

3. Structure of Employees Changes by Operative Sectors, with a Special Study of the Sector of Education

The previous studies showed an evident discordance between the labor market and the secondary education subsystem's output. A possible reason for discordance is the change of the structure of employees by operational sectors in republic of Macedonia, i.e. the increase of employment within certain sectors on one hand, and the secondary education subsystem's inertness on the other – the failure to follow the labor market changes thereof. However, the Table 2 data shows that the 15.21% growth of employment – from 411723 in 2004 to 474368 in 2012 – is to a large extent based on the growth in:

- The sectors of wholesale and retail trade; motor vehicles and motorcycles maintenance and real estate activities, and that from 67893 employed in 2004 to 89064 in 2012, which is a 31.18% increase;
- The sectors of public administration and defense, mandatory welfare insurance, education and activities within the health and welfare protection, wherein the total number of employed raised from 97496 in 2004 to 112783 in 2012, marking an increase of 15.68%;
- The sectors of expert, scientific and technical activities; administrative and auxiliary services and other services, and that from 15311 employees in 2004 to 36656 in 2012 – an increase of 139.41%.

The herein above denotes that in the period from 2004 to 2012 the overall increase in the number of employed amounts to 62645 people, whereupon the overall increase in the number of employees in the abovementioned sectors raised from 180700 in 2004 to 238503 in 2012 or 57803 people, which is an increase of 32%. We may also observe that the abovementioned sectors participate with a staggering 92.27% in the overall growth of employment. The Table 2 data indicate that in the same period a significant raise in the number of employees occurred in the sectors of transport, storage, information and communications, and in the sector of accommodation and catering services – 6534, while the other sectors marked a minimal growth, stagnation or decline in the number of employees. The meaning of this does not require a special analysis: it suffices to mention that such trends in the change of number of employed by sectors do not tend towards the desired restructuring of the Macedonian as an economy based on knowledge.

Table 2: Employed in Republic of Macedonia by Sectors

Operational sector	Year		
	2004	2005	2006
Agriculture, Forestry and Fishery	15574	12227	11883
Mining and Quarry	1880	2099	2731
Manufacturing Industry ¹⁾	109572	106179	104970
Supply with Electric Power, Gas, Steam and Air Conditioning	8494	8112	8344
Supply with Water; Removal of Waste Water, Waste Management, and activities related to environment preservation	8546	8021	8072
Construction	30795	28731	27546
Wholesale and Retail Trade; Motor Vehicles and Motorcycles Maintenance	66624	71860	72576
Transport, Storage, Information, Communications ²⁾	30084	31234	30724
Accommodation and catering Services	11905	12892	13040
Finances and Insurance	6765	6458	6479
Real Estate	1269	1276	1425
Expert, Scientific, and Technical Activities; Administrative and Auxiliary Services ³⁾	11806	13277	16535
Public Administration and Defense, Mandatory Health Insurance	36244	37206	38526
Education	30391	30690	31559
Health and Welfare Protection	30861	30373	33235
Art, Entertainment, Recreation	7408	7405	7446
Other services	3505	2991	2893
Total	411723	411031	417984
Operational sector	Year		
	2007	2008	2009
Agriculture, Forestry and Fishery	12703	12972	13848
Mining and Quarry	2751	3373	3420
Manufacturing Industry ¹⁾	109164	103902	101097
Supply with Electric Power, Gas, Steam and Air Conditioning	8117	8161	7749
Supply with Water; Removal of Waste Water, Waste Management, and activities related to environment preservation	8079	8920	8437
Construction	26307	25333	24574
Wholesale and Retail Trade; Motor Vehicles and Motorcycles Maintenance	76750	75855	73234
Transport, Storage, Information, Communications ²⁾	33239	30683	30038
Accommodation and catering Services	13040	13265	13668
Finances and Insurance	7110	8413	8229
Real Estate	1552	1105	805
Expert, Scientific, and Technical Activities; Administrative and Auxiliary Services ³⁾	20125	23071	21145
Public Administration and Defense, Mandatory Health Insurance	39053	41377	42328
Education	32134	33548	34085
Health and Welfare Protection	31809	32788	32058
Art, Entertainment, Recreation	7358	7879	7498
Other services	4750	4213	4340
Total	434041	434858	426553
Operational sector	Year		
	2010	2011	2012
Agriculture, Forestry and Fishery	12176	12394	12348

Mining and Quarry	3697	3989	4382
Manufacturing Industry ¹⁾	98950	98581	98752
Supply with Electric Power, Gas, Steam and Air Conditioning	7716	7711	7833
Supply with Water; Removal of Waste Water, Waste Management, and activities related to environment preservation	8392	8555	9024
Construction	23340	26106	27575
Wholesale and Retail Trade; Motor Vehicles and Motorcycles Maintenance	77010	83679	87064
Transport, Storage, Information, Communications ²⁾	33362	38573	40756
Accommodation and catering Services	13988	16267	18359
Finances and Insurance	8404	8513	8843
Real Estate	1566	1714	2000
Expert, Scientific, and Technical Activities; Administrative and Auxiliary Services ³⁾	24558	27102	30302
Public Administration and Defense, Mandatory Health Insurance	42474	43258	44006
Education	35193	36099	36002
Health and Welfare Protection	31200	32505	32775
Art, Entertainment, Recreation	7648	7375	7986
Other services	5374	6452	6354
Total	435048	458873	474368

Source: Statistical Yearbook of Republic of Macedonia

1) The data on publishing, printing, and reproduction of recorded materials for the period from 2004 until 2009 and the data on printing and reproduction of recorded materials for the period 2010 – 2012 are not included in the Manufacturing Industry data, but in the Transport, Storage and, Information and Communications, which resulted from the application of the new National Classification of Operations that the State Bureau of Statistics uses since the beginning of 2011.

2) The data on the sectors of Transport, Storage and, Information and Communications are presented collectively, since the application of the new National Classification of Operations prevents separation of the data for the period 2004 – 2009, when the data on the telecommunications and postal services were arranged and presented collectively..

3) The data on Expert, Scientific, and Technical Activities; Administrative and Auxiliary Services for the period 2004 – 2009 are also presented collectively.

Table 4 studies the structure of the higher education in Republic of Macedonia as a prerequisite to a development of an economy based on knowledge, indicating that the higher education's output is far from the desired condition. However, the hereinabove indicates a similar situation to the secondary education's output, an evident discordance with the labor market's need, that is. As previously stated, a detailed analysis of the secondary education's output requires a lot of time, space, and resources; hence the following surveys will offer a collective study only of the elementary, secondary, and higher education subsystems' cadre potentials as opposed to the number of educational institutions, the number of classes, and the number of pupils and students.

Table 3: Participation of Specific Operational Departments in the Sector of Manufacturing Industry

Department of Operations	Year		
	2004	2005	2006
Production of Food and Beverages	12820	13150	11849
Production of Textile	7849	6291	5314
Production of Clothes	31872	34534	35070
Production of Leather and Leather Products	4508	4429	5345
Production of Metals	5581	5745	5972
Production of Fabricated Metal Products (except machines and equipment)	8554	7889	8031
Total Manufacturing Industry	109572	106179	104970
Department of Operations	Year		
	2007	2008	2009
Production of Food and Beverages	11810	13206	11945
Production of Textile	5292	4535	4362
Production of Clothes	38556	35638	35376
Production of Leather and Leather Products	5735	4645	5769
Production of Metals	6281	6228	5550
Production of Fabricated Metal Products (except machines and equipment)	8022	7124	7394
Total Manufacturing Industry	109164	103902	101097
Department of Operations	Year		
	2010	2011	2012
Production of Food and Beverages	13566	16627	16985
Production of Textile	3714	3158	2712
Production of Clothes	34680	32525	33360
Production of Leather and Leather Products	5628	4154	4803
Production of Metals	5755	6537	6217
Production of Fabricated Metal Products (except machines and equipment)	6894	6454	6460
Total Manufacturing Industry	98950	98581	98752

Source: Statistical Yearbook of Republic of Macedonia

The Table 5 data informs that the continuous rise of the number of employed within the Republic of Macedonia's educational system stems from the increased employment of teaching cadre, while the number of administrative – technical employees (other personnel) remains virtually constant. This is an expected trend, considering the expansion of private and state-owned higher educational institutions. Yet, the Table 6 data indicates that the dynamics of employment within the higher education does not coincide with the dynamics of establishing higher education institutions. Thus, in the academic year of 2006/07 57011 students attended the 44 existing higher education institutions that employed a total of 2413 professors and associates, only to continue rising in the following period to reach 102 in the academic 2011/12, serving 58747 students and employing 3120 professors and associates. The significance of these numbers asks for no additional elaboration, short of considering that 3120 professors and associates realize over 450 study programs (see Table 1), but it is evident that the drastic increase in the number of employees in Republic of Macedonia's educational system was not induced by the employment of administrative – technical personnel and the outburst of higher education institutions.

Table 4: Participation of Selected Sectors in the Total Number of Employed

Sector of Operations	Year		
	2004	2005	2006
Public Administration and Defense, Mandatory Health Insurance	36244	37206	38526
Participation in Percents of the Sector of Operations in the Total Number of Employed	8,80	9,05	9,21
Education	30391	30690	31559
Participation in Percents of the Sector of Operations in the Total Number of Employed	7,38	7,47	7,55
Health and Welfare Protection	30861	30373	33235
Participation in Percents of the Sector of Operations in the Total Number of Employed	7,50	7,39	7,95
The Total of the Studied Sectors	97496	98269	103320
Participation in Percents of the Sector of Operations in the Total Number of Employed	23,67	23,91	24,72
A Total Number of Employed	411723	411031	417984
Sector of Operations	Year		
	2007	2008	2009
Public Administration and Defense, Mandatory Health Insurance	39053	41377	42328
Participation in Percents of the Sector of Operations in the Total Number of Employed	9,00	9,52	9,92
Education	32134	33548	34085
Participation in Percents of the Sector of Operations in the Total Number of Employed	7,40	7,71	7,99
Health and Welfare Protection	31809	32788	32058
Participation in Percents of the Sector of Operations in the Total Number of Employed	7,32	7,54	7,51
The Total of the Studied Sectors	102996	107713	108471
Participation in Percents of the Sector of Operations in the Total Number of Employed	23,73	24,77	25,43
A Total Number of Employed	434041	434858	426553
Sector of Operations	Year		
	2010	2011	2012
Public Administration and Defense, Mandatory Health Insurance	42474	43258	44006
Participation in Percents of the Sector of Operations in the Total Number of Employed	9,77	9,43	9,28
Education	35193	36099	36002
Participation in Percents of the Sector of Operations in the Total Number of Employed	8,09	7,87	7,59
Health and Welfare Protection	31200	32505	32775
Participation in Percents of the Sector of Operations in the Total Number of Employed	7,17	7,08	6,91
The Total of the Studied Sectors	108867	111862	112783
Participation in Percents of the Sector of Operations in the Total Number of Employed	25,02	24,38	23,78
A Total Number of Employed	435048	458873	474368

Source: Statistical Yearbook of Republic of Macedonia

Considering the hereinabove, logic imposes the question: what did induce the drastic increase in the number of

employees in Republic of Macedonia's educational system? The Table 7 data reveals that by number of schools, classes, students and teachers the situation within the specialized elementary and secondary schools and the elementary schools for adults is virtually constant through the studied period, meaning that the noted changes did not derive from this educational system's subsystem.

Table 5: The structure of the employees of the Republic of Macedonia's educational system

Year	2004	2005	2006
Teaching cadre ¹⁾	22356	22842	23955
Other personnel	8035	7858	7604
Total	30391	30690	31559
Year	2007	2008	2009
Teaching cadre ¹⁾	24263	25306	26581
Other personnel	7871	8242	7504
Total	32134	33548	34085
Year	2010	2011	2012
Teaching cadre ¹⁾	26737	27590	28045
Other personnel	8456	8509	7957
Total	35193	36099	36002

Source: Statistical Yearbook of Republic of Macedonia

1) The data on the teaching cadre has been obtained as a total of the employed in respective subsystems, whereby the data on the full-time employees is used as relevant for the higher education, since some of the private universities present the visiting professors and the associates employed at the state-owned universities as their own full-time professors and associates

Table 6: Number of faculties, students, professors and associates

Year	Faculties	Students	Professors	Associates
2003/04	35	46637	1354	986
2004/05	33	49364	1405	1109
2005/06	44	48238	1411	1062
2006/07	44	57011	1439	974
2007/08	75	64254	1594	1193
2008/09	94	63437	1723	1411
2009/10	98	57894	1693	1241
2010/11	122	63250	1804	1251
2011/12	102	58747	1837	1283

Source: Statistical Yearbook of Republic of Macedonia

However, the Table 8 data indicates that through the reviewed period, the number of teachers in the elementary education increased from 13791 in the academic year of 2003/04 to 17233 in 2011/12 that is 3442 newly employed teachers. At the same time, the number of students decreased from 229584 in 2003/04 to 197859 in 2011/12, while the number of classes increased from 9974 to 10685, meaning

that the average number of students per class fell from 23 students in 2003/04 to 19 students in 2011/12.

Table 7: Vocational elementary and secondary schools and elementary schools for adults

Year	Schools	Classes	Students	Teachers
2003/04	63	242	1909	362
2004/05	65	264	2213	412
2005/06	65	277	2261	429
2006/07	67	278	2512	464
2007/08	64	257	1848	390
2008/09	64	259	1886	410
2009/10	61	267	1824	392
2010/11	60	263	1848	392
2011/12	59	264	1678	394

Source: Statistical Yearbook of Republic of Macedonia

Table 8: Schools, classes, students and teachers in the elementary education

Year	Schools	Classes	Students	Teachers
2003/04	1012	9974	229584	13791
2004/05	1010	9920	223879	13970
2005/06	1006	10823	236186	14917
2006/07	1000	10775	228207	15106
2007/08	997	10713	220833	15691
2008/09	991	10713	215078	16205
2009/10	990	10622	208980	16403
2010/11	990	10567	201914	16946
2011/12	986	10685	197859	17233

Source: Statistical Yearbook of Republic of Macedonia

This indicator should at the least concern the educational authorities, since according to Article 41, paragraphs 4 and 5 of the Law on Elementary Education, the number of students in a class should range from 24 to 34, wherein a class could be formed with fewer students upon an approval by the founder(s). At first glance it may seem that the disproportion resulted from the transformation of the eight-year elementary education to a nine-year one, but it is not so. To wit, there were no significant changes to the curriculum and to the weekly fund of lessons, thus the increase of 24.96% in the number of engaged teachers is not justified - even more so if considered that the transition to a nine-year elementary education increased the number of classes by 7.13% and therefore the increase in number of engaged teachers should be congruous. Regarding the secondary education subsystem, the Table 9 data indicates a continual growth in the number of classes cumulatively reaching 12.43% as opposed to - the irregular trend notwithstanding - a cumulative decline in the number of students of 2.88%. On the other hand, the number of engaged teachers marked a growth of 28.42%, which should result in improvement of the secondary education subsystem, since the average number of students of 30 per class in 2004 declined to 26 per class in 2011/12. This is in accordance with Article 28, paragraph 2 of the Law on Secondary Education stipulating that the number of students composing a class in public schools should not be below 25 or over 34.

Table 9: Schools, classes, students and teachers in the secondary education

Year	Schools	Classes	Students	Teachers
2003/04	96	3082	93791	5863
2004/05	100	3134	94053	5946
2005/06	101	3184	93908	6136
2006/07	104	3219	93763	6280
2007/08	107	3237	92753	6438
2008/09	110	3295	93164	6832
2009/10	110	3398	94284	7008
2010/11	114	3441	92848	7197
2011/12	113	3465	91167	7298

Source: Statistical Yearbook of Republic of Macedonia

4. Conclusion

The previous study indicated the evident discordance between the secondary education output and the labor market's needs, as well as the inadequate dynamics of employment in respective subsystems of the Republic of Macedonia's educational system. The overcoming of this situation is only possible with a comprehensive reform of the educational system, particularly focusing on:

- Qualitative analysis of the curriculums, whereby an impartial evaluation of the vocational secondary education's curriculums compliance to the labor market's needs is necessary, as well as a projection of their development to the benefit of building an economy based on knowledge;
- Studying of the secondary education subsystem by educational profiles, which should result in restructuring of the secondary education subsystem, i.e. The network of secondary schools and its adjustment to the labor market's needs;
- Change in enrollment policy in secondary education and making it in the function to the needs of society;
- Amendments to the educational system's admission policy, with a special review of the detected situation within the secondary education subsystem, and
- Revising the network of higher education institutions and consistent application of the legislative acts and bylaws regulating the higher education.

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