

The Sultanate of Oman's Research Centers: Their Roles in Promoting Decision-Making

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Abstract

Objectives: This study aimed to identify the reality of research centers in Oman and their role in supporting decision-making by examining the types of research and the nature of the services and activities provided by these centers.

Methods: To achieve its objectives, the study used the qualitative approach using semi-structured interviews as a tool to collect data. The study's population included all the 21 academic and government's research centers in the Sultanate of Oman, with the exception of three newly established research centers. Eighteen managers and two department heads were interviewed.

Results: The study results showed that majority of the research centers contribute to supporting decision-making according to their varied specialty and concerns by providing several types of research according to their source of funding. Research funded internally by the institution achieved the highest percentage (100%), followed by contract research funded externally by public and private sectors with (95%). Long-term strategic research funded by His Majesty the Sultan to support scientific research and the strategic research grants programme conducted by the Research Council reached (38%). Lastly, research chairs percentage was (29%). In addition, the study demonstrates the diversity of research fields of the research centers in Oman which focus on future studies and local opinion poll studies. It also shows that the centers provide several services and activities including: consultation services, joint committees, conferences and seminars, training workshops and community initiatives.

Conclusions: The study recommends activating collaboration between local research centers and establishing cooperation networks in order to exchange experiences.

Keywords: Research centers, Decision-making, Oman's research centers.

المراكز البحثية في سلطنة عُمان: دورها في تعزيز عملية صنع القرار

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ملخص

الأهداف: تهدف هذه الدراسة التعرف إلى واقع المراكز البحثية في سلطنة عمان ودورها في دعم صنع القرار، من خلال دراسة أنواع البحوث، وطبيعة الخدمات، والأنشطة التي تقدمها المراكز.

المنهجية: اعتمدت الدراسة لتحقيق أهدافها على المنهج النوعي، باستخدام المقابلة شبه المقتنة لتكون أداة لجمع البيانات، وتكون مجتمع الدراسة من جميع المراكز البحثية الأكاديمية والحكومية في سلطنة عمان البالغ عددها 21 مركزًا بحثيًا، باستثناء ثلاثة مراكز بحثية حديثة، وتمت مقابلة (18) مديرًا، و (2) رئيس قسم.

النتائج: كشفت نتائج الدراسة أن غالبية المراكز البحثية تساهم في دعم صنع القرار، وفقًا لتخصصاتها واهتماماتها، من خلال تقديم أنواع مختلفة من البحوث حسب مصادر التمويل، وهي البحوث الممولة داخليًا من المؤسسة التي حققت أعلى نسبة (100%)، تلتها البحوث التعاقدية الممولة خارجيًا من قبل مؤسسات القطاعين العام والخاص بنسبة (95%)، والمشاريع البحثية الاستراتيجية بعيدة المدى والتمويل من حضرة صاحب الجلالة لدعم البحث العلمي، وبرنامج المنح البحثية الاستراتيجية التي ينفذها مجلس البحث العلمي بنسبة (38%)، في حين جاءت أقل نسبة للكراسي البحثية، إذ بلغت (29%). كما أوضحت نتائج الدراسة تنوع المجال البحثي للمراكز البحثية في السلطنة، إذ تركز على الدراسات المستقبلية، ودراسات استطلاع الرأي المحلي. كما أظهرت الدراسة تقديم عدد من الخدمات والأنشطة من قبل المراكز، وتتمثل في الخدمات الاستشارية، واللجان المشتركة، والمؤتمرات والندوات والورش التدريبية، والمبادرات المجتمعية.

الخلاصة: في ضوء نتائج الدراسة، توصي الدراسة بتفعيل التعاون بين المراكز البحثية المحلية، وإنشاء شبكة تعاونية؛ لتبادل الخبرات.

الكلمات الدالة: المراكز البحثية، صنع القرار، المراكز البحثية العمانية.



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1. Introduction

Research plays an active role in the development of contemporary human societies. It is the main engine for the peoples' renaissance, as the educational process and socioeconomic development require that science and technology be the basis of it, and the way to do so is through research, as it represents the main pillar in the development processes, hence the endeavour of many developed and developing countries around the world to support research to achieve higher rates of economic and social growth. The efficiency of research depends on many elements, perhaps the most important of which is the availability of qualified research teams, in addition to scientific institutions that work to direct the research in line with the requirements of development. Accordingly, many countries are interested in establishing research centers.

Research centers are among the main pillars of the progress of countries and their scientific and economic revival because of their main role in the development process through their assessment of reality, innovative solutions to problems, and innovations in various fields, in addition to their contribution to setting visions and strategies and their continuous assessment. These centers have become the focus of the attention of countries, major economic institutions, and universities, as they are an essential component in achieving sustainable development and a source of sustainable investment. The significant increase and spread of research centers in recent years is attributed to several reasons, such as technological progress and the need to analyse information and harness it for decision-makers, as it contributes to advancing progress in the country. Despite the diversity of research centers, specialized and public centers, and others that are financially and administratively independent or affiliated with a governmental institution or the private sector, for profit and non-profit, they generally perform the same tasks represented in conducting research and studies related to their field of interest, providing scientific advice for plans, programs, and projects for the public and private sectors.

There is a close relationship between research centers and decision makers in development fields, as these centers serve as mediating institutions between academics and decision makers. The centers play a role in supporting decision makers by assisting them in preparing and clarifying policies, providing them with new documented information, accurately analyzing issues, and influencing decision-making or policy formulation through various forms such as research output, organizing conferences, seminars, and workshops on issues relevant to officials and decision makers, as well as conducting research circles or closed meetings.

Oman possesses a strategic location, situated in the far southeast of the Arabian Peninsula, and this location plays a role in shaping its social, economic, cultural, and political life. Throughout various historical epochs, Oman has experienced several governance systems under different names. The governance system in Oman transitioned, like other Gulf Arab states, from traditional tribal alliances to monarchy. However, Oman was distinguished by the Ibadi Imamate system that prevailed at certain stages of its history (Al-Saadoun, 2013). Upon assuming power, the late Sultan Qaboos initiated a state-building program, focusing on modernizing the political system, leading to significant social, economic, and political transformations that paved the way for democratic transition (Bani Salameh, 2009). The year 1996 marked a pivotal moment in modern Omani political history, witnessing the issuance of the first written constitutional organization for the Sultanate, known as the Basic Law, after 26 years of Sultan Qaboos's reign (Al-Jalandi, 2020). The Basic Law serves as the legal framework that delineates the functions of various authorities, and different state institutions derive their principles and scope of work from it. In 2020, Sultan Haitham bin Tariq Al Said assumed power peacefully, showcasing the strength of Oman's institutional system. In 2021, legislative updates were made, administrative structures were reorganized, and amendments were introduced to the Basic Law, along with government restructuring and decision-making processes (Al-Duwayani, 2021). Oman Vision 2040 represents a fundamental pillar for Oman's transition towards new horizons of economic, developmental, scientific, and cultural projects. The vision sets forth several objectives and priorities, including education, learning, and scientific research. In the Sultanate of Oman, interest in research centers stemmed from the government's interest in research and its institutions. Several research centers have been established to support the country's economic, social, and educational development programs. Most of these centers are concentrated in the capital, Muscat, by virtue of the centralization of ministries and service institutions, in addition to universities. The Universities in Oman have been interested in establishing academic research centers, as Sultan Qaboos University is one of the leading universities in

research and the establishment of research centers, reaching 14 specialized centers by the end of 2023. The University of Nizwa has also established three research centers specialized in technical, cultural, agricultural, and medical fields, and Dhofar University established a " Dhofar University Research Center ". There are also government research centers in various ministries whose fields of work revolve around government requirements and policies. The Research Council has also prepared a program for research centers, aiming at achieving research excellence in areas of national importance, and conducting research in strategic areas. Thus, the Oman Animal and Plant Genetic Resources Center was established by virtue of Royal Decree.

Therefore, this study seeks to reveal the reality of academic and governmental research centers in Oman and their role in supporting Decision-making.

2. Statement of Problem

Research centers are one of the most important sources of strength, success, and progress in societies. These centers around the world play a prominent role in supporting the drawing of public policies, setting strategies, examining issues, drawing a picture of the future, and revealing the challenges facing society and mechanisms to deal with them. They provide an accurate analysis of problems, and present alternatives and recommendations to decision makers (Wiarda, 2008). The Arab countries, including Oman , have been keen to enhance the role of research centers in the development by establishing several research centers, and providing them with support to carry out their tasks. However, intellectual output dealing with the reality and role of these centers is minimal. The results of certain studies, such as Al-Hamad (2005), concluded that there is a gap between research centers in the Arab world on the one hand, and decision-makers on the other, which led to the loss of scientific effort and waste of knowledge. Mahmoud's study (2013) also showed that despite the existence of several issues in the region, and its passage through economic and political changes, these centers did not exercise their vital role in participating in the preparation of public policies, supporting decision-making, or providing the necessary advice, and most of these centers do not have any active role in community development.

Alternatively, the global go to think tank index report (Think Tank & Civil Societies Program) (TTCSP), a scientific report based on international standards in assessment, from the American University of Pennsylvania for 2020, revealed that Oman occupies the last position at the level of the Gulf countries with only three centers, in addition to the absence of a clear vision of the role of these centers (McGann, 2021).

According to these studies, and University of Pennsylvania report, the reality of research centers, especially in supporting Decision-making, remains unclear, and the reality in the Oman indicates that there are many research centers that were not mentioned in the report, and their role in supporting development and decision-making is not clear, in addition to the nature of activities and services provided to decision makers. Due to the lack of studies concerned with studying the reality of the role of research centers in general, and the absence of studies that search for the reality of the centers in Oman in particular, this study revealed the reality of university and government research centers in Oman and their role in supporting Decision-making, considering the Oman's current and future need for an active role for these centers in light of the political, economic, social, cultural and scientific changes occurring in Oman and the region, which directly affect development.

3. The Study Objectives

The study identified the reality of research centers in Oman and their role in supporting Decision-making, through the following objective:

- Determine the various types of research offered by research centers that support decision-making.
- Determine the characteristics of the services and initiatives offered by research centers that support decision-making.

4. The Study Questions

The study seeks to answer the following main questions:

- What type of research are conducted by research centers, and what role does that play in decision-making?
- What types of services and initiatives are offered by research centers to support decision-making?

5. The Importance of the Study

The importance of the study in the theoretical and practical aspects is as follows:

Theoretical aspect: The importance of this study is represented by the scarcity of similar studies that shed light on the reality of the role of research centres in supporting development decisions in general, in addition to the limited similar Arab studies that look at the same subject, and the absence of studies that look at the role of research centres and their reality in Oman in particular. In addition, it is anticipated that this study will represent an addition to the Arab intellectual outcome about research centres and their role in supporting development decisions, and it is expected that it will contribute to the production of future studies on the reality of research centres in various economic, political, and social fields.

Practical aspect: It is anticipated that the results and recommendations of this study will benefit the following parties:

- **Management of research centres:** it is anticipated that the results of the study will contribute to the development of strategies and plans necessary to adopt all measures to stimulate the role of research centres in supporting development decisions in Oman in a manner that serves its objectives and enhances the efficiency of its performance.
- **Decision-makers in government institutions:** It is anticipated that the current study will help decision-makers in various ministries to identify the actual reality of research centres in Oman, and that the centres be part of the developmental decision-making process that contributes to providing information and reviewing alternatives, obstacles, and anticipated results.
- **The private sector:** It is anticipated that the study will contribute to stimulating the role of the private sector in the subject of research centres in Oman through the establishment of community partnership, which is represented in the private sector providing support and funding for the centres to carry out in-depth research, and to implement the centres' research thus contributing in solving administrative and technical problems, and developing services and products in the private sector.
- **Researchers and those who are interested:** It is anticipated that this study will open horizons for researchers and those interested in studying the role of research centres in supporting development decisions in Oman.
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6. Literature Reviews

The various types of research and the characteristics of the services and initiatives offered by research centers that support decision-making Research centers contribute to the achievement of sustainable and comprehensive development societies, as they study and analyse issues and problems facing the state and society, and propose solutions to confront them, by providing a set of services and activities, that would double the level of awareness among decision-makers. Previous studies reveal the disparity in the reality of research centers and their role in supporting decision-making in developed and developing countries. What follows is a discussion of the reality of research centers and their role in supporting decision-making through the activities and services they provide, as stated in previous studies.

In Western countries, O'Neill (2008) explained, that when research centers appeared in Europe and the United States of America, they could not directly influence public policy makers. As they were seen as academic institutions that provide theoretical information. After the Cold War, these centers have greatly influenced decision-makers and the formulation of public policies. Zakia (2015) indicated that research centers in Britain emerged after World War II, as assistance was sought from mathematicians, physicists, statistics, and others. Operations research teams were established, which met with military leaders, and through which many theories were reached that helped in decision-making. These centers contributed to facing the challenges left by the war and revitalizing the economic situation. Abelson (2016) also indicates that the American research centers devote their activities and research to the political side, so funding has increased, which has led to the growth of their numbers and popularity. McGann (2005) agrees with the previous study that the main mission and activity of American research centers is to generate knowledge related to politics and provide information by conducting research for political and economic decision makers in particular, and for the public in general, in addition other activities such as lectures, seminars, conferences and expert meetings. The Center for Strategic and International Studies (CSIS) organized 700 events throughout the year, and the American Enterprise Institute (AEI) conducts 200 events annually.

In East Asian countries, according to the University of Pennsylvania research, China is the second-largest country in the world with 1413 centers (McGann, 2021). According to Ahmed (2015), the rapid economic growth China has experienced over the past 20 years has brought about changes and difficulties at the local level or in matters of foreign policy. As a result, their numbers have increased and they are in high demand by decision-makers. As a result, they focused on presenting research projects that helped with issue analysis and problem-solving for political and economic challenges.

In the Arab countries, the quantitative size of research centers has clearly grown in the nineties of the twenty-first century, and their types have varied, their activities have expanded, and the number of scientific conferences and publications has increased. Although there are several issues in the region, undergoing economic and political changes, these centers have not exercised their vital role in participating in the preparation of public policies, supporting decision-making, or in providing the necessary advice (Mahmoud, 2013). Hassan's study (2016) concluded that research centers in the Arab world in general, and Iraq in particular, have played a poor role in preparing the public policies and economic decision-making, and that the level of research contribution to addressing development problems is still poor. This is not because of their inability to perform this role, rather because of the challenges that surround them. Al-Hamad's study (2005) also revealed that there is a gap between decision-makers in the Arab world and researchers in research centers, and this divergence led to focusing on immediate treatment of issues by decision-makers on the one hand, and on the other hand, it led to the loss of scientific effort and the activities provided by the centers, which if it was used it would have led to raise the level of awareness among the decision makers. This was confirmed by the Al-Hourani study (2016) through interviews conducted with directors of research centers in Jordan, that most of the sample indicated the absence of a relationship between research centers and decision-makers in the country. The decision-maker does not consult these centers, and because the decision-maker makes the decisions from top down. and not the other way around. Also, Abd Alhai's study (2012) found that 40% of private research centers in Jordan have no role in providing consultations or even submitting reports and studies to decision-making institutions. As confirmed by the study conducted by Aldabas (2023), the limited impact of civil society institutions, including research centers, was emphasized in supporting the decision-making process regarding internal political and democratic reforms in Jordan.

On the other hand, Al-Khazendar and Al-Asaad (2012) explained that academic research centers in the Arab world have greater credibility with decision-makers and the government than Western academic research centers. Additionally, Arab private research centers are now relevant to decision-makers and have worked to provide a variety of services, such as conducting research and studies on issues facing the state, publishing books and magazines on topics of interest to the general public and decision-makers, creating concise and focused reports on regional developments, offering consultations and guidance on solutions and pressing issues, creating advisory studies, etc.. Ismail's study (2016) also aimed to reveal the types of publications of research centers, and to identify the necessary guiding standards for the quality of public policy publications to play a role in influencing decision-makers. The study concluded by presenting a variety of publications, such as policy summaries, which are an aid to decision-makers, and are based on defining the problem, alternatives, and recommendations. Other publications provide policy evaluation reports, an objective educational tool, helping decision-makers to decide on current policies and benefit from them in making future policies. Musa (2012) added another service provided by the centers, which is the publication of future studies in various fields, which aim to monitor the change in a particular phenomenon, identify the different possibilities for its development in the future, and come up with results that help decision-makers, which are important to the decision-makers in the development plans.

At the level of the Arab states of the Gulf, the results of the study by Al-Arini and Al-Otaibi (2010) indicated that the most crucial activities conducted by research centers in teacher colleges at Saudi universities involve researching the challenges facing these colleges. Additionally, these centers assist faculty members in their research and provide workshops, seminars, and lectures. Despite the majority of these centers offering these services, they are limited and deficient. For instance, among ten centers, only one issues a peer-reviewed journal, while the rest publish non-peer-reviewed journals. The results of the previous study are consistent with the results of the study of Al-Hamoudi and Al-Moataz (2000) regarding the similarity of the services and activities provided. The study concluded that research centers at

King Saud University provide many activities and services, including conducting and publishing research, contributing to providing research and advisory services to the public and private sectors, finding solutions to problems facing society and various sectors, and conduct seminars, conferences and lectures. It also contributes to training researchers to conduct research. Al-Rumaihi (2000) confirms the contribution of the Bahrain Center for Studies and Research in supporting decision-makers in the Kingdom of Bahrain through the center's interest in contractual research, which meets the needs of the beneficiaries, whether from state ministries or companies in the private sector, and propose policies to plan the research activities and determine its priorities in the production and service sectors, in order to achieve the development goals, in addition to the formation of advisory committees in various fields, whose membership includes individuals from all sectors, to ensure that the research topics adopted by the center reflect the needs of decision makers.

In the Sultanate of Oman, Al-Hinai (2009) undertook a theoretical study in Oman with the goal of learning more about the reality of research centers there, their importance, and the reality of the research process, with a particular emphasis on the Research Council and its function in fostering a culture of communication . The study concluded that Oman adopts a well-defined policy through the stimulation of research centers, as they were established to create a suitable environment for researchers, to serve research, and enrich scientific knowledge, through strategic research to participate in supporting the development in Oman. Sadiq (2014) explained that Sultan Qaboos University includes several specialized research centers whose interests vary between the environment, water, oil and gas, communications, and Omani studies. Although it is a nucleus for research in Oman, its impact is poor and does not have specific and independent research programs. In addition to Sultan Qaboos University's interest in establishing centers, there are many parties that have centers and specialized units including: Ministry of Agriculture and Fisheries, Ministry of Regional Municipalities, Environment and Water Resources, Ministry of Commerce and Industry, Ministry of National Economy, Ministry of Health, and Petroleum Development Oman (Abd Alwarith & Kahil 2012). However, the 2020 report of University of Pennsylvania indicated the lack of research centers in Oman and the lack of a clear role for them in supporting the decision-making process, despite the presence of a number of economic and social issues that require study and a national vision (McGann, 2021).

7. The research study: design and methods

The stud's methodology used a qualitative approach, because the matter at hand touches upon reality and requires a thorough explanation and detailed clarification from those involved, qualitative methodology aids in obtaining diverse perspectives, opinions, and experiences. This approach helps gather in-depth information that is challenging to express through quantitative or statistical data (Al-Hashemi, 2005) . Both Johnson and Obrien (2016) argue that qualitative methodology provides more descriptive details about the study subject, offering a precise understanding of the topic. Furthermore, they suggest that its results are more representative of reality than being merely approximate. This is achieved through the provision of analytical and interpretative data regarding the study subject, given that participants in qualitative methodology are those who have witnessed or experienced the reality under investigation.

The study relied on interviews as a data collection tool. The stud's community consisted of all academic and governmental research centers in Oman, except for three newly established academic research centers, as shown in table (1).

The interviews included all members of the stud's population, consisting of (18) managers and (2) department heads, and the response rate was (100%). For the Oman Animal and Plant Genetic Resources Center and Institute of Advanced Technology Integration, one interview was conducted, and the reason is that both centers are affiliated to the Scientific Research Council.

Table 1: Academic and government research centers in Oman

No.	Center	Institution	No.	Center	Institution
1.	Omani Studies Center	SQU	12.	Sustainable Energy Research Center	SQU
2.	Earth Science Research Center	SQU	13.	Al Khalil bin Ahmed Al Farahidi Center for Arab	Nizwa University

No.	Center	Institution	No.	Center	Institution
				Studies	
3.	Communication and Information Research Center	SQU	14.	DARIS Center for Scientific Research and Technology Development	Nizwa University
4.	Remote Sensing and Geographic Information Systems Research Center	SQU	15.	Dhofar University Research Center	Dhofar University
5.	Humanities Research Center	SQU	16.	Oman Animal and Plant Genetic Resources Center	The Research Council
6.	Water Research Center	SQU	17.	Institute of Advanced Technology Integration	The Research Council
7.	Earthquake Monitoring Center	SQU	18.	Studies and Research Center	Ministry of Health
8.	Oil and Gas Research Center	SQU	19.	Middle East Desalination Research Center	Ministry of Foreign Affairs
9.	Excellence in Marine Biotechnology Center	SQU	20.	Agricultural and Animal Research Centers	Ministry of Agriculture and Fisheries
10.	Environmental Studies and Research Center	SQU	21.	Social and Economic Studies Unit	Diwan of Royal Court
11.	Nanotechnology Research Center	SQU			

High levels of credibility are attained by encoding, and participation rates rise. Additionally, it helps researchers avoid mistakes by structuring their thoughts during interview analysis. It is crucial to make sure that the encoding corresponds with the topic and goals of the study (Laakmann, 2010). To ensure the confidentiality of information and the privacy of the participants, individuals involved were encoded using a simplified scientific method based on their affiliated research center. Research centers were assigned codes (RC), an abbreviation for Research Center, and numbered (1-21) to indicate the participation of 21 research centers.

8. Findings and Discussion

8.1 Types of research are offered by research centers to support decision-making.

The nature of the research services that emerged from the results of the study and support the development decision-making process are divided into research, advisory services, joint committees, conferences, seminars, training programs and workshops, and community initiatives.

Types of research are conducted by research centers, and its role does that play in decision-making

One of the most significant services offered by research centers with a range of subject expertise is research production.. However, the results of the interviews varied in the nature and types of these researches, and included more than one type. The forms of research that were derived from the qualitative data of the semi-structured interviews are displayed in the following table.

Table 2: Types of research carried out by research centers in Oman

No.	Types of research within 21 centers	Repetition	Percentage
1.	Research not funded from within the institution or external parties	10	48%
2.	Research funded by internal grants from the institution	21	100%
3.	Contractual research with third parties	20	95%

No.	Types of research within 21 centers	Repetition	Percentage
4.	Strategic research projects	8	38%
5.	Local opinion poll studies	11	52%
6.	Future studies	18	86%
7.	Research chairs	6	29%

Table No. (2) clearly indicate that “research funded by internal grants from the institution” are carried out by all the research centers under study, as it came as the highest percentage, which is (100%), followed by “contractual research with third parties” with a rate of (95%), while the lowest percentage of "research chairs" is (29%). The results of the interviews with the study population also showed that the various types of research carried out by research centers contribute to supporting Decision-making in Oman. The role of each type of research is reviewed below.

8.1.1 Unfunded Research

The results of the interviews showed that 48% of the research centers adopt research projects that are not funded by the affiliated institution or external parties. There are many reasons for the centers to conduct such research, two managers (RC6, RC11) stated that their research centers carry out this type, which are preliminary research that the center aims to find out its feasibility, and then present it to an external funding source. (RC19, RC7) indicated that each research needs funding, but when support for research stops, especially after the exceptional economic situation in 2015, these centers continue the research without funding, due to the importance of research in supporting the development in Oman.

Manager (RC6) stated that this type of research is not sent to decision makers, while manager (RC8) believes that "all funded and unfunded research has a role in one way or another in supporting Decision-making, but the issue of benefiting from it depends on the decision maker."

On the other hand, the research centers that do not conduct such research constituted 52%, considering the nature of their research needs funding, so they turn to funded and contracted research projects with third parties. Another manager indicated that any research needs a budget, researchers, and the acquisition of software, hardware, and equipment. While another manager believes that this type does not serve Decision-making, and is not sent to decision makers, and the reason for this may be that this research does not provide comprehensive and focused information, and their purpose is to present them for funding later. These results align with Al-Hadhrami's study (2021) in emphasizing the importance of financial support in research production.

8.1.2 Research Funded by Internal Grants

The results show that there are several sources of funding for research that the centers sought to benefit from, but the main source was internal grants through the institutions that these centers affiliated with. Internal funding constituted (100%), due to the presence of several internal funding systems. For example, there are three types of internal funding at Sultan Qaboos University, which has 14 research centers under its umbrella, which allows these centers to submit their research projects to obtain funding from any of these systems according to the approved regulations. As for other centers, there are specific annual budgets to fund research.

The study community agrees that funded research play an important role in supporting Decision-making, the head of the department (RC21) stated that the funded research carried out by the center are preliminary research based on intellectual facts and opinions that support the decision-making process in the institution regarding economic and social issues in Oman, as the manager (RC19) noted:

The center, since it was a department, has contributed to supporting Decision-making. The center carried out an in-depth study to see if such research were used in planning or making a new program and developing a strategic policy, and it has concluded that only five studies during the past forty years have been of benefit and played a role in the decision-making and policymaking.

This is what Wiarda's study (2008) emphasized the role of research centers in providing decision-makers with studies related to society and public policies, and its contribution to bridging the gap between development potential and development aspirations, and the ability to set successful development policies. The experiences of developed countries

indicate that development has been linked to the issue of applying the results of scientific knowledge. Development planners in these countries realize that investing in research is no less important than investing in other fields (Shiban, 1994).

The manager (RC9) stated that the center is carrying out a series of research funded by the university to study social and economic phenomena of concern to the decision-makers, executives, and legislative and control authorities. The center also focuses on national strategic directions in general, and on this issue, "the center carried out a study on community awareness of the exceptional economic situation that Oman is going through, and a recommendation on studying the causes and effects of hidden trade, and these studies have a national strategic dimension. For this reason, the center's studies are of interest to decision-makers in the government sector more than the private sector". The manager of the center (RC10) explained that the funded research projects carried out by the center "serve Decision-making, and serve Oman in issues related to the energy sector, as Oman faces challenges in this field that may cause future problems. Therefore, through its research, the center contributes to providing solutions to the challenges Oman is facing.

The study community agreed on the role of funded applied research in supporting Decision-making. Manager (RC17) believes that the center focuses on funded applied research that leads to tangible results on the ground and leads to the production of new products that contribute to supporting Decision-making, while research done in the universities does not go beyond the theoretical aspect. This was agreed by the manager (RC18), "the importance of research centers focusing on applied research, not theory, and this is what the center is currently working on, as it has moved to applied research... as the decision-makers in the ministry depend mainly on the research carried out by the center, and it contributes significantly to the Decision-making. Manager (RC15) stated that the funded applied research carried out by the center in the field of medicinal plants contributed to supporting the Omani economy.

This interest in research by these research centers in Oman is consistent with what Abd Albari (2016) indicated that the goal of establishing social and human research centers is to conduct research to reach a pattern of reliable knowledge because of relying on theoretical and methodological tools that analyse and study reality, and come up with recommendations that contribute to the formulation of applied social policies that achieve the development goals. Likewise, Al-Khazendar and Al-Asaad (2012) mentioned that the most important role of research centers is to conduct research and studies, and to provide an in-depth analysis of issues facing public policies. Therefore, these centers represent a primary role, not a secondary one, in drawing up policies and rationalizing the decision-making process. The findings of the current study are in line with those of a study by Hjerpe (2005) that found that research, despite being theoretical, supports decision-making by prioritizing the topics and issues that require investigation, exploring them, putting forth alternatives and solutions, and ultimately calculating the costs and profits associated with each alternative

8.1.3 Contractual Research

The results of the study showed that 95% of the research centers under study in Oman carry out contractual research with government and private agencies in Oman and abroad.

In order for research to have a role in supporting decision-making, and in reflecting the needs of the government and private sectors, several research centers have encouraged cooperation and contracting between the two sectors. 95% of the research centers contract with entities within the country. For example, center manager (RC17) indicated that "The center launched the "Ejad" project, which is a platform that allows companies in the industrial sector to share their research challenges with academics in higher education institutions in Oman, ... thus we are working to bridge the gap between the industrial and academic sectors." This is also consistent with what the head of the department (RC21) said "Considering the importance of involving the private sector in research work, the center incubated the public/private sectors partnership team, consisting of businessman and businesswomen from the private sector, and decision makers from the government sector." The main objective of this partnership is contractual research, he added. "The center produces a policy paper that is presented to the decision-makers in the partnership team, to help them make decisions."

The contractual research produced by the centers play an important and essential role in supporting decision-making. This is evident through the 100% agreement of research centers of various specializations on the role of contractual research in supporting decision-making. Center manager (RC16) stated that "The center contributed to making decision-making."

Another manager (RC10) confirms that:

Contractual research has a major role in supporting the development in Oman, considering that Oman is now heading to invest in renewable energy, and Oman has set a goal by 2025, energy consumption is supposed to be 10% and there will be sources of renewable energy. Thus, any research that the center conducts in the field of renewable energy will undoubtedly help in making the appropriate decisions in the future, and will assist Oman in drawing up future policies, particularly in the field of renewable energy.

The center manager (RC3) indicated that "the center cooperates with the Research Council and telecommunications companies in Oman, and the studies have a role in supporting Decision-making...". Managers (RC4) considers that:

The center has an influence in drawing up construction policies and standards through contractual research... Therefore, the center carries out studies and presents them to the Supreme Council for Planning or the Council of Ministers, and after that our role ends. However, the center is aware of the studies that have been accepted and applied, through feedback and questions that come from foreign companies when they come to implement projects in the Sultanate.

On the other hand, some research centers (27%) contract with entities abroad (RC13, RC15, RC17, RC18, RC20 & RC21). The center manager (RC15) stated that "they cooperate with certain German and British universities because they possess the infrastructure and equipment for such studies that the center conducts, and these universities help the center in making various analyses, as the center does not possess such expensive equipment."

The results of the current study showed that although there is internal funding for these centers, this funding is minimal and does not cover the costs of the research projects that these centers aim to complete. Accordingly, they resorted to obtaining external funding from public and private sector institutions through contractual research. This result can be explained as follows: (1) contractual research is an opportunity for the sustainability of research in view of the exceptional economic situation witnessed by Oman, and the difficulty of providing financial support by the government, (2) finding strategic partners in research, which enhances the strength and reputation of these centers at the local and international levels, (3) contributing to bridging the gap between research institutions and society, which makes the completed research reflect reality and its challenges, and contribute to its treatment or development, (4) strengthening the role of research institutions in the success of the public and private sector institutions by contributing to the development of products and services, preserving their customers, and expanding their products production and marketing in order to achieve its objectives. This result is consistent with the findings of Al-Rumaihi (2000) that the Bahrain Center for Studies and Research contributed to supporting decision-makers in the Kingdom of Bahrain through the center's interest in contractual research, which meets the needs of the beneficiaries, whether from state ministries or companies in the private sector. Therefore, and considering the partnership it represents between research centers and institutions, contractual research support decision-making through the knowledge sharing between institutions and benefiting from the experiences and expertise of others.

8.1.4 Strategic Research Projects

The results of the study showed that 38% of the research centers under study in Oman conduct strategic research projects. One manager (RC18) indicated that "the center, through the Ministry, participates in two strategic programs funded by the Research Council..., one of them aims to raise awareness of water issues and support decision-makers in this field, and these projects have not been completed."

The study community (research centers) at Sultan Qaboos University acquired 58% of the long-term strategic research projects funded by His Majesty. The center manager (RC11) indicated that "the center has obtained a strategic research project, the nature of which is to find a solution for water recovered from desalination plants in the groundwater in the Al Batinah region, and there are decision-makers participants from the Ministry of Agriculture and the Ministry of Regional Municipalities and Water Resources." The manager (RC8) also stated that "the center has obtained a strategic project on water..., and the project has a role in supporting Decision-making, for it gives decision-makers or implementers a clear idea of water-related issues, and then the decision-maker identifies future projects, programs and plans in the light of figures and data provided by the Center." This was confirmed by another manager (RC6) that the strategic project obtained by the center contributes to supporting Decision-making in the field of oil and gas in Oman... and helps to make a sound decision

based on accurate information according to the capabilities available from the laboratories. The center manager (RC12) also stated that "the center has obtained three strategic projects on the exploration of mineral resources in Oman, which contribute highly to supporting Decision-making in the country."

The results of the study showed that the strategic research projects, which play a role in supporting Decision-making in Oman, can be divided into two types, long-term strategic research projects funded by His Majesty to support research and aim to produce new knowledge, which brings economic and social benefits to the Omani society, and in line with the objectives of Oman's long-term development plans. The results indicated that research centers at SQU obtained funding for strategic research projects, and this is a good indicator because strategic research projects are open to all researchers from all higher education institutions in Oman, and public and private sector institutions, making it very competitive. The strategic projects serve major issues of the Omani society and contribute directly to drawing up policies and addressing problems, this research stems from the needs of society, and the institutions of the public and private sectors, thus have a great impact on decision and policy makers, whether at the public level, as in future visions, or at the level of a single institution, or a group of institutions, or in addressing some problems such as finding cures for some diseases, or some agricultural pests, or developing products related to oil, gas and solar energy, or related to environmental problems, etc. The other type of such project is the strategic research grants program implemented by the Research Council in cooperation with third parties, and aims to build local research capabilities in strategic areas that contribute to supporting development in the country, in addition to strengthen the Omani economy, discover solutions to national challenges and present them to stakeholders, and improve the socioeconomic challenges of public policy. Only one center participated in these projects funded by the Research Council, as one of the directors confirmed that the center participated in the Dubas date bug project, and this insect constitutes a serious pest for palm trees in Oman. Accordingly, the center works through research to provide solutions to this problem, and to reduce its economic damage. The other strategic project relates to water research, and aims to raise awareness of water issues and support decision-makers in this field.

From the foregoing, it is noted that a small number of the research centers under study obtained funding from strategic research projects, and the reason may be that these projects focus on long-term issues of high strategic importance in the country, and that every strategic project needs huge funding that amounts to millions, and that is why there are only few projects. 62% of the centers did not obtain this type for several reasons, they may not be covered by these grants, and several centers submitted proposals, but they were not accepted.

8.1.5 Local Opinion Poll Studies

The results of the study indicated that 52% of the research centers under study conduct local opinion poll studies on development issues or decisions. The head of the center (RC20) confirms that the issue of induction is a very important topic and is useful in providing data and inputs that contribute to complementing some of the research activities carried out by the center.

The study community agreed that they conduct such surveys due to their complementary role, and thus their contribution to supporting Decision-making, as manager (RC19) indicated "the center conducts surveys on diseases prevalent in the country and has a role in supporting Decision-making, and it was used in setting the five-year plans for the Ministry of Health, knowing the rates of prevalent diseases, and how much is spent on a person from the health budget." The center manager (RC9) also mentioned "the importance of conducting this type of study in human research. The center has conducted many opinion poll studies..., such studies help decision-makers, as they study national strategic directions in social and economic issues, so we send them to the decision-makers on an ongoing basis."

The manager (RC1) indicated that the center conducted local opinion polls studies such as the issue of social welfare, a study on the evaluation of government services, and the private sector evaluation of the government performance, and each of these studies contributes directly or indirectly to Decision-making. The head of the department (RC21) stated that "the center has attempts to monitor or analyse some of the socioeconomic variables specific to Oman ... and they support policies and decision-making in the country."

Al-Suwaidi (2010) stated that this type of research provides a necessary knowledge base for decision-makers and

policymakers. On the other hand, decision-makers can use it to gauge public opinion on various issues. It also serves as a means to assess the efficiency of public and private services provided to the public, identify shortcomings, and subsequently work on improving these services. Al-Amir (2007) indicates that one of the factors influencing the increase in the effectiveness of research centers is the nature of the prevailing culture in the local community. Many centers rely on conducting opinion polls on various issues, and if they are met with rejection and lack of credibility in the answers by the community, this will lead to an imbalance in the role of the centers in supporting Decision-making. While the results of the study showed that 48% of the centers do not conduct this type of research, and there are many reasons for that, as one manager indicated that the center relies on other research centers to conduct these polls, and it also follows up the local indicators issued by the National Center Statistics and Information. While several managers indicated that the substantive specialization of the center has no direct relationship with society, and opinion polls are conducted by the private sector, and these centers do not interfere in their work.

8.1.6 Future Studies

The results of the interviews indicate that 86% of the research centers in Oman are interested in conducting future studies of interest to decision-makers in the fields of development. The future studies conducted by the centers have a major role in shaping the future for Decision-making. The department head (RC21) indicated that "the center is carrying out forward-looking studies for the future... which give a kind of future reading and support decision-making." Another center manager (RC5) stated:

The draft National Strategy for Adaptation and Mitigation of Climate Change: Vision 2040 is one of the future studies, and it is a central document of interest to decision-makers in setting future policies 2020 - 2040. It also gives the country directions and future paths, and one of the first changes we made is changing the regulation of Omani Climate Affairs 2016 in line with the international standards.

(RC3) indicated that "the center is concerned with future studies...and they should stem from the center, or at the request of government or private parties, and among the future development issues under study are smart cities. A contract was signed with Omantel to equip a new Internet of Things laboratory to study smart cities..."

The study's results are in line with what Musa's study (2012) emphasized, that future studies conducted by research centers work on monitoring changes in phenomena and issues, attempting to understand the past and the present, identifying various possibilities for their future evolution, and providing results that assist decision-makers. These studies are essential in the development plans of decision-makers in various fields, whether they are political, economic, social, or cultural.

8.1.7 Research Chairs

The results of the interviews indicated that 29% of the study population have research chairs, and some have completed them. (RC11) indicated that "the decision makers are the ones who decided that this chair should be created to meet Oman's current and future needs for development, and to benefit from nanotechnology. There is also a joint committee accompanying the chair to follow up on developments."

The results indicated that several research centers obtained research chairs funded by the government sector (RC5 & RC9). (RC9) stated that the center has an Oman Chamber of Commerce and Industry (OCCI) chair for economic studies, and it is the first research chair in Oman concerned with the Omani economy, which aims to extrapolate the Omani economic reality and anticipate the future in line with the ninth five-year plan 2016-2020, and conduct research to provide solutions to various economic issues related to social and economic development, including the issue of job seekers, sustainable financial development, global trade...etc. The chair serves the decision-makers of OCCI by providing them with studies. The decision-makers also participate in this chair through their presence on the technical and scientific committees. (RC5) indicated that "the center obtained a research chair related to industrial zones funded by the Public Establishment for Industrial Estates ... It is funded by decision-makers." (RC5) believes that the decision-maker does not fund any research project unless there is a direct benefit from it, instead of disbursing these funds to foreign companies that only submit a simple report, but when these funds are given to research centers, they employ national capacities, contribute to the localization of research, and provides decision makers with correct information of high accuracy and a high degree of certainty.

Certain centers also obtained research chairs funded by international organizations. (RC2) stated that the UNESCO Chair in Marine Biotechnology conducts qualitative research on strategic issues in marine biotechnology, and provides qualitative research outputs in vital fields that serve different sectors. The other chair is the UNESCO Chair for the Study of Ophiolite, which is proposed by the university and funded by UNESCO. Its aim is to look ahead and find an economic feasibility for ophiolite rocks in Oman. Decision-makers fully participate in this chair (RC12).

These chairs represent a link between these centers and various institutions, and recognition by the institutions of the role that these centers can play in developing their capabilities and potentials, and achieving their goals. The research chairs stem from the need for institutions to support research centers to provide them with information that enables them to address some of the problems they are facing, or to draw their future policies. Also, these chairs may be of a local, regional, or international level, which expands the circle of participation of research centers in decision-making at these levels. For example, there are research chairs between Sultan Qaboos University (SQU) and Petroleum Development Oman (PDO), and other research chairs between research centers in Oman and some of the Arab Gulf countries, and some of them from friendly and brotherly countries, which enhances the reputation of these centers and Oman in general. Al-Aqili and Humphreys (2012) indicate that the idea of research chairs is based on a partnership between an academic institution and a company, government agency, external party, or individuals. This company or entity provides the necessary financial support for the research activity of the chair, and then the academic institution conducts the research necessary to study a specific field of knowledge. The importance of the chairs is evident in that it focuses on areas of special value and a high degree of importance, and deals with social, economic, and educational issues. 71% of the study population indicated that their research centers have not yet obtained research chairs, and there are many reasons for that, including that these chairs are only limited to universities, while research centers affiliated with ministries cannot obtain them, and some of these centers have submitted proposals to be funded by the Research Council or other parties, while two managers believe that the problem with the lack of research chairs is the lack of financial support from the funding agencies, and the shortage of manpower in the research centers, so they don't like to get involved. This is consistent with the result of the study by Grant and Drakich (2009), which evaluated the Canadian research chairs program, and concluded that it is necessary to provide adequate support for the chairs to carry out their functions, and to choose scientific and administrative competencies according to objective bases and considerations.

8.2 Types of services and initiatives are offered by research centers to support decision-making.

8.2.1 Consulting services

The results of the interviews indicated that 86% of the research centers provide consulting services to government and private parties. The study community providing these consultations agrees on their importance in supporting decision-makers. (RC1) stressed that "these consultations are very important because they are directed for development purposes, specifically for drawing up Oman's future development policy, whether it is related to the production sector and the private sector, or in relation to the service sector and the government and its evaluation". This is confirmed by Hassan's study (2017) that research centers constitute back lines to support decision-makers by providing advice and guidance on priorities and immediate urgent developments through direct contact and research.

While some centers provide other types of consultations. (RC11 & RC13) mentioned that they provide consultations by analyses, as their centers contain accurate laboratories and analytical equipment, and most of the consultations are for the private sector, especially Oman oil sector. These consultations contribute to reducing costs for these companies, because if these samples were sent abroad, the cost would be higher.

As for the methods of communicating with decision-makers with regard to research consultations, (RC3) said that the decision-maker is interested in communicating with the center for advice on a specific issue, as the communication process takes place in two ways, "the first is the most common method, as we communicate with the decision-makers and invite them to visit the center and discuss the importance of conducting research or the need for a research chair, and the second way to communicate, which is rare, is for the decision-maker to come to the center."

In addition, some centers provide consultations to international institutions, (RC20) stated that the center "provides a

range of advisory services to countries such as Palestine... Experts from the center were sent to provide consulting services related to water in order to solve and address these problems." (RC1) stated "The study of divorce with the Ministry of Social Development is examining an issue that the country suffers from... The center was asked to be a member of Gulf committees... Consultations were also provided to them in the presence of former ministers in the GCC countries and undersecretaries of ministries and experts." This is what the study by Al-Hadhrami (2021) confirmed, that scientific consultations reflect the level of confidence that both public and private sector institutions place in research centers, and demonstrate decision-makers' awareness of the importance of scientific research in development.

8.2.2 Joint Committees

The results of the interviews showed that 73% of the research centers under study have joint committees with governmental or private agencies, and this explains the tendency of these centers to stimulate the committees to discuss issues of interest to decision-makers, and to ensure that research topics reflect their needs, and to follow up the implementation of research and take its recommendations. These committees have a role in supporting decision-making, as they assist the authorities to make sound decisions, and to provide solutions to the problems facing these authorities.

These committees have a role in supporting decision-makers. (RC10) indicates the importance of these committees saying "...this committee follows up on policies or research related to renewable energy in Oman, and this committee will have a role in setting policies in the future, and will benefit decision-makers in Oman." (RC6) also emphasized that "the committees assist the companies in making sound decisions, as through them information and ideas are exchanged, feedback from research funded by them, identification of problems they face, and work to solve them through the center research and laboratories".

(RC13) indicated that the center participated in a committee with the Ministry of Environment, Ministry of Tourism and Sultan Qaboos University, on endangered green turtle reserves, and this committee has an active role in supporting Decision-making, through which the reserves were developed...". While (RC5) stated that to define the effectiveness of the committees, and to know their role in supporting Decision-making, there is a department specialized in the affairs of committees and councils at SQU level, and it follows up monthly on the implementation of the recommendations of the committees.

Despite the existence of these joint committees to follow up on the implementation of research, and the extent to which recommendations are taken, there are several centers that are satisfied with implementing and presenting research, and as for following up, they believe that they are not within the competence of the center. These centers represent 27% of the research centers, but some centers indicated that they hold semi-periodic meetings with them. (RC9) mentioned that "the role of any research center is conducting research and consulting, and has no executive, legislative or oversight role, and those who play these roles are established institutions."

8.2.3 Conferences, Seminars, and Training Programs

All the research centers under current study indicated that they are interested in organizing research activities through conferences, seminars, forums, workshops, or training courses. The study community unanimously agreed on the importance of involving the decision-makers in the government and private sectors, and they are all interested in sending recommendations in the form of reports to be submitted to decision-makers in various relevant authorities.

(RC9) indicated that the center is concerned with these research activities, and also cooperates with other bodies to organize them. They deal with issues of current developments that benefit decision-makers, the most important of which is the panel discussion entitled Exploring Prospects for the Future of the Omani Economy, and was sent to the Ministry of Finance. The Ministry was keen to get the recommendations, and this indicates the interest of decision-makers. (RC21) also stated that when the center incubated the public / private sectors partnership team, "it was able to assist the team in making decisions that directly affect the development of Oman ... These sessions come out with a lot of perceptions, and accommodate various categories of the private sector, thus, the center has an educational and awareness role for the private sector."

The study community unanimously agreed that decision-makers in government and private organisations have an active participation in these activities. This illustrates the centers' interest in stimulating communication with these parties, and

the importance of communicating results and recommendations so that they can be of benefit once implemented to contribute to supporting Decision-making. These are expected results due to the nature of the structure of research centers and the nature of their work, which is manifested through a set of services and activities to express their content and achieve their goals through the transfer of knowledge for the decision-makers. Such services and activities are also a means to activate the benefit from the research results and attract decision-makers, in addition to their importance in the marketing process of the center. The seminars and conferences, they are an effective way to shed light on various issues and the participation of decision makers, and come up with recommendations that can be applied on the ground. This result agrees with what McGann (2005) indicated that American research centers are interested in conducting lectures, seminars, and conferences to effectively disseminate information. The Center for Strategic and International Studies (CSIS) has organized 700 events throughout the year. The AEI Research Foundation organizes 200 annual events. It also agrees with the results of Al-Jumaili's study (2016), which concluded that Iraqi research centers depend on seminars and conferences to address problems, issues, and phenomena, and that the nature of the relationship of lectures to the needs and problems of society ranges from medium to strong. Certain community institutions take the results and recommendations of the seminars as a means of marketing. Zakia (2015) indicates that Arab research centers are witnessing a remarkable development, with increasing interest in conducting scientific and academic conferences and seminars that discuss various local, regional, and international issues in view of the changes in the Middle East region, which prompts the need to focus on finding a mechanism to stimulate their use for decision-making institutions.

8.2.4 Community Initiatives

The role of the centers is not limited to conducting research activities, as some of them launched community initiatives and training programs for the community that lead to highlighting the concept of joint cooperation between the government sector and the community in implementing programs and activities that contribute to the advancement of society for the better. Social Fund for Development (2016) in Yemen confirms that community initiatives contribute to involving society in decision-making and implementation processes regarding issues of concern, in addition to its contribution to stimulating the role of society in planning and strengthening the relationship between the community and local institutions.

(RC16) indicated that "the center has an effective role in communicating with civil society, as it meets with the public every month through the Scientific Forum." (RC20) stated that the center launched training programs for water desalination, to train fresh graduates in Oman, and has trained more than 2,000 persons, and this contributes greatly to capacity development and Omanisation, and to providing jobs for Omanis in this field.

9. Conclusion and Recommendations

This study aimed to reveal the reality of Omani research centers and their role in supporting Decision-making. The findings indicate that these centers have made a major impact on decision-making. They have specifically tailored their approach to address the unique areas and concerns in which they specialize. The results of the study revealed that there are several types of researchs. Such as: unfunded researchs, researchs funded by internal grants, Contractual researchs, strategic researchs, research chairs, future studies and Local opinion poll studies. The study also found that there are a number of services and activities provided by research centers to support decision-making, including research, consulting services, joint committees, conferences, seminars, training workshops, and community initiatives.

Based on the study's findings, The study recommends a number of recommendations, among the most important of which is to promote collaboration between regional research centers, create a network of people to share experiences with, lower the cost of research and activities, and conduct joint research to avoid duplication. The centers can achieve this through knowledge sharing. The study also recommends the participation of research centers in policy-making and decision-making committees in the relevant authorities. In turn, this promotes the roles of research centers by allowing them to gain insight into the interests of decision-makers and the type of research that aids in the formulation of prudent policies and supports decision-makers in arriving at wise choices based on scientific research methodologies. Also, create a directory of research centers at the level of the Sultanate of Oman to unify efforts in research and facilitate access to them.

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