

DETERMINANTS OF THE DEMAND FOR EDUCATIONAL SERVICES OFFERED BY THE MILITARY HIGHER EDUCATION INSTITUTIONS

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Abstract: *The specific character of the military education depending on social command and the necessities for qualified superior personnel of the military higher education institutions, limits the direct influence of the demand for the educational products and services offered by the military higher education institutions on the Romanian market. Analysis of the associations between determinant factors of the demand for educational services in the military higher education system reveals that the evolution of the population enrolled in the secondary education in addition to the evolution of the overall Romanian population exert an influence over the amount of candidates to be accepted in the military higher education institutions. A favorable demographic growth, especially on the 15-19 years segment of population, may generate a growth in the demand for educational products and services offered by the military higher education institutions. Analysis of the connections between the factors which influence the dimension and evolution of the demand for educational products and services offered by the military higher education institutions leads to the conclusion that the marketing efforts of the military higher education institutions should approach the higher quality segment of the Romanian educational market.*

Keywords: military; higher education; educational products and services; educational demand; Romania

JELclassification: B23; C34; I21; I23; M31

Introduction

The complexity of the educational domain and of the educational politics promoted since ancient times through the modern era can be revealed through philosophical approaches, but also socio-historical, influenced by philosophical figures (Crețu et al., 2011). Since the dawn of mankind, education represented the main engine of development, societies which have understood the importance of education becoming prosperous in time, capable not only of securing their existence, but also bringing important contributions in the universal science and culture (Enache, 2012a).

Active participants on the education market, education institutions are mediators between individuals, school population, generating demand for instruction and education, whom are offered such services, and the offerers of jobs, those who create the workforce demand, of a certain kind of qualification (Nedelea, 2002).

In the marketing approach of some authors (Grigoruț et al., 2011), the educational services' market encloses in an ensemble educational components which assure the consumers the satisfaction of some needs, interests, wishes, individual or collective searches, except for demand and offer, the educational market assuming the existence of at least two other defining elements, price and competition, to which attach the domain regulations, traditions and biases.

Characterised as being a complex system (Enache, 2012b), educational services' market contains both public institutions which provide educational services and particular ones, more and more visible, which makes necessary a rethinking of the marketing perspective of the educational services in the public sector (Răbontu and Bălăcescu, 2013), the impact of the demographic, social, political factors leading to changes in the consumers' attitude, in the structure and the evolution of the market (Enache, 2012b).

An efficient marketing activity of the institutions existent on the educational services market imposes a full connection with the customers, consumers of the services, adopting a marketing orientation assuming the understanding of consumers, reaching a circular vision both of their everyday existence and of the changes which appear over their lives so that the products/services offered should correspond to those necessities (Kotler and Keller, 2008).

The educational services' market may be defined as an ensemble of educational components which contribute to the satisfaction of some needs, wishes, individual or collective searches of the members of society (Ciobanu, 2003).

Starting from the premise that every activity must be oriented in the direction of satisfying with maximum efficiency the demands of the customers, effective and potential, in education it is necessary that the education institutions, both military and civil, put in the center of their attention the knowledge and the anticipation of the market's demands, satisfying actual and perspective needs of the consumers of the offered educational services (Cătoiu and Teodorescu, 2004).

Education is acquired, firstly, through the consumption of educational services, which means that an analysis of the education market should be made by referring to the demand and offer terms of educational services. On the educational services' market, the demand for education expresses the need for knowledge and competence which can be asked for both by education consumers, future clients of the education institutions, and by the beneficiaries of the final product, economic agents, institutions (Ciobanu, 2003).

The total market demand for a product or service is the total volume that would be bought by a defined consumer group in a defined geographic area in a defined time period in a defined marketing environment under a defined level and mix of industry marketing effort (Kotler and Armstrong, 2014). The demand for a product exists only when on the market are satisfied three conditions: the desire of consuming certain products, the capacity and disposition of consumers to buy (Rao, 2011).

The demand for education can be placed in the interference zone of the factors which determine the demand for educational services: the needs of the educational products' consumers, the level of earnings they have, the price of the educational programs as study taxes, the demographic evolution, the need on the labour market for specialists with higher education (Ciobanu, 2003; Grigoruț et al., 2011), the demand in the educational field being determined both by the changes in the economic, politic and social space and also by the individual educational needs of the consumers (Ciobanu, 2003).

In the approach of certain authors, the existing demand for educational services at a moment in time on the market for this kind of services represents the ensemble of the needs manifested in the context of the market by all the education consumers from a specific area and is expressed through the total volume of the service options requested by all the education institutions, during a certain period of time and in certain environment conditions (Epure, 2007).

In the higher education, the demand for education expresses the need for knowledge, competence, which can be requested both by the economic agents, and by people who take the courses at this study level, the students, the demand receiving this way a diverse character, the marketing approach of the education needing the identification, description and dimensioning of the market segments to which the higher education institution relates and connects to (Petrică, 2014).

In the special literature exist numerous studies which investigate the relations between

education in general, higher education especially and the variables which influence one way or another domain. Drăgoescu (2015) starting from the viewpoints formulated by Mankiw et al. (1992), Kui (2006), Barro (2013), Dănăcică (2011), examined existant relations between economic growth and education, the variables introduced in the case of Romania being the Gross Domestic Product per capita, the number of students enrolled in the higher education and the public spending for education.

The demand on the educational services market is determined by the influence of many factors: demographic, economic, technological, political, natural, cultural. The demographic tendencies model the educational services market and they influence the demand for this kind of services/products (Kotler and Keller, 2008).

Both military higher education institutions and their customers, potential students, employees, concurents, all operate in an environment rich in tendencies and influence factors, which configure opportunities and risks for each one, their identification and analysis permitting an answer which can satisfy the manifested demands (Kotler, 2005).

Methodological notes

The research approach aims to evaluate the manner in which the demand for education in the military higher education system is influenced by demographical, economical, technological, cultural, political or natural factors, which act upon the educational market on which activate the military higher education institutions. A multiple regression model which permits the prediction of a dependent variable based on more independent variables was constructed and used to predict the education demand based on the evolution of the demographical, economical, technological, political factors. To determine the association degree between the variables mentioned as influence factors of the demand on the educational market services offered by the military higher education institutions, the Pearson correlation coefficient was utilized, indicator of the intensity of the links between variables. The independent variables considered in the framework of this research endeavour were: the population of Romania, the population aged 15-19 years old, the population aged 18 years old, the school population, the number of military high school graduates, the total number of high school graduates, the number of high school students, the number of military high school students, the number of students, the number of students in the military system, the number of high school graduates who passed the baccalaureate exam, the number of universities, the number of faculties, higher education graduates, technical higher education graduates, economical higher education graduates, the number of admission places in the military higher education institutions, GDP per capita, the ratio of education expenditure in the GDP, the average monthly net salary, the number of mobile customers, the ratio of research expenditure in the GDP, the number of households with internet access, the number of PCs in the higher education system, the number of internet connections, the ratio of defense expenditure in the GDP, defense expenditure, military personnel.

Main findings of the research

In Romania, after the December 1989 Revolution, the demand for higher education has shown an upward trend, occurring the phenomenon of market expansion and of diversification of the education products offered by universities. Getting a higher education degree has become almost naturally a target for many secondary education graduates in Romania, who wanted to have access to a safe and well paid workplace.

Demographic decline manifested in Romania since 1990 has only served to intensify competition in education, the higher education institutions addressing the offer of educational products /services to fewer potential consumers. The evolution of the school age population for high school and university studies shows the same trend as the one shown by the total population of Romania. In the 2004-2014 timeframe there was recorded a decrease in the Romanian population with 1,573,831 people, representing 7.3% of total registered in 2004, the annual average rate of change being of -0.75%, which means that during 2004-2014 the population decreased on average by 0.75% per year. At European level (EU 28) there was registered an increased of 13,748,733 people in 2014 compared to 2004 (Eurostat), the demographic current throughout the analysed period being characterised by continued population growth across the continent. The trend of population decrease maintained on segments of the school population aged 14 and 18, the decrease being 37.7% in 2014 compared to 2004 for the first category of population and 30.1% for the second category.

During 2004-2014, the number of students in Romania follows the upward trend registred across Europe, this indicator having a negative evolution since 2009, the same trend with the evolution of the population, in 2014 being recorded a total of 411,229 students, with 50% less than in 2007-2009. The number of students enrolled in high school, carriers of the demand for higher education, recorded a slight upward trend in the last 10 years, from 773,843 students in 2004 to 888,768 in 2011, while in 2013 to decrease by 55.194 pupils to the previous year.

The number of secondary education graduates in Romania increased in the period after 1990 from 188,732 graduates to 217,743 in 1991, then during the next evolution period to be characterized by decreases followed by increases, the maximum number of secondary education graduates being 218,205 in 2006. During the following period the number of high school graduates dropped to 172,000 in 2014.

The number of students and graduates of military colleges has experienced reductions in the period under review although they constitute a solid basis for the selection of candidates for admission to military higher education, considering that during undergraduate training in the military education system provides a strong motivation for the continuation of military studies at university level, while familiarizing young people with the military and the specific institutions in this field. The number of secondary education graduates who have passed the baccalaureate exam is a factor influencing demand on the market of educational services provided by military higher education institutions. Between 2004-2014 there is an upward movement of those who have passed the baccalaureate exam during the first part of the timeframe, until 2008, and then to decline significantly, with about 50% in 2014 from the maximum of the analysed period.

According to the National Education Law, the state higher education institutions obtain financial resources from allocations from the budget of the Ministry of Education and Scientific Research, based on a contract during one study cycle, and also from their own income. Military higher education institutions are largely dependent on the budget of the Ministry of National Defence, the amounts allocated ensuring the organization and progress of the educational process, expenditure on accommodation, feeding, equipment and other rights due to military students according to normative acts. Between 2004-2014, there was an increase in education spending, with 2,500 mil.lei in 2014 compared to 2004,

and those of defense, with over 2,000 mil. lei in 2014 compared to 2004.

The number of students enrolled in military higher education institutions since 2004 has recorded an upward trend even as the population aged over 18, secondary school graduates and number of students nationally recorded reductions. A maximum number of students was registered in 2010, the debut year of the economic crisis and wage cuts in Romania. Between 2007-2014, the evolution of the demand for education in the military higher education system, described by the number of applicants to the entrance examination for graduate cycle, recorded decreasing values, the year 2014 recorded 985 less candidates than in 2010, the growth during the following period could have been attributed to the politico-military context that prompted an additional number of places, required both by the Ministry of National Defence and by the other structures in the system of public order and national security.

The behavior of consumers of educational services, potential candidates to the admission exam in the military higher education institutions, is influenced by cultural, social, personal and psychological factors. The cultural factors, the subculture (the cultural subsystem) highly influence the consumers' behavior, culture being the fundamental determinant factor of the demands and behaviors of a certain individual (Kotler and Keller, 2008). In regard to the military higher education institutions, the market on which it operates and the education offered to answer a social command which they offer limit significantly the impact of cultural factors, which were not taken into account for this research endeavour.

Regarding the impact of technological factors, those contribute to the development of the technological environment where military higher education institutions operate, their implication being both that of a beneficiary and a provider of technology.

In order to represent, define and size the technological environment, the evolution of access to online information for potential candidates for military higher education institutions was analyzed. It was noticed that the internet generates an accelerated dynamics of the environment where military higher education institutions place their offers, the information being permanently available to the consumer public interested of the educational offer.

Data provided by the National Institute of Statistics show that, in 2014, more than half of Romanian households (54.4%) have access to the internet, most of them (70.9%) in the urban area, 1 out of 3 households using portable computers (laptop, notebook, tablet) and fixed broadband connections (88.2%), the proportion of other devices, such as mobile phones and smartphones being 20%. Thus, between 2004 and 2014 an increase in public interest and access to information was observed, the number of broadband internet connections growing from 0.38 million in 2004 to 4 million connections in 2014. Also, during the same time-span, the number of PCs per 100 students grew from 6.4 to 19.2. The development of the internet permits keeping clients and potential clients on the educational services market, collecting and analyzing data from market research and, last but not least, the dissemination of results in educational and research fields.

An initial analysis of the correlations between the dependent variable and the independent variables, using a 5 year interval, reveals that the evolution of the population of Romania and the school population in the secondary education influence up to 95%, respectively 98%, the evolution of the demand for education in the military higher education institutions. By extending the interval to 8 years, by analyzing the data from Table 1 it can be observed that in most cases the relations between variables have low or medium intensity, the strongest influence being manifested by the number of high school graduates, who can determine up to 67% the evolution of the admission candidates in the military higher education institutions.

Table 1. Relations between the number of candidates at the admission exam in military higher education institutions and demographic, economic, technological, cultural, political factors

Variables	2007	2008	2009	2010	2011	2012	2013	2014	Correl. coef.R
Entrance exam candidates military HE institutions (dependent variable)	1,919	1,610	2,037	2,536	2,077	1,876	1,558	1,551	
Population of Romania	21,130,503	20,635,460	20,440,290	20,294,683	20,199,059	20,095,996	20,020,074	19,947,311	0.156
Population of Romania aged 15-19	1,651,290	1,542,308	1,424,342	1,313,974	1,241,199	1,197,738	1,170,241	1,158,055	0.129
Population of Romania aged 18	283,448	258,239	231,644	224,078	221,770	221,128	225,947	215,785	-0.099
School population	4,345,581	4,404,581	4,324,992	4,401,070	4,228,067	3,988,996	3,887,891	3,796,404	0.605
Number of military high school graduates	360	435	318	280	273	272	344	315	-0.556
Number of high school graduates	185,255	187,576	218,205	204,863	202,160	187,521	200,004	172,613	0.571
Number of high school students	791,348	784,361	837,728	866,543	888,768	831,810	776,616	727,072	0.816
Number of military high school students	1,358	1,202	1,227	1,289	1,319	1,363	1,332	1,337	-0.067
Number of students	907,353	891,098	775,319	673,001	539,852	464,592	433,234	411,229	0.229
Number of military institution students	2,315	2,631	2,640	3,406	2,895	2,898	2,690	2,588	0.706
Baccalaureate exam graduates	188,123	204,883	204,854	163,541	111,932	104,751	114,652	104,229	0.220

Variables	2007	2008	2009	2010	2011	2012	2013	2014	Correl. coef.R
Graduates technical universities	24,758	23,949	49,342	30,287	27,946	29,689	27,713	24,668	0.352
Graduates economical universities	37,211	91,884	67,420	72,641	62,685	34,415	25,724	21,922	0.426
Total admissions places military higher education institutions	1,370	1,384	1,342	1,426	1,061	1,284	1,239	1,315	0.138
GDP per capita	19,315.4	23,934.6	25,065.6	26,368.7	28,047.8	29,679.1	31,895.4	33,532.2	-0.350
Ratio of education expenditure in GDP	3.7	4.25	4.24	3.53	3.07	3.03	2.50	3.20	0.201
Average monthly net salary	1,042	1,309	1,361	1,391	1,444	1,507	1,579	1,697	-0.329
Mobile customers to 1000 citizens	1,063.6	1,145.4	1,193.9	1,146.8	1,073.9	1,049.9	1,055.8	1,059.1	0.426
Ratio of research expenditure in GDP	0.52	0.58	0.46	0.45	0.49	0.48	0.39	0.38	0.111
Ratio of total households with internet access	35	36	38	42	47	54	58	61	-0.431
Number of PCs to 100 students	7.90	9.40	13	15.6	18.9	21.8	24.2	19.2	-0.180
Internet broadband connections (mil.)	1.95	2.51	2.82	3.0	3.3	3.5	3.8	4.0	-0.302
Ratio of defence expenditure in GDP	1.5	1.5	1.4	1.3	1.3	1.4	1.3	1.3	-0.194
Defence expenditure Military personnel(thousands)	6,358	7,558	6,785	6,630	7,255	7,282	8,160	9,014	-0.732
	75	68	67	67	66	66	66	65	0.104

Number of Romanian universities	106	106	108	108	108	107	103	101	0.769
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Source: Ministry of National Defence, National Institute of Statistics, Eurostat, Ministry of Education and Scientific Research

Using the multiple regression model in SPSS – the backward method, the variables that best explain the variation of the dependent variable were identified, taking into account all the independent variables introduced in the analysis and eliminating one by one those which do not bring anything new for the adjusted determining coefficient and have low partial correlations with the dependent variable (Labăr, 2008). It was observed that a significant part of the independent variables were excluded as they were weakly connected to the dependent variable: Romania's total population, the population between 15 and 19 years old, the 18 years old population, the school population, the number of high school graduates, high school students, military high school students, the total number of students, the total number of students in the military system, the number of high school graduates who passed the baccalaureate exam, the number of universities, the number of faculties, higher education graduates, GDP per capita, the average monthly net salary, the number of mobile customers, the ratio of research expenditure in the GDP, the number of households with internet access, the number of PCs in the higher education, the number of internet connections, defense expenditure. The order of eliminating variables was determined by the weakest influence on the demand for education in the military higher education system, even though links exists, but not significant ones. Somehow surprisingly, on the list of eliminated variables there are also some which would

have been expected to influence significantly the evolution of the demand for educational services offered by the higher education institutions. Among the most representative from this point of view are: the population aged 15-19 years old, the number of military high school students or the defense expenditure. The deeper analysis of the influence of those variables as of other variables which were not taken into account (for example, cultural variables) will make the object of a future research endeavour.

After using the multiple regression, with the help of SPSS, a regression model was built containing one dependent variable and seven independent variables, whose parameters are presented in the table below:

Table 2. Parameters of the regression model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-915.564	.000		.	.		
	Military high school graduates	-5.117	.000	-.848	.	.	.413	2.422
	Technical higher education graduates	.004	.000	.096	.	.	.491	2.038
	Economical higher education graduates	.012	.000	.875	.	.	.337	2.967
	Admissions places in military higher education institutions	1.024	.000	.350	.	.	.549	1.820
	Ratio of education expenditure in GDP	-155.612	.000	-.285	.	.	.132	7.596
	Ratio of defence expenditure in GDP	-1218.285	.000	-.324	.	.	.218	4.595
	Military personnel	68.686	.000	.651	.	.	.410	2.437

For the estimation of the evolution of the demand for education in the military higher education, expressed through the number of candidates at the admission contests organized by the military higher education institutions, were determined the average evolution indices of the independent variables which remained in the analysis and then was predicted the evolution of the variables for the 2016-2018 period, using the model:

$$Y = -915.564 - 5.117X_1 + 0.004X_2 + 0.012X_3 + 1.024X_4 - 155.612X_5 - 1218.285X_6 + 68.686X_7$$

where:

Y – Demand for education in the military higher education

X₁ – Number of military high school graduates

X₂ – Number of technical higher education graduates

X₃ – Number of economical higher education graduates

X₄ – Admissions places in the military higher education institutions

X₅ – Ratio of education expenditure in GDP

X₆ – Ratio of defense expenditure in GDP

X₇ – Military personnel

Table3. Estimation for the demand for the educational services of the military higher education institutions during the 2016-2018 period

Independent variable	Average evolution indices	2016 estimation	2017 estimation	2018 estimation
Military high school graduates	0,98110	303	297	291
Number graduates tech. HE	0,99947	24,640	24,625	24,610
Number graduates econ. HE	0,92769	18,846	17,473	16,202
Number admission places in military HEI	0,99416	1,299	1,291	1,283
Ratio education expenditure in GDP	0,97947	3,069	3,006	2,944
Ratio defense expenditure in GDP	0,97947	1,247	1,221	1,197
Military personnel (thousands)	0,97976	63	62	61

Using the regression model presented above, in the context of maintaining the dynamics of the military high school graduates, technical and economical higher education graduates, the ratio of education and defense expenditure in the GDP, the number of the military personnel, the levels of demand for the educational services of the military higher education institutions have been estimated to 1519 candidates (2016), 1498 candidates (2017) and 1475 (2018). The negative dynamics of the demand for education can be observed, the determined levels could be, although, influenced by changes in the evolution of the independent variables used in the analysis and also by other variables which can influence the behavior of potential clients of the educational services offered by the military higher education institution, in the sense of adopting the decision to opt for one of these institutions for the university preparation.

Conclusions

The analysis of the factors determining the demand for educational services in the military higher education system reveals that the evolution of military high school graduates, the number of graduates from technical and economic higher education institutions, the educational offer of the military higher education system, the ratio of education and defense expenditure in the GDP, as well as the evolution of military personnel significantly influence the number of candidates enrolled for the admission in the military higher education institutions. Given the result of the evaluation of the association between the dependent variable and the determining factors, it may be concluded that it would be expected that a positive demographic increase, the increase of the number of universities, faculties, students, the technological, economical progress, the increase of welfare on a national level, would not generate an increase in the demand for education offered by the military higher education institutions, which is easy to explain, taking into account that this type of economic-social are specific to periods characterised rather by a lower need for both the services offered by the military structures and their preparation, inclusive through the military higher education institutions. The specific of military education, as well as the scholarization according to social demands, and the necessities of highly qualified personnel in institutions concerned with national defense, public order and national security explains why the demands on the educational market do not directly influence the educational offer of military higher education institutions. The present analysis and the correlations between the selected variables further support this idea, but, in order to have a basis for making appropriate decisions, we consider that further research may focus on other variables, as well as data collected in a lengthier time-span. We may say that educational marketing strategies employed by the military higher education institutions are more likely focused on the competition for the qualitatively superior segment of the educational services' consumer public. The main limit of the research is given by the lack of data regarding the education demand in the military higher education for a longer period

of time, which affected to a certain degree the development of a more consistent regression model, which would have included more independent variables or which would have approximated better the influence of each independent variable over the demand for education specific to the military higher education institutions. All in all, this endeavour allowed the identification of new opportunities and future research directions, through the extension of the analysis of determinant factors of the demand for education and also the evaluation of the consequences and impact of this process over the military higher education institutions.

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