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Building a Knowledge-Based Economy in Oman: Educational Reforms under Vision 2040

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Abstract

Oman Vision 2040 is a bold road map towards transforming Sultanate economy that currently relies on resources to becoming knowledge-based economy (KBE), in which the source of sustained economic growth is innovation, education, and technology. The paper shall examine how educational reforms are key in bringing this change and the success rate of the present policies and programs with national goals. It assesses the extent to which policy reforms are aligned with labor market requirements, institutions are being remodeled in support of innovation and how digital learning is becoming an important facilitator of learning. By means of evaluating official strategies of the governments, academic sources, and regional benchmarks, the study given outlines the spheres of improvement, like curriculum renewal, digital education incorporation, and research advancement. Nevertheless, some challenges such as rural access gaps, decentralization, and low participation of the private sector, are reiterated. The paper can argue that the process of Oman shifting to a sustainable KBE will not only be about articulating policy, but it will also involve profound changes in culture, institutions and leadership to

promote the process of continuous learning, interdisciplinary learning and capacity building. Vision 2040 in general establishes a bright course of action that should be followed, but only regular launching of the plan and the willingness of partners to help achieve its goals can result in its full efficiency.

Key Words: Oman Vision 2040, Knowledge-Based Economy, Educational Reform, Digital Learning, Human Capital Development

1. Introduction

Vision Oman 2040 is the most extensive long-term plan to develop the country to make it more diversified and sustainable economy. It is a future-oriented strategy that gives high priority in improving the avenue of governance, developing the dichotomy of the private sector, citizens empowerment and improving the overall quality of life. The main strategic drift implied in Vision 2040 is its focus on the development of a knowledge-based economy (KBE), because such an orientation puts particular emphasis on the educational, research, innovation and technology sectors as the major drivers of economic success and social prosperity. The element of knowledge in KBE makes it a major element and factor that drives productivity and competitiveness both regionally and globally. Since Oman is gradually abandoning its classical dependences on oil and gas revenues, the importance of developing strong human capital and innovative culture grows time after time. One of the fundamental aspects that should be taken into consideration to ensure that this vision is actualized is overhauling the national education system to match the demands of a modern and knowledge-based society. These include modernization of the curriculum, increased investment in higher education and research, capacity building and incorporating technology in the teaching and learning activities. This paper is going to examine the Oman Vision 2040 initiated educational reforms and critically analyze its success in establishing the foundations of sustainable knowledge-based economy in the Sultanate.

2. Conceptual Framework: Knowledge-Based Economy

A knowledge-based economy (KBE) is a knowledge-intensive form of economy where knowledge production, distribution, and use also play an important part in achieving its economic growth, productivity, and competitiveness. In contrast to the conventional economies in which natural resources or low-skilled workforce plays one of the main roles, KBE focuses on intellectual potential, the development of technologies, and human capital. In these economies, knowledge is regarded as a strategy asset and economic prosperity is intimately connected with

concepts such as innovation, research, digital literacy and constant improvement of skills and competencies. Organization for Economic Co-operation and Development (OECD) identifies four important pillars which constitute the framework of a successful KBE. Education and training, information and communication technology (ICT) infrastructure, effective innovation system and economic and institutional incentives. All these elements complement each other to facilitate generation, dissemination and usage of knowledge across industries of the economy. As it is related to the case of Oman, the conversion to a KBE needs not merely the implementation of the mentioned pillars but also adjusting them to the local settings, cultural considerations, and economic circumstances. Differences example, ICT infrastructure should be improved keeping in consideration regional differences in access as well as education reforms should take into consideration the demands of the labor market in the country. In addition, promoting innovation will rely on entrepreneurial culture and encouragement of research and development by the collaboration of both the public and the private sector. As such, a sustainable KBE needs to be built in Oman through a strategic and context-sensitive process, which would be aligned with the broader goals of Vision 2040, and take full advantage of the Sultanate-based specific strengths and weaknesses.

3. Educational Challenges in Oman

Even though Oman has achieved significant milestones concerning the spread of education and an upward trend on literacy levels in the last few decades, there are several structural and system barriers still restricting the promotion of a stronger knowledge-based economy (KBE). To realize the objectives in Vision 2040, the major transformation in the education system is essential. Major challenges that should be tackled include the following:

1. Misalignment between graduates' skills and labor market demands

One of the major concerns of the education industry of Oman is the disparity that occurs between the packaged skills of the graduates and the demands to the skills of the employers. There is many graduates who were trained in a field that has few job opportunities or is not practically applicable. This ends up in the high rate of youth unemployment even though there are vacancies in professions such as technology, engineering and logistics. Graduates are also described by employers as deficient in soft skills, including communication, teamwork and problem-solving that are key attributes in a contemporary workforce. To resolve this situation, it is necessary to create more intensive collaboration between academic institutions and business, including the

creation of curriculum that takes into consideration the needs of the labor market not only nowadays but in the future as well.

2. Limited emphasis on critical thinking, creativity, and research

The Omani traditional teaching method is still dominated by teacher-centeredness that is basing the teaching techniques on rote learning instead of inspiring learners to think independently. Consequently, there is a tendency that students do not have critical thinking and analytical skills towards innovation and the creation of knowledge. Moreover, research and inquiry-based learning receives little focus both at secondary and tertiary level. Building a culture of questions, inquiries and investigation is necessary to achieve innovation and being in line with the principles of KBE. Such a transition necessitates alternative pedagogical approaches where students should be a central focus of learning, process-based education, and cross-disciplinary problem-solving should be emphasized.

3. Low enrolment in STEM (Science, Technology, Engineering, and Mathematics) fields

Technological innovations and diversification of an economy are centered on STEM fields. Nevertheless, the enrolment in STEM programs is still relatively low in Oman especially in the female students. Among the contributing factors, we can name a lack of interest along with a low level of exposure to STEM careers and the views of these subjects as challenging or unpleasant. Shortage of the STEMs graduates limits the ability of the nation in building essential industries like information technology, renewable energy and scientific research. Schools need to play an essential role in endeavors to foster STEM education, including the implementation of interesting science subjects, career advisory as well as mentorship, and relevant practice to make students have interest and involvement.

4. Insufficient teacher training and curriculum modernization

Educators play a central role in influencing the learning process, but most educators in Oman cannot gain access to continuous professional development. This is compounded by the lack of qualified teachers particularly in specialized areas like science and mathematics. In addition, the current curriculums tend to be old-fashioned and fail to incorporate new trends and technologies. The education quality is not likely to improve without the constant efforts to train teachers and renew the curriculum. It is vital to present training courses that will be devoted to teaching methods of the time, the use of digital applications, and approaches to developing creativity and innovation.

5. Underdeveloped vocational and technical education pathways

Even though the university education is usually the priority, vocational and technical education (TVET) is relatively unevolved and unvalued in Oman. It has contributed to excessive dependence on academic degrees, and sub-optimal use of skills sets, which are needed in varied industries. The reinforcement of TVET pathways may contribute to the solution of the skills gap, minimizing unemployment, and providing more inclusive opportunities to youth. To accomplish this Oman needs to invest in advanced training facilities, design competency-based curricula and improve the social face of vocational-based career in social awareness programs. To achieve the objectives of vision 2040, Oman must face these challenges in the field of education and eliminate or solve them by exercising certain types of reform, strategic investments and a paradigm shift regarding the nature of knowledge development and utilization. It is at this point only that the country can build a good foundation for the sustainable, inclusive, competitive knowledge-based economy.

4. Educational Reforms under Vision 2040

Oman Vision 2040 lays out a strategy roadmap that will enable Sultanates to be converted to a diversified and knowledge-based economy. Education stands at the center of this change and is accepted not only as an agent of sustainable development but also as a product of it. The vision recognizes that, to attain the goals of becoming competitive and the leader of innovations globally, the educational system as we know it would need to be redesigned radically. In response, Vision 2040 presents a few disruptive changes addressing the major shortcomings in the existing system and focusing on developing a future workforce. These changes are curricular redesigning, increased access to higher education, expanded training of vocations, exposure to the digital world, and quality assurance.

1. Curriculum Overhaul: From Rote Learning to Outcome-Based Education

Upon the reform agenda is the redesign of the national curriculum as one of the core pillars. Oman education system has traditionally focused on rote learning and assessments through examination. Although the method is beneficial in terms of content recollection, it fails to teach practical skills required at progressive workplaces including critical thinking, creativity, teamwork, and problem solving. Vision 2040 includes the idea of moving to an outcome-based education (OBE) model of education where everything revolves around what the learners are supposed to be able to perform after the completion of an educational experience. These are not only academic contents but also 21 st century skills, including digital literacy, emotional intelligence, civic duty, and entrepreneurship. The revision of the curriculum content toward

more interdisciplinary orientation and being more application-related, as well as active learning techniques like projects, debates, simulations, and group work become more central. Further inquiry is also being given on the need to combine lessons in environmental sustainability, national citizenship and international citizenship in the classrooms to ensure students learn to be a professional in their respective fields of study as well as responsible citizens both socially as well as towards others.

2. Higher Education Development: Research, Industry Linkages, and Postgraduate Growth

Considering the importance of higher education on enhancing innovation and advancing knowledge-based economy, Vision 2040 gives high priority to modernization of universities and research and development institutions. Among the strategies, it is significant to mention that postgraduate education is to be expanded and improved, particularly, in areas that can contribute to the national development objectives that include renewable energy, biotechnology, artificial intelligence, and logistics. Research capacity is being modernized by establishing special research centers and allocating more finances to scholarly studies and encouraging faculty research activities. Oman intends to expand its presence in the world in terms of research and become a regional center of knowledge production. Further, there is emphasis in Vision 2040 on the role of improving the matrimony between academia and industry. Universities are required to expand their relationship with the businesses so that the output of research reflects the needs of the real world and that the graduates are ready to join the workforce. This is composed of collaborative research projects, internship, cooperative education and collaborative innovation platforms involving the students, faculty and industry players. These efforts are geared towards producing an innovative ecosystem in higher education that is responsive and globally competitive in the face of the local, as well as international labor market needs.

3. Vocational Training Expansion: Technical Education and Employment Alignment

The next important reformation direction of the Vision 2040 is the upgrading and widening of vocational and technical training (TVET). Vocational education is an aspect that has been poorly valued in Oman but is currently seen as a method of eliminating the youth unemployment in the country and providing learners with skills that will help them secure employment easily. Vision 2040 forecasts a big investment in technical colleges, training centers and competency-based programs that directly meet the needs of the labor market. The posterity of those institutions is getting a name change and updating to lose part of the stigma that vocational schools are a cog to academic ones. Sensitization programs are being used to shift the thinking of society and make

the office of a trained skill-performer worthwhile. Beyond that, the government is in progress to align vocational pathways nearer to employment strategies. This comprises bringing the employers on board in curriculum development, design of apprenticeship programs, and articulate well-established pathways that enable vocational graduates to continue to higher education in case they want to. The idea of these changes is to provide vocational education as a prospective and desirable possibility of Omani youth.

4. Digital Education: Integrating ICT and E-Learning

The education reform agenda of Vision 2040 is based on Digital transformation. The COVID-19 pandemic pushed the popularity of digital tools, and this trend continues in Oman now, where the future leaders are working to develop a more versatile learning environment with increased use of technologies. Examples of reforms involve the incorporation of the Information and Communication Technology (ICT) in the day-to-day teaching and learning. The digital infrastructure is being installed in schools and universities such as smart classrooms, learning management systems (LMS) and high-speed internet connection. The teachers are undergoing professional training on how to maximize instructional technology to be used in teaching, assessment, and to engage students. Moreover, there is a development of a virtual learning environment and an e-learning platform to help in the blended and distance learning. This is special most especially when student of remote areas and rural areas are given access to education. They are also creating more chances to learn throughout life and update professional skills, by the promotion of open educational resources (OER) and online certification programs. These efforts are to support the learners in the digital economy and make sure that the education system in Oman will be resilient, inclusive, and innovative.

5. Quality Assurance and Accreditation: Setting National Standards

Vision 2040 focuses on the structures of high-quality assurance and accreditation to maintain the efficiency and coherence of these educational reforms. It is imperative that the country set out and implement national standards in educational institutions, curricula as well as academic programs to continue with high degrees of quality and accountability.

The core body in this is the Oman Authority for Academic Accreditation and Quality Assurance of Education (OAAAQA). It is charged with the responsibility of assessing institutions and accreditation of programs and the ongoing assessment through evidence-based reviews and international benchmarking of standards.

The same is being applied to quality assurance of vocational and privately run education so that there is even a parity among standard institutions at all levels. There are also performance

indicators and data systems being built to track performance, inform policymakers and build a culture of excellence and openness.

The reforms would not only achieve better results but would strengthen the trust of the common people in the education system and become a focus point of attraction to international students and partners.

Education reforms in Oman vision 2040 are holistic and progressive in nature where all areas of the education structure are covered with a vision of identifying a knowledge-based and innovation-oriented society. Through the process of redesigning curricula, enhancing higher education, increasing vocational opportunities, adopting digital transformation, and focusing on quality through accreditation, Oman is setting the stage to be able to provide a resilient, skilled, competitive workforce with the capacity to address the challenges of the 21st century.

5. Progress and Implementation

The Oman Vision 2040 has an ambitious plan of transforming Sultanate to have a diversified knowledge-based economy. Although the reform of the educational system is complicated and long-term in nature, its meaningful advancements have been achieved due to numerous initiatives, institutional changes, and manipulations of several policies. Such developments signify that an environment of knowledge-based economy (KBE) is gradually being established. The section also presents the main initiatives and developments that reflect on the advancement of educational reforms within the framework of Vision 2040, yet it considers major implementation challenges that have still to be resolved.

1. The Education and Training Strategy 2040: Aligning with Labor Market Needs

The Education and Training Strategy 2040 is one of the richest policy tools that are in line with the vision of 2040. The national strategy has been used as a roadmap to be ensuring that education results are intertwined with the changing essence of its mission is getting it right so that the Oman education and training systems graduate skillful, competent and qualified individuals with knowledge and skills required in an economy running in the fast pace, an economy that embraces innovation. This plan focuses more on the result-oriented learning, competency structures and increased integration between schools and employers. One of the biggest characteristics of the Education and Training Strategy is that it involves lifelong learning and development of skills. It encourages open learning routes, prior learning recognition and incorporation of soft skills like communications, problems solving and flexibility into the

curriculum. It also demands routine analysis of the labor market that would keep curricula up to date with new requirements put in place by the industry, particularly in industries focused by Oman Vision 2040, including logistics, tourism, renewable energy and information technology. This approach has also promoted the establishment of country occupational standards which act as training and occupation certification guidelines in various sectors. These guidelines serve to facilitate such that vocational and technical training programs are closely connected to the practical job requirements, improvement of employability, and minimization of the skills mismatch that afflicts the Oman labor market historically.

2. Innovation and Entrepreneurship in Higher Education

The tasks of improving innovation and entrepreneurship education should also be considered as another area of great progress, especially when it is taught in the higher learning institutions. The most prestigious Sultan Qaboos University (SQU) of Oman has established various programs and initiatives that would enhance the culture and atmosphere of entrepreneurial thinking, creativity, and innovation among the students and faculty. A case in point is that SQU has formed an office of Innovation and Technology Transfer that creates start-ups by students, registered patents, and assists in the commercialization of university research. There are new degree programs being designed in entrepreneurship, business innovation and applied sciences to develop problem-solving skills and foster independent thinking. In addition, incubation facilities, including the SQU Innovation Park, offer mentorship services, access to funds and networking support to potential entrepreneurs. Other institutions like the privately owned universities have followed suit. Universities such as Muscat University and German University of Technology in Oman (GUtech) are making entrepreneurship modules part of the undergraduate curriculum, holding innovation bootcamps and making strategic links with domestic industries. This is to help achieve the Vision 2040 goals of an innovative ecosystem connected between research, education, and business to economic diversification. All these reforms have a common objective of transforming the current view of higher education as primarily academic focused to a place that will stimulate knowledge generation, applied research and business opportunities.

3. The Role of the National Center for Vocational Education and Training

Oman was aware that solid vocational education is required, and that is why it created National Center of Vocational Education and Training (NCVET) to help to organize and improve the technical education level all over the country. The center plays a key role in the achievement of the initiative by the government to popularize vocational education as a prestigious career. The role of NCVET is to formulate standardized vocational qualifications, accreditation of training

providers and the provision of training programs which match priorities of national development. The center works together with the private sector to make sure curricula meets industry requirements in terms of the skills required in the construction industry, manufacturing industries, automotive repair and hospitality industry. Notably, NCVET is actively trying to integrate vocational pathways into the general and higher education system with the view to providing students with the ability to switch between the academic and the technical streams in a less defined manner. This is increasing the social mobility and increases widening of opportunities to learners. Practical training in apprenticeships and work-based learning is also an obligation on the center, hence enhancing the connection between learning and work. In the long term, it is hoped that NCVET will become part of the strategy of Oman to curb youth unemployment rates, tap the labor market potential, and enhance economic diversification.

4. Acceleration of Digital Learning Infrastructure Post-COVID-19

The pandemic of COVID-19 became the landmark of digital education in Oman. Due to the closure of schools, the Ministry of Education, and the Ministry of higher education, research and innovation reacted fast, putting in place emergency remote learning strategies. Such an unanticipated interruption became a driving force of digitalization in the field of education. The focus was on heavy investments in creating Learning Management Systems (LMS), virtual classrooms, and e-content systems. Online pedagogy was trained among the teachers, and the learning means of digital access was offered to students wherever possible. Colleges like SQU and Middle East college have started full on online platforms with synchronous and asynchronous online learning, online assessments and online laboratories. National platforms such as the establishment of digital content at schools through centers such as the establishment of the Eduportal were also introduced by the government. E-learning has since become part and parcel of the education system and has ensured the blended learning systems which involve both face-to-face and online learning. Nevertheless, although this development was striking, substantial inequalities still exist in access, more so in rural and distant regions where there is little or no digital infrastructure. Learning gaps were created when many of the students could not access devices or the internet due to unstable connection. This digital divide is a must be addressed, to achieve an equitable education reform. The emphasis in the future should be on the increase in connectivity, affordable devices and digital literacy of both students and teachers.

5. Persistent Challenges: Institutional Coordination and Private Sector Engagement

Despite these optimistic trends, the idea of implementing educational ambitions of Vision 2040 remains to be challenged by systematic issues that might hinder its possible impact. To begin with, there is uncoordinated institutional coordination. A variety of government agencies including the Ministry of Education, Ministry of Higher Education, Research and Innovation, and NCVET act simultaneously and there are cases when responsibilities overlap. This may cause redundancy, interminable wastage of resources and lack of uniformity in the enforcement of policies. Greater control would be achieved with a unified system of governance or more mechanisms of inter-ministerial coordination, which would enhance implementation and oversight to a large extent. Second, in education reform, the role of the private sector is not much. Although certain steps have already been undertaken towards promoting the university-industry collaboration, a vast majority of employers have not yet been incorporated into the development process and flow of educational programs completely. To transform Oman into a genuinely knowledge-based economy, the key element that the private sector should contribute to is the more direct influence on the curriculum, provision of internships and apprenticeships, and providing funds to research and training programs. It is necessary to strengthen the position of the public-private partnership. Finally, educational institutions are different in terms of the ability to introduce reforms. Other universities and schools do not have the necessary resources, experience or authority to innovate. Professional development and strengthening of governance arrangements and developing infrastructure will enhance institutional capacity that would ensure reformers give their results in the form of improved learning outcomes. To achieve Vision 2040 goals of education, Oman has made tremendous efforts in realizing these wishes. The fact that education is aligned with the issues of the labor market and integrates innovation and entrepreneurship into higher education, variation of vocational training via NCVET and the rapid growth of digital learning signify great progress. Nevertheless, to meet long-term success, challenges pertaining to equitable access, institutional coordination, and enhanced cooperation of the private sector should be solved at any cost. Continued investment, involvement of the stakeholders, and sustainability of strategic management will be important when Oman is on its road to being resilient and knowledge-based economy.

6. Regional Comparisons and Best Practices

As part of its determination to attain diversified and knowledge-based economy as planned in its Vision 2040, Oman may find it worthwhile to use its Gulf Cooperation Council (GCC) peers. States such as America, United Arab Emirates (UAE), Qatar, and Saudi Arabia have taken

radical decisions on education reformation and strategy nationalization to change resource-dependency to knowledge-based growth. Although situations and abilities vary, Oman can also find a value in introducing and localizing effective examples of these countries striving a balance between innovation and the conservation of more ideas, both cultural and societal, oriented traditions. The following section discusses the main reforms in the region and suggests best practices that can influence the future policy of Oman.

1. United Arab Emirates: Global Education Hubs and R&D Investment

The United Arab Emirates has engaged itself as a regional powerhouse through higher education, innovation and digital transformation. It has been able to do this by being strategic in the attraction of international academic institutions, restructuring its education system to be in tandem with the international environment and investing heavily in research and development (R&D).

International University Partnerships

Another of the many signatures of the UAE had been to set up academic free zones like Dubai Knowledge Park or even in education city in Abu Dhabi, some of the leading world universities, like New York University (NYU Abu Dhabi), the University of Sorbonne, as well as the Rochester research Institute of Technology (RIT) have developed branch campuses. With such collaborations, international curriculum, research opportunities and access to global faculty are introduced into the UAE wherein local students do not have to leave the country to enjoy world-class education. The strategy has aided in internationalization of education system, academic excellence as well as foreign students- instilling culture of internationalism and innovation. The possibilities to collaborate with well-known educational establishments, especially in the spheres of artificial intelligence development, sustainability and health sciences are available to Oman to establish brand of higher education and collaborate with the world.

Focus on R&D and Innovation

The National Innovation Strategy in the UAE focuses on the development of an environment where research and entrepreneurship are encouraged. It has also developed focused funds, like the Mohammed bin Rashid Al Maktoum Foundation, launched innovation incubators and technology parks to assist and fund startups and applied research. Also, the metrics of innovation are followed with care and the institutions are ranked and rewarded based on the research output and the impact in society. In case of Oman, copying this success is a perpetuated issue that needs to be solved by enhancement of the research ecosystem by making specific investments, faculty,

and university-industry relationships. Improvement on national research funding, facilitation of innovation hubs and the protection of intellectual property may contribute to a more profound innovation culture along the lines of vision 2040.

2. Qatar: Strategic Education Reform and Human Capital Development

Qatar has also become a champion in education reform in the region, and this has been strengthened by its Qatar National vision 2030 which aims at transforming the nation into an advanced society that can maintain or sustain the development through quality education and investment in humans. Higher Education City and Multidisciplinary Learning Qatar is best known probably because of its Education City, the 12-square-kilometer campus in Doha where several renowned universities have their branches such as Carnegie Mellon, Georgetown, and Texas A&M. These schools provide courses in business, computer, international affairs and engineering courses that are important as well in the future economy. The peculiarity of Qatar is that it attaches importance to interdisciplinary learning and combinatorial research. Real-world problems are collaboratively solved by students at various universities and specialties which improves their problem-solving skills, collaboration skills and critical thinking skills. Qatar Foundation is centralized to organizing these institutions and keeping them in line with the national development agenda. A downsized version of that model may suit Oman, whose version of higher education could include clusters or even centers of excellence, designed with foreign universities partnerships in areas of national interest (such as water sustainability, oil and gas efficiency, and climate adaptation).

Investment in Teachers and Quality Assurance

Qatar has also put high emphasis on the quality of the teachers and accountability of the schools understanding that they influence the student outcomes. There has also been the Qatar National Professional Standards for Teachers that has defined transparent practices in how to recruit, appraise and develop them. Schools are subject to periodical evaluation to guarantee quality and compliance with curriculum outcomes. Oman can take advantage of the possibility of implementing analogous systems of teacher performance and enhancing their accreditation organizations. An upgrading of teacher training levels, provision of ongoing professional growth opportunities and a connection between promotion to competency assessments would raise performance and achievement in the classroom.

3. Saudi Arabia: Vision 2030 and Skills-Based Education

Vision 2030 is a very ambitious strategy of Saudi Arabia to diversify its economy, and the education sector has been ingrained as a crucial factor that contributes to the national capacity

and ensures the end of oil-driven economy dependence. The focus on skills-based, localized knowledge, and collaboration with the private sector are some of the most important topics of its novel educational agenda.

Curriculum Reform and Competency Frameworks

Saudi Arabia has already begun a massive curriculum reform that has seen an end to rote memorization and its exchange with a competency-based system. The reformed curriculum is focused on critical thinking, technological competency, project learning, and character formation. This model aims to train students in ready-to-employ you-anywhere and future-bulb skills capable of dealing with dynamic labour markets. Furthermore, the Human Capability Development Program, introduced to Vision 2030, is aimed at enhancing early childhood education, university graduates upskilling and lifelong learning opportunities via micro-credentials, online platforms, and industry-recognized certifications. These reforms are much in line with the vision 2040 in Oman. This is because in creating its own national skills framework Oman will be able to more closely match educational outcomes to labour market needs and formalize existing relationships with employers to drive relevant, job-ready skills.

Localization and Capacity Building

Saudi Arabia is also looking at developing local intelligence of education and local capacity to minimize external expertise. This entails the creation of local curriculum representing the cultural values, educator training of locals and investments in aboriginal research. Oman can exercise the localization strategy that would reflect the same societal values and traditions of Oman and stimulate innovation. It involves developing culturally relevant learning materials, marketing the Arabic language in scientific research, and engagements of the local faculty with the help of leadership development courses.

7. Cross-GCC Themes and Lessons for Oman

Even though every single country has adopted a unique strategy regarding its resources, demographics, and geopolitical situation, there is a set of common ground that Oman can consider:

A. Public-Private Partnerships

Qatar, Saudi Arabia, and UAE are also among the countries that have used the public-private partnership (PPP) to innovate education through. Its contribution to the provision of education service is not the only role of the private sector; it also contributes to the design of curriculum,

internship program, and funding. The educational reforms in Oman can also make use of the involvement of the private sector especially in vocational training, the transfer of technology as well as training in entrepreneurship.

B. Digital Education and Smart Learning

This is given that COVID-19 has sped up digital learning in the GCC. Government sponsored integrated e-learning platforms include the Smart Learning Program in UAE and Madrasati in Saudi; these programs incorporate content, assessment, and analytics into a complete immersive environment. Their animation systems are scalable, personalized, and data driven. Oman has already progressed in digital learning infrastructure, but it experiences problems with the equity of accessibility and implementation. Oman can establish more sustainable and participatory e-learning systems especially to cover the rural areas by learning the digital infrastructure of its neighboring countries.

C. Research and Innovation Ecosystems

GCC countries are investing in research environment by being innovative in cities, investing in councils and laws on intellectual property. Examples include Qatar National Research Fund, Artificial Intelligence University in the UAE and King Abdulaziz City of Science and Technology in Saudi. Research capabilities in Oman are in infancy levels. It is necessary to set up national priorities in research, design funding pipelines to applied research, and promote industry-academic collaboration as some of the key future research development steps in Oman to increase research output of the country and its economic reach.

5. Localizing Best Practices: Oman's Strategic Approach

Although Oman will gain by benchmarking itself with peers in GCC, wholesale imitation of models of any other country might not be compatible with socio-economic reality of the Sultanate. Oman needs to regionalize the best practices that reform should not interfere with cultural heritage, promote the development and use of Arabic as the major language, and bandage regional diversities. Moreover, having a little population and resource base can be benefited by Oman since it can carry out reforms more effectively and scale them to the needs of the communities. Enhancement of sustainability of reforms can be achieved by using a phased implementation model and constant feedback by the stakeholders. The better to demonstrate that Oman is not alone in its efforts to establish a knowledge-based economy, we have drawn regional comparisons. The internationalization and innovation ecosystems, as well as international partnerships have proved to be of paramount importance to the UAE and Qatar.

Saudi Arabia has demonstrated that capacity building and skills-oriented education at national level has a long-term payoff. Oman is at one of the crossroads to incorporate these lessons and at the same time develop its own culturally relevant, economically pertinent pattern of education. Oman can make progress towards its goal of becoming a resilient and inclusive knowledge economy faster by borrowing but also adapting best practices in regional curriculum reform, research development, digital education and institutional capacity building whilst prioritizing the maintenance of its distinct identity.

8. Recommendations

To fast track its shift towards knowledge-based economy (KBE), Oman needs to keep on applying strategic reforms to align its education sector to innovation, inclusivity and global competitiveness. Considering the premises of the Vision 2040, the typology of the key recommendations provides the approach to the solution of the systemic gaps and opportunities to develop human capital and create sustainable economic growth.

1. Foster Public-Private Partnerships in Education

Enhancing the cooperation between the state and the business sector is crucial to making educational achievements correspond to the needs of the labor market. Curriculum development, opportunities in the form of internships and apprenticeship, and co-funding of training programs can be included as the objects that can be promoted thanks to the practice of the public-private partnership (PPP). The involvement of the private sector in the planning and provision of education also means that it meets the needs of the present and new job needs. In the case of Oman, the PPPs in the technical education, commercialization of research, training in entrepreneurship areas could contribute to fill the skills gap, lead to enhancing employment and encourage innovation of all levels of education.

2. Increase Investment in R&D and Innovation Hubs

KBE is based upon a robust research and innovation ecosystem. Oman needs to make more national investment in research and development (R&D) particularly in key sectors including renewable energy, water security, healthcare, logistics and digital technologies. The development of innovation centers to be co-located with universities, research institutes and industry clusters, can act as an incubator to startups and applied research as well as product development. These hubs must provide funds, guidance and physical space to entrepreneurs and innovators. The policies of academic research, intellectual property creation, and international cooperation will also encourage the increase of Oman on the international scale of researchers.

3. Encourage Interdisciplinary and Lifelong Learning

The education system in Oman needs to produce flexible thinkers possessing knowledge in interdisciplinary levels to enable Oman to stay competitive in the fast-changing global economy. Interdisciplinary programs, e.g. it is beneficial to mix technology with business, or environmental science with policy opens the student environments to be holistically thinking innovators around disciplinary boundaries. Simultaneously, adult education programs, online learning, micro-credentials and professional certificates should be formalized so they form a lifelong system of learning. Such pathways will enable ordinary citizens to upskill, reskill and become resilient to the change in the labor market, and this will improve the national resilience.

4. Strengthen Teacher Training and Education Leadership

Educators and administrators are key factors that may influence teaching and learning. Oman ought to invest in quality teacher preparation that gives priority in modern pedagogies, student-centered learning, and digital integration, and inclusive education. As well as the initial education of teachers, continuous professional development and performance-based assessment systems play a crucial role in sustaining high-value teaching. Moreover, the development of visionary education leaders at the school, district and ministry settings will guarantee the uniformity, tactical and national rationale of reform measures.

5. Implement Robust Data Systems for Education Policy Evaluation

High-quality education reform cannot be achieved without quality data that can be utilized to monitor the changes and outcome, as well as facilitate evidence-based decision-making. Oman ought to come up with EMIS that stores real-time data on enrolment, learning outcomes, teacher performance and resources allocation. Such systems are expected to facilitate policy analysis, find regional imbalance, and determine resource prioritization. Accountability and stakeholder engagement can be promoted through transparency and accessibility to educational data as well. With the help of these suggestions, Oman can develop a more vibrant inclusive and future-oriented education system which is the strength of any flourishing knowledge-based economy.

8. Conclusion

At the center of this grand scheme of Oman is transforming the country into a knowledge-based economy as outlined in the Vision 2040. Although the policy framework has presented a clear strategic vision which focuses more on innovation, development of human capital and competitiveness in the global environment, the ability to fully succeed with such reforms relates

to the success of implementation on all education levels. To get the full power of the vision, Oman must keep investing into the modern infrastructure, digital tools, research and development, teacher capacity-building. Such efforts should be continued throughout time and be able to satisfy the labor market changing needs as well as social needs. It is also crucial to promote the collaboration of the major stakeholders, such as ministries of the government, schools, private sector, and civil society. Such an inclusive approach, which is based on well training and coordination, will make reforms not just comprehensive but equitable as well as contextually significant. Educational modernization in Oman entails more than changing curricula but through building a knowledge and activity-oriented environment that facilitates critical thinking and creative innovation combined with entrepreneurship. It needs to open new opportunities to high-quality education, narrow down regional differences, and include the concept of lifelong learning as part of the culture. Remaining faithful to these objectives, Oman will be able to prepare its youth and empower them with the knowledge and skills that are required to make the economy grow sustainably, stop depending on oil revenues and to strengthen national resilience. Finally, education not only has been a source of economic reformation but the key in which Oman can shape a prolific, unified, and world related future.

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