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**Restructuring The Higher Education In Light Of Population And
Industrial Growth**

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Introduction

As we are crossing to the 21st century, the role of higher education is becoming more complex and the coming up of more sophisticate technology in different spheres of life, keep a facing challenge to the higher education policy makers where training of graduates to respond to social changes and to the rapid development of knowledge and skills.

This means that universities must be constantly prepared to review their teaching structures and curricula, since crisis becomes more acute when the need for change coincides with rigid academic organizations and educational traditions that ascribe more importance to form than to cognitive content.

1. The main problems facing the higher education

The higher education is in general a function of different variants which effect directly or indirectly the higher education structure as shown in fig. 1

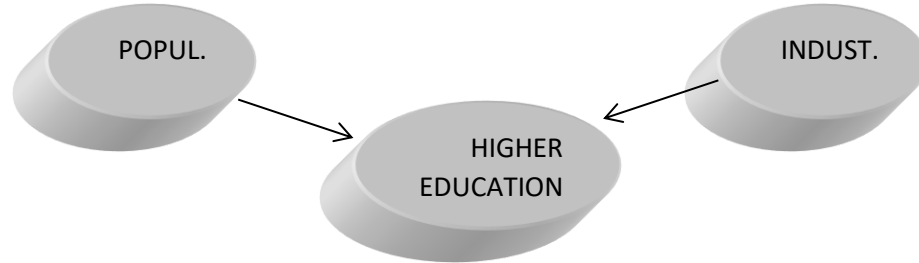


Figure 1

1.1 Population growth:

The rapid growth in the population in Yemen, where the population growth factor is 3.6% per annum, this will double the population within a two decade, and now from the total population of approximately 17.7 millions in 1999 there are 7.8 millions (male and females 44.1% of total population) are in the age of schooling, this will raise to 10.7 millions where the population is expected to raise to 25.2 millions in 2009[1].

This reflect positively to the constantly rising enrolment and will affect the quality of the higher education particularly those related to the technical fields, if special measures are not taken for restructuring the following:

- Laboratories
- Teachers
- Buildings

1.1.1 Laboratories:

Has to be re-equipped with latest equipment's. This will help graduates in the following:

- Get acquainted with the new measuring tools.
- Learn new methods for measuring or carrying experiments.
- Get precise results.
- Get familiar with the operations of latest equipment's.

All the above will ease graduates tasks after graduation when they join their specialized field.

1.1.2 Teachers:

The increase in number of enrolment will naturally require appointing further qualified university teachers. The old have to go on further training to update their knowledge with new technology, this can be achieved by a special long term internal program designed by the higher education policy makers for this purpose, or by changing expertise between the universities, according to bilateral protocol signed between the universities. The fact that to keep these teachers with their higher rate of productivity is related also to their basic pay, if they are not well paid then they will try to leave teaching area and find other well paid jobs. For this special attention should be given to the salaries of university teachers and technicians, added to it some incentives so as to get well paid.

1.1.3 Buildings:

The increase in number of enrolment naturally need increase in number of seats, as a result this means in certain cases erecting new lecture halls to absorb the huge number of students. In some places due to limited financial resources this can't be afforded, as a result dense number of students are kept in a lecture room this acts negatively to the grasping factor of students and totally reflect negatively to the higher education quality.

The total expenditures in the government budget for govt. universities have drastically increased from 557 million Riyals in 1990 to 6.1 milliard Riyals in academic year 97/98, out of this 2.4 milliards were expended to Investments in buildings, furniture's etc.

1.2 Industrial growth:

The emerge of new technologies in industries keep the task of higher education more challenging, this forces to further restructuring the higher education program so as to adopt the modern technologies, this means further investing into higher educational programs and laboratories.

The growth in industry is correlated to the growth in population and as a result the demand of industries from university's graduates especially those of engineering and technical background will increase. This has to be seriously considered and has to be well defined and planned by higher education policy makers.

Now this growth in industry require well qualified graduates and expertise to run it smoothly without any obstacles, this will facilitate local graduates to participate in the industrial growth .In missing this, the industry will import graduates/specialists from foreign countries to cover their needs as shown in the table 1 below[2].This will have it's negative impact to the unemployment of graduates, which will further increase.

Table 1: Working Permits issued in 1998 by main occupational

Main Occupational	Total
Specialists in scientific technical & humanities fields	9377
Technicians in scientific , technical, humanities fields	2174
Assistant basic engineering professions	764
Total	12315

From the statistical data it appears that the country is highly in need of graduates and technicians in technical and scientific fields to run the industry , and the demand for this will increase in near future as Aden is considered to be a freezone area where the plans for running the industries plant is on the way to start, this has to be seriously considered as the number might be rapidly increase if proper steps are not taken to restructure higher education and satisfy the industries needs.

2. Planning the nation need of graduates:

The growth in population, and industry and expansion in the number of universities would raise in number of graduates every year as shown in the table 2 below[3]

Table 2: Total number of enrolled and graduated students in the universities (Govt .+ Private) for academic year 98/99

College Type	Enrolled			Graduated		
	Male	Female	Total	Male	Female	Total
Social Colleges	102158	28060	130218	12464	3353	15817
Scientific Colleges	11268	4181	15449	904	403	1307
Total	113426	32241	145667	13368	3756	18274

This rise in number of graduates have advantage if it can be thoroughly absorbed by the local market, otherwise unemployment will occur and this will discourage new comers from enrolling in the universities. This will lead graduates to migrate to the neighbor countries to work at a cheap lab our rate, and the nation will lose the graduated skills. Taking into account that the cost of graduating a person in an Engineering/Medical University varies from country to other and it's around 500 - 3000 dollars per year.

All the above mentioned factors naturally are related directly or indirectly to the restructuring of higher education, which require proper funding in the Govt .budget lines, to absorb all the above mentioned problems, this will naturally exhaust the budget, and in most cases is impossible due to financial crisis and deficiency in budget lines of the Government, this enforce to search different means for financing the higher education. Since the government's policy is towards the open market, in this case the private sector or collection of intellectual can participate in bringing up of Private Universities (Non-Governmental Universities), which will help much in rectifying the above problems.

2.1 The Role of Private Universities:

This growth in enrolment give the way to establish Private Universities to come up and absorb this growth in enrolment, a long term objectives must be clearly defined and a feasible study should be carried on prior to decide the faculty or departments belong to the established university.

In Yemen Private Universities established since 1993 and there are 9 universities and colleges offer higher education in main centers of certain governorates and some have branches in main governorate's centers.

These Universities are categorized into three main fields as shown in figure 2

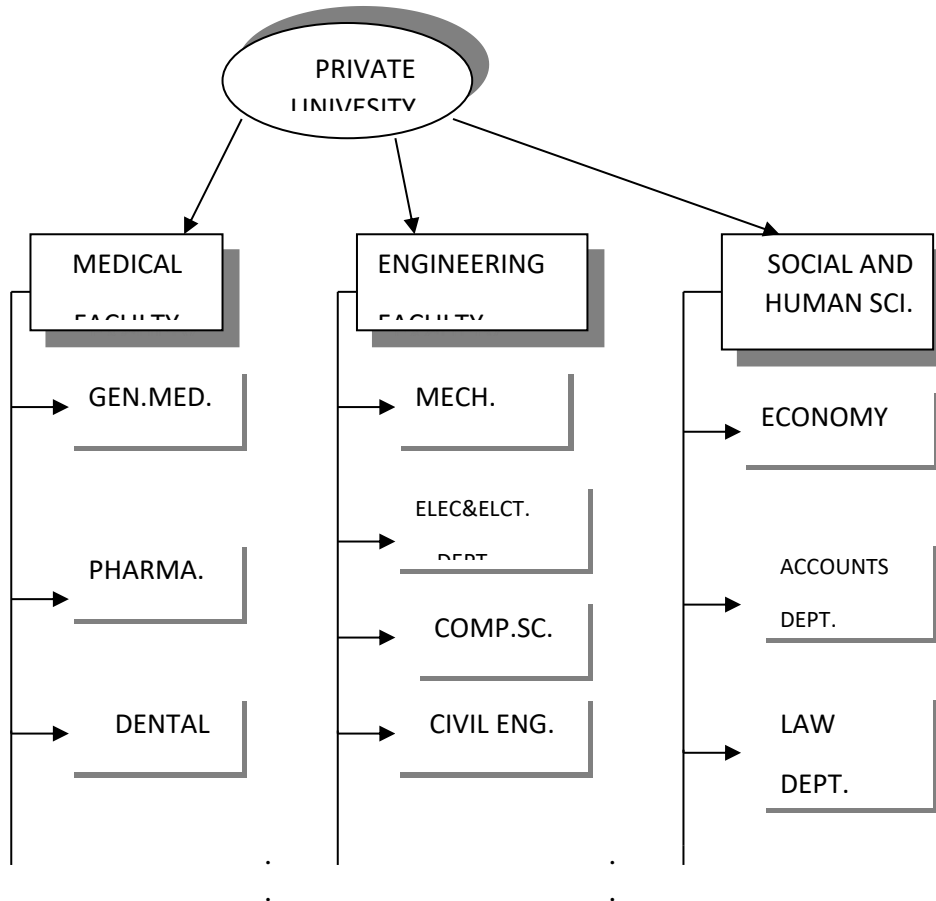


FIGURE 2

It worths to mention that almost all the private universities and their colleges are following the same harmony similar to the above,where as the real demand of the country in the field of Agriculture ,Petrochemical and Food Industries is neglected .

For each of the above mentioned scientific faculty or departments special funds for laboratories should be allocated, particularly for Engineering and Medical specialization, and should well be feedback regularly otherwise lack of equipment's will enforce the theoretical ratio to be much higher than the practical as a result this will have it's negative effect to the graduation level ,and might not further resist and get collapse(wreck).The case for Social Sciences is not critical, for this reason it can smoothly run.

2.2 Funding of Private Universities:

As mentioned above that funding of Private Universities is very important and should be well defined in the long term workplan of the university. As stated earlier that Technical and Medical Universities require special funding for purchasing and running Laboratories, and the incoming revenue from students fees will not be able to cover all the expenses for this I suggest the following:

- The funding of Technical and Medical Universities should be shared by well known industrial and commercial houses ,this will enable the private university to run without any financial obstacles.
- The Govt . should support the private universities by exempting taxes on the imported equipment's, books, buildings etc., free electricity and water supply.
- Research work and consultancy given to others.
- Fees collected from the students.
- The International Organizations aids or signed bilateral protocols with foreign universities.

2.3 Proposals and suggestions:

Since the private universities have recently appeared in Yemen so to further improve it's role in the society the following suggestions are given:

- Beside the concentration to 4-5 years (B.Sc.) graduation period it seems that 2-3 years higher diploma curricula should be given by the university, as it's demand is very much increasing in the market, and in this way the university can participate to fill the gap that exist in qualified technicians holding engineering principles.
- The private university should carry research work for industries, and give consultations to.
- There should be a central board appointed by the govt. to monitor the operation of all the private universities, and give a support where appropriate.
- Build relations with local and international universities, exchange lecturers, expertise, joint researches and projects.
- Strict criteria for admission and examinations will give a good reputation in long term period.
- A deep concern should be given to the quality of teaching rather than the quantity of number of enrolled students [4].
- Private universities should have branches in many governorates so as to facilitate the students get enrolled in the university, but a special attention should be given to the orientation of the governorate (e.g. Hadramawt, Marib, Shabwa need a Petrochemical Eng. Dept. some others need Agriculture Dept., unfortunately not a single university have an Agriculture, or Chemical Eng. Dept. where the whole country is considered as agricultural ,and the food industry is still mature.
- Should regularly every 4-5 years update their syllabus, and
Introduce computers and new methods in teaching.

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