefit analysis has a greater utility, any financing requiring a more relevant budget fundament.

Table 4 presents the efficiency analysis itself of the analyzed program.

Table 4 Cost efficiency analysis

EUR	1st year	2nd year	3rd year	4th year	5th year	Total
Number of students that increase performance	25	30	32	34	38	
School costs	305500	267355	264415.7	271688.1	279178.8	1653594
School costs for program participants that satisfy the graduation criteria or the performance growth	12220	8911.833	8262.989	7990.827	7346.81	1653594
TOTAL COST	355500	318855	317460.7	326324.5	335454.2	1653594
Cost for program participants that satisfy the graduation criteria or the performance growth	14220	10628.5	9920.645	9597.779	8827.742	1653594

Source: own processing

Total program benefits estimation must take into account direct benefits of the program participants and indirect benefits of the society. Also, their projection must be made for a long future timeframe – for example 25 or 30 years, for showing the advantages offered by the analyzed program in detail.

For the student bachelor degree exam graduation growth program, total benefits estimation of the program and their projection in a future time period is not possible due to the lack of data and necessary information.

8. Program improvement recommendations

In case the added value offered by the program implementation is positive, it is obvious that the recommendation is to implement that program. In the cost efficiency analysis, there is no clear rule to decide in the project appraisal, the use of an expert professional judgement being necessary. If two programs are appraised by comparison, that report to the same efficiency units, the program which has the lower costs is desired to be implemented. In this case the question raised is if the associated benefits are at least equivalent if not superior to the rejected program benefits.

9. Conclusions

The performance indexes of the school units that are used in their appraisal do not offer a clear image of their efficiency and do not allow an appraisal for all performance components in education. That is why it is necessary to use specific managerial accountancy methods to find a solution in both economic and social natures.

Regardless to the used method, this implies human judgement that removes the managerial accountancy from an exact science. That is why it is necessary to use an approach that lowers the subjectivity of the individuals engaged in the molding and development of a complex resource allocation model which starts from a clear definition of education suitability, which specifies and appraise monetary resources and study programs offered and those which develop a fair mechanism of resource distribution.

Without a doubt, the fair education cost determination and associated costs represents a tough but necessary process that has to be practiced in every country. The existence of several methods does not make this process easier, the use of one or another being difficult, choosing the most suitable method falling in the decision making team task, regarding financial resources allocation, which must determine the most suitable method regarding the educational system for every nation.

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