HUMAN CAPITAL FORMATION : THE CASE OF QATAR*

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ABSTRACT

This paper is an exploratory study that investigates human capital (HC) formation in the state of Qatar. It is carried out with the intention to provide an insight into such a process among Qataris and to ascertain how government's investment in education has been an effective influence on the formation of HC in Qatar. The study provides new evidence about the actual process and indicators of indigenous HC over the last three decades and revealed that Qatari government has been investing well over that period and its educational indicators are accepted internationally. However, the research showed that even when backwardness occurs, this was mainly referring to the structures of the Qatari population and related labour force, quality of educational outcomes and expenditures boundaries. It is also appeared that the education system in Qatar has gained an increasingly high degree of independence from the economy since its establishment. However, the Qatari education system is not entirly to blame for such shortcomings. Indeed, a comprehensive, realistic and workable manpower development and overall development plan at national level would appear to be a crucial element of any HC strategy to enable the country to fully integrate its social and economic growth with the desired manpower.

* This paper is derived from larger study that investigates human capital formation in Qatar.

1. Introduction

Recently, indigenous human capital formation (HCF) through education has become a prominent public policy issue in Qatar. Several factors account for the increased attention being paid to this kind of capital formation of the population and labour force. First, Qatar is characterised by an abundance of oil and natural gas resources, which provide extensive opportunities for national economic development. However, as a 'limited-natural-resource' state, Qatar's economy relies on the sale of depletable natural resources rather than sustainable capital operations of the economy. Qatar has benefited from its natural resources' revenues in implementing different social and economic development projects. However, future development, particularly the booming industrial development, is increasingly significant and may require the full utilization of such resources.

Indeed, issues relating to HCF are at the forefront of current policy debates in Qatar. This importance arises because of the increasingly widespread view that the skills, knowledge and competencies of labour force are more important today than they have been in the past. A variety of inter-related factors, such as globalization, industrial development, increased international trade, changing characters of local labour market and greater economic development, account for the increased emphasis being given to education. Thus, many economists argued that achieving sustainable economic growth requires more emphasis on human resources besides natural resources (Lucas, 1988, Romer, 1990, Becker, 1993; Riddle, 1999). For these reasons the indicators of human capital (HC) are generally viewed as a reflection of any economic development in any country. Such indicators is the core of the current research as discussed below.

1.1 Significance of the Study

The greater emphasis on HCF has led to increased scrutiny of our education system. Virtually every part of this system, pre-primary, primary and secondary education, technical and vocational education and higher education, is currently the subject of public debate and development policy.

Yet despite the increased attention to education during the last decade, there has not been any Qatari research that investigated educational indicators. For this reason, we devote much of this paper to documenting some of the key trends and developments in HCF in Qatar by investigating such indicators.

Previous studies have either concentrated mainly on the development of education in Qatar (Al-Kubaisi, 1979; Al-Misnad, 1984; Al-Marzoki, 1996), or on human resources development (Nema, 1983; Al-Ghanem, 1994; Al-Ghanem, 1995). Such studies have focused solely on examining the education system or its effects on the issues of human resources in Qatar. Unlike these studies, the current research has tried to avoid such comprehensive surveys of the educational system and its relation to the development of human resources. Rather, this study had focused on investigating the educational indicators in Qatar as adopted by the international agencies as the World Bank (WB) and United Nations (UN.) However, the study will attempt to utilise the general findings of existing studies, based on the relevant literature on the issue of HCF through educational indicators in all its important variations. Although this is not a comparative study in that sense, the important variations between different systems in studying the same issue should be noted.

1.2 Objectives of the Study

The main objective of this research is to evaluate the process of HCF mainly through educational indicators in the state of Qatar. Specifically, the purpose of this research may be summarized by the following objectives:

1. To provide a systematic understanding of the Qatari HC over the last three decades via analyzing its educational indicators;
2. To evaluate the current situation of Qatari HC;
3. To suggest and set a strategy in which the future national HC can be formed in more developed terms according to the concluding findings within the current study;
4. To make a specific contribution on this issue.

1.3 Questions of the Study

The present study is aiming to answer three main questions:

1. What are the accumulated educational indicators that have taken place through the development of indigenous HC over the last three decades?
2. What is the current situation of Qatari HC?
3. To what extent such HC is accepted internationally when compared to other countries?

We begin in the next section by reviewing the literature related to the international educational indicators as adopted by the WB and UN. The second section presents the methodology used within the study, while the third section examines the experience of Qatari HCF over the past three decades in terms of its development and the current situation. Main focus will be on educational indicators as literacy rate, educational attainment, enrolment rates, expenditures on education, and university graduates with scientific degrees. Third section will discuss the findings of the study in relation to other internal factors as the structures of population and labour force.

2. Literature Review

At the outset, the concept of HC will be presented briefly in order to understand the indicators used within this study. In the last century, waves of investment in physical capital increased productivity and provided the infrastructure, which created entire new industries. During that period, neo-classical economics has recognised only two factors of production: labour and capital. Knowledge, productivity, education, and intellectual capital were all regarded as exogenous factors, that is, falling outside the system. In contrast, New Growth Theory, has proposed a change to the neo-classical model by seeing technology (and the knowledge on which it is based) as an intrinsic part of the economic system. Knowledge has become the third factor of production in leading economies (Romer, 1990). But sustained GDP growth doesn't just happen. In order to make investments in

technology, a country must have sufficient HC.

Generally, the economist's notion of HC refers to a particular set of acquired human capabilities. The formal concept of HC developed by a group of economists, e.g. Becker 1993, etc., is defined as "the aggregation of investments in activities, such as education, health, on-the-job training, and migration that enhance an individual's productivity in the labour market". However, recently, economists have begun to recognize that this definition is narrow, because it misses crucial aspects of HC and may serve as a poor guide for the development of public policy. For example, Laroche, Merette and Ruggeri (1999) have suggested that the traditional definition of HC should be expanded to include the potential to acquire HC, as well as its actual acquisition. They define HC as "the aggregation of the innate abilities and the knowledge and skills that individuals acquire and develop throughout their lifetime" (1999: 89).For the purpose of this study, the term 'human capital' in this study refers to the skills, talents and knowledge accumulated by people in the process of their education. Accordingly, human capital formation is the process of increasing the knowledge, the skills, and capacities of all of the people in a society. In economic terms, it could be described as the accumulation of HC and its effective investment in the development of an economy.

The application of the above concept of HC to economic growth and labour productivity are the same and are applied basically to the same problem: contribution of HC to economic growth. Generally, literature review indicates that the growth models view education as a central determinant of growth rates. However, the growth models that view HC as a simple input to production predict that growth rates will be positively associated with changes in the stock of education, whereas models in which HC has a role in the development of innovation and its diffusion throughout the economy, imply that it is the stock, rather than the flow, of HC that affects the overall productivity growth rate of the country.

There are currently few methods for measuring HC, the most common three methods in the literature are: first to use educational attainment as an approximation for HC; second to test people for their competences, and third to look at the earning differentials of people, that appear to be

associated with particular individual attributes, to estimate the market value of these attributes and hence the aggregate value of human capital (OECD, 1998: 10). However, for the purpose of the current study, focus will be on measuring the effects of educational attainment. This is simply because the second measure is often subject to significant uncertainty as to its validity, inconsistency and the fact that it is subject to data availability, while the third measure depends on how efficiently the labour market functions in the economy, both of which are lacking in the Qatari context.

Despite these difficulties in measuring HC, various indicators have been developed for different purposes. Our focus will be on the international indicators adopted by international agencies as UN and WB. The UN (1990) adopted a mixture of social and economic indicators called 'Human Development Indicators' (HDI)1. These indicators focused on education aspects such as adult population literacy rate and primary, secondary, and tertiary enrolment. On the other hand, the WB's (1999) database of 'competitiveness' indicators is a collection of different aspects to quickly assess economic performance and the environment for competitive business development in many countries. Given our mandate of HC, we report only the indicators for HC, which also focuses mostly on the utilization of formal learning achievements such as, besides the above indicators, university science graduates.

Our investigation includes first: monetary indicators mainly: government expenditure on education. Using expenditure as an indicator of HC levels provides an insight into the investment priorities of government. Indeed, looking at HC expenditure as a percentage of GNP may represent the investment priorities of society in general. In addition, the percentage of the government budget allocated to HC investment provides a sense of the government's investment priorities. However, a drawback to using expenditure indicators is that they tell us little about the actual output, or effectiveness of those investments. Thus, another proxy to assess HCF is the use of physical indicators of education such as literacy rate, gross enrolment rates GER, etc. The advantage of these indicators is that most of them are the end product of HC investment such as educational attainment and enrolment ratio.

3. Methodology of the Study

This paper is a part of large study that investigates HCF in the state of Qatar. It is of descriptive type of research, which is a form of conclusive research that focuses on an accurate description of the variables under investigation. Usually such studies are based on the nature of the research problem and its objectives always stated in clear and detailed statements which is different from other types of research. Since the aim of this research was to collect data at one point in time, descriptive method of research was used in the current study because of two main reasons. First, the study has clear and specific objectives and questions, as listed above, and secondly because other types of research as exploratory and experimental are not appropriate within the current study context since the formers' objectives and data requirements are unclear while the latter of cause and effect relationships is difficult when controlling or manipulating the variables under investigation in the current study. In order to gather information relating to the context of the present study and also to provide an assessment of the general background of the study, a wide range of related primary and secondary sources, both published and unpublished documents, were used intensively. The best known resource of primary data collection in the social sciences in general is the survey, which includes structured or semi-structured data collection methods, with the information being collected from a census of the population of interest or from a representative sample of that population. Official documents and publications along with relating literature review were used as a major source in supporting the background of this study. There was a review of the governments' documents and statistical annual reports as a main instrument in gathering general data.

4. Educational Indicators

Educational measurements include literacy rate, educational attainment, enrolment rates, university graduates with scientific degrees and expenditures on education. Each of which, is analysed and evaluated in the following discussion.

4.1. Literacy Rate and Educational Attainment of Population Over 15

One of the most useful indicators used to evaluate the current HC stock as it relates to education is literacy[2]. The primary goal of basic education in any country is to bring about literacy. Thus, governments invest in the literacy of their citizens as a means of increasing returns on social and economic developments, particularly in terms of a literate population and educated labour force. Indeed, it maybe stressed that adult literacy levels may. matter both economically and socially. It affects labour quality and flexibility, employment, training and skills development.

Table (1) shows the percentage of the population over 15 years in Qatar that cannot read or write, according to gender. It is apparent that while the illiteracy rate of the population aged 15 years and over is very high, ranging from 30% to 18% of each gender respectively, the illiteracy rate of the population aged 15 to 24 years is much less, ranging from 16% to 5%. It is also evident that the illiteracy rate decreased sharply for both groups of population, aged 15 years and over and 15-24 years, during the period 1980-2000. For example, the illiteracy rate of the population aged 15 years and over decreased from 30% in 1980 to 18.7% in 2000 in comparison to a similar decrease of illiteracy rate in the population aged 15-24 from 16.7% to 5% during the same period.

Table (1) Estimated Illiteracy Rate and Illiterate Population aged 15 years and over, and 15 to 24 years old

Year	Population aged 15 years and over						Population aged 15 to 24 years					
	Illiteracy rate (%)			Illiterate population (000)			Illiteracy rate (%)			Illiterate population (000)		
Gender	MF	M	F	MF	M	F	MF	M	F	MF	M	F
1980	30.2	28.2	34.6	46	30	16	16.7	17.7	15.1	7	4	2
1985	25.6	24.5	28.5	65	46	19	13.2	14.7	10.6	7	4	2
1990	22.9	22.6	23.9	80	59	21	9.7	11.7	7.0	5	3	1
1995	20.7	21.0	20.0	82	60	22	6.9	9.1	4.4	4	3	1
2000	18.7	19.5	16.8	82	60	22	5.1	7.3	2.9	4	3	1

UNESCO, 2000, *Statistical Year Book: II-48.*

Generally, the definition of literacy used in a country determines the level of illiteracy. For example, in Egypt, the adopted definition of literacy is based on the conventional premise that four grades of primary education are sufficient to attain a good level of literacy (Fergany, 1998: 17), which is the same adopted definition of literacy in Qatar. However, such a definition may not impart basic literacy skills, and thus quantitative achievement maybe exaggerated and the literacy eradication strategy may impart only the rudiments that may sooner or later be forgotten due to the absence of meaningful life-long learning educational opportunities. Thus, statistics based on such a definition may provide only a limit on the level of illiteracy. In a knowledge-based economy and lifelong learning context, an upper may be arrived at not only by assuming persons with less than intermediate education but also persons with no computer-based education are illiterate. Where the first category includes those who have had some schooling but, because of their poor quantity and quality of education, cannot be considered fully literate, the second category includes those who may have had a good education but because of poor computer skills and knowledge are considered only partially literate. The difference in the extent of illiteracy using the two definitions given above is problematic, and thus widening the definition of illiteracy to include either both or only the first category may increase the illiteracy rate not only in Qatar but in the world.

4.2. Mean Years of Schooling (MYS)

Mean Years of schooling (MYS) is a standard measure of the stock of HC. This indicator is usually defined for the adult population, 25 years of age and older. Table (2) shows the distribution of population aged 15 years and over by educational attainment in Qatar, since there is no such indicator for the population aged 25 and over. The improvement in educational attainment over the last two decades, according to UNESCO's data, has been contradicted. Though the available data are limited to the 1980s, it is clear that the proportion of the population with no schooling increased from 48.9% to 53.5% during 1980-86. However, this maybe interpreted in relation to the increase of the number of non-Qataris in Qatar during that period, where they constituted about 63.1% (Al-Mussa, 1985: 4).

On the other hand, the proportion of the adult population, aged 10 years and over, with no schooling decreased from 22.3% in 1986 to 15.3% in 1997 (Planning Council, 2000: 27). In practice, MYS may not represent the real figure of the population's educational attainment. This is mainly because officially it may include those who had dropped out of school and those who had finished their education at the time of the collection of the data. In turn, this may result in an underestimate of the current data.

Table (2) The Distribution of Population Aged 15 Years and Over by Educational Attainment

Year	Gender	Population aged +15	Highest level of education attainment %			
			No schooling	Primary	Secondary	Post-secondary
1981	MF	188.940	48.9	15.0	12.8	11.6
	F	61.732	49.1	15.9	13.6	9.7
1986	MF	211.485	53.5	9.8	13.3	13.3
	F	50.673	56.0	6.7	14.6	15.3

Sources: a) UNESCO, 2000, Statistical Yearbook: II-59,

4.3. Primary, Secondary, and Tertiary Enrolment

Since MYS may not present the real figures of the population's educational attainment, an individual enrolled in school at succeeding time points adds one year to the HC stock of the population for each school year successfully completed. Thus, the yearly enrolment rate is utilized to estimate incremental additions to the HC stock3.

It is worthwhile, before discussing Gross enrolment rate (GER) in Qatar, to stress that such rates will not include pre-school enrolment, since such enrolment was absent during recent decades. As we have seen above, while literacy rate and educational attainment levels provide an indication of the current stock of HC, enrolment ratios help provide an indication of the future stock, or current flow, of educated people. For example, if it was estimated, in any country, that children between 6 to 14 years of age who have never attended primary school is over 50%, this may suggest a serious hurdle to that country's social and economic development. This hurdle is

represented by the fact that the current stock of HC is low and that the future stock is not promising. However, Table (3) shows the enrolment ratios of three levels of education in Qatar.

It is clear that total GER rose modestly from 60% and 70% in 1980 for both males and females to 69% and 74% respectively in 1995, but it is more evident that a high proportion of this percentage was in the categories of secondary and tertiary education. For example, where males' secondary enrolment ratio increased from 65% in 1980 to 80% in 1995, females' secondary enrolment ratio increased from 68% to 79% over the same period. On the other hand, the male tertiary enrolment rate increased from 6% to 14% in 1980-1995 in comparison to an increase of more than double in the female's tertiary enrolment rate during the same period from 17% to 42%. Indeed, expanding access to education, especially for females4, is a prime objective in Qatar, which, as the above indicators show, has met with considerable success over the last two decades.

Table (3) Primary, Secondary, and Tertiary Gross Enrolment Ratios (GER) (1980-1995)

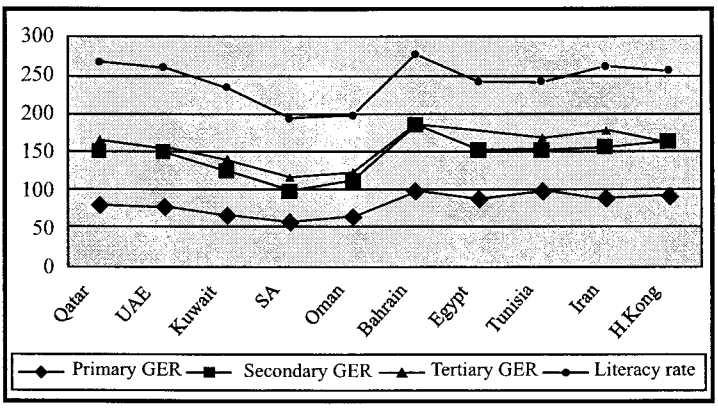
Year	Gender	Primary	Secondary	Tertiary	GER of 3 levels
1980	M	107	65	6	60
	F	102	68	17	70
1985	M	110	79	13	70
	F	107	86	34	83
1990	M	101	77	15	73
	F	94	85	43	81
1995	M	87	80	14	69
	F	86	79	42	74

Source: UNESCO, 2000, Statistical Year Book: II-329

From Figure (1), it is apparent that Qatar has good indicators in comparison not only to other Gulf countries, but also to other Middle Eastern countries, where Qatar seems to exceed them in the above indicated educational indicators, as well as some Asian countries such as Hong Kong. This may underline the striking development of education in Qatar represented by the "sudden expansion" (Mahdi, 1997: 21) in mass school

enrolment over the last thirty years. This is clear in the light of the above comparisons with other developing countries within the Middle East, which "made modest quantitative progress" (ibid) although educational development, in these countries, started much earlier than in Qatar.

Figure (1) Gross Enrolment Rate for Some Selected Countries (1995-97)



Source: UNDP, 2001, Human Development Report: Making New Technologies Work for Human Development, New York: Oxford University Press: 218-221

On the other hand, increased enrolment requires increased resources, in order to maintain quality, thus, pupil-teacher ratio is also investigated (Table 4). According to the available statistics, pupil/teacher ratio of both primary and secondary stages decreased from 13% and 10% to 11% and 8.4% respectively during 1998-2001, which appears to be highly satisfactory when compared with more advanced countries such as the UK, of 19% and 18% for primary and secondary education, and the US, of 15% in both primary and secondary, in 1999-2000.

Table (4) Pupil-Teacher Ratio

Year	Primary	Secondary
1998-99	13	10
2000-01	11	8.4

Source: www.unesco.org, Ministry of Education, 2001, Annual Report: 64

As indicated above, between 1980 and 1995, GER of three levels had increased (see Table 3), which reflects a substantial expansion of access to

education. It is apparent that such an increase coincided with the pupil-teacher ratio decrease during the same period as indicated above. For example, in 2001, the primary school pupil-teacher ratio is about 10, while it is about 11.7 and 8.4 in intermediate and secondary schools respectively, and 7.7, 11.7 and 10.7 in commercial, industrial and industrial technology schools respectively (MOE/op. cit, 64). A low pupil-teacher ratio implies that adequate resources had been allocated to upgrade the quality of education, where students attend classes in small groups. However, high enrolment ratios and an appropriate pupil-teacher ratio may not show the real situation of the HC stock, there can still be many obstacles to overcome. Indeed, dropouts and repetition rates may mark such efficient outcomes and result in an inefficient enrolment rate and wastage of resources. The 2000-2001(Table 5) statistics showed the following figures of dropout in the three stages of education, and indicate that such a rate amongst total dropouts is 13% amongst Qatari females in comparison to 37% amongst Qatari males, which represents the highest proportion of dropout in the three stages of education. The same results were also found amongst non-Qatari males, except at the secondary level.

Table (5) Dropouts in primary, preparatory, and secondary schools according to sex and nationality in 2000-2001*

Stage	Sex	Qatari	Non-Qatari
Primary	F	134 (1.1 %)	463 (6.6 %)
	M	488 (10.1 %)	558 (17.3%)
Preparatory	F	98 (1.6%)	152 (4.6%)
	M	301 (5.5%)	256 (7.9%)
Secondary**	F	277 (5.3%)	210 (7.4%)
	M	639 (17%)	267 (7%)
Total	F	509 (13%)	825 (21%)
	M	1,428 (37%)	1,083 (28%)

* Percentages are accounted amongst total dropouts, which were estimated at 3,845 in 2000-01.

**Including specialised schools such as commercial, industrial, and technical industrial schools. Source: MOE, (2001), Annual Statistical Report, P: 69

Considering the problems of population in Qatar, as discussed latter, especially the small size of the indigenous population, and the related shortage of qualified national manpower, these figures represent significant losses, reducing the already small pool of educated nationals and increasing education costs as indicated above. Thus it maybe argued that to reduce the number of dropouts a higher quality of education should be provided. It is clear that dropout rates of both sexes and nationalities are quite high, constituting 5.4% of total number of students enrolled in 2000-01, which in turn may affect the education efficacy.

Generally, such a problem maybe for a variety of reasons such as joining the labour market, enrolling in another educational institution, especially private education which has flourished in recent years, some social factors such as girls getting married, and educational factors such as repetition. In the Qatari context, students can dropout for other reasons as the increased interest of young Qatari males, especially those with educational difficulties, in joining the labour force whenever employment opportunities are available, especially in the armed forces.

4.4. Graduates with Science Degrees

Such an indicator may reflect the quality of the current HC in terms of accumulated skills and qualifications, which should provide a good base for the booming industrial development of the country. Total number of graduates of the University of Qatar during the period 1976-77/2000-01 reached 21,789. Qatari graduates reached 16,148, about 74%, of total graduates (University of Qatar, 2001: 47), representing the majority among the university graduates. As the only government higher education institution Qatar University has been successful in attracting nationals who are interested in completing their higher education in Qatar.

From the bellow statistics, it is clear that the total number of science graduates represents 23.2% of the total number of university graduates during 1976-2001. In addition, the majority of sciences graduates are Qatari, representing about 61% of the total science graduates with 40% are Qatari females in comparison to 20% of Qatari males, 18% of non-Qatari males,

and 22% of non-Qatari females. In comparison to other countries' tertiary students enrolled in scientific fields such as the percentage of the total number studying science, mathematics and engineering, Qatar maybe lagging behind. For example, in 1994-97 the percentage of students enrolled in such fields accounted for 23% in Kuwait and Japan, 29% in the UK, and 39% in Tanzania (UNDP, 2001: 174-76), whereas it accounted for only 15.4% during the same period in Qatar (University of Qatar, 2001:23, 125, 149).

Table (6) Total Number of Graduates of Qatar University Obtaining Degrees in Scientific Specialisations During 1976-77-2000-01 According to Gender and Nnationality

Nationality & Gender	Qatari			Non-Qatari			Total		
	M	F	T	M	F	T	M	F	T
Specialisations									
Mathematics	13	232	245	81	225	306	94	457	551
Physics	9	213	222	33	77	110	42	290	382
Science	20	65	85	69	10	79	89	75	164
Chemistry	102	372	474	220	310	530	322	682	1,004
Biology	88	323	411	57	114	171	145	437	582
Geology	137	45	182	164	32	196	301	77	378
Zoology	45	272	317	25	158	183	70	430	500
Botany& Microbiology	53	232	285	5	30	35	58	262	320
Marine Science	87	0	87	46	0	46	133	0	133
Biomedical science	0	89	89	0	64	64	0	153	153
Computer Science	48	158	206	60	64	124	108	222	330
Nursing	0	44	44	0	25	25	0	69	69
Mechanical Engineering	120	0	120	30	0	30	150	0	150
Electrical Engineering	87	0	87	44	0	44	133	0	133
Civil Engineering	13	0	130	46	0	46	176	0	176
Chemical Engineering	92	0	92	10	0	10	102	0	102
Total	1,031	2,045	3,076	890	1,109	1,999	1,921	3,154	5,075

Source: University of Qatar, 2001, Statistical Year Book Report, pp; 102, 129, 153.

One may, therefore argue that if the stock of Qatari graduates in these fields over the last two decades, accounted for only 23.2% of total

university graduates, then it becomes significant to stress the inability of such an educational institution to provide the economic sectors with the scientific qualifications they require. Thirty years ago, such findings may not have had a crucial effect on the economy and the labour market, because higher education in Qatar was a recent development, there was high dependence on non-nationals in operating and managing different sectors of the economy, and the fact that in Qatar the economy was transforming from a traditional to a more developed economy, and thus the focus was mainly on the quantity of labour and capital. However such findings in the current context of a knowledge-based economy could be critical not only in terms of higher education outcomes, which depend on secondary and university education outcomes, but more significantly in terms of the structure of the labour market and the whole economy. Reliance on non-nationals would be expected to continue with the skills of nationals continuing to diverge from the labour market and the demands.

4.5. Expenditure on Education

What determines a nation's commitment to education? We consider this to be expenditure on education, even though it may not reflect the quality of education. Generally, this yardstick should reflect, to some extent, the government's commitment to education. The international standard indicator used in terms of expenditure on HC is the proportion of the gross product allocated to education, which may reflect the relative important given to education as expressed by the allocation of total resources available. Expenditure on education as a share of GNP in Qatar declined from its peak level of 4.7% in 1985-87 to 3.4% in 1995-97. In contrast, the share of GNP spent on education in other Gulf countries has risen over the same period as in Oman and Saudi Arabia5, though Qatar GNP is relatively high. In addition, other advanced and to some extent developing countries also witnessed an increase in their expenditure on education as a percentage of their total GNP as in the UK, Brazil, Jordan and Gambia (Table 7). However, some factors should be taken into account when such a comparison is made, as geographical considerations for instance

Additionally, although the fraction of total national income devoted to education is a useful summary measure, this proportion may vary because of

differences in the quantity and the quality of education being provided across different countries. For example, the quantity of education depends to an important extent on the age structure of the population, especially the fraction of the population aged 5-25, which was estimated at 30.5% in Qatar according to the 1997 census. On the other hand, the quality of education depends on the academic and vocational 'stream' of education provided. Thus, it is important to bear in mind the institutional and cultural differences in educational systems when interpreting differences between countries. Thus, the inadequacy of this measure maybe due, as stressed above, to the international differences between countries in varying positions on the development spectrum such as size of GDP, population size and age structure as will be explained more later.

Table (7) International Comparison of Public Expenditures on Education

Country	Public Expenditure on Education as % of GNP	
	985-87	1995-97
1. GCC Countries		
Qatar	4.7	3.4
Kuwait	4.8	5.0
Bahrain	5.2	4.4
Oman	4.1	4.5
UAE	2.1	1.7
SA	7.4	7.5
2. High Human Development Countries		
USA	5.0	5.4
UK	4.8	5.3
Hong Kong	2.5	2.9
3. Medium Human Development Countries		
Malaysia	6.9	4.9
Jordan	6.8	7.9
3. Low Human Development Countries		
Pakistan	3.1	2.7

Source: UNDP, 2001, Human Development Report: Making New Technologies Work for Human Development, New York, Oxford University Press: 170-72, 218-221

On the other hand, it is worth looking at the fraction of total share of government expenditure devoted to education as indicated in Table (8). It is clear that public expenditure on education as a percentage of government expenditure decreased from its peak of 11% in 1985 to 9% in 2001, but this may also be interpreted as due to the population structure as well as to fluctuations in the oil price.

Table (8) Public Expenditure on Education as % of Total Government Expenditure

Year	%
1982	7
1985	11
1990	10
1995	10
2000	8
2001	9

Source: Ministry of Public Finance, Budget Department, 2002

It is noted that Qatari MOE budget was not based on projects, in accordance with the country's budget system, and thus may result in some confusion. For example, an overlap between direct and indirect expenditure on education was included as international aid for some countries, annual subscription in organizations of ALESCO, UNESCO, ESCWA, etc., and even scholarships, which makes it more difficult to determine direct and indirect expenditure on education. In addition, the MOE does not have full control over its budget but has to refer to the Ministry of Public Finance or any allocations and transfers within their budget, which affects the qualitative expenditure such as that on research and development.

In the final analysis, what matters is how much is allocated per student for education. This indicator maybe considered a better basis in the current international context of a knowledge-based economy and life-long learning since it may provide some indication of the quality of education in any country. Table (9) shows the development of average cost per student in Qatar during 1980-2001, and indicates a reduction of cost per student,

which indeed coincides with the decreased total expenditure on education as indicated above. By this criterion, the most significant conclusion is that per capita/student expenditure on education has been reasonable though the fluctuation of oil prices in 1980s and 1990s, affected the reduction of cost per student to nearly QR 21,578 in 2001.

Table (9) Average Cost Per Student 1980-2001 in QR*

1980	26,251
1985	21.254
1990	15.001
1995	13.932
2001	21,578

* QR is equal to US$ 3.65. Source: Ministry of Education, 2001, Annual Report: 394.

Nevertheless, according to the above argument of overlapping direct and indirect expenditure on education, it is also noted that such a situation resulted in the exaggeration of cost per student, as shown above, which may give the impression that such indicator does not reflect the real cost, if the direct cost of education is to be taken into account. For example, current expenditure includes different direct costs, such as those related to curricula and activities, and indirect costs, such as those related to scholarships, contributions to the UN and Arab League and its related bodies, external donations and assistance. The latter was estimated to constitute 35% within the total current expenditure and about 9% of the total budget in the 2000-01 (MOE, 2001: 138-9).

5. Discussion

As our examination of recent developments had documented, Qatari HC is not lagging far behind other countries as the above indicators suggest. However, two contrasting views are held about this development. One is that there has taken place, as a consequence of globalization of production

and hence technological change associated with information accelerated era, a noted increase in demand for highly skilled workers and a decline in demand for the less skilled. The result has been growing employment opportunities for those with high levels of education and declining opportunities for the less educated. The alternative view is that rising educational attainment is principally due to poor labour market. Qatar experienced, during the last few decades, uncompetitive and distorted labour market which was the result of different factors. First of all, the demographic characteristics of the population according to the last census of 1997 imply an imbalance in its structure. First, there was higher rate of population growth in the male category, representing about 65.6% of the total population, while the female population represents 34.4% of the total population (Planning Council, 1998). As a result, the age distribution of the population between the two sexes is unequal, where the total male population of the age group (25-29) is 41,288, while the female reached only 14,119 in 1997 (Table 10).

Furthermore, the percentage of young males to the total male population is higher than that of young females to the total female population as more presented in the aging groups (25-29), (30-34), and (35-39). This unbalanced structure and the abnormally high male/female ratio is due to the male foreign labour force as the state requires male labour to participate in the development of the country. The national population has been too small to provide the manpower required for the economic development projects initiated by the state. In other words, Qatar's population and the size of its national workforce have been insufficient to meet the total manpower requirements of the Qatari economy, which led to the increased demand for expatriates.

Table (10) Population by age group and sex, 1986, 1997, 2001

Sex/year	1986		1997		2001	
Age group	Female	Male	Female	Male	Female	Male
0-4	20,189	20,965	23,841	24,997	24,134	26,932
5-9	16,870	17,774	23,277	24,890	27,208	27,940
10-14	12,783	13,871	19,891	20,809	25,339	26,059
15-19	10,295	12,33	15,131	16,832	19,441	19,656
20-24	10,448	22,121	12,788	25,739	15,589	29,951
25-29	11,530	41,664	14,120	41,288	15,551	46,586
30-34	13,248	41,004	19,502	46,302	22,633	47,646
35-39	9,826	30,158	19,098	47,484	20,126	43,460
40-4	5,845	19,236	12,937	39,022	16,068	42,589
45-49	3,712	12,742	7,430	24,370	10,615	32,578
50-54	2,458	7,692	4,301	14,055	5,726	19,332
55-59	1,388	3,84	2,694	7,564	3,153	10,219
60-64	1,025	2,177	1,774	4,202	2,134	4,801
65 +	1,601	2,262	2,780	4,905	2,902	5,415

Source, State of Qatar, Central Statistical Organisation, General Population & Housing Census, 1986, 1997, Planning Council, Labour Force Sample Survey, April (2001)

The above imbalance of population structure in Qatar in terms of size, nationality, sex, and age groups, together affects the structure of the labour force in terms of similar characteristics. The 2001 statistics of the labour force engaged in the government, public enterprises, mixed, and banking and investing sectors. Statistics reveals that the national labour force participation rate reached 45.6%, in comparison to 54.4% of non-nationals. Specifically, The Qatari nationals represent 62.4% in comparison to 37.6% of non-nationals in the government sector, 29% in comparison to 71% in government enterprise, 19% in comparison to 81% in the mixed sector, and 14.3% in comparison to 85% in the banking and investment sector (Planning Council, 2001: 2). It is evident that job opportunities for Qataris in government departments and their flourishing financial and social situation, had increased their participation from 15.5% to 62.4% during the

period (1980-2001), in comparison to the noted sharp decline in the non-nationals' participation from 84.5% to 36.8% for the same period.

On the other hand, the population age structure influenced the labour force structure in terms of participation rate. Apart from the increased demand for social services, another important socioeconomic implication of the wide base of the age pyramid of Qatar's population is represented in its responsibility for low rates of labour force participation. For example, the crude economically active rate was only 17% in 1970 among the indigenous population in comparison to 83% among the non-national population, which increased to 53.7% in 1997, which in turn affects female participation. Out of 34.4% of the total female population in Qatar in 1997, only 27% are engaged in the labour force, and only 18% are Qatari. Statistics of the government sector, where the majority of national females are concentrated, show that they accounted for only 29% of total females in 2001 (ibid.).

The above indicators of population and labour force structural imbalances reflect the fact that Qatar in general and the government sector in particular not only suffer from national manpower shortages, but more significantly manpower over-employment and under utilization. This under utilization is seen in the low participation rates of nationals, and particularly females, which is due to the relatively high percentage of unproductive groups of the population, whether under the age of 15 or over 60, which together constituted over 28% of the total population in 1997. The Qatari government has indicated an awareness of such dual labour markets and male/female dichotomy problems especially in terms of increasing the participation of nationals in the labour force. The government is currently attempting to find appropriate solutions, not only by restricting the non-national labour force6, but also through educating and training the nationals.

The question arises as to what extent such investment in education has been an effective influence on the formation of HC in Qatar. Indeed, the above investigated indicators suggest that Qatar's substantial investment in education is reflected in a good literacy (103% in 1999), relatively low illiteracy rate among population aged 15-25 (5.1% in 2001), and reasonable GER of secondary and tertiary (70% and 41% respectively during 1995-97),

which, internationally, maybe considered reasonable and not lag far behind some developed industrial countries. But why such 'good' educational indicators are not fully utilized?

Indeed, the answer may be found in different aspects as the above discussion suggest. Apart from the imbalance of population and hence labour force structures, the previous analysis of educational outcomes' quality rather than quantity aspects, seems to be far from the real demands and requirements of the Qatari economy and desirable development. It is, therefore, the government's responsibility to undertake the necessary reforms to improve the quality outcomes of the current education system. The absence of such reforms may not only hinder the optimal utilization and orientation of above indicators, but also the preparation and supply of Qatari nationals for the local labour market, which both are representing the current situation.

Second, modest expenditure on education that results in moderate quality may seem to be a higher price to pay than greater expenditure of better quality. This is because medium or low-quality educational outcomes may cost the country much more than producing high-quality educational outcomes, since the former are not fully utilized in the economy and may need further investment such as continuous training. In order to overcome such an imbalance between expenditure and outcome, one has to look first at the different factors that may affect the efficacy of such expenditure. As discussed above, the education budget has to be based on project and programme criteria in order to identify and distinguish between direct and indirect expenditure, which currently overlap. The budget preparation criterion is, therefore, the basic key in ensuring the optimal allocation of resources, along with the Ministry's financial autonomy, either in allocating its resources or controlling its finances independently from the direct control of the Ministry of Public Finance. In addition, reallocation of resources amongst educational activities and practices is also important, as with the case of per student cost which includes different indirect expenditure as discussed above. Such a proposal would increase the ability of the MOE to fully control its budget but also to face different challenges during the academic year and spend more on research and development.

6. Conclusion

The study has provides new evidence about the actual indicators of indigenous HC over the last three decades. It was revealed that Qatari government has been investing well over that period and its educational indicators are accepted internationally and not lagging far behind other developed countries. However, the research showed that even when backwardness occurs, this was mainly referring to the structures of the Qatari population and related labour force, quality of educational outcomes and expenditures boundaries. It is also appeared that the education system in Qatar has gained an increasingly high degree of independence from the economy since its establishment, which as a result, generated relatively 'modest' levels of educational achievement in literature and theoretical fields. The Qatari education system was orientated towards developing the literacy skills of the population, and hence the labour force in general.

Reforming the education system and enhancing the level of achievement in general education while introducing more sophisticated forms of TVE, seems to be profitable solution both in the short and long-term. In addition, such an option should also include the building of institutional arrangements which involve both the education system and the employers within the economy and which is based on the integration of theoretical and practical skills, to ensure the availability of intermediate and high level skills for the employers. By proposing this model, the state would be able to develop a national HC strategy, which incorporates mechanisms to ensure that the outflow from the education system matches the requirements of the economy at each stage of its development.

On the other hand, the Qatari education system is not entirely to blame for such shortcomings. Indeed, given that the economic strategy of Qatar is highly orientated towards diversification away from the hydrocarbon extraction sector, since the country is not well endowed with many other natural resources, and given the country's relatively small population and hence workforce size, comprehensive, realistic and workable manpower development would appear to be a crucial element of any strategy. Moreover, an overall development plan at national level also suggests itself as a core strategy to enable the country to fully integrate its social and

economic growth with the desired manpower, as well as undertaking appropriate reforms in the education system, and hence improving the quality of educational outcomes and thus the workforce.

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Feas Notes :

1- The purpose of these indicators is to determine how the process of economic growth 'translates or fails to translate into human development in various societies', where human development is defined, as seen above, as 'the entire spectrum through which human capabilities are expanded and utilized' (UNDP, 1990: iii).

2- Literacy generally defined to include reading, writing and mathematical skills.

3- School enrolment rates at the primary, secondary, and tertiary levels, as well as data on male and female primary and secondary enrolment rates, and teacher-pupil ratios, are drawn from World Development Indicators (WDIs) and UNESCO database, since such data is not available from Qatari sources.

4- Increased females' GER in Qatar coincides with previous findings in secondary and higher education, where females, both Qatari and non-Qatari, constitute the majority of both education outcomes.

5- It is true that Oman and Saudi Arabia spend a higher proportion of their budget on education, 4.5% and 7.5% respectively, in 1995-7, but their enrolment rates are considerably lower than those of Qatar, 58% and 57% in both countries respectively in 1996-7 (UNESCO, 2001: 11-327-11-8).

6- The Labour Law of 1963, article 7, states that when applying for a visa, a prospective worker must possess skills beneficial to Qatar and have a Qatari national as a sponsor. Moreover, Article 1 of Law No. 20 restricts expatriates from participating in more than 49% ownership of an enterprise. In addition, a foreign worker is not allowed to change jobs if discharged by a sponsor, but is required to find another sponsor or leave the country immediately (Ministry of Civil Services, Public Relations Department).

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