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Investigating the Research Challenges in the Arab World

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Abstract: Scientific research is fundamental for knowledge development, yet researchers in the Arab world face many challenges that prevent productivity. This study aimed to analyze obstacles faced by Arab researchers across the region, including Palestine. A mixed methods approach gathered insights from a questionnaire of 86 Arab scholars, in-depth interviews with three researchers, and a literature review. Results showed limited research spending, averaging 0.5% of GDP versus 2-4% in developed nations. Deficient facilities, equipment shortages, and brain drain also constrained productivity. Moreover, academic freedom and support for new ideas were lacking. Publications in top journals were few. Initiatives are urgently needed to increase funding, upgrade infrastructure, improve training, boost private sector linkages, enhance intellectual liberty, and refresh the Arab research environment. Offering the appropriate funds and training can help Arab nations reclaim their rich history of scientific excellence. The researcher provided recommendations based on the results.

Keywords: Research Challenges; Arab Scholars; Rsearch Fund; Research Infrastructure; Research Development.

1.INTRODUCTION

Scientific research is the basis for the development and prosperity of societies and a fundamental pillar for building human knowledge. It contributes to solving problems, develops technological knowledge, and works on the improvement and progress of society. Scientific research also helps generate new ideas and solutions for solving problems, which can be transformed into economic and social projects, raising income and livelihood. Thus, it becomes clear to us its great importance and the need to upgrade it and push it to the right track. Countries' reliance on it has also increased recently due to their awareness of its importance in progress, civilization development, and nature.

Arab researchers face numerous challenges in conducting research and publishing their work in the Arab world. A major obstacle is limited funding and resources. Most Arab countries invest little amounts in research and development. According to UNESCO, research expenditure as a percentage of GDP is about 0.5% in most Arab nations, compared to 2-4% in developed countries. Limited funding restricts the ability of researchers to carry out studies and acquire equipment. There is also a shortage of qualified research personnel due to brain drain. Many scholars leave to pursue opportunities abroad (Bsharat et al., 2023). Additoanlly, their writing level is sometimes unacademic thus they must avoid the vague language in their research (Ismail et al., 2023).

Furthermore, research infrastructure in the Arab world is inadequate. There are few well-equipped laboratories, research centres, and academic institutions. Researchers frequently complain about lacking academic freedom and autonomy. Finally, the publication and indexing of Arabic research in international journals and databases remains low. This limits the visibility and accessibility of research from the region. Initiatives to support researchers and reform academic institutions are critical to addressing these challenges.

1.1 Statement of the Problem

Scientific research productivity in the Arab world is declining despite its historic leadership in science. Restricted funding, inferior infrastructure, brain drain, and limited international collaboration prevent Arab nations from

conducting impactful research. Thus, this research article explores the challenges Arab researchers face in their research writing.

1.2 Aims

Based on the short preview above, this study aimed to discover the difficulties facing scientific research in the Arab world that prevent it from achieving its goals. This study aims to analyze the current state of scientific research in the Arab world and identify the major impediments facing researchers that hinder the productivity and advancement of science across the region.

1.3 Significance of the study

Understanding the challenges facing Arab research is important to developing policies and initiatives to reinvigorate scientific advancement. Enhancing research capacity can catalyze innovation, economic development, and solutions for regional issues in Arab nations.

2.LITERATURE REVIEW

Scientific research output in the Arab world falls behind other regions despite harbouring a rich history of scientific advancement. Several challenges continue to prevent research productivity and progress. A fundamental issue is the lack of funding. Research spending as a percentage of GDP is around 0.5% in Arab nations, far below the 2-4% in developed countries (Alshayea, 2013). This shortage of research funding restricts facilities, equipment, and personnel available to conduct studies.

Deficient research infrastructure also prevents productivity. Laboratories, research centres, and academic institutions in the Arab world often lack the facilities and equipment necessary for rigorous research (Masri, 2017). Good management of Arab universities smothers creativity and independent thinking among researchers (Khelfaoui, 2009).

Furthermore, research capacity in the Arab world is weakened by brain drain. High-achieving scholars are drawn abroad by rewarding opportunities and career advancement prospects (Masri, 2017). Ties between universities and industry are also weak. It limits the collaboration on solutions for economic and societal challenges.

Other roadblocks include scarce scholarly publications in international journals, minimal knowledge exchange between Arab researchers, and linguistic barriers preventing contribution to mainstream science conducted in English (Waast & Rossi, 2010). Concerted efforts are required to mobilize resources, attract competent researchers, and cultivate supportive academic environments.

Research productivity in the Arab world compared to other regions, despite harbouring a rich history of scientific advancement. Several obstacles continue to hinder the ability of Arab scholars to conduct impactful research. A primary challenge is scarce research funding and resources. Most Arab nations devote less than 0.5% of their GDP to research and development, constrained by small budgets and low prioritization of science (Masri, 2017). This restricts facilities, equipment, materials, and personnel available for rigorous research. Deficiencies in research infrastructure, including outdated laboratories, libraries, databases, and slow internet connectivity, also hamper productivity (Khelfaoui, 2009).

Moreover, the quality of research and innovation is weakened by brain drain, as many accomplished Arab scholars are drawn to opportunities abroad (Masri, 2017). Authoritarian administrations within Arab universities stifle creativity and discourage unconventional ideas among researchers (Waast & Rossi, 2010). Bureaucracy often dominates decision-making, obstructing ambitious projects. Weak links between academia and private industry limit collaboration on practical solutions for economic and social issues.

Palestinian scholars face additional challenges within restrictive political environments, including difficulties accessing field sites, cooperation with foreign researchers, and publishing research critical to government policies (Khazen, 2018). Enhancing research capacity across the Arab world will require increased funding, upgraded facilities, greater academic freedom, and policies encouraging the return of expatriated scholars.

3.MATERIALS AND METHODS

This study used a mixed methods approach to assess the challenges facing researchers in the Arab world. AbuHamda et al. (2021, p. 71) stated, “Quantitative and qualitative methods are the engine behind evidence-based outcomes.” Quantitative data was gathered through a questionnaire distributed to 86 researchers across various scientific fields in Arab countries. The questionnaire consisted of closed-ended questions on a 5-point Likert scale, inquiring about factors participants perceived as significant obstacles to conducting effective research. Questionnaire topics included the availability of funding and resources, research infrastructure, academic

policies and governance, and opportunities for international collaboration. The questionnaire was distributed online to enable efficient data collection from researchers from multiple Arab nations.

Additionally, qualitative data was collected through in-depth interviews with three researchers working in academic institutions in Arab countries. The semi-structured interviews lasted approximately one hour and focused on gathering insights from participants' experiences regarding impediments to performing and publishing research. The interviews were conducted via phone or video conferencing and recorded with permission.

Furthermore, the researcher reviewed literature, including journal articles, reports, news publications, and online sources, to compile secondary data on issues and limitations confronting Arab research. Integrating quantitative questionnaire responses, qualitative interview data, and information from the literature review allowed triangulation to validate findings regarding obstacles to research productivity in the Arab world. The mixed methods approach provided complementary information to develop a comprehensive understanding of this topic.

DISCUSSION AND RESULTS

Political and economic factors profoundly influence the climate for scientific research in the Arab world. Political instability and conflict in many Arab nations hinder research productivity and advancement. For example, the ongoing Israeli occupation of Palestine severely restricts access to materials, resources, and collaboration opportunities for Palestinian scholars (Surakji, 2023). Restrictions on the import of laboratory equipment, chemicals, and even paper and books critically obstruct research initiatives, as noted by Dr. Ihab Surakji in a personal interview. Furthermore, collaborations between Palestinian and international researchers encounter numerous barriers under the occupation. The stifling of economic development under military occupation also limits funding available to academia for facilities, personnel, and research projects. Political instability and economic constraints create significant challenges for scholars conducting impactful research in Palestine and other Arab countries experiencing turmoil. More stable, peaceful political environments and increased academic funding are requisite for nurturing a vibrant research culture across the Arab world.

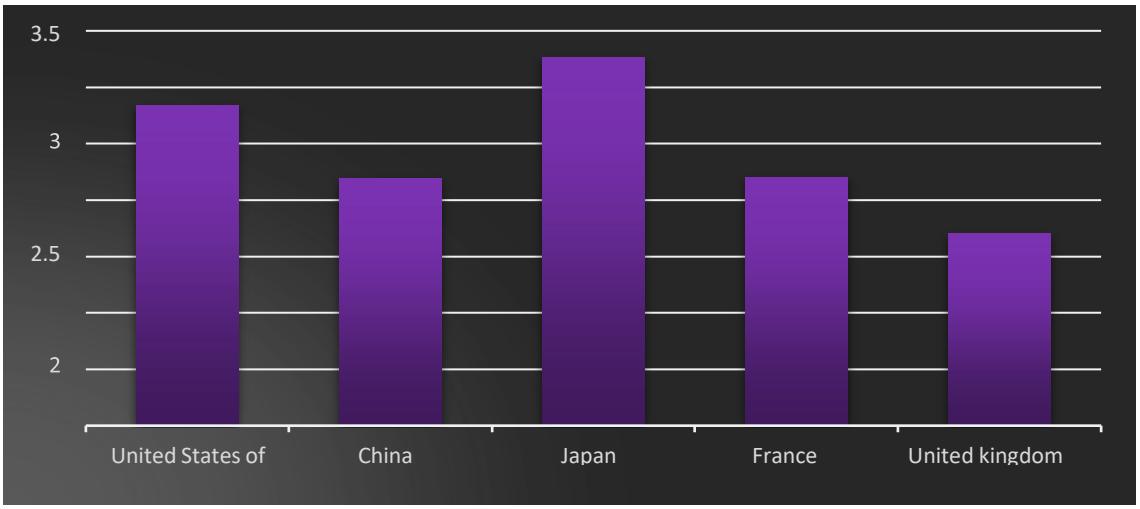
Restrictions on intellectual freedom and expression in some Arab nations also hinder the advancement of scientific research, as scholars may fear voicing unconventional perspectives or critiquing policies. As Dr. Maher A.K. (2021) notes, researchers avoiding controversial stances or topics to evade threats or detention limits idea exchange and inhibits progressive research (p.16).

Additionally, the lack of research funding and resources accessible to Arab scholars severely impedes productivity. Insufficient financing from governments and private sources to acquire necessary laboratory equipment, data analysis software, scholarly databases and other research necessities constitutes a major practical barrier, as emphasized by Dr. Islam Diab and Dr. Ihab Surakji (personal communication, December 21 – 24, 2023). Moreover, research expenditure at Arab universities amounts to less than 1% of institutional budgets, drastically lower than the 5-7% spent by universities in Western nations. Increased government and industry investment in academic research is imperative to equip scholars with the tools, materials, and environment to advance science and knowledge significantly.

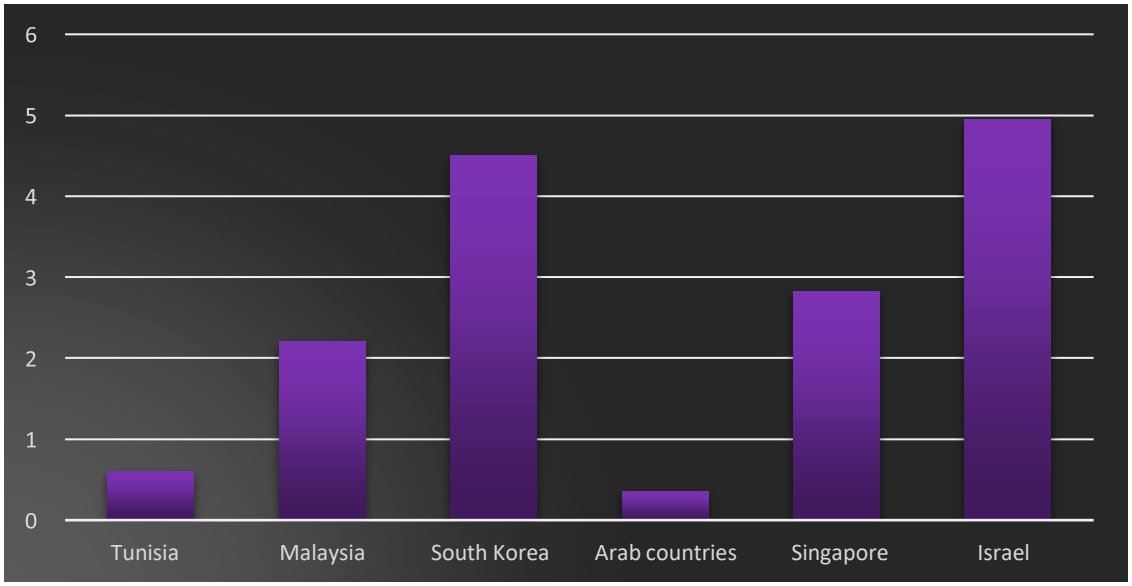
To foster more impactful research, increased expenditure on academic research in Arab nations is imperative, whether by universities expanding budgets or governments enhancing funding for higher education institutions. As Dr Islam Diab (personal communication, December 21, 2023) emphasized, modern research infrastructure, including advanced laboratory facilities and equipment, is often lacking, hindering investigations. Moreover, few academic-industry partnerships exist to translate university innovations into commercialized products, as many Arab countries lack business incubators to facilitate this technology transfer process.

Furthermore, the pervasive brain drain drastically diminishes the pool of talented researchers in the Arab world. Scholars frequently pursue opportunities abroad without attractive academic positions and salaries, as Dr. Diab (2023) and Dr. Khadija S. (2019) noted. Losing high-potential researchers perpetuates a cycle of depleted research capacity. Comprehensive strategies are required to counter brain drain, such as enhanced research funding, improved facilities and resources, increased faculty compensation, and integration of business incubators to apply findings toward economic and social progress. Sustained efforts to strengthen Arab research environments will be important to retaining promising scholars and nurturing scientific advancement.

Expenditures on scientific research from the GDP of major countries 2018



Expenditure on scientific research from GDP in countries of different continents



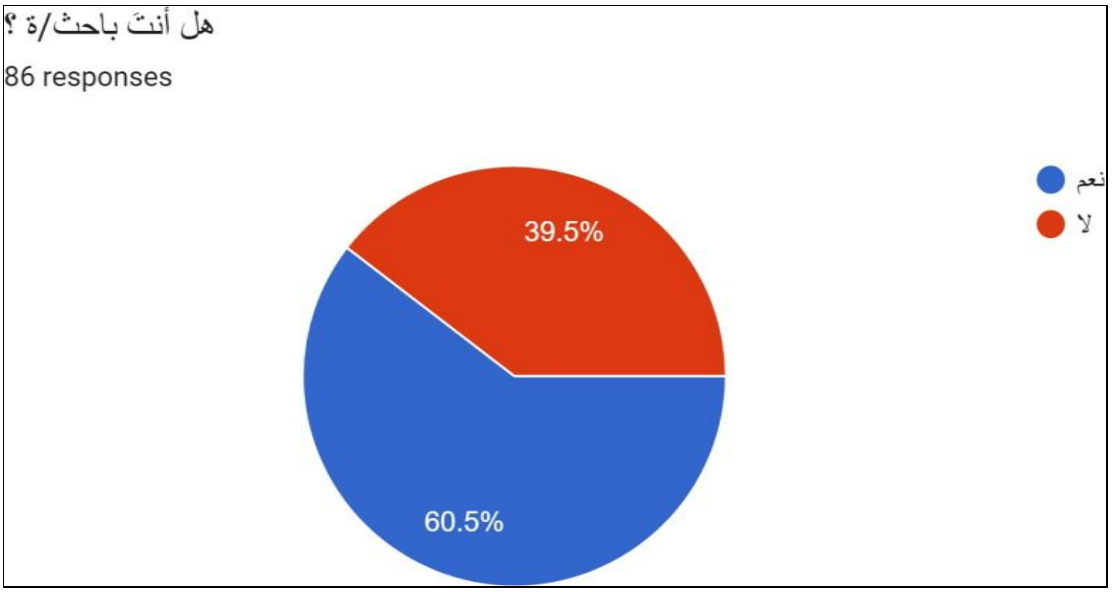
[Figure 1]

Source: *UNESCO Science Report, 2015 / P, 9 and World Bank data, 2018.*

Expenditure on research and development in Arab nations significantly lags behind other regions globally. As depicted in Figure 1, Arab countries, on average, spend less than 1% of GDP on R&D, whereas Western and European countries invest 2-4% of GDP. This immense gap in research funding contributes to the relatively diminished research productivity and innovation in the Arab world compared to counterparts abroad.

Original survey data collected for this study corroborates the immense challenges Arab scholars face in conducting research. A questionnaire on research barriers was completed by 86 researchers across various disciplines in the Arab region. Results showed that 47% of respondents lacked access to scholarly databases and sources, 61% faced shortages of laboratory equipment and supplies, and 39% struggled with unreliable internet connectivity and outdated facilities.

Additionally, 55% reported minimal funding opportunities from governments or industry partners, and 68% felt their institutions did not prioritize research. These quantitative findings highlight the deficiencies in research resources, infrastructure, and support widely perceived by Arab academics to obstruct their productivity and advancement of knowledge severely. Comprehensive policy reforms will be essential to redress these impediments.



[Figure 2]

In addition to the aforementioned systemic challenges, social and cultural factors also hamper Arab research productivity. As Dr. Islam Diab (personal communication, December 21, 2023) noted, limited training opportunities hinder the development of researcher expertise and efficiency. Moreover, English proficiency among Arab scholars tends to be inadequate to effectively comprehend and contribute to the global scientific literature published predominantly in English. This impedes benefiting from previous findings and disseminating their own research discoveries.

Furthermore, communication gaps between academia and industry inhibit the application of university innovations, as emphasized by Dr. Ismail Warad and Dr. Ihab Surakji (personal communication, December 24, 2023). Collaboration to transform academic research into commercial products and services is sparse. Organization of the research process could also improve, as publication is often random rather than strategic, with few incentives for dissemination, according to Dr Diab (2023).

On a broader societal level, the cultural emphasis on rote learning rather than critical thinking and inquiry from childhood may also limit ingenuity and scientific curiosity. Comprehensive initiatives, from school education reforms to enhanced industry partnerships, are required to address these multifaceted social and cultural barriers constraining Arab research. Fostering a supportive environment for free intellectual exchange and nurturing a spirit of inquiry will be key.

Access to scholarly sources is another fundamental challenge for Arab academics. Dr. Ismail Warad (personal communication, December 24, 2023) noted that free access to journals, databases, and reference materials is scarce, restricting literature review and knowledge building. Moreover, some Arab universities claim joint ownership over the intellectual property of published research, diminishing faculty motivation along with the ability to receive individual acclaim, according to survey findings.

Problems also arise on the demand side, as interest in research appears misaligned with academic goals. Seeking only grades, financial gain, or organizational continuity rather than pursuing knowledge advancements for its own sake was reported in survey responses and emphasized by Dr. Warad (2023). Consequently, participation in research studies suffers, with poor questionnaire response rates hindering data collection, as mentioned by multiple scholars.

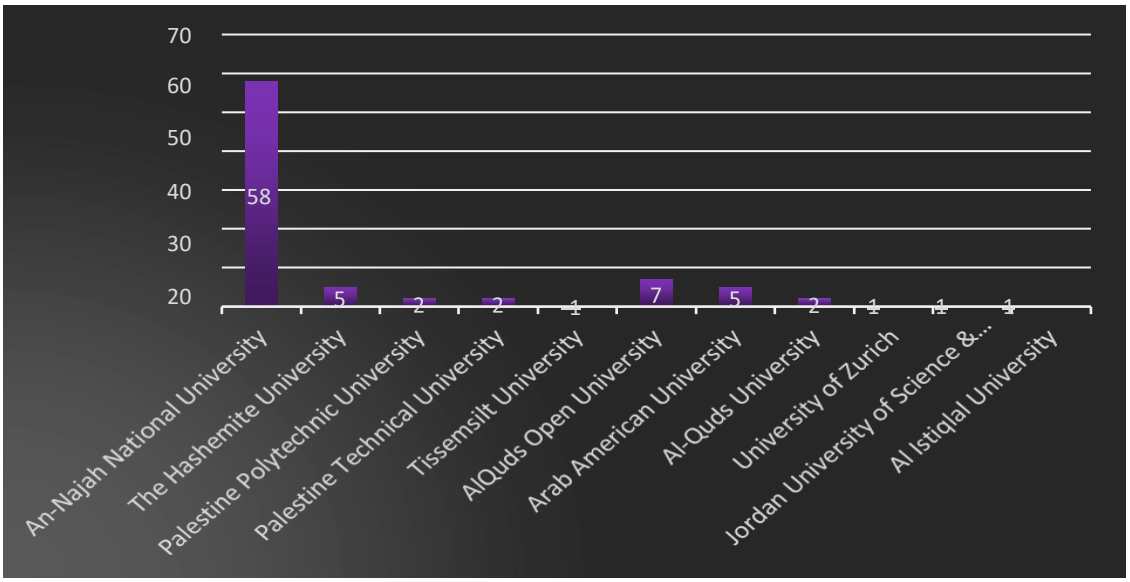
Lastly, limited high-quality local publication venues drive researchers to target international journals, which boosts visibility but reduces domestic exchange, as noted by Dr. Maher A.K. (2021). Local journals suffer from irregular publication and insufficient peer review. Fundamental shifts in academic values, systems, and resources are required to nurture a vibrant culture of inquiry in the Arab world.

Institutional and administrative policies in Arab universities also impede impactful research. As Dr. Khadija S. (2019) highlighted, academic studies in the region frequently remain theoretical rather than applied, yielding minimal practical impact. Furthermore, as noted by Dr Maher A.K (2021, p. 14), heavy teaching and administrative workloads detract faculty from research activities. Most Arab universities prioritize teaching obligations over research goals.

Mentorship and motivational support for Arab scholars are also insufficient, with minimal efforts to publicly recognize productive researchers through honors, encouragement or publication opportunities, as pointed out by Dr. A.K (2021, p.13). To enhance research productivity, Arab institutions must undergo profound reforms to incentivize research excellence, reduce bureaucracy, implement meritocratic policies, applaud achievements, and cultivate a climate favoring creativity over conformity.

The delay and slow procedures of the Ministry's Scientific Research Center to allow the researcher to enter schools and distribute questionnaires, thus delaying the publication of the research. Administrative regulations and obstacles (including the regulations of some universities and work in laboratories and some ministries, where it takes a lot of time, especially if the person is not a government employee).

Below are the results of my survey that the researcher also conducted on 86 people, and they are explained through a questionnaire showing the percentage of researchers in general and their percentage from each university, mentioning its name:



As for the size of scientific publications produced annually in the Arab world, the UNESCO report for 2015 indicates that the share of scientific publications in the Arab world (22 countries) represents only 2.4% of the volume of publications in the world. This is a small percentage and must be improved, as we will mention below.

Based on the study I conducted and my question about the level of maturity of scientific research in Palestine and the Arab world, I found that, unfortunately, the level of maturity is low and very small compared to other countries, for the reasons mentioned above, for example, when requesting data for specific research from places in the Arab world. There is a lot of procrastination, and if the data is originally submitted, on the contrary, foreign institutions share the data by simply indicating that it is for scientific research. From another point of view, the lack of support for research also reflects a very low level of maturity because this limits the progress of many researchers.

CONCLUSION

In conclusion, this research has highlighted the multifaceted challenges impeding impactful scientific inquiry in the Arab world, spanning financial constraints, inadequate infrastructure, bureaucratic roadblocks, and sociocultural disincentives. However, the central importance of academic research for economic and social progress is clear. By implementing strategies such as increased research funding, strengthened international collaboration, private sector partnerships, meritocratic incentive structures, enhanced research training, and public promotion of intellectual freedom, Arab institutions can foster environments where brilliant minds

flourish. With concerted efforts to unleash their human capital, the Arab world holds immense potential to reclaim its rich history of scientific excellence and pioneer solutions that propel prosperity across the region and globally. Sustained commitment to empowering researchers and progressing knowledge will be key.

At the end of this research, we can reach to the conclusion that scientific research is one of the most important pillars of economic and social development. It provides a vision for the future and the extent of its development. It also contributes to the success of ideas and businesses if an incubator is available to embrace the idea and expand the researcher's knowledge of the subject on which scientific research is being conducted.

RECOMMENDATIONS

To overcome obstacles facing researchers, Arab institutions should prioritize international collaboration through research partnerships with foreign universities and participation in European-funded projects. Providing scholarships for talented students to focus on studies and research without economic pressures can boost productivity. Effective marketing of scientific achievements and exchange programs between Arab universities for knowledge sharing are also advised. Moreover, strengthening industry linkages and technology transfer can catalyze innovation. Implementing merit-based incentive structures such as rewards, promotions and competitions can motivate excellence. Increased state funding for academia, ideally reaching at least 2-4% of GDP as in developed nations, is critical for facilities, materials and project support. Promoting intellectual freedom and free publication without fear enables vibrant exchange of unconventional perspectives. Multifaceted policy reforms are essential to empower Arab researchers and unlock their immense potential as global scientific leaders.

Furthermore, establishing business incubators across the Arab world can facilitate commercialization of academic innovations. Providing free online access to books and databases would enable more robust literature reviews. Government ministries should share relevant data files to aid research on key issues like water management. Coordination between universities and ministries to produce guides facilitating administrative research tasks could also help. Offering research skills workshops, engaging volunteers to mentor aspiring scholars, and providing elective research methodology courses could build essential capacity. A multifaceted approach strengthening infrastructure, resources, training and networks is required to nurture world-class Arab researchers equipped to pioneer scientific breakthroughs.

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