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Chapter 5.42

Research Management and Administration in Saudi Arabia: Transitioning From an Oil to a Knowledge-based Economy

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Abstract

Like several of its neighbouring countries, the Kingdom of Saudi Arabia (KSA) has seen a move away from an oil-based economy towards a knowledge-based economy in recent decades. Research productivity in the Kingdom is increasing quickly along with international collaborations. Nonetheless, postgraduate research at universities in KSA is a relatively young domain, which certainly is a core factor in the evolving research management structures in the country.

Going forward, increased openness in research, along with continuing significant investment into higher education and research both by the government and the strong private sector points to a need for refined research governance and policy frameworks with designated expert research management staff developing and facilitating the underlying processes to enable Saudi institutions to engage at the forefront of academic research.

Keywords: Kingdom of Saudi Arabia; middle east; international collaboration; research management and administration; professionalisation; knowledge-based economy

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Research Ecosystem

The Arab world has a long tradition of scientific research and is known for many of its early scholars, such as Musa al-Khwarizmi (c.780–850) who is widely seen as the Father of Algebra (Ashfaque, 2017). The first Islamic university was founded by Fatima al-Fihri in 859, the University of al-Qarawiyyin in Fez, Morocco (Fejzic-Cengic, 2020). For most of the last century, however, scientific innovation and knowledge production has been dominated by science superpowers in the USA and Europe (Adams, 2012; Altbach & de Wit, 2015).

The KSA is the second largest country in the Arab world, formed in 1932. Since its formation, it has quickly gained wealth and influence, largely due to its significant oil resources, and is now the largest economy in the Arab world. However, the first university in Saudi Arabia, King Saud University (KSU) in Riyadh, was not inaugurated until 1957, followed in 1967 by King Abdulaziz University (KAU) in Jeddah (Al-Eisa & Smith, 2013). Both institutions have long focused on undergraduate teaching (Alhuthali & Sayed, 2022). The number of universities has since increased, most significantly in the last two decades, counting now close to 40 institutions (Abouammoh, 2018). The development of higher education has become a priority, recognising its importance for socioeconomic development, knowledge production, and sustainability (Abouammoh, 2018). This is also reflected in the Saudi Vision 2030 that focuses on the country's post-petroleum future (Saudi Vision 2030, n.d.). What is notable here is not only a move towards renewable energies to reduce dependency on fossil fuels but also the aim to diversify its economy. Education and research and development are seen as an important pillar in this endeavour through enabling a knowledge economy in KSA. Talent development and knowledge transfer both feature strongly in the strategy document. Both factors are well recognised as important for knowledge-based systems, contributing to a conducive research environment that enables both foundational and applied research that is seen to be most innovative when conducted bottom-up rather than driven by external priorities (Flesia, 2013).

Expenditure for higher education tripled in the years 2008–2013 and rose to US$160 billion per annum in 2013 (Al Ankari, 2013). The King Abdullah Scholarship Program (KASP) started in 2005, sending promising young students abroad for education. While this undoubtedly increased the number of postgraduate degree holders in the country, it also came with the usual caveat of brain-drain due to students staying abroad in the host countries aiming to establish an international career. Those who returned to their country often did so without gaining prior research experience (Alhuthali & Sayed, 2022; Alsuhaibani et al., 2018).

It was not until 2007 that the first postgraduate research university, King Abdullah University of Science and Technology (KAUST), was established with a large endowment directly from the then King Abdullah bin Abdulaziz Al Saud (Al-Ohali & Burdon, 2013). Core objectives were to build a knowledge base within the country with a strong focus on a post-oil economy, generation of technologies relevant to the region, and the establishment of a new generation of local researchers to counteract the brain-drain caused by students not returning from abroad. Not least, this was done with a firm intention to enter the esteemed circle of so-called world-class universities within a decade (Shattock, 2017). While this might have been overambitious, KAUST has climbed the global research rankings quickly, featuring sixth globally and first in the Middle East and North Africa in the Nature Index 2021 of 175 young universities globally ranked by article share (Nature Index, 2021).

Recent ambitious initiatives such as the newly created city, NEOM,[1] near the border to Jordan, is laying the foundation to a new university (NEOM U) and creating an education, research and innovation hub; these offer an insight into the importance given to higher education and research excellence in the Kingdom. NEOM U recently announced the appointment of its inaugural president, Professor Andreas Cangellaris from the University of Illinois Urbana-Champaign (USA), to realise the country's vision to transform Saudi Arabia's education sector 'by creating a nexus of innovation and knowledge that will attract students from all over the Kingdom and the world' (NEOM, 2022). NEOM U is expected to build on KAUST's model and is, by some, already predicted to become the new Flagship University of the Kingdom if it manages to address challenges around free speech and gender (Lem, 2022). NEOM will establish its own governance structures that will supposedly be largely independent from KSA. NEOM aims to create an open environment that enables collaboration and reduces trade or research barriers, while adhering to the highest international standards. However, it also means that NEOM U, even more so than KAUST over a decade ago, is setting out on its journey without an established set of policy or governance frameworks and will have difficult decisions to make before it can even start its operations. Globally, many will measure it against its adherence to international values and standards. NEOM U's success will depend on how well its founders manage to embrace innovation, learn from best practice in the sector, while anchoring NEOM U in its own cultural heritage.

Since the mid-2000s, the KSA has been actively encouraging and funding research productivity at universities creating Centres of Research Excellence and technology incubators (Al-Ohali & Shin, 2013). The technology incubators indicate a strong focus on economic development and industry collaboration in an environment strongly depending on its oil resources and its supply chain. Public universities largely receive institution-based research funding that they then allocate to their researchers. In recent years, this has been complemented by private, often industry-sponsored endowments such as Research Chairs (Al-Eisa & Smith, 2013). King Abdulaziz City for Science and Technology (KACST)[2] has acted as a grant-giving body under the National Science Technology and Innovation Plan (NSTIP)[3] which ran until 2015, envisaged to be a similar entity to the US National Science Foundation (NSF).[4] The economic downturn due to the plunge in oil prices over the last decade has contributed to a reduction in these funding sources. The focus on research and innovation nonetheless remains strong, as the 2021 funded cross-ministerial Research, Development and Innovation Authority (RSIA)[5] indicates. The announcement of a new strategy for research and development has been envisaged in November 2022 (Arab News, 2022).

International co-authorship is a common measure for the globalisation of research. Co-authorship data based on the Thomson Reuters database indicates a significant increase in international collaborations of Saudi institutions between 1970 and 2010, often based on long-term partnerships with overseas institutions (Al-Ohali & Shin, 2013). Not infrequently, these are funded by their Saudi partners that often involve the Saudi oil company Aramco or other large industry partners. This aligns with the

[1]https://www.neom.com/en-us/about
[2]https://kacst.gov.sa/
[3]https://npst.ksu.edu.sa/sites/npst.ksu.edu.sa/files/imce_images/Governing%20Rules%20Part-I%20%28English%29.pdf
[4]https://www.nsf.gov/
[5]https://rdia.gov.sa/index.en.html#home

strong emphasis on industry collaborations with a focus on technological advances. Notable expertise demonstrated through publications is also visible in the medical field, where institutions such as the King Faisal Specialist Hospital and Research Centre (KFSH) feature in publications data (Ul Haq et al., 2020).

Looking at research productivity, recent publication patterns indicate the increased influence of Saudi Arabian researchers in international research networks (Gui et al., 2019). In an overarching trend moving away from the USA and Anglo-centric publication profiles, Saudi Arabia features as one of the emerging independent nodes engaging in both regional and global networks (Gui et al., 2019). Top Saudi collaborators are China, followed by the USA, Germany, the UK, France, and South Korea (Nature Index, 2022). At the same time, Saudi researchers have strong collaborations with other Middle Eastern countries indicating strong networks between Arabic countries (Sarwar & Hassan, 2015). Overall publication numbers have increased from about 2,000 in the period of 1980–1984 to nearly 75,000 between 2000 and 2014, with top research producers being KSU, KAU, and King Fahd University of Petroleum and Minerals (KFUPM), followed by KFSH and KAUST (Shehatta & Mahmood, 2016). Of those, 35,000 are international collaborations. Since then, publication numbers have continued to rise, accounting for more than 85,000 for the period of 2015–2019 (Hu et al., 2020).

This substantial rise in publications has not happened by chance, but rather was initiated through increased awareness of the importance of global university rankings such as the Academic Ranking of World Universities (ARWU) and the QS World University Rankings in 2008 (Alhuthali & Sayed, 2022). Both put strong emphasis on publications and highly cited researchers. The latter aspect stimulated an increase in international faculty at local universities. However, few of those have established their main research base in the Kingdom. Notwithstanding some influx of international researchers, and with the exception of KAUST, higher education systems in the Kingdom have stayed relatively closed and opaque, demonstrating the challenge of striving to be a strong player in the global knowledge economy versus adhering to long-held societal values (Smith & Abouammoh, 2013).

Evolution of the Profession

The emergence of research managers and administrators (RMA) is often associated with an increase in external, project-based funding (Langley, 2012). In Saudi Arabia, this has been less of a driver than in many other regions and countries. First and foremost, as previously shown, where university research has emerged at universities, it has been largely funded through the Ministry of Education. There have been only a few national research grants given out by KACST and those required less administrative support than regular call schemes of other funders across the globe. Many collaborations with other institutions have not been supported by external funding but were rather self-funded by collaborators. The absence of large portfolios of external funding makes the need for research administration a less dominating factor than for many other institutions in the world.

Another factor is language. With a long tradition of teaching and publishing in Arabic, comparably low publication rates in international journals are often attributed to a lack of English language skills and limited experience in how research outputs for such journals are structured and written (Smith & Abouammoh, 2013). This not only affects the visibility of research conducted in the country but also academic rankings. With the exception of KAUST, the working language at universities in the

Kingdom is Arabic. Although the internationalisation of research and an increase in collaboration has certainly contributed to English becoming more prominent in the Kingdom's research environment, it is most likely that administrative support structures still largely operate in Arabic. This inevitably affects research management, particularly when it comes to contracting with international funders or research partners, but also more technical agreements such as material transfer agreements (MTAs) or non-disclosure agreements (NDAs) which are particularly relevant when working with industry.

While many universities globally have seen a rise in managerialism and are increasingly led by their administrations, Saudi universities are still operating on a largely academically driven and led basis since the Kingdom has yet to be affected by the increased commercialisation and massification of higher education. This also impacts on research management structures. While in many European or US institutions research management offices are strongly embedded in their administration, in other regions, such as Malaysia, the emerging research management structures often reflect a set-up where research management or support offices are headed up by senior academics of the institution, sometimes on a rotational basis, rather than managers or administrators (Kasim et al., 2021). Again, this is supported by the often limited English language skills of staff working in classical administration such as finance. This suggests that Arabic-speaking universities in the Kingdom might apply a similar approach.

Current Community

At this stage, only KAUST features an English-speaking research support structure and has RMAs who are engaging in research networks across the globe. This does not mean that research administration does not exist beyond KAUST. Rather, it reflects the unique set-up of KAUST as the only university that was set up outside the governance of the Ministry of Higher Education. It is the only solely English teaching university with a large community of expats, both on the academic as well as the administrative side of the institution. These bring with them not only expertise but also their existing contacts and networks which have contributed to the shaping of RMA structures and practices in the institution.

It is not possible to assess how far structures exist and knowledge exchange takes place between Arabic-speaking institutions and teams regarding research administration. It is clear, however, that any potential research administrators or managers have not been engaging in the sphere of international research management networks, nor are there indications of regional, Arabic-speaking networks dedicated to research support. The recent RAAAP-3 survey that captured active RMAs across the globe produced only one submission from KSA (Kerridge, Dutta, et al., 2022). It is well possible that a dualism of RMA structures exists with an English-speaking community at KAUST and, going forward, possibly at NEOM U, and Arabic-speaking community at all other institutions.

Demographics

The absence of visible RMAs or respective networks outside of KAUST does not mean that there is no awareness of challenges to research in higher education, as several recent publications of local scholars on aspects such as governance, research development, knowledge economy, or global rankings indicate (see, e.g., Abouammoh,

2018; Al Kuwaiti et al., 2019; Al-Ohali & Shin, 2013; Alhuthali & Sayed, 2022; Alshuwaikhat et al., 2016; Smith & Abouammoh, 2013). The Centre of Higher Education Research and Studies (CHERS) was established in Riyadh more than 20 years ago, in 2000, also acting as a think tank to promote higher education as a research discipline (Abouammoh, 2018). CHERS is supported by the Ministry of Education and draws on academics from Saudi universities. It has led to the establishment of bodies such as the National Commission for Academic Accreditation and Assessment (NCAAA) in higher education or the Saudi National Centre for Assessment in Higher Education (NCAHE) and has the responsibility to provide policy analysis on Saudi higher education and build the research environment to study higher education (Abouammoh, 2018).

On the research side, the steady increase in co-authored publications indicates a continued growth in international collaborations that bring in an increased openness of universities in the Kingdom. In 2016, the Saudi Ministry of Education announced its willingness to allow foreign higher education providers, to operate in the Kingdom, though it is not clear at this stage whether this will entail independent foreign institutions based on a model such as the American University of Beirut in Lebanon or whether it could include branch campuses, as can be found across the globe and in the Gulf region, for example, in the UAE (Abouammoh, 2018). To date, no such initiative has been announced. If realised, this would align higher education in the Kingdom with its neighbouring countries, such as the UAE, Oman, and Qatar. These developments certainly point to a need for qualified staff supporting the whole research lifecycle whether for university–industry partnerships or collaborations between universities. Institutions like KAUST could act as a reference point for developing a governance and policy environment and qualified support staff that guides best practice in the country.

KAUST opened the door to its first cohort of postgraduate students in autumn 2009. Along with this, about 70 international faculty members set up their labs and offices at the university in three academic divisions and what are now 12 research centres, bringing together expertise in priority areas for the region; all focused on science and technology. KAUST did not only recruit internationally renowned academics, it also created an international advisory board and brought in administrators from across the globe, who worked hand in hand with local staff to establish the university. In addition, researchers had support from a large team of technical staff running state-of-the-art core lab facilities.

The Office of Research Services (ORS) was established in January 2010 and grew to 16 staff members over the following three years. While KAUST was funded through a large endowment, giving a good degree of financial independence to researchers at the institution, a research support function was nonetheless fundamental. Not only was there a need to negotiate industry contracts, MTAs, and other legal agreements governing collaborations, processes for best practice, and quality assurance also needed to be established, as did systems to capture activities or outputs. Ultimately, this also included the ability to bid for externally funded projects. While the financial aspect of such awards might not always have been at the forefront of these applications, the reputation that comes with winning prestigious, competitive awards certainly was.

KAUST became the first Saudi institution in 2010 to join the prestigious, EU-funded ERASMUS Mundus Scheme,[6] a cooperation and mobility programme enabling student exchange beyond Europe. This engagement was facilitated by the research office

[6]https://www.eacea.ec.europa.eu/scholarships/erasmus-mundus-catalogue_en

(Saudi Press Agency, 2010). In the same year, the office initiated KAUST's participation in the European Science & Technology International Cooperation Network in collaboration with the Gulf Cooperation Council (GCC)[7] countries (INCONET-GCC, 2013), which concluded in October 2011 with KAUST becoming an official beneficiary. These initiatives provided important reference points for KAUST on its journey to establish policies and procedures that enable international collaboration at the highest standard.

The structure of the ORS was not modelled on any particular country's approach, as is often the case with branch campuses or satellite universities that mirror their 'parent' organisation. Rather, processes evolved based on a needs analysis and best practice principles from across the globe, supported by a network of international RMAs. This was equally owed to the ORS founding manager's active engagement with a number of international research management networks as well as a conscious approach to recruit a diverse team of RMAs bringing together a multitude of international experiences combined with local cultural knowledge. This expertise created the necessary policy framework to allow KAUST to engage with large multinational companies as well as US or European government funders and foundations worldwide. Many of the initial collaborations helped shaping and finetuning best practice in an iterative approach. The profiles of individuals joining KAUST as RMAs varied significantly. They did not only cover the typical steps of the research lifecycle covering pre- and post-awards as well as contracting, they also brought expertise from their respective national environments and higher education systems. This was complemented by local staff adding invaluable expertise not only with regard to governance, financial matters or industry collaborations but also cultural context.

Directions/Future

It is important to note that not having any RMAs organised in the many international RMA networks apart from those from KAUST, does not mean that research support structures do not exist. Rather, it seems likely that where research support structures have emerged these are driven by the local context of currently still limited external funding, a focus on industry collaborations with related contractual or regulatory matters and, not at last, a common Arabic language. The formation of a KSA RMA network would seem unlikely in the near future due to the currently still quite inwardly focused research landscape as well as language barriers in administration, but this might well change should be the ambitious research and innovation plans come to fruition.

The interest in higher education research, and therefore understanding research governance and management, is clear from the formation of the CHERS in Riyadh and the not insignificant number of publications in this field, a few of which have been mentioned above. CHERS might also play a role in raising awareness at the level of the Ministry of Education to recognise research management structures and roles as an integral part of the research lifecycle and ecosystem.

There is no doubt that with the increased complexity of research combined with a further opening and integration of Saudi Arabian universities in the global research sphere, interactions between institutions, which are often the catalyst for network formation, will increase. Whether the developing research support structures will then use local or international best practice models or whether new models might be emerging remains to be seen.

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[7]https://www.gcc-sg.org/en-us/Pages/default.aspx

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