

University Education and its Relation to Development in Egypt

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Abstract: During recent years, university education in Egypt has witnessed a remarkable development. Enrolment rate in university education has greatly increased and university education budget has reasonably raised. Despite these developments in university education, quantitative development has predominated it and qualitative development has been neglected. These developments are not accompanied by developments in the ability of economic sectors as a result of the increase in the number of graduates in theoretical sciences to the disadvantage of applied and vocational sciences which are considered the main pillar of development in this age of technology, information and globalization. This increase in the number of students or what can be described as the student explosion phenomenon has led to unemployment among graduates as a result of graduates' poor skills and efficacies, lack of appropriate job opportunities, and lack of expansion in economic activity. In addition, the limited sources of funding, dependence mainly on governmental funding, the insignificant contribution of the private sector in funding scientific research, and the financial, administrative and educational problems which governmental universities face have obviously led to the dissociation between the outputs of university education and the labor market.

Key Words: education and development, labor market, return to university education and its cost, scientific research and its problems

INTRODUCTION

University education is considered the impetus of development in both developed and developing countries, as it is the main pillar of progress through which we can contribute to the solution of the problems of society. Scientific research is considered one of the most important issues that preoccupy researchers in university educational institutions. Having a look at the tremendous technological scientific revolution which today's world witnesses in the field of information and communications, which has been brought about by the globalization phenomenon and the fast growth of knowledge within the framework of the New World Order with the challenges imposed by the overlapping of cultures and civilizations, we get more convinced of the importance of education in general, and of university education and the role of scientific research in particular as more necessary than ever before. This requires the adoption of scientific and technological methods and techniques to face future challenges through developing and creating advanced goods and services that enable different sectors of the country to face the expected foreign competition. This also requires supporting all scientific and academic institutions with all material and moral resources to provide specialized efficiencies that meet the needs of the labor market in all fields. Despite the fast growth of

education in developing countries including Egypt, this growth is not accompanied by growth in the ability of economic sectors, as there was just a great surplus in the graduates of theoretical sciences, then it expanded to include the graduates of other practical, vocational and technical educational sectors. The result was great unemployment of university graduates in all fields of specializations. This reflects the mismanagement of human resources and not making the optimal use of them. Quantitative development has predominated these changes and qualitative development has been neglected, as these changes did not touch on the essence and content of science, knowledge, and productive and behavioral value as regards the value of science and work. No fundamental change has occurred in production relations. On the contrary, the changes that occurred in developmental tendencies often did not serve the purpose of recent educational orientations and its goals of developing society.

Research Problem: The research problem lies in how to activate the relationship between education in general, and university education in particular, and development to narrow the gap between the demands of the labor market and the poor efficiency and skills of university graduates under absence of expansion in economic activity and therefore lack of appropriate job

opportunities for graduates. In the future, quantitative expansion of education will be a burden on the State. Therefore, the State will be unable to fund education. This poses the important question of how necessary the participation of the private sector in funding education will be in the future. In addition, the research problem lies in identifying the problems and challenges which hinder the effectiveness of educational institutions in Egypt, the misdistribution of the financial resources allotted to university education expenditure, and if funding resources for scientific research are adequate compared with other countries. The present study will be limited only to governmental universities which are controlled by the Supreme Council of Universities. In addition, it will address scientific research and development issues. A regarding the issue under study.

Sources of Data Collection: The present research makes use of library sources for the theoretical part and general concepts. Data was collected using the statistics issued by the Supreme Council of Universities. This research also used the national human development reports in Egypt in different years. It also used the reports of National Specialized Councils about education in Egypt and the reports of the Scientific Research and Technology Academy regarding the development of education in Egypt. Moreover, the present research used the human development reports issued by the United Nations Program for Development in different years as well as the information coming from the Information and Decision Support Council of the Egyptian Cabinet.

Research Plan: The present research includes five main sections:

- The reality of the relationship between university education and development in Egypt.
- The problems and challenges faced by university education in Egypt.
- The relationship between the university education system in Egypt and the labor market.
- The return to and cost of university education and scientific research in comparison with other countries.
- The results and suggestions of the study.

The Reality of the Relationship Between University Education and Economic Development in Egypt: Education occupies an important place in different economic and social development plans. It is also considered one of the most important sectors whether in terms of its expenditure or in terms of being the main source of the trained and specialized work force needed for achieving the goals of economic and social development plans. No doubt, education in general, and university education and scientific research in

particular, is considered the main basis which helps shift from traditional economy to modern economy. The greater the investment in human resources, the greater the economic return compared with investment in other economic sectors. This depends on the type of educational system in society and its contribution in achieving economic growth. Certainly, economic returns in developed countries are, for the most part, due to the increase in the quality and the quantity of work and capital inputs. This confirms the close overlap between education and overall development. We must emphasize that there are two types of education. The first has nothing to do with the prevalent demands and needs in society and does not effectively contribute to the developmental process. It is called non-functional education. The second type is called functional education. It is that type of education which considers development in the economic, political, social and cultural systems, which effectively contribute to the developmental process and help produce economic growth in different sectors^[6].

Historically, Egypt is considered one of the oldest countries of the world oriented towards Islamic education through establishing El-Azhar in 975 AD. Modern Egyptian education, however, started in the time of Mohamed Ali pasha (1798 AD), who established many schools for engineering, medicine, law and other subjects.

In 1908, a national university was established in Egypt. Later in 1925, this national university was merged into a public university, and in 1940 was named after the king of Egypt at that time, Fouad El-Awal. In 1953, after the Egyptian revolution, it was named Cairo University^[18].

After that the Egyptian government started to adopt the policy of expansion in establishing public universities believing that quantitative expansion of education is the way to achieve development. Therefore, the State was committed to the policy of free public education in universities despite its high economic cost. The data shown in table (1) indicates that the total number of Egyptian universities in 2004 was twelve public universities including 268 faculties and institutes, in addition to El-Azhar University which involves about 250,000 students. Cairo University comes first in terms of the number of faculties and institutes (43 faculties and institutes) or the number of students enrolled in it which was about 221,955 students in the academic year 2004/2005. Ain Shams University comes second in terms of the number of students which was about 165,506 students during the same year.

Table (2) shows the development of the numbers of admitted, enrolled and graduated students in Egyptian public universities during the period from 1995/1996 till 2004/2005. Data indicates the number of students enrolled in Egyptian universities increased from 755606 in 1995/1996 to 1323620 students in 2004/2005 with a percentage of 75%.

Table 1: Number of Students and Faculties in Egyptian Universities in the Academic Year 2004/2005

University	Undergraduate Stage			Post-Graduate Stage		
	No. of Faculties and Institutes	Admitted	Enrolled	Graduates	Enrolled	Graduates
Cairo	43	42337	221955	39112	36563	7912
Alexandria	27	28297	148740	26186	20187	4270
Ain Shams	17	32995	165506	30875	33952	6850
Assiut	18	16161	63995	12670	4927	1910
Tanta	21	23437	116709	22540	11999	3687
Mansoura	21	23247	113410	20902	8515	2680
Zagazig	30	32959	154689	30580	15968	4502
Helwan	18	21831	96327	17792	8254	2037
Minia	16	10796	40996	7390	5966	1475
Menofiya	18	17898	77303	12602	6589	1625
Swez Canal	22	9743	49471	9124	4553	1905
South Valley	17	16516	64519	11840	4430	1270
Total	268	276217	1323620	241613	161903	40123

Source: Supreme Council of Universities, Higher Education Development Research Center, Statistics Dept., 2005.

Table 2: Number of Admitted Freshmen, Enrolled Students and Graduate and Post-Graduate Students in Egyptian Universities during the Period from 1995/1996 till 2004/2005

Year	Undergraduate Stage			Post-Graduate Stage	
	Admitted	Enrolled	Graduates	Enrolled	Graduates
1995/1996	237873	755606	10963	99210	21833
1996/1997	268967	926325	118309	102113	23297
1997/1998	240904	1043765	139631	106158	24948
1998/1999	221530	1167891	195156	118251	27481
1999/2000	200586	1175155	210190	119734	27738
2000/2001	234217	1203086	222524	149101	42854
2001/2002	243055	1223419	227049	165564	48051
2002/2003	241847	1240321	230312	157971	38227
2003/2004	257576	1278178	237115	154147	38994
2004/2005	276217	1323620	241613	161903	40123

Source: Supreme Council of Universities, Higher Education Development Research Center, Statistics Dept., 2005.

The number of universities is expected to increase in the future, especially after the call for the independence of universities and the establishment of new ones has increased. This has resulted in the independence of universities and the establishment of another five universities; namely, Beny Sweif, Fayoum, Banha, Sohag and Kafr El-Sheikh. Thus, the number of public universities in 2006 has increased to eighteen universities including El-Azhar University.

Table (3) shows the numbers of students and graduates in some fields of specializations in the academic year 2004/2005. Social studies come first and they include the Faculties of Commerce, Law, Arts and Education. The number of students enrolled at these faculties in the academic year 2004/2005 was about 315570, 190577, 186859 and 173351, with percentages ranging between 23.9%, 14.3%, 14.1%, and 13.1% of the total number of

Table 3: Number of Undergraduate and Graduate Students and Faculties in Some Fields of Specializations in the Academic Year 2004/2005

Year	Undergraduate Stage		
	Admitted	Enrolled	Graduates
Commerce	54330	315570	53912
Law	39809	190577	28157
Arts	46553	186859	37131
Education	42392	173351	33963
Engineering	14153	101637	17850
Medicine	7622	55563	9067
Pharmacy	7152	40769	6508
Science	8550	39939	7839
Specific Education	6153	28398	5778
Social Work	6999	22856	3926
Physical Education	5277	20285	3928

Source: Supreme Council of Universities, Higher Education Development Research Center, Statistics Dept., 2005.

Table 4: Development of Senior and Junior Faculty Members and the Budget in Egyptian Universities during the Period from 1995/1996 till 2004/2005

Year	Senior and Junior Faculty Members						University Budget in a Million Pounds
	Professor	Assistant Professor	Lecturer	Assistant Lecturer	Administrator	Total	
1995/1996	8589	6664	10977	9418	6265	41913	2939
1996/1997	8817	6869	11874	9527	6330	43417	3482
1997/1998	8960	6934	12457	9613	6672	44636	3616
1998/1999	9541	7111	13065	10194	7866	47777	3986
1999/2000	9817	7285	13384	10698	8187	49371	4059
2000/2001	10249	7623	13630	11048	9141	51691	4329
2001/2002	10634	8211	13569	11471	9662	53547	4870
2002/2003	10887	8440	14042	11821	10499	55689	5462
2003/2004	11234	8784	14663	12246	11323	58250	5842
2004/2005	11458	9076	14892	12513	11286	59225	6356

Source: Supreme Council of Universities, Higher Education Development Research Center, Statistics Dept., 2005.

students enrolled in Egyptian universities, respectively.

These four fields of specialization represent about 65.4% of the total number of students enrolled in Egyptian universities. This indicates the increase in quantitative expansion in university education to the disadvantage of applied sciences. It is worth mentioning that most developing countries, including Egypt, are considered countries that consume, and not produce, technical knowledge. These countries rely on foreign expertise in carrying out developmental projects or what is called "Turn-Key Projects".

As for the applied fields of specialization which include engineering, medicine, pharmacy and science, they have a limited share in the total numbers of students enrolled in Egyptian universities. The number of students enrolled in these fields of specialization is about

101637, 55563, 40769 and 39939, with percentages ranging between 7.6%, 4.1%, 3.0%, and 3.0% of the total number of students enrolled in Egyptian universities, respectively. This necessitates reconsidering this policy so that it may keep up with the developmental needs of the work force, especially in vocational fields and reducing expansion in university education for social sciences to the advantage of applied sciences.

The data shown in table (4) indicates the number of senior and junior faculty members increased from 1995/1996 to 2004/2005 from 41913 to 59225 with a percentage of about 41%. Junior faculty members represented about 37.4% of the total number of faculty members in 1995/1996. This percentage increased to 40.1% in 2004/2005.

Table 5: Development of Senior and Junior Faculty Members and the Budget in Egyptian Universities in the Academic Year 2004/2005

University	Senior and Junior Faculty Members					Total	University Budget in a Million Pounds
	Professor	Assistant Professor	Lecturer	Assistant Lecturer	Administrator		
Cairo	2532	1813	2764	2346	2201	11669	1279
Alexandria	1726	976	1292	1147	1256	6397	701
Ain Shams	1662	1379	2267	1679	1376	8363	1032
Assiut	700	402	686	746	605	3139	450
Tanta	681	565	993	864	680	3783	334
Mansoura	839	572	1053	1011	959	4434	553
Zagazig	1450	1273	1738	1218	1365	7044	592
Helwan	495	615	1252	898	681	3941	288
Minia	416	391	608	520	380	2315	195
Menofiya	449	410	797	760	636	3052	336
Swez Canal	363	410	849	886	673	3181	302
South Valley	141	270	593	438	474	1916	181
Total	11458	9076	14892	12513	11286	59225	6356

Source: Supreme Council of Universities, Higher Education Development Research Center, Statistics Dept., 2005.

By distributing faculty members to the total number of students enrolled in Egyptian universities in 2004/2005, we notice that there is one senior faculty member for every 37.4 students and that there is one junior faculty member for every 55.6 students. In comparison, in 1995/1996, there was one senior faculty member for every 28.8 students and one junior faculty member for every 48.1 students.

This data differs from one university to another because of the big difference among universities in the number of faculty members and students as shown in table (5). The data shown in this table indicates that Cairo University has the greatest share in the total number of senior and junior faculty members (n = 11660 senior and junior faculty members), followed by Ain Shams University which has 8363 senior and junior faculty members, then Zagazig University which has 7044 senior and junior faculty members, and South Valley comes last as it has 1916 senior and junior faculty members, with percentages ranging between 19.6%, 14.1%, 11.9% and 3.2% of the total number of senior and junior faculty members in Egyptian universities in the academic year 2004/2005, respectively.

As for university budget, the data shown in table (4) indicates that the budget of Egyptian universities increased from 2.939 billion pounds in 1995/1996 to 6.356 billion pounds in 2004/2005. However, this increase is considered a limited one compared with its counterparts in international universities.

According to the data shown in table (5), Cairo University has the greatest share in the university budget (1279 billion pounds) with a percentage of 20.1% of the total university budget, followed by Ain Shams University whose share is 1032 billion pounds with a percentage of 16.2%, then Alexandria University whose share is 701 billion pounds with a percentage of 11%, and finally comes South Valley University whose share is 181 billion pounds with a percentage of 2.8% of the total university budget.

As for private university education, it came with Egypt's orientation towards privatizing education within the framework of the economic reform program. The Ministry of Higher Education indicates that these private universities were established as a response to the increasing demand on university education and the inability of public universities to meet this demand. There are nine private universities in Egypt. They are the American University in Cairo, the German University, the British University, the French University, El-Ahram Canadian University, the 6th October University, Misr University for Sciences and Arts, Misr University for Sciences and Technology, and International Egyptian University.

These universities were established to keep up with the international developments in the field of privatization and the shift to the private sector to contribute to economic and social development. In addition, private universities were established with the aim of reducing the

foreign flows of hard currency which were transferred abroad to the students who could not be admitted in public universities because of the low rate. They also helped get domestic flows of hard currency from Arab students.

It is worth mentioning that the reality of these private universities is characterized by completing and repeating what exists in public education in Egypt with no qualitative addition. This means that these universities increase the quantitative dimension of graduates in different fields of specialization and do not duly contribute to the improvement of the quality of graduates so that they can get into the labor market.

The problem in the relation of education to development is not lack of education with all its levels and fields of specialization. Rather, it lies in the poor preparation and skills of graduates on the one hand, and lack of expansion in economic activity and lack of appropriate job opportunities and their discouraging living return on the other hand. Therefore, it is difficult to activate the relationship between education and development without taking the following into consideration:

- Expanding the base of economic activity to secure appropriate job opportunities for graduates and improve their living return.
- Providing the standards that secure equal opportunities for graduates in the labor market and emphasizing real quality standards instead of different affiliation and nepotism standards.

Educational statistics in universities indicates females' increasing interest in joining universities, especially theoretical faculties. The number of females joining theoretical faculties increased from 151 thousand in 1991 to 539 thousand in 1999, then to 870 thousand in 2004/2005. This shows that the ratio of females to the total number of students enrolled in theoretical faculties increased from 36% to 49% during that period^[19]. The ratio of newly admitted male students to female students is nearly 2 to 1, whereas the ratio is nearly 1 to 1 for enrolled and graduated students. This increasing interest in education on the part of females is a result of the efforts made by the State to provide the two sexes in society with different skills and experiences to carry out national developmental programs and to reduce illiteracy rates and increase people's interest in joining different stages of education. This helped narrow the qualitative gap between males and females. It is worth mentioning that the illiteracy rate among females in most Arab countries, including Egypt, is considered high compared with males, as it amounts to about 30% of the total number of population. This shows the danger of differentiation against women in Arab countries, including Egypt, and its negative effects on economic and

social development, something which requires exerting adequate efforts to make policies that aim at removing the gap through expanding educational opportunities for women, especially in rural areas, so as to achieve economic development through increasing productivity and contribution in the work force. The increase and fast growth of female education may result in an increase in the supply of educated work force and a relative decrease in job opportunities. This means an increase in unemployment in general and masked unemployment in particular, especially among graduates (academic proletariat) as a result of the increase in the student explosion phenomenon^[8].

The Problems and Challenges Faced by University Education in Egypt:

Tracing the course of university education in Egypt, one can notice a number of challenges brought about by this field. These challenges include three main issues. The first issue revolve around the suitability of higher education outputs for the needs of the labor market in Egypt. Here we notice that some higher education programs are of the traditional type, and this takes graduates away from the development needed by the labor market. The second issue falls under the challenges of the type of education, and this includes the increase in the numbers of students in classrooms, the increase in the teaching burden on faculty members and the inability to update teaching aids and others. The third issue involves scientific research and lack of facilities which it requires.

The following is a brief overview of the most important problems facing university education in Egypt^[11]:

- **Administrative Problems:** These include administrative dependency of universities because of the multiplicity of authorities with which the university deals, the difficulty of coordination between them, absence of university performance evaluation systems and standards, the imbalance between the numbers of graduates and the quality of their efficiency, decentralization of decision-making and university education management, augmentation of administrative structures, and outdatedness of existing systems.
- **Legal and Legislative Problems:** These include the unsuitability of prevalent university laws for modern international changes, the issuance of laws to expand the establishment of universities, and the increase in the number of lawsuits made at courts because of the absence of the principle of equal job opportunities.
- **Financial Problems:** These include the misdistribution of financial resources, and the poor funds allotted to scientific research because of the complete dependence of university education on the State budget and the increased wages and salaries of

administrative staff and decreased salaries of senior and junior faculty members. Expenditure on scientific research in Egypt does not exceed 0.87% of the gross national product. This percentage is very insignificant compared with other countries.

- **Educational Problems:** These include lack of clarity of university education philosophy and goal, the low efficiency of university graduates, and the unsuitability of the university admission system and its dependence on the Coordination Office through the total marks alone, and this does not reflect the student's real desire to choose the field of specialization. Added to these are the increasing pressure on the limited resources of universities, the increasing numbers of admitted students year after year, besides the reduced performance of senior and junior faculty members as a result of lack of training and preparation, lack of devotion to the educational process, the traditional character of university programs and lack of coordination at the faculty and departmental levels.

Perhaps the greatest of these problems is the relation of university education to the labor market. The real problem in Egypt lies in the fact that there are larger numbers of graduates than is actually needed by the labor market. This is attributed to the expansion in the fields of specializations that are inappropriate for the labor market, and lack of coordination between work force planning and educational planning, thus resulting in the heterogeneity between educational outputs and labor market needs. This helped increase structural and contact unemployment in Egypt because of the excess demand on some fields of specialization at the time when there is excess supply of other fields of specializations. This accounts for the structural imbalance between demand and supply in the labor market^[7].

The Relationship between the University Education System in Egypt and the Labor Market:

Theoretic Approach: Education in general, and university education in particular, is considered one of the most important sources of providing the labor market with the main input of production which is the laborer. The issue of education has begun to revolve around supporting this tendency through investing in human capital about which the economist Shultz wrote under the title "The Economic Value of Education" since the early 1960s. After that writings in this field continued focusing on some issues relevant to education such as the relation of education to productivity and wage level, return to education, the relation of education to development, etc. Shultz argues that ongoing education and training create better job opportunities and that improving the quality of the human element results in increasing individuals'

potential productivity^[17]. On the other hand, Marshall and others see that the educational quantity is not essential for increasing productivity and individual efficiency but that the quality of education and knowledge is essential for increasing productivity, and thus for increasing wages as a result of the increase in expected returns for educated individuals^[10]. Some others (Like Carnoy) argue that economic growth in western countries has taken the main batch of human, and not physical, capital. In addition, they argue that one means of increasing the efficiency of using physical capital is education along with training and experience^[4]. Studies indicate that the idea of the quality of education and its relation to the labor market lies in the fact that education is considered a signal and screener for the labor marker or what is called "signaling and screening). This view sprang from the fact that employers need certain signals to select suitable employees^[15]. Consequently, Wise introduced the idea of the relationship between the quality of the educated individual and the quality of the university or faculty from which s/he graduated. He indicated that well-reputed universities are a signal for their students in the field of demand in the labor market^[22]. The relation of education to the idea of signaling and screening has raised a great controversy among economists in the field of work economics. The proponents of this idea argue that education signals increased productivity, thus resulting in great financial returns for workers. This means that there is a direct relationship between education and the increase in the expected wage level.

The screening or classification theory is based on the idea that education is a screening tool through which those capable of production can be sorted out from those incapable of production and work, where continuing education and achievement leads to better wages compared with those who could not continue education, thus resulting in an increase in productivity and a rise in wages.

Also the connection of education with the labor market is reflected in the form of external social benefits. This means that an individual's increased educational achievement affects society members through increasing productivity and the benefits gained by employers, making available goods and services, and reducing unemployment, because an educated individual can find job opportunities compared with an uneducated individual. Also, an educated individual, even if s/he is unemployed, does not represent a danger for society compared with an uneducated individual. This means that education brings about external social benefits for society in the fields of productivity, efficiency, social safety, population growth, poverty level and distribution of income^[3]. The study conducted by Johns on a number of developing countries indicates that there is a good relationship between education and the level of population

growth in these countries. This relationship indicates that educated couples are more responsive to the idea of family planning than uneducated ones. This will also help remediate the misbalance between supply and demand in the labor market, which results from the excess supply of laborers. Considering family planning, this will reduce supply in the labor market and help remediate the misbalance^[9].

The Educational and skill level of the Work Force in Egypt: The data about the size of the work force in Egypt is conflicting. The data of the Central Organization of Public Mobilization and Statistics in Egypt indicates that the work force in 2003 was about 19.7 million out of 39 million people who were at work age (15-64 years), while the data of the Central Bank of Egypt indicates that the work force was 19.5 million people. On the other hand, the data of the World Bank indicates that the work force was 24.4 million people out of 38.5 million people who were at economic activity age during that period. The people who were at economic activity age (39 million people) constituted 59.1% of the population of Egypt. This percentage is not lower than the corresponding world percentage which was 62.9% during that period (according to the data of the Central Organization of Public Mobilization and Statistics).

According to the estimations of the World Bank in 2003, the work force constituted about 37.8% of the population of Egypt, and this percentage is lower than the corresponding world percentage which was 48.4% during that period. However, according to the estimations of the Central Organization of Public Mobilization and Statistics, the percentage of the work force in Egypt is 29% (19.7 million people), which is lower than the estimation made by the World Bank and is not proportionate to the rates of the economic effectiveness of the population in low income countries whose economic conditions are similar to those of Egypt. The economic effective rates of population in low income countries, average income countries, and high income countries are 45%, 51.4% and 48.5%, respectively, and Egypt falls in the category of the low-average income countries in which the rate of the economic effectiveness of the population is about 53.5%, according to the data of the World Bank.

This great difference in the estimation of the size of the work force is a main source of the conflicting data about unemployment rate and the difficulty that researchers have in performing their role in analyzing the position of employment and unemployment in Egypt and making suggestions for solving the problem. This means that data should be consistent and should not conflict so as to have a real conceptualization of the size of the problem in the light of realistic data.

The educational level of the work force is considered

an indicator of its skill and productive level and of its ability to deal with modern technology. In this connection, the data of the Central Organization of Public Mobilization and Statistics indicates that the scientific and skill of the work force in Egypt is considered highly low, as the percentage of illiteracy in the work force is about 35.6%, while those who are literate constitute about 18.9% of the work force. This means illiterates and near illiterates constitute about 54.5% of the Egyptian work force, and this percentage may increase to 60.5% if we add those who received education below the intermediate level and those who received primary education, who constitute about 3.4% and 2.6%, respectively. This is natural given the low level of graduates in the current educational system. As for the graduates of intermediate education, they constitute about 22.7% of the work force in Egypt, while this percentage reaches about 4.2% for those who received education above the intermediate level. Finally, university graduates constitute about 12.2% of the work force, while holders of higher diplomas, M.A. and Ph. D. degrees constitute about 0.4% of the work force in Egypt.

This indicates that the skill and educational level of the majority of the work force in Egypt is low, something which makes it necessary to develop education and training to raise the productivity of the work force in the present economic activity or re-prepare workers so that they can keep up with modern technological advances and labor market needs.

Unemployment of Educated People and Means of Fighting It: The problem of unemployment in Egypt is a dangerous phenomenon that threatens national economy as it lasts for a long period, especially that it is the problem facing the young people entering the labor market for the first time. Female unemployment in 2004 was 26.5% while male unemployment was 6%^[2]. Moreover, employment supplied in the labor force does not meet needs for efficiencies and skills. In other words, there is a gap between employment supply and demand. The high unemployment rates may be attributed to the population growth rates that are higher than economic growth rates, the increased number of graduates in the fields of specializations that are not needed in the labor market, and lack of new job opportunities as a result of financial and tax constraints on new projects, besides the privatization of many companies and the return of immigrants from the Arab countries after the second Gulf War and the deterioration of economic conditions^[1].

Table (6) indicates that in the last ten years the number of educated people and graduates increased year after year with the increase of population and that the number of unemployed people increased with the increase of the number of educated people and graduates.

Table 6: The number of educated graduates and unemployed people from 1994 -2004

Period	Number of Population (in a million people)	Number of Graduates of Universities and Institutes	Total Number of Unemployed People (in a million people)	Unemployed rate
1994/1995	57510	180844	1.9	9.6
1995/1996	58755	148897	NA	9.2
1996/1997	60080	154464	1.5	8.8
1997/1998	61341	172850	1.4	8.5
1998/1999	62639	237062	1.483	8.2
1999/2000	63976	22349	1.698	7.9
2000/2001	65292	30638	1.7	7.6
2001/2002	66628	321638	2.021	9
2002/2003	67976	336353	2.241	9.9
2003/2004	69330	346327	2.238	9.9

Source: The Central Organization of Public Mobilization and Statistics, Yearly Statistics Book.

The data shown in the table indicates that the number of graduates in 2003/2004 increased to 346327 graduates and that the total overall unemployment in the same year was 2.238 million. University unemployment is about 17.3% of overall unemployment. It is a high proportion as a result of the State's abandonment of its commitment to appoint graduates. The total work force in Egypt in 2004 was 21.176 million people, and the annual growth rate of the work force during the same period was 2.3%.

As regards the ordering of graduate unemployment in different fields of specialization, the highest proportions during the period from 2002 till 2004 were in commerce (34.7%), followed by arts and archeology (about 15.3% for each), then agriculture and law (14.5% for each), other fields of specialization (10%), social work (7.3%), and finally engineering (3.8%)^[11].

The data of the Central Organization of Public Mobilization and Statistics indicates that the number of unemployed people in Egypt in 2004 was about 1.78 million with a percentage of 9.1% of the work force, while the data of the Central Bank of Egypt indicates that the number of unemployed people in Egypt in 2004 reached 1.6 million with a percentage of 9.1% of the work force, then in 2005 it decreased to 1.5 million with a percentage of 7.62%. This means that unemployment rate took a backward direction as a result of the continuous efforts made by the government to fight unemployment, create new job opportunities, and encourage the private sector through incentives and legislative and administrative guarantees to attract national and foreign investments. The main variation in the data issued by the Central Organization of Public Mobilization and Statistics, the Central Bank of Egypt, the International Monetary Fund, and the World Bank about the estimation of unemployment size and rate in Egypt may be attributed

to the difference in defining unemployed people. The Central Organization of Public Mobilization and Statistics bases its data on the premise that unemployed people are those who can work and are willing to work but do not have another source of income. This means excluding all those who have an income source from inherited property or money or from a previous job inside the country or abroad, even if they are qualified and can work and are willing to work. Unemployment in Egypt is mainly concentrated in young age groups, as the majority of unemployed people are educated young people, and this increases economic and social losses in Egypt and affects the economic development process. The data issued by the Central Organization of Public Mobilization and Statistics indicates that unemployment is concentrated in the younger age group aged between 15 and 30, as the number of unemployed people in this age group in 2004 reached about 1.31 million with a percentage of about 88% of the total number of unemployed people in Egypt. This is logical to a great extent because university graduates who are looking for a job opportunity and who enter market for the first time are more prone to continue to be unemployed for a long time with the spread of the unemployment phenomenon.

This shows the economic and social losses caused by unemployment, especially among educated people in Egypt, something which makes it necessary to make instant governmental plans to confront this problem and reduce its negative economic, social, and political effects. In fact, the government has made a plan aiming at providing 700 thousand job opportunities, and this plan is based on four main axes. The first axis is the appointment of 170 thousand graduates in governmental and service institutions at a cost of about 350 million pounds. The second axis is the establishment of a fund for training

and preparing workers in productive crafts with a fund of 500 million pounds in order to provide 200 thousand job opportunities. The third axis is the establishment of a fund for giving popular loans to graduates with a fund of 500 million dollars to finance small businesses. The fourth axis is the establishment of a fund for supporting exports with a fund of 400 million pounds to increase exports and create about 50 thousand job opportunities.

As a matter of fact, the appointment of these numbers in governmental and service institutions raises this question: Will these graduates be appointed in real jobs or will they be a burden on the government and thus join masked unemployment in the government and have a bad effect on the efficiency of the government which is bad and bureaucratic.

As regards training and preparing the youths, it is just an increase in expenditure on the trainers and equipments required for this and small rewards for trainers without creating real job opportunities for trainees. Therefore, it is better to direct this budget to the establishment of some small and medium factories in some industries with intensive work. As for popular loans to establish small businesses, experience has proved that they play a negative role because of lack of coordination at the national level and absence of guarantees required for marketing in the long run to increase and develop production. As for the establishment of a fund for supporting exports, it has nothing to do with creating job opportunities because its main role is to help export products which actually exist and which are produced by an actual work force, and not to set up export industries that create new job opportunities.

In the light of the foregoing, and to cope with this phenomenon, the following points should be taken into consideration:

- Data should be accurate and there should be impartiality in calculating the number of unemployed people so as to know the actual size and rate of unemployment in Egypt. Future economic studies should be conducted on a clear basis.
- The private sector should be encouraged, its role in the economic development process should be supported, and the role of the government in supporting small businesses should be enhanced through changing the banking policy towards the establishment of small businesses.
- Public expenditure should be restructured to create real and continuous job opportunities in productive projects.

Return to and Cost of University Education and Scientific Research:

Return and Expenditure of University Education:

Expenditure on education and scientific research is considered investment in human capital which constitutes the main pillar of economic and social development. Despite the high cost of education, it is argued that it brings more returns than other sectors, as the State relies on it in building the scientific and technological basis required for the developmental process. Expenditure on education in general, and university education in particular, is considered one of the most important governmental activities in all developing countries including Egypt. Expenditure on educational services has increased greatly recently, as expenditure on education in Egypt in 2003 was 5.9% of the gross national product while it was 3.9% in 1991^[20]. As previously mentioned, the budgets of Egyptian universities increased from 2.939 billion pounds in 1995/1996 to 6.356 billion pounds in 2004/2005. However, this increase is still insignificant compared with other countries. Despite the quantitative expansion of educational services and spending huge amounts of money on these services, there is still the phenomenon of social inequality in educational opportunities. A poor family has become unable to have tuition fees even if education is free, because such costs consume a large proportion of the budget of poor families which live below the line of poverty. Also, the educational services provided in rural areas are not like those provided in urban areas despite the efforts exerted by the State to remove the differences in education between the countryside and the city, something which will widen this gap in the future because of the State's discontinuation of its course and its abandonment of its commitment towards this sector at the beginning of economic reform and opening the way before the private sector to invest in this sector which will eventually increase drop-out rate which has greatly grown in recent years, i.e. the economic reform years, and which results from the poverty of the economic and social environment of the Egyptian family and may have bad effects on society. The percentage of students who do not complete their primary education is about 29% in Egypt, 60% in Latin America, 54% in Africa, and 20% in Asia. There are significant differences among countries within each group, as this percentage may increase or decrease in the same group. As for the secondary stage, the percentage of students who do not complete this stage is about 18% in Egypt, 39% in Africa, 18% in Asia and Latin America, and 11% in Europe. This percentage decreases in the university stage to 6% in Egypt, 21% in Africa, 9% in Asia and Latin America, and 4.5% in Europe^[12].

Table 7: Returns to Higher Education in Different Countries

Area	No. of Studies	Special Returns%	Social Returns%
Africa	9	32	12
Asia	8	19	11
Latin America	5	23	18
Least Developed Countries	12	24	13
Countries of Average Development	8	17	10
Developed Countries	14	12	9

Source: Psacharopoulos, George, Returns to Education: an updated international comparison. Comparative Education, 2001.

Table 8: Educational indicators in some International Blocks 2003

Country	Illiteracy Rate		Rate of Enrollment in Educational Stages		Indicator of Educational Status	Expenditure on Education	
	(M) %	(F) %	M+F %	F %	to 1%	Gross National Product	Governmental Public Expenditure
Arab Countries	41.4	53.6	59	59	0.59	5.9	15.7
All Developing Countries	28.6	39.1	59	55	0.67	3.6	14.8
Latin America	12.8	13.8	72	77	0.82	4.5	17.9
Industrial Countries	1.3	1.4	92	93	0.96	4.5	12.7
Total	22	28.9	63	60	0.73	4.8	12.7

Source: United Nations Program for Development, Human Resources Report, 2003.

Expenditure on education has two characteristics:

- Consumer expenditure whose effect is represented in the intangible benefits which the learner gets through learning and knowledge and through obtaining a university degree that makes his/her life more beneficial, satisfactory and happy.
- Investment expenditure whose effect is represented in the special and social returns on both the individual and society. Several studies have emphasized the positive relationship between education and economic development through the results of 56 case studies of the patterns of the return rates on education in 45 countries. The results of these studies have shown that the return rate of investment in education is over 10% as a common criterion for the alternative opportunity of capital. This rate is higher in developing countries than in developed countries as shown in table (7).

The human resources report for the year 2003 issued by the United Nations refers to the remarkable connection between the order of countries in terms of their educational status as a component of human development. Industrial countries rank first among 174 countries as shown in table (8).

The above table indicates low educational status, especially in terms of the difference between males and females. The indicator of educational status included in the table indicates the superiority of developed and developing countries and Latin America compared with Arab countries. Also there is a strong correlation between total economy recession and the changes in educational indicators. In this connection, a study conducted by the experts of the International Monetary Fund indicates that the bad economic conditions, the worsening of short term shakes in the gross national product, economic instability and negative trade shocks were the cause of the decrease in academic achievement rate by 80%^[13].

Expenditure on Scientific Research and Funding

Sources: One of the most important indicators of the progress of countries is the expenditure on scientific research and development. Data shown in table (9) indicates that America, Japan, Germany, Canada, China, France, England, Russia, Australia and Italy are considered the highest ten countries in terms of expenditure on scientific research and technology during the period from 2001 till 2003. The average yearly expenditure of these countries on scientific research reached about 522.577 billion dollars, of which America's share constituted about 43.17% and that of Japan 20.16%.

Table 9: Expenditure on Scientific Research and its Percentage of the Gross National Product for the most Important Countries of the World During the Period 2001-2003

No.	Country	Mean Expenditure on Scientific Research a Year in a Million Dollar	Percentage of Expenditure on Scientific Research of the Gross National Product %	Rate of Each Scholar's Share in Expenditure on Scientific Research
1	United States of America	238546	2.93	576
2	Japan	111415	3.22	418
3	Sweden	7503	3.38	349
4	England	23444	2.65	215
5	Germany	43274	2.7	391
6	France	26777	2.48	322
7	Italy	11703	1.77	184
8	Netherlands	6246	1.92	159
9	Spain	8720	1.62	132
10	Russia	20511	1.45	204
11	Canada	32505	1.96	358
12	Australia	14977	1.83	276
13	China	29325	1.58	198
14	South Korea	6055	2.32	87
15	India	10934	1.25	135
16	Singapore	1223	1.41	511
17	Malaysia	1306	1.02	163
18	Mexico	4722	0.86	21
19	Turkey	3915	0.95	72
20	Israel	5813	2.78	347
21	Egypt	543	0.87	7
22	South Africa	7137	0.93	104

Source: Organization for Economic Cooperation and Development, Development Center Studies (science and Technology Indicators), 2004.

As for percentage of expenditure on scientific research from the gross national product, Sweden came first, Japan came second, and America came third with percentages of 3.38%, 3.22% and 2.93% of the gross national product, respectively, whereas this percentage reached about 2% of the gross national product for England, Germany, France, Israel, and South Korea. On the other hand, this percentage ranged between 1% and 2% for Italy, Netherlands, Russia, Canada, Australia, and China. This percentage decreased to less than 1% in Egypt, Turkey, and South Africa.

As for the funding available to each researcher and scholar, Singapore came first, America came second, Japan came third, and Canada came fourth. The funding rate available to each researcher and scholar in these countries a year was about 511, 476, 418, and 358 thousand dollars, respectively. The funding available to each researcher and scholar decreased to about 87, 21, and 7 thousand dollars in Turkey, Mexico and Egypt, respectively.

Developed countries are considered the highest countries in terms of expenditure on scientific research which serves productive sectors. Expenditure on

productive sectors in these countries is more than two thirds of the expenditure on scientific research, as expenditure on scientific research in productive sectors in America, Sweden, Germany, Japan, England, and South Korea reaches 70.5%, 70.2%, 69.7%, 68.8%, 67.3% and 67.2%, respectively, while expenditure on scientific research in productive sectors in India, Turkey, Egypt, and Mexico decreases to one third of the total expenditure on scientific research as it reaches 38.5%, 38.6%, 38.8% and 24.3%, respectively. In the service sector, however, expenditure on scientific research decreases, especially in scientifically and technologically developed countries, as it reaches 29.5% in America, 29.8% in Sweden, 30.3% in Germany, and 31.4% in Japan, while it increases in the less developed countries as it reaches 76.6% 61.5%, and 62.2% in Mexico, India and Egypt, respectively^[13].

It is worth mentioning that the number of scientific research institutions in Egypt is 350 research institutions in most fields of specializations, and the number of scientists and researchers in Egypt is 122 thousand scientists and researchers. International statistics indicates that Egypt occupies an advanced place in terms of the number of scientists and researchers per a million people. The number reached about 1145 scientists and researchers per a million people during the period 2001-2003^[14]. Egypt has recently taken interest in increasing expenditure on scientific research. Expenditure on scientific research increased from 0.56% of the gross national product in 1997 to 0.86% in 2003. Also total expenditure on scientific research increased from 872 million pounds in 1997 to 1612 million pounds in 2000, then to 2751 million pounds in 2003^[5]. Governmental funding is considered the main source of funding scientific research in Egypt, besides foreign funding through some economic and scientific agreements. Governmental funding constitutes about 88.6% of total expenditure on scientific research, of which 80% goes to wages and salaries and the rest to equipments and supplies needed for scientific research, something which makes it difficult to meet the needs of scientific research. The contribution of the private sector in funding scientific research in Egypt does not exceed about 1.5% of total expenditure on scientific research, while that of foreign funding reaches about 10% of total expenditure on scientific research^[13].

As for the expected return of scientific research, it depends on the nature of research and its applicability. There is research whose return appears in the long run. There is applied research whose return appears as its results are implemented. This research is marketed at high costs, and developing countries may not afford it because of its high costs. OECD has estimated scientific research return in developed countries at about ten times greater than what is spent. That is to say that every million dollars spent on scientific research brings in ten times as much^[21]. America gains the highest return among developed

countries, as every 10 million dollars bring in 152 million dollars. OECD has estimated scientific research return in developing countries as being very low, as the accumulated return on scientific research does not exceed five times as much. Among these countries are Egypt, Mexico and Brazil. This is attributed to the limited ability to make use of the results of scientific research in these countries and the lack of coordination among the scientific authorities in the one and same country, and this leads to the repetition of research unlike the case in developed countries.

Among the most important problems facing scientific research in Egypt are lack of the sources of financial funding for scientific research activities, lack of research facilities, and lack of guidance for post-graduate students towards adopting applied research projects to solve developmental problems in different fields. Although Egyptian universities attract a large number of holders of M.A. and Ph. D. degrees, their role in scientific research is very limited, as full-time researchers in Egypt constitute about 5.6% of the total number of faculty members. Excluding the main incentive that motivates faculty members to do scientific research to obtain academic promotion, the contribution of faculty members in scientific research does not exceed 3% at most^[16]. This may be attributed to the increased teaching burden and academic and administrative tasks of faculty members and the low salaries they get. Another reason is that faculty members do not make use of the year devoted to scientific research to develop their research abilities and the immigration of genius people abroad because of the great financial incentives they get there. In addition, there is another problem which lies in the fact that the majority of research centers are concentrated in governmental research centers which are bureaucratic and do not suit the goals of private projects which are based on increasing profit and, therefore, these research centers are not appropriate for the needs of the private sector.

RESULTS AND DISCUSSIONS

Among the most significant results reached by this study are the following:

- The efficiency of university graduates is low because the numbers of students are increasing in a way that exceeds available financial and human resources.
- The increase in quantitative expansion of university education was the main cause of increasing unemployment among university graduates.
- The goals and philosophy of university education are not clear and the current educational policy is not appropriate for developmental needs.
- Egyptian university education is centralized and bureaucratic and does not keep up with the age of technology and information.

- There are many administrative, financial, legislative and educational problems which face university education in Egypt.
- The relation between university education and the labor market has broken up.
- The funding allotted to research is poor, depending mainly on governmental funding, and the contribution of the private sector to the sources of funding is very little.
- Lack of coordination among universities was the main cause of repeating scientific research.
- There is no scientific atmosphere that encourages the creativity of researchers due to poorness of technical resources and modern scientific equipments.

In the light of the above results, the researcher suggests the following recommendations:

- Reducing the quantitative expansion of university education and dependence on the quality of university education.
- There should be a close connection between university education and the needs of the labor market.
- The funding allotted to scientific research should be increased through the effective contribution of the private sector besides governmental funding.
- There should be coordination among universities as well as among research centers so that scientific research and studies may not be repeated and their costs may not increase.
- Providing appropriate scientific atmosphere for researchers so as to motivate their scientific creativity.
- Supporting small businesses which provide new job opportunities for large numbers of graduates through providing appropriate investment incentives.
- Clarifying the goals and philosophy of university education accurately, showing their future role in serving the needs of total development.

Summary: University education is considered the mover of development whether in developed countries or in developing ones because it can contribute to the solution of the problems of society. Egypt has long taken interest in university education despite its high economic cost as it is free education funded mainly by the State's budget. In recent years, public as well as private university education have witnessed great expansion with the start of the economic reform project in Egypt considering that education is more necessary than ever before.

Despite the remarkable changes and increased expansion of public and private university education which education has witnessed recently after the orientation to privatization within the framework of the

economic reform program, these changes have been predominantly quantitative rather than qualitative. This has resulted in unemployment among graduates in different fields of specialization as a result of the great surplus of the graduates of theoretical sciences to the disadvantage of applied and vocational sciences, something which reflects the mismanagement of human resources and not making the optimal use of them. The result was the low efficiency and skills of graduates and the inability to meet the needs of the labor market.

The present research aimed at discussing the problems and challenges which hinder university institutions in Egypt and which curb the efficiency of graduates. In addition, the present research aimed at identifying the different means to activate the relationship between university education and development in Egypt.

The present research hypothesized that quantitative growth of university education leads to an increase in unemployment rates among university graduates.

The present research made use of the descriptive and quantitative analysis method. The percentage method and comparison with other countries were sometimes used.

Among the results reached by the present research is that the efficiency of university graduates is low and quantitative, and not qualitative, expansion of university education has increased, something which led to increasing unemployment among graduates. The present research also concluded that the goals and philosophy of university education are not clear and that relation between university education and the labor market has broken up. Another result was that the funding allotted to research is poor, depending mainly on governmental funding.

Among the most important recommendations suggested by the researcher are reducing the quantitative expansion of university education, activating the relationship between university education and the needs of the labor market, and increasing the funding allotted to scientific research through the effective contribution of the private sector.

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