PROSPECTIVE ANALYSIS OF EDUCATION IN DÂMBOVIȚA COUNTY

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The young people of the present society are the future, and the most important prospective analysis techniques are used to realize a pertinent presentation of their situations in point of educational level. The main goal of the present article starts from the idea that the decrease of the number of people benefiting of education triggers negative effects on the world. A person with no education generates much higher expenses for a society than an educated person. By means of the present analysis, we endeavor to make a projection of the future as an alarm signal meant for the people in charge with the elaboration and implementation of strategies in the domain of education.

Key words: education, educational institution, prospective analysis, forward planning techniques, competitive environment

JEL: I20, I21, C53

Introduction

The strategic prospective analysis has been the focus of many specialists in the field. Gaston Berger is considered the father of this concept. He has endeavored to introduce it not only in its French version, as it originally appeared, but also as a concept adapted to the English language. The concept of *prospective* (forward planning) has developed, and at present it is used in the sense of analysis made in order to establish the existence of connections between the existing decision processes, the images of the agents on the level of the social-economic system and the strategic choices that constitute the future. The strategic prospective analysis, according to Gaston Berger and to his successors in economics, includes quantitative and qualitative methods. The distinction between these two categories consists in the fact that, while the former can be tested, the latter have an intuitive character.

Structured on two parts (the state-of-the-art and the practical parts), the article aims principally to present education in Dâmbovița County during the last few years, but also a vision for the next period. The added value of the present article consists in the fact that the practical part does not consist only in prospecting education in Dâmbovița County for the immediately following period, but also extends to a larger time period, namely 5 years. Throughout this study, in order to support the argumentation, both short-term and long-term prospective methods are presented. Of the former category, the moving average and Mayer average have been used, and of the latter, the linear function and trend extrapolation have been used. The selection of these methods is not randomly, but relies on the fact that they can be tested.

Throughout this scientific approach, we have meant to attain several goals, of which the most important are: knowing the educational statistics for Dâmbovița County during the last few years, identifying the evolution of these indicators and the extent to which the prospective trend of statistics in education is characterized by linearity within the "Coresi" Primary & Secondary School, "Nicolae Titulescu" National College and the Faculty of Economics of "Valahia" University of Târgoviște. The most important conclusions, drawn as a result of this scientific approach highlight the fact that society will not record a progress, but rather a regress in the context of the decrease of the number of educational services beneficiaries.

1. Theoretical approach

The present theoretical approach uses as introductory pretext the quotation above belonging to the philosopher Confucius ("Nature makes us alike, education makes us different.") whose main message reveals the fact that education leads to the human evolution. In the guideline named "Guide of good practices for managers and members of the board of directors of the pre-university education units", the authors Luminița Preda and Mihaela Diaconescu mention that "education becomes, increasingly more, a public service, a quality supplier, assessed and self-assessed as an organization, based on standards whose management must provide satisfaction to the customer requirements, under conditions of efficiency and maximization of the added value."[48]

The concept of school as service provider is detailed by Gherguț A. who considers educational services as "a set of specialized activities, achieved by specific methods and techniques, elaborated and developed within a public institution or organization belonging to a community, meant to settle various categories of educational and training problems of different categories of beneficiaries within the respective community."[49]

The definition suggested by Gherguț A. develops the axis: community – members – educational organization, on the basis of which one can conclude that:

1. The autonomy of the educational organization is relative, since, on the one hand, it holds the monopoly regarding the teaching of school title owners (teachers) meant to assure its reproduction, and, on the other hand, the educational services provided need to be in tune with the offers of the agents who provide jobs on the labor market;
2. The educational organization interacts with three categories of customers: economic agents as final beneficiaries of the labor force produced, parents, community members, as secondary beneficiaries of instructive-educative services and major actors structuring the community values, and pupils as main beneficiaries getting ready for a profession.

A structuring element of the local public scene, the educational institution has changed in time. At present, it orients "towards the integration in the European education area, as it results from the programmatic documents assumed by the Romanian government, regarding respectively the Lisbon strategy and the Bologna reform". [3]

The educational institution's opening towards its outside is approached by Enache R., Brezoi A. and Crișan A. through the perspective of the need to answer, as much as possible, the beneficiaries' demands: "Educational institutions, as providers of educational services have to have collaboration contracts with the collectivity they belong to, relations with potential beneficiaries and customers, and with suppliers of educational products."[4]

The present school is facing a series of challenges related to the keeping, adaptation and development of the skills capital. A stable positioning of the educational unit in the competitive educational environment consists in the capacity to adapt to environment, in a flexible and reactive management. Positioning is a strategic selection by which it is attempted to assure a credible, different and attractive position to a school institution in the competitive environment.

The adoption of the top management decisions starts from planning. This concept represents an essential function of the organizational management and its main goal is the representation of a situation from the future. "Planning is thinking projected in the future; planning is a control of the future. Planning is an integrated decisional process, planning is a finalized procedure meant to produce a result" [5].

According to forward planning, the future does not necessarily represent the representation of the image of the present, and this aspect generates a variety of long-term decisions characterized by the fact that they differ from the short-term ones [6].

According to Vairon A., the most important features of forward planning known in the literature as forecast consists in [7]:

1. The traditional forecast adopts a fragmented vision,
2. Numerous forecast errors occur as a result of confusion,
3. It explains the future.

The quantitative techniques of the prospective analysis rely on the observation of statistical data, the definition of the rules observed and the elaboration of a forecast. Their structure appears as follows: mobile environment, linear function, extrapolation of Mayer trends. Lately, their increasingly

frequent use has been due to several considerations such as the special importance given by managers in the organization, the possibility of using the computer and low costs.

2. Prospective techniques used in the analysis of education

2.1. Research activity methodology

Aim – The lack of concrete data regarding the tendency of manifestation of education starting from the past towards the present, and also focusing on the future (on the short and long term), as well, on the level of Dâmbovița County, made it necessary to perform this research on a general case (Dâmbovița County), and also on particular cases (on the level of three educational institutions within this county).

The research has been approached from two perspectives:

1. an analysis - in dynamics - of the statistic indicators belonging to the domain of education in Dâmbovița County during the last 14 years;
2. a prospecting of education on the level of three educational institutions in Dâmbovița County (a Primary & secondary school – "Coresi", a national college – "Nicolae Titulescu", and a university – "Valahia", Faculty of Economics).

Research goals:

- know the evolution/ involution recorded on the level of education in Dâmbovița County for the period between 1999 and 2013;
- identify the trends of the indicators reflecting formal education (on primary & secondary school level; on high school level; and on university level) on short term;
- determine the extent to which the trend of manifestation of the statistical data in the domain of education for the following years is one characterized by linearity.

Research hypotheses

- On the level of the last 14 years, not all the education stages (beginning with pre-school education up to the high school stage) record involution;
- The number of individuals benefiting of university studies for the period between 1999 and 2013 is characterized by evolution and regress stages, as well;
- The short-term trends of the number of registered and promoted school students of "Coresi" Primary and Secondary School, of "Nicolae Titulescu" National College, and of the Faculty of Economics (FSE) of "Valahia" University of Târgoviște (UVT), reflects regress;
- For the following years on the level of the three educational institutions, an accelerated increase of the educational service beneficiaries shall be recorded.

Organization of research

Type of research – office research, focused on the analysis of external sources.

The research method is quantitative, relying on the prospective analysis as a result of the use of three methods. For the short-term research, we have chosen as methods, to support our reasoning: the trend method and Mayer method, and, for the long-term research, the linear function method and the trend extrapolation method have been used.

The information collection method is represented by the analysis of the statistical sources of the National Statistics Institute (INS) – Dâmbovița branch, and of Dâmbovița County Inspectorate, and the study of the data provided by the representatives of the "Coresi" Primary and Secondary School, of "Nicolae Titulescu" National College and of FSE of UVT.

The research has been carried out for the period between 1999 and 2019 (present and future trends), and the period of information collection was between February 1 and March 1, of the current year. The processing of the results has been realized using the EXCEL software, which facilitated the study of this phenomenon by the analysis methods used.

2.2. Research results

1. Statistical analysis of education in Dâmbovița County

Throughout this approach, we presented the number of educational beneficiaries in the educational institutions, starting from past towards present, realizing a diagnosis of it, on the level of Dâmbovița County. The formal education on level of primary & secondary school, high school and university is given in table 1.

Table 1. Formal education on study stages

Dâmbovița County	Preschool	Primary and secondary				High school	Vocational	Post-high school and foreman school
		Total	Primary (grades 1-4)	Secondary (grades 5-8)	Special education (grades 1-8)			
1990/1991	18098	67436	30938	35922	576	24151	7944	467
1995/1996	16110	64288	35401	28141	746	18434	6258	918
2000/2001	13226	63510	28423	34540	547	15857	5348	1803
2001/2002	13479	60932	27037	33463	432	16419	5948	1703
2002/2003	13762	57752	26132	31238	382	16956	6489	1284
2003/2004	14439	55843	26989	28532	322	17121	7106	949
2004/2005	14574	52830	25891	26603	336	17477	6918	766
2005/2006	14513	50529	24798	25446	285	16920	7055	681
2006/2007	14464	48630	23985	24414	231	17202	5833	577
2007/2008	14796	47058	22069	24783	206	17464	5076	845
2008/2009	14860	46373	22172	23999	202	17079	4384	900
2009/2010	15258	45149	21732	23227	190	18293	2579	873
2010/2011	15185	43964	21233	22568	163	19575	1192	936
2011/2012	15038	41464	20539	20765	160	20193	224	1069
2012/2013	13199	44359	23297	20903	159	18972	314	1454

Source: http://www.dambovita.insse.ro/main.php?id=388

According to the data in the table above, one can note an increase of the number of students registered at the post-high school and foreman school in the school year 2012-2013, by comparison to the period 1999-2001, while for the other educational stages from the perspective of the number of beneficiaries, a decrease is recorded.

Table 2. Education at university level

Dâmbovița County	Higher education
1990/1991	-
1995/1996	2,514
2000/2001	10,165
2001/2002	11,520
2002/2003	9,823
2003/2004	9,807
2004/2005	9,196
2005/2006	9,076
2006/2007	8,756
2007/2008	8,361
2008/2009	8,037
2009/2010	8,214
2010/2011	7,758
2011/2012	6,480
2012/2013	5,405

Source: http://www.dambovita.insse.ro/main.php?id=388

The analysis of the data given in the table on the left reflects the fact that the highest number of university students in Dâmboviţa was recorded during the academic year 2001-2002, i.e. 11,520, and on the level of the academic year 2012-2013, a value representing half of that recorded during the academic year 2001-2002.

2. Trends of education on the level of three educational institutions of Dâmboviţa County

The second research perspective is structured on two levels:

- Short-term trends

- Long-term trends

Short-term forward looking techniques, applied on the level of "Coresi" Primary and Secondary School, of "Nicolae Titulescu" National College and of "Valahia" University (Faculty of Economics).

A. Short-term trends

"Coresi" Primary and Secondary School

For this case, to analyze the future trends, the short-term quantitative method - Mayer – has been used. The features of this method consist in the fact that a classification of real data into two groups takes place and the coordinates of the two median points of the series takes place. The equation of the straight line, as a result of the calculation of the median abscissa and of median ordinate, is determined.

Table 3. Number of pupils

Period	No / y
2009-2010	648
2010-2011	648
2011-2012	654
2012-2013	782
2013-2014	840

Mayer Method

y=ax+b

P P2014/2015 registered-931

a=80

b=531

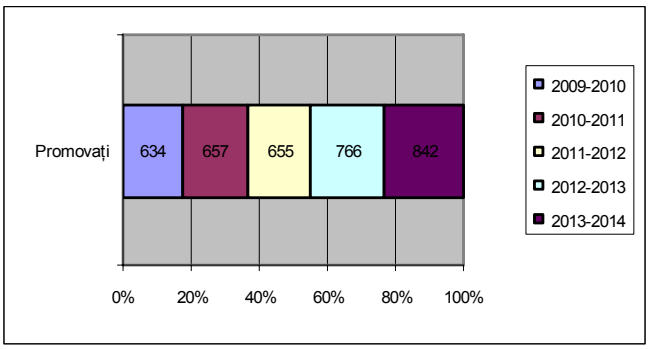

Figure 1. Number of promoted pupils

a=74

b=545

P P2014/2015- 915

By applying this method, one can note that both for the number of registered pupils, and for the number of promoted pupils for the school year 2014-2015, a significant increase can be noticed.

"Nicolae Titulescu" National College

Table 4 . Number of registered students

	REGISTERED
2009-2010	700
2010-2011	728
2011-2012	771
2012-2013	765
2013-2014	748
2014-2015	752

For the number of registered students and for the number of promoted students another method - efficient in short-term forecasting – the moving average method has been used.

Moving average method

Calculation formula: Σx/n

P2015/2016-744

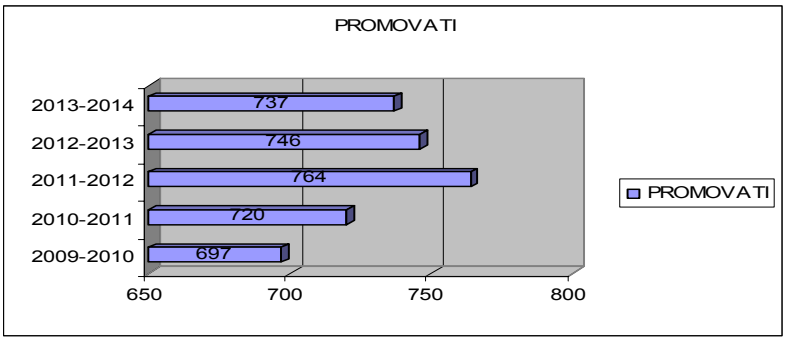

Figure 2. Number of high school students promoted

Moving average method

P2015/2016- 732.8

The application of short-term forecasting in the two cases indicates a decrease of the number of students belonging to this high school for the school year 2015-2016.

"Valahia" University- Faculty of Economics

To forecast the number of registered and promoted students - belonging to the 2012-2015 cohort - two quantitative methods are used: moving average and Mayer average. The selection of these two methods in the demonstration is meant to assure a higher accuracy of the information.

Table 5. Number of students registered in the last academic year (Bachelor Degree).

Period	No.
2008 -2011	597
2009 -2012	479
2010 -2013	348
2011 -2014	354

Moving average method

P 2012/2015- 444.5

Mayer Method

a=93.5 b=23.75

P 2012/2015- 491.25

The application of such quantitative methods for the short-term research for the students enrolled at the Faculty of Economics reflects, on the short term, an increase of their number.

Table 6. Number of graduates (Bachelor Degree) on classes.

Promoted

Period	No.
2008 -2011	367
2009 -2012	269
2010 -2013	221
2011 -2014	224

Moving average method
P 2012/2015- 270.25
Mayer Method
a=48
b=54
P 2012/2015- 294

Period	No. y	rank x	x*x	x*y
2009-2010	648	-2	4	-1,296
2010-2011	648	-1	1	-648
2011-2012	654	0	0	0
2012-2013	782	1	1	782
2013-2014	840	2	4	1,680
Total	3,572	0	10	518

2014/2015	610.8
2015/2016	662.6
2016/2017	714.4
2017/2018	766.2
2018/2019	818

Just as in the previous case, the short-term increase trend continues regarding the number of promoted students from Economics, Bachelor Degree, as well.

B. Long-term research

We have used as long-term prospective methods: the linear function and trend extrapolation.
Table 7. Calculation data for the forecast at "Coresi" Primary and Secondary School

Long-term forecast on the level of Coresi Primary & Secondary School for the number of registered pupils

For this case, the linear function method has been used.
y=a+bx

After the calculation and as a result of the application of long-term forecasting, we may note that up to the school year 2018-2019, a decrease of the number of registered pupils is to be recorded.
The long-term forecast on the level of "Nicolae Titulescu" National College of Pucioasa
Linear function method – registered high school students
Table 8. Calculation data

Period	No. y	Rank x	x*x	x*y
2010-2011	728	-2	4	-1,456
2011-2012	771	-1	1	-771
2012-2013	765	0	0	0
2013-2014	748	1	1	748
2014-2015	752	2	4	1,504
Total	3764	0	10	25

y=a+bx
a= 752.8
b= 2.5

After the calculation, we obtained the following results:
Forecasts

2015/2016	760.3
2016/2017	762.8
2017/2018	765.3
2018/2019	767.8
2019/2020	770.3

The data in the table on the left highlight the preservation of the evolution trend of the number of registered school students of "Nicolae Titulescu" National College for the next 5 years.

Faculty of Economics
For this case, the trend extrapolation method and the linear function method have been used.
Both methods rely on the following formula:
y=a+bx
Table 9. Forecast of students registered in the last academic year (Bachelor Degree), using the trend extrapolation method

Period	No. y	Rank x	y*y	x*y
2008 -2011	1	597	1	597
2009 -2012	2	479	4	958
2010 -2013	3	348	9	1,044
2011 -2014	4	354	16	1,416
Total	10	1,778	30	4,015

a 659.5
b -86

143.5 2013-2016

In the case of the linear function, this time we will no longer use the calculation table, but will apply the Excel software tools (Edit, File, Series, Linear). The application of these tools points to the same results as the trend extrapolation method. Thus, we have proved the fact that the forecast result tends towards real values.

The application of these methods to observe the situation of the students to be registered in the next few years highlights their decrease.

3. Research conclusions

The analysis in dynamics of education on the level of Dâmbovița County for the last 14 years reflects, on average, both involution and evolution stages. For this period, a significant decrease of the total number of pupils attending primary and secondary school classes has been recorded. The trend of the number of school students registered on high school level is not linear. A dramatic decrease of the number of school students of the vocational schools during the last 14 years has been recorded - by 7630 people. The number of university students of Dâmbovița County has recorded constant involution stages beginning with the academic year 2002-2003.

The first two hypotheses of our research have been confirmed, while the other two have not. The first hypothesis is confirmed since, according to the analysis in dynamics, one can note that for the period under analysis, not all the education stages record a regress. The following hypothesis is confirmed, as well, since the number of pupils/students during the last 14 years shows both evolution and involution stages.

The last but one and the last hypotheses have not been confirmed. The last but one hypothesis has not been confirmed because the short-term forecast highlighted that only on the high school level

one can note a regress, whereas in the case of the primary & secondary school and of the faculty, an evolution is recorded. The fourth hypothesis is not confirmed since the application of long-term forecast methods (linear function and trend extrapolation) reflects the fact that only on the high school level, significant increases shall be recorded, while on the level of primary & secondary school and on university level a decrease shall be recorded.

As a conclusion, the lack of interest regarding the future of the young from the perspective of their educative situation has consequences on Dâmbovița County, i.e. the number of uneducated people shall increase, and the lack of interest of the people in charge regarding the anticipation of such situations by efficient strategies encourages phenomena like school abandonment (on secondary and high school level) and illiteracy (on secondary school level).

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