

Investment Evaluation of Higher Education Through Cost-Benefit Analysis: Evidence from Adrar University-Algeria

Benlaria Hocine Mostéfaoui Sofiane
Department of Economics and Management
University of Ahmad Draia - Adrar – Algeria

Abstract

This study aims to measure the social and individual rates of return for investment in higher education at Adrar University. The approach adopted looks for investigating the costs and benefits of the human capital. The study found that the economic feasibility of investment in higher education exists at both the individual and social levels, where we have acquired a rate of 10.34% for the social return and a return of 13.27% for the per capita return. These two rates are much higher than the prevailing market interest rate for the period 2008/2011.

INTRODUCTION:

Countries over the world paid particular attention to the education sector in general and higher education in particular, in order to achieve its objectives. These goals consist principally of the community service and upgrading its civilization height, as well as providing the state by the different specialists, technicians and experts in various fields (Richard Raymond and Michael Sesnowitz, 1975; Walter W. McMahon, 1975; Jane Louise Johnson, 1978; Gary Rhoades, 1983; Kent Hill et al, 2005; Sandy Baum & Kathleen Payea, 2005). Therefore, the university could be considered as the main source of investment as the human wealth is considered as the most important and expensive fortunes of a society (David Post et al, 2004; Joy Murray, 2007; Christian Schierenbeck, 2013)

Due to the growing doubts about the feasibility of investment in higher education especially after an outbreak of some negative unforeseen consequences resulting from this type of investment, as well as the large amount of resources spent; necessary attempts have been made to evaluate the investment in higher education (Albert J. Robinson, 1971; Walter W. McMahon; 1974; B. M. Craven et al, 1983; Rajesh Kumar Sharma, 2006). These endeavors are coupled with the view of some economists that the evaluation of the investment in higher education is difficult and distinguished from the other approaches undertaken to evaluate other kinds of investments (Daniel C. Rogers, 1972; Briggs P. Dunn and W. Robert Sullins, 1982; Donald R. Winkler, 1984; Kathy L. Stafford et al, 1984). The intricacy refers intrinsically to the multiplicity of objectives and the presence of a large scale of non economic returns. However, this picture might not discourage the ongoing processes to monitor and assess this type of investments (Jandhyala B. G. Tilak, 1995; D. F. Westerheijden, 1999; Adela Garcia Aracil and Davinia Palomares- Montero, 2010; Olga Cherednichenko and Olga Yangolenko, 2013)

In this context, the measurement of the return on investment in education presents the focus of the economic vision for the sector of education and the way to assess the feasibility of investing in this important arena for both the individual and social levels (Edward F. Renshaw, 1960; Raymond P. Byron and Evelyn Q. Manaloto, 1990; Julie McMillan and John Western, 2000; Axel Muller-Hofvenschitild, 2001; Berthold U. Wigger, 2004; M. N. Van Den Berg and W. H. A. Hoffman, 2005; Laveesh Bhandari and Mridusmita Bordoloi, 2006; Pedro Carneiro, James J. Heckman and Edward J. Vytalacil, 2011). The objective of the measurement approach is to rationalize the economic and educational decisions in the community (Jesse M. Cunda and Trey Miller, 2014; Khanchitpol Yousapronpaiboon, 2014). Among the techniques used are those seeking the evaluation of the social and individual returns on investment in human capital, method of the internal rate of return, or what is widely recognized by the cost-benefit analysis (Richard Raymond and Michael Sesnowitz, 1975; Walter W. McMahon and Alan P. Wagner, 1981; William N. Trumbull, 1990; Philippe de Villé et al, 1996; Teresa A. Sullivan et al, 2012; Olga Erfort et al, 2016)

Despite the fact that studies stressing on the investment in Algerian higher education are sparse, this research comes to measure the rate of social and individual return on investment in Algerian higher education during the period 2007-2008 / 2010-2011 (4 years). The purpose of the study is to figure out the approaches adopted to evaluate the higher education in Algeria by applying the techniques listed above on the University of Adrar.

THE MODEL AND THE EVALUATION STEPS:

We will use in this study the quantitative approach by which we will estimate the economic rate of return of spending on higher education through the application of the method of internal rate of return. The latter is considered as one of the most important criteria for evaluating investment projects. The assumption of the model is based on annual returns and the annual cost of the investment in higher education according to the following equation:

$$\sum_{t=1}^n \frac{(B_T - C_T)}{(1 + K_I)^n} = 0$$

B_T : Annual real returns

C_T : Annual real costs

K_I : Rate of the cash return on the investment in higher education

The previous model permits to achieve the rate of the social cash return as well as the rate of the individual return of the investment according to the benefits and the costs incurred.

The aim of the benefit-cost analysis is to adopt a method for measuring the expected returns from investments in education by respecting the following steps:

- The first step is to identify and estimate the direct costs incurred by the individual and society to ensure the education for all its members especially the child. In this regards, the study is applied on one of the faculties of the university in an attempt to keep track of a particular group of students admitted and to determine the direct cost elements for the student's education until graduation. This direct cost involves the value of the faculty members, the ongoing costs necessary for the functioning of the educational process, the share of each year of study of investment assets and equipment in addition to the individual cost of the student like spending on books, transportation. These elements are used to calculate the cost of the group under investigation.
- As far as the direct costs are not the only costs involved, it is crucial to take into account the indirect costs of the students represented by the opportunity cost. The technique to compute this cost is by calculating the average income earned by their peers who are certified by the secondary school and joined the labor market.
- Additionally, the impact of both unemployment and death is omitted as suggested by the studies of Psacharopoulos and Maureen Woodhall (George Psacharopoulos, 1995, Maureen Woodhall, 2004). This elimination aims at reaching the net effect of higher education and the extent of the scientific career of individuals.
- After determining all of the costs' elements and revenues of higher education, we proceed to estimate the internal rate of return of the model by using the Microsoft Excel program in order to find out the individual rate of return and the rate of social return on the education investment in the faculty under study.
- In the last step, we come up with the rate of individual and social return reflected on the whole society through the education acquisition by its members.

DATA OF THE STUDY:

The period of the study covers four years from 2007 until 2011. It is the period that allows the student to accomplish his undergraduate studies and get a diploma. Therefore, we can estimate both the direct and the indirect costs of the undergraduates as well as the other social rates of return related to the individuals. To make the estimation possible, we have to respect the following steps:

- We determine properly the real costs related to the educational process at the Faculty of Arts and Humanities. These costs include: the management expenditure as the staff and capital assets in addition to the buildings' depreciations during the four years of investigation. The costs are those of the final accounts of each year and they are obtained from budget and planning sections of the University and the Directorate of Equipment and Housing of Adrar city.
- We adopt the average of data obtained from a personal interview of about 270 students. The purpose of the interview is to estimate the cost of each student.
- The expenses of the professors are related to various scientific ranks and grades. Data of expenses are obtained from records of the accounting service in which the different salaries and bonuses are recorded.
- We track the number of students in each year during the transition from one level to another. In this context, the record excludes the students who were transferred in order to take the effect of the educational depreciation into account.
- To estimate the differences in incomes between the undergraduates and those having diploma from secondary school, we acquire the data of incomes through the incomes earned by the employees prescribed in the official journal № 61 for 2001.

1- THE COMPUTATION OF EDUCATIONAL COSTS AT THE UNIVERSITY OF ADRAR:

In this part, we estimate the individual and the social costs of the investment at Adrar University. The following statement shows how to calculate these costs in the Faculty of Literature and Humanities.

1. ESTIMATION OF THE INDIVIDUAL COST (INCLUDING THE OPPORTUNITY COST):

To estimate the per capita rate of return and calculate the individual cost of education, we evaluate first the individual cost, including opportunity cost. The following table illustrates this:

Table 01: Total net average individual cost (Dinars)

Variable \ Level	Net Individual Cost	Opportunity Cost	Total of the net individual cost
First Year	-6930.00	141995.68	135065.68
Second Year	-6930.00	148840.47	141910.47
Third Year	-6930.00	172986.77	166056.77
Fourth Year	-6930.00	178465.99	171535.99

Source: the researchers

2. ESTIMATION OF THE SOCIAL COST:

After the estimation of the individual costs, we estimate the social cost incurred by the state for students in the faculty of Arts and Humanities through the addition of direct costs to the indirect ones as the table shows:

Table 02: Elements of the social cost of higher education at the University of Adrar (Dinars)

Source: the researchers

Variable \ Academic Year	First Year 2007-2008	Second Year 2008-2009	Third Year 2009-2010	Fourth Year 2010-2011
Direct cost	115048.87	138291.13	175616.68	186586.47
Teachers' expenses	59982.07	72288.79	86690.06	90652.34
Administration expenses	10585.07	12756.84	15298.24	17652.77
Operating and maintenance expenses	10558.08	12651.08	18586.29	20048.27
Other costs				
The cost of capital	31403.78	36091.98	49587.53	52331.86
	2519.87	4502.44	5454.56	5901.23
Indirect cost (Opportunity cost)	135065.68	141910.47	166056.77	171535.99
Total of the social cost	250114.55	280201.60	341673.45	358122.46

3. THE ESTIMATION OF THE INDIVIDUAL AND SOCIAL COST OF THE STUDENT ACCORDING TO THE EDUCATIONAL DEPRECIATION PARADIGM:

In this context, the individual and social costs are adjusted to the failure and the dropout rates which have an impact of increasing the period spent by the student at the university. The extra period that the student may spend at the university since the student fails augments the general costs incurred by the society. The adjustment process requires the multiplication of the individual cost of each student by the real time spent by the student (failure rate is included)

Table 03: social cost adjusted according to the waste of educational depreciation paradigm (Dinars)

Variable \ Academic Year	2007-2008	2008-2009	2009-2010	2010-2011
Total cost	250114.55	280201.60	341673.45	358122.46
Duration	1.345	1.1	1.07	1
Adjusted Social Cost	336404.06	308221.76	365590.59	358122.46

Source: the researchers

In the same way, we adjust the individual cost by considering the real time of graduation per student for each level. The following table illustrates this:

Table. 04: Net individual cost adjusted according to the educational cost paradigm (Dinars)

Variable \ Academic Year	2007-2008	2008-2009	2009-2010	2010-2011
Net Total Cost	135065.68	141910.47	166056.77	171535.99
Duration	1.345	1.1	1.07	1
Adjusted Individual Cost	181663.34	156101.517	177680.74	171535.99

Source: the researchers

II- THE ESTIMATION OF HIGHER EDUCATION RETURNS:

After computing the individual and the social cost of the graduate students, it is necessary to estimate both the individual returns expected to be collected, as well as the social returns got by the community from the higher education.

1. SOCIAL RETURNS:

A prelude to calculate the rate of social return of education at the faculty of Arts and Humanities, we will estimate at first collectible social returns expected over the individual productive life. This approach is based on the assumption that the graduate student will join after graduation the public sector for a specific work. Consequently, it would be possible to adopt the structure of wages and salaries that are described in the Official journal № 61 for 2007. We have reached the structure in accordance with the following steps:

The use of cross-sectional data for returns of graduated employees. These data illustrate the current incomes of workers in successive ages. In addition to this, the study is based on limited wage a group of employees from the graduates of the university, and who were hired in consecutive years. For this purpose, the number of employees is limited to 37 persons, the first of them was appointed in 2012, and the period of last of person from his appointment is evaluated by 37 years, which means that he reached the retirement age of 60 years.

The same as the previous process for workers who obtained a certificate of third year high school, where the young man spends a year and a half in military service. This is different from the girl who joins directly the business life. Since we care about the years of employment in the public sector, the study assumed that the first year of work will be at the age of 20 years old. The data of the study are derived from the employees' staff at the University of Adrar for the years 2011-2012 in order to reflect the cross-sectional data of the two variables: income and age for workers who hold a bachelor degree and employees with certification of third year high school. Data are shown in the following table:

It should be noted that the differences of the previous returns are adjusted according to the unemployment rate, the mortality rate and the different age groups. This is done by multiplying the adjusted returns differences according to the average unemployment by the rate of life expectancy. The following table shows the additional income before-tax adjusted to the rate of unemployment and the rate of deaths. (Table at the next page)

Table 05: social returns differences according to an unemployment rate and the mortality rate (Dinars)

Age	Differences in returns	Unemployment rate	Employment rate	Adjusted differences in returns according to the unemployment rate	Mortality rate	Life Expectancy rate	Adjusted differences in returns according to the unemployment rate and mortality rate
20	-293670	0,313	0,687	-201751,29	0,0016	0,9984	-201428,4879
21	-298470	0,261	0,739	-220569,33	0,0016	0,9984	-220216,4191
22	-298686	0,261	0,739	-220728,954	0,0016	0,9984	-220375,7877
23	256894,2	0,261	0,739	189844,8138	0,0016	0,9984	189541,0621
24	256889,4	0,261	0,739	189841,2666	0,0016	0,9984	189537,5206
25	256893,84	0,21	0,79	202946,1336	0,002	0,998	202540,2413
26	263375,76	0,21	0,79	208066,8504	0,002	0,998	207650,7167
27	262183,56	0,21	0,79	207125,0124	0,002	0,998	206710,7624
28	259196,28	0,21	0,79	204765,0612	0,002	0,998	204355,5311
29	275593,44	0,21	0,79	217718,8176	0,002	0,998	217283,38
30	275436	0,127	0,873	240455,628	0,0021	0,9979	239950,6712
31	273073,56	0,127	0,873	238393,2179	0,0021	0,9979	237892,5921
32	274508,04	0,127	0,873	239645,5189	0,0021	0,9979	239142,2633
33	272374,08	0,127	0,873	237782,5718	0,0021	0,9979	237283,2284
34	273875,76	0,127	0,873	239093,5385	0,0021	0,9979	238591,4421
35	271832,52	0,79	0,21	57084,8292	0,0026	0,9974	56936,40864
36	273128,16	0,79	0,21	57356,9136	0,0026	0,9974	57207,78562
37	272694,84	0,79	0,21	57265,9164	0,0026	0,9974	57117,02502
38	278445,12	0,79	0,21	58473,4752	0,0026	0,9974	58321,44416
39	276144	0,79	0,21	57990,24	0,0026	0,9974	57839,46538
40	275061,12	0,43	0,57	156784,8384	0,0032	0,9968	156283,1269
41	276326,76	0,43	0,57	157506,2532	0,0032	0,9968	157002,2332
42	277456,68	0,43	0,57	158150,3076	0,0032	0,9968	157644,2266
43	280776,48	0,43	0,57	160042,5936	0,0032	0,9968	159530,4573
44	307172,76	0,43	0,57	175088,4732	0,0032	0,9968	174528,1901
45	288740,88	0,27	0,73	210780,8424	0,0056	0,9944	209600,4697
46	287549,88	0,27	0,73	209911,4124	0,0056	0,9944	208735,9085
47	292929,48	0,27	0,73	213838,5204	0,0056	0,9944	212641,0247
48	291996,6	0,27	0,73	213157,518	0,0056	0,9944	211963,8359
49	292809,36	0,27	0,73	213750,8328	0,0056	0,9944	212553,8281
50	295041,96	0,37	0,63	185876,4348	0,0097	0,9903	184073,4334
51	296803,68	0,34	0,66	195890,4288	0,0097	0,9903	193990,2916
52	298694,28	0,37	0,63	188177,3964	0,0097	0,9903	186352,0757
53	295402,8	0,37	0,63	186103,764	0,0097	0,9903	184298,5575
54	300456,72	0,37	0,63	189287,7336	0,0097	0,9903	187451,6426
55	300693,72	0,24	0,76	228527,2272	0,014	0,986	225327,846
56	310862,88	0,24	0,76	236255,7888	0,014	0,986	232948,2078
57	312312,84	0,24	0,76	237357,7584	0,014	0,986	234034,7498
58	310555,2	0,24	0,76	236021,952	0,014	0,986	232717,6447
59	311681,28	0,24	0,76	236877,7728	0,014	0,986	233561,484
60	331612,08	0,138	0,862	285849,613	0,014	0,986	281847,7184
20	-293670	0,313	0,687	-201751,29	0,0016	0,9984	-201428,4879
21	-298470	0,261	0,739	-220569,33	0,0016	0,9984	-220216,4191
22	-298686	0,261	0,739	-220728,954	0,0016	0,9984	-220375,7877
23	256894,2	0,261	0,739	189844,8138	0,0016	0,9984	189541,0621
24	256889,4	0,261	0,739	189841,2666	0,0016	0,9984	189537,5206
25	256893,84	0,21	0,79	202946,1336	0,002	0,998	202540,2413
26	263375,76	0,21	0,79	208066,8504	0,002	0,998	207650,7167
27	262183,56	0,21	0,79	207125,0124	0,002	0,998	206710,7624
28	259196,28	0,21	0,79	204765,0612	0,002	0,998	204355,5311
29	275593,44	0,21	0,79	217718,8176	0,002	0,998	217283,38
30	275436	0,127	0,873	240455,628	0,0021	0,9979	239950,6712
31	273073,56	0,127	0,873	238393,2179	0,0021	0,9979	237892,5921
32	274508,04	0,127	0,873	239645,5189	0,0021	0,9979	239142,2633
33	272374,08	0,127	0,873	237782,5718	0,0021	0,9979	237283,2284
34	273875,76	0,127	0,873	239093,5385	0,0021	0,9979	238591,4421
35	271832,52	0,79	0,21	57084,8292	0,0026	0,9974	56936,40864
36	273128,16	0,79	0,21	57356,9136	0,0026	0,9974	57207,78562
37	272694,84	0,79	0,21	57265,9164	0,0026	0,9974	57117,02502
38	278445,12	0,79	0,21	58473,4752	0,0026	0,9974	58321,44416

Source: the researches based on the data provided by National Office of Statistics (NOS) 2. ASSESMENT OF THE INDIVIDUAL RETURNS:

In the same way and as a preliminary step to calculate the rate of per capita return of the education at the faculty of Arts and Humanities, we start first by evaluating the individual returns. Since we want to assess the higher education as a specific form of the individual investment, the issue that interests us much is the computation of the real returns enjoyed by the individual. This process implies the calculation of the account differences after collecting taxes on total income; and then the assessment of the individual returns follows the same steps applied to get the differences of the social returns. The tables at the next pages show the differences of the individual returns:

Table 06: Differences of the individual returns between bachelor degree and third year secondary school after tax (Dinars)

Differences in returns	Annual income of a graduate student after tax	Age	Annual income of a secondary school student	Differences in returns
20	0	20	283392	-283392
21	0	21	283392	-283392
22	0	22	283392	-283392
23	528780	23	298728	230052
24	528780	24	298728	230052
25	528780	25	298728	230052
26	542640	26	311616	231024
27	542640	27	311616	231024
28	542640	28	311616	231024
29	555540	29	193500	362040
30	555540	30	193500	362040
31	555540	31	193500	362040
32	568680	32	321096	247584
33	568680	33	321096	247584
34	568680	34	321096	247584
35	579120	35	324300	254820
36	579120	36	324300	254820
37	579120	37	324300	254820
38	588900	38	334428	254472
39	588900	39	334428	254472
40	588900	40	334428	254472
41	599880	41	339072	260808
42	599880	42	339072	260808
43	599880	43	339072	260808
44	607776	44	347736	260040
45	607776	45	347736	260040
46	607776	46	347736	260040
47	618240	47	347736	270504
48	618240	48	348384	269856
49	618240	49	348384	269856
50	628020	50	348384	279636
51	628020	51	358764	269256
52	628020	52	358764	269256
53	634200	53	358764	275436
54	634200	54	361896	272304
55	634200	55	361896	272304
56	658704	56	361896	296808
57	658704	57	371844	286860
58	658704	58	371844	286860
59	695496	59	371844	323652
60	316668	378828	60	695496

Source: the researchers

Table 07: Differences of the individual returns according to the unemployment rate and mortality rate

Age	Differences in returns	Unemployment rate	Employment rate	Adjusted differences in returns according to the unemployment rate	Mortality rate	Life Expectancy rate	Adjusted differences in returns according to the unemployment rate and mortality rate
20	-283392	0,313	0,687	-194690,304	0,0016	0,9984	-194378,7995
21	-283392	0,261	0,739	-209426,688	0,0016	0,9984	-209091,6053
22	-283392	0,261	0,739	-209426,688	0,0016	0,9984	-209091,6053
23	230052	0,261	0,739	170008,428	0,0016	0,9984	169736,4145
24	230052	0,261	0,739	170008,428	0,0016	0,9984	169736,4145
25	230052	0,21	0,79	181741,08	0,002	0,998	181377,5978
26	231024	0,21	0,79	182508,96	0,002	0,998	182143,9421
27	231024	0,21	0,79	182508,96	0,002	0,998	182143,9421
28	231024	0,21	0,79	182508,96	0,002	0,998	182143,9421
29	362040	0,21	0,79	286011,6	0,002	0,998	285439,5768
30	362040	0,127	0,873	316060,92	0,0021	0,9979	315397,1921
31	362040	0,127	0,873	316060,92	0,0021	0,9979	315397,1921
32	247584	0,127	0,873	216140,832	0,0021	0,9979	215686,9363
33	247584	0,127	0,873	216140,832	0,0021	0,9979	215686,9363
34	247584	0,127	0,873	216140,832	0,0021	0,9979	215686,9363
35	254820	0,79	0,21	53512,2	0,0026	0,9974	53373,06828
36	254820	0,79	0,21	53512,2	0,0026	0,9974	53373,06828
37	254820	0,79	0,21	53512,2	0,0026	0,9974	53373,06828
38	254472	0,79	0,21	53439,12	0,0026	0,9974	53300,17829
39	254472	0,79	0,21	53439,12	0,0026	0,9974	53300,17829
40	254472	0,43	0,57	145049,04	0,0032	0,9968	144584,8831
41	260808	0,43	0,57	148660,56	0,0032	0,9968	148184,8462
42	260808	0,43	0,57	148660,56	0,0032	0,9968	148184,8462
43	260808	0,43	0,57	148660,56	0,0032	0,9968	148184,8462
44	260040	0,43	0,57	148222,8	0,0032	0,9968	147748,487
45	260040	0,27	0,73	189829,2	0,0056	0,9944	188766,1565
46	260040	0,27	0,73	189829,2	0,0056	0,9944	188766,1565
47	270504	0,27	0,73	197467,92	0,0056	0,9944	196362,0996
48	269856	0,27	0,73	196994,88	0,0056	0,9944	195891,7087
49	269856	0,27	0,73	196994,88	0,0056	0,9944	195891,7087
50	279636	0,37	0,63	176170,68	0,0097	0,9903	174461,8244
51	269256	0,34	0,66	177708,96	0,0097	0,9903	175985,1831
52	269256	0,37	0,63	169631,28	0,0097	0,9903	167985,8566
53	275436	0,37	0,63	173524,68	0,0097	0,9903	171841,4906
54	272304	0,37	0,63	171551,52	0,0097	0,9903	169887,4703
55	272304	0,24	0,76	206951,04	0,014	0,986	204053,7254
56	296808	0,24	0,76	225574,08	0,014	0,986	222416,0429
57	286860	0,24	0,76	218013,6	0,014	0,986	214961,4096
58	286860	0,24	0,76	218013,6	0,014	0,986	214961,4096
59	323652	0,24	0,76	245975,52	0,014	0,986	242531,8627
60	316668	0,138	0,862	272967,816	0,014	0,986	269146,2666

Source: the researchers 3. COMPUTATION OF INDIVIDUAL RETURN AND SOCIAL RETURN OF HIGHER EDUCATION INVESTMENT

The computation process of the individual return and social return at the faculty of Arts and Humanities is represented by the previous steps, and the results are mentioned below:

3.1. THE RATE OF SOCIAL RETRUN:

The results of the social rate measurement at the University of Adrar for the years 2007-2008; 2010-2011 by applying the method benefit-cost and according to the following model:

$$\sum_{t=1}^n \frac{(B_T - C_T)}{(1 + Ks)^t} = 0$$

Where:

B_T : are the differences of the social returns after tax. These are illustrated by the table 06 after its adjustment according to the unemployment and mortality rates.

C_T : represents the components of the adjusted social costs computed by the table 03

Ks : is the rate of the social return which makes the difference between the total values of B_T and those of C_T equals 0. This is done through Excel software (See appendix № 05)

In light of the above, the rate of the monetary social return equals 10.34% (See appendix № 05). This value computed at the University of Adrar is higher than the prevailing market interest rate for the year 2011 which approximates the rate of 8%. From an economic point of view, this issue encourages the society to invest more in higher education as this kind of investment becomes feasible despite the high costs incurred (the economic aspect of investment in education). In this context, the high rate of the social return is referred to the rise in the value of the graduate income as well as the small value of the pension granted to the university students in addition to the low opportunity cost which represents the lost income when the student attends the university compared with the expected returns that the student will get in his business life.

3.2. THE RATE OF THE INDIVIDUAL RETRUN

The individual return is computed at the University of Adrar during the period 2007/2008 and 2010/2011 according to the following model:

$$\sum_{t=1}^n \frac{(B_T - C_T)}{(1 + Ki)^n} = 0$$

Where:

B_T : are the differences of the individual returns before taxes and after their adjustment according to the unemployment and mortality rates figured out by the table № 07

C_T : The value of the adjusted individual cost components

Ki : is the rate of the individual return which makes the difference between the total values of B_T and those of C_T equals to 0. This is done through Excel software. The computation process gives the result that the rate of the individual return K_i equals 13.27 %.

In light of the above result, it is clear that rate of the individual return of higher education at the university of Adrar during the period 2008-2011 is relatively higher than the market interest rate for the year 2011; and 2008 is the year in which the secondary school student decides to attend the university and invest in higher education instead of redirecting towards the business life. Thus, the individual return given by this value encourages the individual investment in this sector which means the feasibility of the higher education investment is effectively existed.

Additionally, the increase of the individual return is due to the relative raise of the graduate income in one hand and the decrease in the opportunity cost of the secondary school graduate on the other.

In general, the results demonstrate the economic feasibility of both the individual and social investment at the University of Adrar since the graduate joins the business life and rates of the individual and social return exceed that of the market interest rate.

Furthermore, which justifies the increased level of the individuals' spending on higher education is the expectations of the individuals to get high future incomes to satisfy their desires and realize their self-fulfillment. In light of these results and the need of the society for a cultivated citizen to increase productivity and disseminate knowledge, culture and changing the consumer habits as well as improving the education level; all these are robust reasons behind the increased level of the state expenditure on the education.

CONCLUSION:

From the above analysis, it is argued that the economic evaluation of the investment in education sector relies on robust methods and effective approaches to examine the feasibility of the economic projects. However, this field of research in Algeria is still scarce and this study comes to pave the way for further investigations.

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