

Postgraduate Studies, Research and Community Service in Higher Education Institutions in the Sultanate of Oman: A Systemic Analysis

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Abstract: The Ministry of Higher Education, and Sultan Qaboos University and all other governmental and private higher education institutions in Oman have paid a special attention to the issues of quality and relevancy of their programs to the national comprehensive development plan. These institutions need to strike a balance in executing their functions in research, teaching and community service. The purpose of this study, thus, is to systemically analyze the current status of higher education institutions in reference to the above mentioned domains. The sample consisted of 29 higher education institutions and 23 ministries and semi-governmental organizations that benefit from the output and services of higher education institutions. Two questionnaires were used for data collection. The results revealed that despite the efforts exerted to enable these institutions to cope with local, regional and international changes, they are still suffering from shortcomings in the three domains targeted by the study. Accordingly, a number of recommendations were suggested to be considered in the Omani national strategy for higher education in order to accommodate the demands and requirements of the national development plan.

Key words: Research, Post Graduate Studies, Community Service, Systemic analysis, Sultanate of Oman, Higher Education.

الدراسات العليا والبحث العلمي وخدمة المجتمع في مؤسسات التعليم العالي بسلطنة عمان: دراسة تحليلية

المخلص: أولت وزارة التعليم العالي، وجامعة السلطان قابوس وسائر مؤسسات التعليم العالي الحكومية والخاصة في سلطنة عمان اهتماما خاصا بالمسائل المتعلقة بنوعية برامج الدراسات العليا والبحث العلمي لتحقيق أهداف الخطة الوطنية للتنمية الشاملة. وعلى الرغم من الجهود المبذولة من قبل هذه المؤسسات إلا أنها بحاجة إلى تحقيق توازن في تنفيذ مهامها في البحث والتدريس وخدمة المجتمع. وعليه فإن الهدف من هذه الدراسة هو تحليل الوضع الحالي لمؤسسات التعليم العالي في المجالات المشار إليها أعلاه. وقد تكونت عينة الدراسة من ٢٩ مؤسسة من مؤسسات التعليم العالي، و ٢٣ من الوزارات والمنظمات شبه الحكومية التي تستفيد من النواتج والخدمات المقدمة من مؤسسات التعليم العالي. وتم استخدام استبيانين لجمع البيانات المتعلقة بأسئلة الدراسة. وقد كشفت النتائج أنه رغم الجهود التي بذلت لتمكين هذه المؤسسات للتعامل مع التغييرات المحلية والإقليمية والدولية، إلا أنها ما زالت تعاني من قصور في المجالات الثلاثة المستهدفة بالدراسة. وفي ضوء ذلك، تم اقتراح عدد من التوصيات المرتبطة بالإستراتيجية الوطنية العمانية للتعليم العالي من أجل تلبية مطالب واحتياجات خطة التنمية الوطنية.

الكلمات المفتاحية: البحث والتحليل المنظومي، الدراسات العليا، الخدمة المجتمعية، "سلطنة عمان"، والتعليم العالي.

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Introduction

The contemporary world witnessed a number of phenomenon and challenges at the end of the last century and at the beginning of the third millennium such as globalization, privatization, market economy, free trade, multinational companies, huge economic conglomerations, computer and communications information technology revolution, bio-technology revolution, the knowledge-based economy, the third management revolution, as well as the revolutions of quality services and products, distinction and creativity.

These challenges have made it incumbent upon the institutions of higher education to respond to such challenges through comprehensive revisions and radical changes in policies, strategies, priorities and finance systems adopted by those institutions pertinent to research and community service in these institutions. These challenges require evidence and data that can be provided through periodic objective assessment, and review of the current state of affairs at the institutions of higher education and appraising it with a view to mapping out a strategy that could meet the aspirations of the individuals as well as the community at large, and requirements of developments therein. Accordingly, the formulation of a strategy for higher education requires an investigation of the current status as springboard to enhance the quality and efficiency of higher education to cater for the requirements of developments in the Sultanate of Oman.

Higher education and scholarly research hold a key role in promoting comprehensive development and rapid transformation necessary for all nations facing the power of globalization. There is a dire need in the Arab world for a complete re-examination of higher education, research policy and planning in order to work towards improving its quality to meet modern society's needs. Al-Rashdan, (2009). States that scholarly research serves as a means through which natural treasures, whether economic, social or cultural, can be discovered and utilized. Research also plays a prominent role in raising society to a higher level by contributing to forging a problem-solving mentality and opening previously closed doors. Researchers must not limit their work to the purely theoretical, but need to also find practical applications when possible.

Higher education has received increasing attention in the Omani society since the advent of renaissance (1970s) as a strategic resource which supplies the society with human cadres to meet the development needs in all aspects of life. The Ministry of Higher Education (MoHE), and Sultan Qaboos University (SQU) and all other governmental and private higher education institutions in Oman have paid a special attention to the issues of quality and relevancy of their programs to the national comprehensive development plan (Ministry of Higher Education, 1998, Central Bank of Oman, 1998, The Ministry of Education and Youth 1989). This requires that more emphasis should be put on excellence in education through the development of educational plans and curricula and performance monitoring and adoption of the accreditation concept as a criterion reference for all higher education programs, in addition to the provision of an environment conducive to continuing education that will provide the students with fast and easy access to information resources, and life-long learning.

It is also apparent that scientific research is becoming an essential part of the activities of faculty members and postgraduate students in higher education institutions and thus institutions need to strike a balance to execute their functions in research, teaching and community service. Institutions, in their pursuit to serve the development plans, are expected to be flexible in introducing programs for new specializations that are needed by the country. This requires continuous review and assessment of the latest scientific developments and to identify areas that need to be underscored in the national comprehensive development plans. In their review of the educational research priorities in the Sultanate of Oman, Issan, Atari and Al Harithi (2005) noted that the society needs educational research even though it may not be aware of its importance or may not ask for it. The results of their study revealed that the participants valued the role of educational research but did not invest a lot of time, money and efforts in it.

This study therefore, focuses on the existing higher education institutions in reference to the programs they offer for postgraduate studies, and their role in scientific research and development, in addition to their role in serving the community and providing the expertise and scientific consultations in all aspects of the national development. It is anticipated that this study would help higher education institutions to review and improve their programs and services to accommodate for the societal needs and developments. The purpose of the study, thus, is to answer the following research questions:

- 1- What is the current status of postgraduate programs in Omani higher education institutions; and consequently their roles in developing the national human resources?
- 2- What is the current status of research in higher education institutions as related to its role in developing the national human resources, and its contribution nationally and internationally?
- 3- What is the role of Omani higher education institutions in developing the Omani society and in raising cultural and social awareness ?
- 4- To what extent are services provided by these institutions effective and efficient?

Historical Background of Higher Education in the Sultanate of Oman

Oman's experience with higher education started late compared to other Gulf and Arab states. Egypt was the first Arab country to establish a university in 1914, followed by the Syrian university in 1923, while in the Gulf countries the first university was the University of King Saud, set up in 1958, followed by the University of Kuwait in 1966, Sultan Qaboos University was founded in 1985. Studies indicate that 80% of the Arab universities were no older than 35 year, with the 1970s and 1980s witnessing the establishment of the highest number of universities (Al Qassim 1998).

Omani documents define Higher Education as "any form of post-secondary education whether a university or other teaching institutions involved in teaching, training or research, and which has been recognized by the competent authorities in the Sultanate of Oman" (Ministry of Higher Education, 1998, 1999). Higher education in Oman has witnessed a remarkable development since the 1970s, as demonstrated

by the establishment of many institutions, colleges, public and private universities. Examples of the institutions include: The Institute of Health Sciences, the Oman Banking Institute in 1983, the Technical Industrial College in 1984, the Police Force Academy in 1985, Sultan Qaboos University in 1985, followed by the Sharia Law Institute in 1986 and the establishment of six Education Colleges for Teachers, in 1995, the Sultan Qaboos Islamic Institutes in 1988, and the establishment of the vocational training authority in 1991, and a number of other private colleges and universities that have been established recently (Ministry of Social Affairs and Labor, 1991; Ministry of Legal Affairs, 1995; Secretariat General of Legislation Department, 1987).

Obviously, Higher Education in Oman has not started with academic universities due to the crucial need for technical cadres and semi-skilled workers rather than skilled and highly qualified ones during the first decade of the Renaissance era which began in 1970.

The future vision for human resources development in Oman, as indicated in the fifth development plan (1996-2000), is to form Omani human resources with abilities and skills capable of keeping pace with the technological development, and to manage the changes that take place therein with high efficiency to preserve the values and traditions of the society. Based on this vision, the fifth development plan (1996-2000) decreed the following regarding higher education (Ministry of Development, 1996, 2000, The Development Council, 1991):

- 1- Developing governmental and private higher education, raising enrollment percentage from 9% in 1995 to 40% in 2020, raising enrollment percentage for females up to 40% to achieve gender equality in higher education opportunities.
- 2- Opening new ways for technical education and vocational training to meet the Omani labor market requirements through increasing the number of enrollment among secondary school students from 4.5% in 1995 to about 50% in 2020.
- 3- Giving the private sector a fundamental role in the academic and technical education and vocational training and to guarantee its participation in laying down policies related to its development to ensure the flow of trained personnel in line with the requirements of the private sector.
- 4- Improving the labor market through increasing the Omani manpower from about 17% in 1995 to 50% in 2020, and increasing the participation rate of Omani women from 6% in 1995 to 12% in 2020. Also, raising omanization rate in the public sector from 67% in 1995 to 95% in 2020, and from 15% in 1995 to 75% in 2020 in the private sector.

A review of the objectives of higher education in Oman at the university or non-university level indicates the importance of linking the output of education with the development process in Oman, because the development of the society is the ultimate goal of education and its strategy. A further review of development plans in the Sultanate from the seventies up to date, reveals the concern shown by the developers in Oman to link education with the labor market requirements. However, the characteristics of the Omani national labor force do not match the requirements

of the technology-based economic development, namely (The Ministry of Development, 2000).

- 1- The bulk of the Omani labor force is classified in the lower class of unskilled labors i.e. 76% of the total manpower in the Sultanate.
- 2- Low supply of national manpower due to the lack of economically active bodies on one hand and the inadequacy of the required skills on the other.
- 3- The limited role of the Omani women in the labor market.

Methodology

This study is based primarily on a systemic-descriptive research methodology that uses a systems approach in analyzing and synthesize data related to the inputs, processes, and outputs of higher education systems as viewed by different stake holders.

Study Instruments:

Two questionnaires were used for the data collection:

- 1- The purpose of the first questionnaire was to assess the status of postgraduate programs, research and community service in higher education institutions (private and governmental) from the perspective of the institutions themselves.
- 2- The second questionnaire was used to assess the role of postgraduate program, research and community service in higher education institutions from the perspective of government and semi-government bodies benefiting from the outputs of higher education institutions.

The two questionnaires were validated by experts in the field in light of the provided theoretical framework, and the operational definitions of relevant terms. They were revised accordingly based on the experts' comments and recommendations.

Population

The population consisted of two groups:

- 1- All public and private higher education institutions that could have a role in postgraduates' studies, research and community service in Oman, which amounts to 43 institutions.
- 2- All the ministries and semi-governmental organizations that benefit from the outputs and services of higher education institutions, a total of 32 organizations.

Sample

The sample consisted of 29 higher education institutions (67%), and 23 ministries and semi-governmental organizations (72%). The sample included only the institutes and colleges that run post-secondary programs for a term of not less than two years, and the ministries and semi-governmental organizations which are expected to benefit from the outputs and services of higher education institutions.

Procedure

A number of internal documents and publications at Sultan Qaboos University related to post graduate programs, research and community service were reviewed and analyzed. These documents were issued or published by the Office of the Deputy Vice Chancellor for Postgraduate Studies and Research, Deanship of Admissions and Registration and the Centre for Community Service and Continuing Education. Additional data were collected through questionnaires from the sample of the study. The study focused on three major dimensions: postgraduate programs, research and community service. In the analysis each dimension is sub-divided into three sections: Sultan Qaboos University, other higher education institutions and the organizations benefiting from the aforementioned services.

Results and Discussion

1- Postgraduate Studies

1-1 Sultan Qaboos University

Sultan Qaboos University pays a great attention to postgraduate studies and scientific research programs in order to meet the community's needs for different areas of specializations. The university offers a host of master degree programs in different fields and had recently launched a PhD program in 2002 for Carbonate Studies at the College of Science. The university also issued the Postgraduate Academic Regulations and applied tuition fees on the programs. A teaching and research scholarship system was also introduced to attract outstanding students.

Academic Programs

The Master degree programs in the university were launched in 1992. The first intake was composed of 36 students who were enrolled in the College of Arts and Social Sciences and the College of Education of which 31 had completed their studies. Currently, the university offers 51 Master degree programs, and 24 Doctoral programs. Table 1 below summarizes these programs.

Perhaps, the adoption of new programs may require that the colleges focus more on scientific and applied studies related to the development requirements and the continuity of the programs is assured in accordance with the needs of the labor market.

Table (1): The Masters and Ph.D. programs at SQU.

Programs	Colleges							
	Science	Engineering	Agriculture & Marine Science	Medicine & Health Sciences	Commerce & Economics	Education	Arts & Social Sciences	Law
Ph.D.	7	6	4	7				
Masters	9	7	8	8	1	8	6	4

Source: SQU Statistical Year Book 2009

The number of master degree holders who were graduated since 1996 until the Fall semester of 2009 amounts to 1922 students. In, addition 3 students graduated from the Ph.D. programs.

In 1999 the College of Education launched two post graduate diplomas in education and school administration followed by the diploma of educational supervision in 2000, and learning difficulties in 2006, and the diploma of career guidance in 2008. These diploma programs serve the Ministry of Education's needs, and have objectives directly related to the education process such as qualifying graduates from colleges and universities other than the colleges of education, developing the administrative and professional competencies of school administrators and school councilors. Table (2) shows the number of graduates since the commencement of the programs as well as the current registered students.

Table (2): Diploma Graduates from 1999-2009 and the Registered Students

Diploma	Graduates										
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
General Diploma in Education	52	81	185	211	231	260	289	270	346	21	1
School administration Diploma	59	79	84	90	42	40	42	40	44	51	42
Educational Supervision	-	39	49	58	20	33	26	20	23	22	20
Learning Difficulties	-	-	-	-	-	-	-	28	32	30	31
Career Guidance	-	-	-	-	-	-	-	-	-	30	30
Total	111	199	318	318	359	333	351	358	441	154	124

(Source: Deanship of Admissions Registration, SQU Database- 2009)

Postgraduate Academic Regulations

Master degree programs were initially based on the regulations submitted by the colleges upon presentation for approval. In 2000 the university adopted the postgraduate academic regulations to serve as a unified and a main reference for the master and doctoral degrees. The document outlines all the admission and registration, and graduation requirements and procedures for both the master and doctoral degrees including the academic transcript of the applicant, language proficiency, release letters, tuition fees, financial support and other criteria required by certain programs. The duration for the master programs is two year for full time students and three years for part-time students, with an option research only, course work plus thesis, or course work plus comprehensive examination. The doctoral programs are research-based for a duration of up to four years.

The tuition fees for the masters programs range from RO 2,500 for the humanities to RO 4,000 for the scientific colleges, while the doctoral programs range from RO 4,000 to 6,000 (SQU, 2008) However, it is important to note that self-financed Omani students enrolled in the humanities or scientific colleges are eligible

for tuition fees reduction by 50%. The students who receive subsidy from the Social Security Fund are exempted from fees. In addition, the university provides teaching and research scholarships for eligible full time students.

1.2 Public and Private Higher Education Institutions

It was found that most of the programs offered by public and private higher education institutions lead to bachelor degrees and diplomas in addition to short-term training courses lasting for one week to two months at most. Postgraduate programs for master and doctoral degrees were offered mainly by SQU, with the exception of the Institute of Banking and Finance Studies which started an MBA program in partnership with Strathclyde University (UK). Also, in 2005/2006 Nizwa and Sohar private universities started offering master programs in the areas of science and humanities (Nizwa University, 2010, Sohar University, 2010).

The difficulties encountered by these higher education institutions in developing and implementing postgraduate studies are probably due to the lack of required financial, organizational and human resources, the high cost of such programs, the lack of infrastructure, and high caliber academic cadres needed for offering these programs. In addition, the lack of future vision for providing highly qualified Omani cadres, the stagnant by-laws of the institution. Some institutions blame SQU for the monopoly of postgraduate studies. All these lead to the inability of most of the government colleges to develop their postgraduate studies and weakness of support of the private sector to research activities performed by the students. Also, some of these institutions are tied up with foreign universities, a matter which adds more financial burdens on them. Lack of accreditation by the Ministry of Higher Education and other restrictions prevents government higher education institutions from offering postgraduate studies.

1.3 The Beneficiaries' Perspective of the Role of Postgraduate Studies

With regard to the study's questions related to the role of postgraduate studies in developing national human resources and the relevancy of such programs to the need of the community for qualified and trained personnel, the data revealed the following results as shown in Table(3):

Table (3): The Role of postgraduate Studies from the Beneficiaries Perspective

#	Statement	M	SD
1	The Percentage of qualified personnel (postgraduate degrees) to number of the employees in the institution/ministry is quite adequate	2.7	0.96
2	The postgraduate programs are related to the human resource development strategy of in the institution/ministry	3.3	0.97
3	The goals of the offered programs are linked to the applicant's professional requirements	3.7	0.88
4	The courses of the postgraduate program meet the labor market's requirements	3.2	0.96
5	There is complete coordination between the institution/ministry and the higher education institutions during the offering of postgraduate programs	3.2	1.08
6	There is sufficient data about admission requirements for postgraduate programs and procedure of enrollment	3.4	1.08
7	The cost of postgraduate programs within the Sultanate is quite reasonable in comparison with the cost of the same abroad.	3.1	0.74
8	The study duration to complete postgraduate studies is suitable	3.2	1.3
9	The graduates of these programs are competent in discharging their responsibilities	3.3	0.61
Note: M= Mean, SD= Standard deviation			

It appears that the percentage of postgraduates to the number of university graduates employed by the ministries and semi-government organizations is very small and does not meet the needs and aspirations of these sectors which are looking for postgraduate cadres. The number of postgraduate employees therein is less than 1% of the total of employees i.e. 0.18% doctoral holders, 0.07% master degree holders and 0.04% high diploma holders, with the exception of the ministry of education where the percentage of postgraduates amounted to 3.74%. The results showed that the postgraduate programs are very much linked to the strategic plan for the development of human resources in the Sultanate in terms of their objectives, their content and the professional needs of those enrolled in such programs. Coordination between government and semi-government organization and higher education institutions with regard to the types of programs and the provision of the required data for admissions and procedures was moderately appropriate. The study also showed that the cost and duration of postgraduate studies offered by higher education institutions are reasonable compared to the same programs abroad. Despite the small number of postgraduates in the aforementioned organizations, yet they discharge their duties competently. This could be attributed to the linkage between the objectives and content of such programs and the professional qualifications of the said programs in addition to the availability of the technological and academic atmosphere conducive to learning in these institutions.

2- Research Activities

2-1 Sultan Qaboos University

Since its inception in 1986, SQU paid due concern to the scientific research and its close link with academic development. The Royal directives of HM Sultan Qaboos bin Said, at the inaugural ceremony, underlined the paramount importance of dedicating the university's capabilities for theoretical and applied research studies in the interest of the society and participate effectively in finding the scientific and practical solutions for its social and economic problems. The university charter highlighted the importance of linking research with the comprehensive development plans and the future vision of the society in the domains of technology, economics, science and arts and other branches of knowledge to prepare the future Omani generations to be ready to contribute to the organized and creative work in all disciplines of science and arts.

Although the first years of the university focused on developing the academic programs, nevertheless a large number of research projects and studies have been executed and published, and a number of its academic staff had participated in regional and international scientific meetings. The university took various measures with the aim of upgrading and activating research to live up to its role as one of the essential activities of the university. This included strengthening the institutional infrastructure. Accordingly, the Deanship for Postgraduate Studies and Research was established in 1999 and was then upgraded in 2001 to Assistant Vice-President Office for Postgraduate Studies and Research, and in 2006 to the Deputy Vice Chancellor's Office for Research. The regulations organizing scientific research in the university have been laid down in 2000 and assistant deans for postgraduate studies and research in the colleges were also appointed in addition to the formation of college research committees as well as an office for innovation affairs. Eight diversified research center were also set up.

The research activities at the university were classified on the basis of type of research project and the means of funding into academic research, strategic research and applied/contract research. The university also offers various consulting and technical services. In 2000 the sum of RO. 500,000 were earmarked as an annual budget for research projects undertaken by the teaching staff (academic research). Another program for strategic research was initiated in 2001 with an annual budget of RO.500, 000 funded by the His Majesty (HM) Research Trust Fund. AL Salmi, and Yousif (2001) pointed out that the support for research had brought about a research culture in the university community which was reflected positively in increasing the research productivity of the teaching staff in terms of the published work, and the number of research contracts between university and local organizations for applied research, technical services and consultation had also increased. In addition, the university opened channels of mutual cooperation with a number of regional and international institutions through the signing of memoranda of understanding (MOUs) to serve the teaching and the research process. However, despite the improvement in the research productivity, some of colleges are still encountering problems such as lack of adequate laboratories and technicians and high teaching load. Another ongoing complaint faculty member often find it difficult

to benefit from the postgraduate students in teaching and research, because the majority of them are enrolled as part-time students.

2.1.1 Academic Research

The primary goal of academic research is the development of knowledge, and not to make short term benefits. However, such research could lead to applications that would reap economic and social returns. For this reason, the university put great emphasis on academic research because it has a direct impact on the improvement of the education process, and it forms the base for the research that is linked to the social and economic issues. Academic research is funded by the annual internal research grant program. The researchers applying for such grants are free to select the topics of their interest, and determine the relevant budget items such as the cost of the equipment and the consumables, appointing research assistants and consultants, traveling within the Sultanate and taking part in scientific conferences inside and outside the country to strengthen the research capabilities in the university. The research proposals are usually assessed by specialized scientists and experts in line with internationally acknowledged criteria and the expected impact on the community (Yousif, 2002). Priority in research funding is given to research teams that lead to sustainable activities.

During the period 1999 – 2008 a sum of (743) research projects have been approved with an annual budget of R O. 500,000. Moreover, a centralized budget was earmarked for conferences in a bid to curb the number of research projects that require only conference participation.

Table (4) shows the number of the participating researchers per annum, taking into consideration that a researcher may take part in more than one research project. In addition, research collaboration between SQU and the United Arab Emirates university was commenced in 2003. The agreement provides for execution of a number of joint research projects at a cost of R O. 100,000 per annum, to be shared equally between the two universities. Eight projects in the fields of commerce, economics, education, agricultural and medical sciences were approved during 2003 and 2008.

Table (4): Academic Research Projects and the Number of Researchers

Year	Number of projects	Number of participating researchers
1999	83	333
2000	62	262
2001	83	283
2002	96	276
2003	60	176
2004	73	180
2005	71	240
2006	66	174
2007	68	-
2008	72	-
Total	743	1924

(Source: SQU, Postgraduate Studies and Research Database _2008)

The approved projects covered various fields of humanities, social sciences, basic and applied sciences, medical sciences, agricultural and engineering sciences.

2-1-2 Strategic Research

H. M. Research Trust Fund of Rials Omani 500,000 was allocated for funding strategic research projects, which are expected to contribute positively to the country's economic and social development plans. The implementation of the strategic projects started in 2001. The same procedure applicable to academic research proposals with regard to the presentation of the research plan, budget, evaluation, implementation and the related investments also apply to strategic research projects. In addition, these proposals are also subjected to internal audit by the Research Administration. The relevant national organizations that are expected to benefit from the outcome of such research are usually consulted to explore their views and interests. The total number of projects approved since 1999 amounted to 37 projects covering different areas such as technology, applied sciences, medicine, agriculture, marine resources, planning, economics as shown in table (5). A number of researchers from ministries and national and international research institutions are taking part in these projects, which may in some cases, require an approval of Memorandum of Understanding (MOU) with these institutions. It is important to note that these projects are being implemented in all parts of the Sultanate. Their distribution reflects the university's concern about the local communities.

Table (5): Strategic Research Fields and Number of Projects

College/Center	Number of Research Projects
Education	1
Arts & Social Studies	4
Medicine & Medical Sciences	6
Agricultural& Marine wealth	13
Sciences	7
Engineering	4
Commerce & Economy	1
Center for Environmental Research	1
Total	37

(Source: SQU, Postgraduate Studies & Database, 2008)

2-1-3 Applied Research

The university encourages the academic staff to engage in research contracts with local and international institutions for conducting applied research projects. This type of research involves systematic development of new knowledge for the benefit of the Sponsor to address current problems, create new opportunities, or sometimes stumble on unexpected discoveries. The regulations allow the teaching staff to negotiate with external bodies such as companies and ministries regarding the research problem and associated costs and other details of the contract. However, the final approval is processed through the head of the originated department, followed by College Dean, and finally by the university's administration. In order to ensure the confidentiality of data and information, the regulations require that researchers sign confidentiality declaration before initiating contract negotiations. The regulations also ensure the patent rights and intellectual property rights resulting from using the resources and services of the university. Thus, the property will devolve to the university unless the contract signed by the university states otherwise. The university covers the costs of patent registration, which shall later be recovered from the income of the patent rights. The net income will be shared equally between the university and the researchers whereas the share of the university will also be shared equally between the university, the college and the department.

The activation of the research in the university resulted in significant promotion of research activities with the local organizations over the past ten years. Table 5 below summarizes the number of applied research projects, with the college of Engineering taking the largest share (66%), followed by the college of Agriculture and Marine Sciences (15%) and the college of Science (14%). The total cost of all research contracts during the last 10 years had amounted to Rials Omani 3,000,000.

Table (6): Contract and Consultancy Research

Year	Number of projects
1999	9
2000	12
2001	25
2002	22
2003	23
2004	24
2005	23
2006	23
2007	31
2008	-
Total	192

The fields of research contracts that concluded with industry includes energy (petroleum, gas, electrical and solar energy), water, communications, geology, agriculture (including marine resources), environment and economy. Nevertheless almost 90% of the research contracts were signed with government or semi-government institutions particularly the Petroleum Development of Oman, which had exceeded, Rials Omani 2.2 million. The private sector's contribution to research contracts stands at 10% which is considered high compared to other developing countries, however, the university has to double its efforts in the coming years to increase the contribution of this sector.

Moreover, applied research also includes bilateral agreements signed between SQU and foreign institutions for the development of certain industries. Such agreements provide for procurement of laboratory equipment and training of employees. However, some of these organizations completely supervise the handling of the research budget. It is worth mentioning that such type of agreements would eventually lead to the transfer of technology in those fields to the Sultanate. In this connection, the university had signed four agreements worth 3.5 millions Rials Omani in the fields of energy, water and environment, valid for several years, with Japanese organizations (SQU, 2006)

2-1-4 Technical and Consulting Services

The research regulations in the university had designated a special section for technical and consulting services offered by the researchers to external institutions within or outside Oman. These services include testing and analysis of materials and technical consultations. An inventory of all specializations and work experience of the researchers had recently been compiled with the aim of activating the directives of HM Sultan Qaboos bin Said for designating the university a house of expertise for both the government and the private sectors. In addition, these inventory databases of the human resources and the technical capabilities are made available to revitalize such services at the regional level too.

2-1-5 Research Centers

The university had established a number of diverse specialized and interdisciplinary research centers in the fields of environmental studies, remote sensing, earthquake monitoring, virtual reality carbonate studies, Omani studies, communications and information, oil and gas, and water, and humanities research studies.

The research centers are striving to develop and boost the capabilities of research and education through joint activities between the government, the university and the industry in competitive research programs. The research centers also work side by side with the industry partners to find solutions to the current technological problems or future-anticipated problems that may surface at a wide scale in fields closely related to Oman.

2-1-6 External Relations and Cooperation

The university maintains close ties with about 30 regional and international educational and research institutions through MOUs that aim at boosting academic interaction through the exchange of lecturers, students, publications, research and joint supervision of students research projects. This will definitely make it possible to avail the capabilities and expertise available at the university and those institutions in the academic fields and research. Preparations are currently underway to conclude new agreements. The MOUs specify the principles of hosting and exchanging of students and faculty members and participation in conferences and other related matters. The university's external relations office is responsible for implementing the program of students' exchange with different parties in order to provide training opportunities for the students and further interaction with their peers in other countries. The efforts of the external relations office were culminated by the recognition of the bachelor and master degrees at SQU by the British National Academic Recognition Information Centre (NARIC), equalizing them with the British degrees. The aforementioned research cooperation with the University of United Arab Emirates is yet another example of reactivation of the MOU with that university.

2-1-7 Research Output

The research projects conducted by the university staff in the previous years included basic and contract/applied research as well as field studies. Some of these projects required financial assistance from the annual research budget while others were implemented without the need to apply for financial support. The research and various studies in many fields were directly associated with applied issues in the fields of health, agriculture, environment, education, science and technology, economics and humanities. The first indicator of research activity and its achievements in higher education institutions is demonstrated in the number of published papers, particularly in refereed specialized periodicals. Table (7) shows a significant increase in journal publications over the last few years.

Table 7: Refereed Journal Articles

Year	Number of projects
1996	310
1997	290
1998	325
1999	435
2000	510
2001	615
2002	790
2003	885
2004	905
2005	955
2006	1080
2007 -2010	12126
Total	19226

(Source: Postgraduate Studies and Research Database , SQU 2010)

Despite the difficulty in measuring quantitatively the results of research activities of universities and the academic institutions and its effects economically and technically, the number of registered patents could be considered as a second indicator for research outputs. In this respect, the university had applied for the registration of patents on the application of solar energy for water desalination and electricity generation and another one in manufacturing of high quality fish products. It has also initiated the procedure for the registration of patent on the production of medical extracts from local herbs.

In addition to the above mentioned indicators, the university also benefited from the financial aid it received as a result of research contracts concluded with local institutions. The regulations specified the overhead expenses to be paid directly to the university from the external resources at 40% of the staff expenses. This reflects the responsibilities shouldered by the university in return for using its name, its human resources, technical and administrative capabilities. The regulations also tackled the principles concerning the distribution of the salaries budget earned from such research activities and services whereby 50% goes to the employees, 35% to the originating department and 15% to the participating colleges (SQU, 2001). A third indicator of the research output is the financial income generated by the university from the overhead expenses which shows that it amounted to more than Rials Omani 300,000 during the last six years.

2.2- Other Public and Private Higher Education Institutions

The research activities in public and private higher education institutions had focused on health, communal and economical problems in the Omani environment in addition to working papers for participation at conferences within and outside Oman. Some of these studies are published by expatriate faculty members in collaboration with their parent universities for promotion purposes.

The study revealed that the research activities in general were unguided, and unregulated and were based on individual initiatives. It also indicated that publication in specialized journals has no effect or reward on the rank of the faculty members in these institutions due to their association with the civil service law which regulates the academic employment and promotion criteria without consideration to criteria in equivalent international bodies. The study also showed that the colleges of education of the Ministry of Higher Education approve annual research plans. However, there is no strategic research map for all the institutions despite the fact that the institutions intend to formulate future research plans. The study pinpointed the difficulties faced by these institutions with regard to development of research such as the lack of incentives and moral support for the researchers, lack of research competence among some of the faculty members employed by these institutions, lack of collaboration in research activities between public and private higher education institutions and, the disassociation of the promotion of faculty members with their scientific and research productivity or research publications. Institutions also cited lack of legislations governing scientific research, lack of budgets for research, high teaching load and academic and administrative supervision. Furthermore, scientific research is not among the objectives of some institutions such as the technical colleges and the health institutes. The study also noted the inadequate financial support for the researchers from the industrial and business sectors in the Omani society (e.g., banks, investment companies and others).

2.3- The Role of Research Activities: The Beneficiaries' Perspective

Although research activities constitute a pivotal dimension in all higher education institutions, the study pointed out that research outputs were considered as inadequate by those who benefit from such activities including ministries and semi-government bodies with the exception of some ministries such as the Ministry of Oil and Gas and Petroleum Development Oman, Oman Telecommunication Company and the Ministry of Education.

Table (8): Role of Research Activities: the Beneficiaries' Perspective

	Statement	M	SD
1	There is full cooperation between us and higher education institutions in the domain of studies and scientific research	2.5	1.2
2	The higher education institutions contribute effectively in providing experts for conducting researches and studies on the different issues encountering us.	2.02	0.96
3	We benefit from the research output of the higher education institutions in handling some of the problems facing us.	2.4	0.91
4	We have adequate information about the services and research activities offered by higher education institutions	2.3	0.97
5	Higher education institutions provide us with sufficient information about research production locally, regionally and internationally.	1.6	0.73
6	Research activities in higher education institutions are effectively contributing to increasing efficiency and productivity in our institution.	2.5	1.12
7	Higher education institutions train the workers in the institution/ministry in the fields of research methodology and practices.	2.6	1.05
8	Workers in the institution/ministry are participating in conducting research and studies in cooperation with the researchers in higher education institutions.	2.2	1.01
Note: M= Mean, SD= Standard deviation			

Table (8) above indicated that cooperation between higher education institutions and government and semi-government organizations is very poor and that there is a gap between the quality of research conducted by the higher education institutions and the research needs in other government organizations which did not contribute positively in fulfilling the needs of ministries and other government or semi-government organization in the field of research and studies. This could be attributed to the lack of specialized academic cadres and to the high teaching load, and administrative duties.

The results also indicated that benefiting from the research output of the higher education institutions in addressing the problems encountering ministries and other semi-government ministries is not up to expectations with some exception being the Ministry of education, Oman Telecommunications Organization and the Petroleum Development Oman. Many organizations do not have adequate information about the services and research activities offered by higher education institutions in Oman. Therefore, the contributions of the research activities in upgrading the efficiency and increasing production in these organizations is inadequate in most of the organizations except those engaged in effective cooperation with higher education institutions in the domains of technical consultations and applied research in the fields of oil and gas, communications and education. Also, the role played by higher education institutions in training the employees in these ministries is very minimal, and does not meet the training needs of the employees in addition to the inability of higher education institutions to bring

in needed experts in the fields of research and consultations. The study also showed that the participation of the employees in conducting research and studies in cooperation with the researchers in the higher education institutions is very limited. This could be attributed to lack of coordination and lack of special databases required for research activities and low numbers of research specialists in the ministries and semi-government organization.

3- Community Service in Higher Education Institutions

3 -1 Sultan Qaboos University

The university's mission statement emphasized the importance of rendering services to the Omani society through contributing to finding solutions and appropriate means for alleviating the problems facing local communities. The university maintains continuous interaction with the local community by participating in the provision of educational, technical and research services. The University's community engagement plan, as stated in the SQU Charter, aims to work on serving and developing the community (SQU Charter Article 5, Item 3, 1999):

- By developing Omani human resources and improving their competence through provision of continuous education and training programs to all institutions of the community, and to disseminate human and scientific knowledge among the members of the Omani community.
- Through direct and continuous contact with the economic, social and cultural institutions in a way that the community can benefit from the capabilities and resources of the University, and by so doing, the University shall realize the objective of providing scientific and technical advice to those institutions.

Since its inception, the university incessantly continues to render its services to the community through discharging its duties in the education of students and the preparation of academically and technically qualified generations capable of conducting research on issues related to the Omani environment. The university also kept providing support to continuing education in different fields of knowledge to enable the members of the society to benefit from the available services and facilities and to strengthen the community's understanding of the university role and its importance as a leading scientific and services organization. These services are usually done via joint committees with the ministries and other institutions and through the organization of workshops and training courses that meet the needs of the institutions and the individuals.

Joint committees have been set up between the Ministries of Higher Education, Ministry of Education, Ministry of Commerce and Industry and with Oman Telecommunications Company, Petroleum Development Oman and other organizations. The academic staff also took part in specialized committees formed by the Ministries and other government organizations. Examples of these committees include: the academic programs committees for the colleges of education (Ministry of Higher Education), the development of school curricula and textbooks for the Ministry of Education, indexing of manuscripts and organization of libraries at the

Ministry of National Heritage and Culture, social service work and rehabilitating peoples with special needs in collaboration with the ministry of Social Development.

In addition, all colleges at Sultan Qaboos University are engaged in various community service activities. For example, the College of Agricultural and Marine Sciences and the College of Engineering organized of a number of workshops on food quality control, fish processing, management of palm trees diseases, and pests control, management of greenhouses, electric energy, factory management, road maintenance, cooling and water networks.

3-1-1 Centre for Community Service and Continuing Education

To ensure the quality and equity of delivery of community services the university has established a special center for community service and continuing education in 2002. The centre aims at boosting cooperation with the community and promulgating culture, knowledge, scientific and technological awareness of the various categories of the community. Accordingly, it organizes training programs in coordination with the colleges and the concerned centers to meet the needs of the employees of the public and private sectors. The centre also provides an opportunity for the community members to expand and update their knowledge through training programs particularly for those who missed the opportunity of regular education. Moreover, the centre organizes seminars and conferences on issues of concern to different sectors of the community.

The SQU self study revealed that though many services were directed to the community , yet there were many weaknesses such as how to Build productive partnerships with government, business, the professions and the voluntary organizations, there fore it was recommended that the University should (SQU, 2009):

- conduct evaluation surveys for the services offered with a view to assess their effectiveness,
- Conduct surveys to explore the needs for additional services, and
- Improve the university facilities so as to make the services offered more effective.

3-2 Other Public and Private Higher Education Institutions

With regard to community service in other public and private higher education institutions, the results showed that there are 25 out of 28 institutions providing various community services that focused mainly on workshops and short training courses and public lectures to meet the community's requirements. These services concentrated on computer training, English language, religious issues, security and health awareness as well as enhancing environmental and historical awareness. In addition, some institutions organize annual programs on fire safety and the provision of technical consultations and specialized training programs for government and non-government organizations such as training courses on administration, the organization of sports festivals, training course on early detection of contagious and the non-contagious diseases, oral hygiene, and personal care and psychological health.

The results of study also revealed a number of difficulties hampering the provision of community services in these institutions such as:

- Limited financial support for community services.
- Shortage of human resources allocated for planning and implementing community service programs.
- The remote geographic location of some institutions that may hamper communications with the local communities.
- The low level of awareness among some institutions of the importance of community service.

Table (9): Community Service from the Perspective of the Beneficiaries

#	Statement	M	SD
1	The higher education institutions participate in spreading cultural and social awareness	3.3	0.97
2	Our institution benefits from the social services provided by the higher education institutions in:		
	2.1- Technical consultations	2.1	1.01
	2.2- Engineering Consultations	2.4	0.98
	2.3- Professional Consultations	2.1	1.18
3	Organizing workshops and short training courses for professional development and upgrading of the employees capabilities.	2.4	1.12
4	Organizing public lectures and seminars (cultural, social, medical, scientific and religious)	3.00	1.00
5	We have adequate information about the nature of the community service provided by the higher education institutions and how to benefit from them	2.1	0.99
6	The services provided by the higher education institutions achieved a positive return for our institution	2.9	0.96
Note: M= Mean, SD= Standard deviation			

3-3 The Beneficiaries' Perspective on the Role of Community Service

Despite the numerous participations of the university and other higher education institutions in community service programs, it appears that the beneficiaries are not satisfied, and not aware of most of the services offered by these institutions. For example, the beneficiaries indicated that they are not adequately informed about the nature of the community services provided by higher education institutions (mean of 2.1, and SD, .99). The results also revealed that the beneficiaries are satisfied by the quality and quantity of the technical, engineering, and professional consultations provided (means: 2.1, 2.4, and 2.1. respectively). Thus, with the exception of the research services and the spread of cultural and social awareness, the community services provided seem to have limited impact on the society. Moreover, the local communities society are well aware of these services and how to benefit from them.

Conclusion

The development of public and private higher education institutions reflects the changes underwent by the Omani society in various aspects. However, despite the efforts exerted to enable these institutions to cope with local, regional and international changes, they are still suffering from shortcomings in the three domains targeted by the study: the status of postgraduate studies both quantitatively and qualitatively, the effectiveness of research contribution to the societal development, and the role of higher education institutions in community services.

Higher Education in Oman, as in many other countries, is pressured more than ever before by both internal and external challenges. These challenges include: securing and maintaining needed financial support, meeting regional and international standards for academic quality, dealing with the influx of knowledge and information, and responding to the changing demographics of learners. In addition, the issues of democratization and globalization may have direct impact on postgraduate studies, research and community services.

To proactively respond to these challenges, it is imperative that both private and public higher education institutions enhance their current programs and services in the light of the national development strategy. Also, they need to exert more efforts in order to meet the aspirations of their beneficiaries, and increase their competitive leverage with regional and international institutions. In addition, higher education legislations need to be updated to cope with the ever changing demands in the Omani environment. Moreover, emphasis should be given to the vital role of information and communications technology in teaching, research, community services, and administrative activities. For example, both intra and extranets may need to be used to link these institutions to effective and efficient access and exchange of knowledge and services.

Based on the results of the study, the following recommendations should be considered:

- New postgraduate programs at both the Masters and Ph.D. levels should be introduced in response to the changing societal needs, job market, and learners' demographics.
- As private higher education institutes are developing, partnership and cooperation with public higher education institutions is required in the three domains (postgraduate programs, research and community service).
- Continuous review of regulations and by-laws of higher education institutions regarding the criteria and conditions of employment of academic staff is needed in order to be competitive with regional institutions.
- Building vertical/horizontal channels of communication to encourage cooperation, coordination and understanding between higher education institutions and beneficiaries at all levels.

- The scientific Research Council should have a clear national vision to coordinate the scattered research activities that are being conducted in different institutions.
- Setting up an awareness campaign plan to inform the whole society about the activities of higher education institutions, with the objectives of gaining support and securing more funding for postgraduate studies, research and community service.
- Building data bases for research and be made accessible to all community sectors.
- On general, it is important to revive the Omani national strategy for higher education in order to accommodate the demands and requirements of the national development plan.

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