

Qatar University Research Magazine

Issue 17, May 2022

Research and FIFA World Cup 2022 “Special Supplement”

QAFCO Research &
Development Grant:
An Example of Industry/
Academia Partnership to
Promote Research Excellence

Coral Research & Nursery
Farm Project-Improving
Technologies for Coral Reef
Restorations in Qatar

The State of Qatar Agriculture
Census 2021 towards
Sustainable Food Security

Gulf Novel and Travelers’
Writings

Interview with an Author:
Prof. Maryam Al-Naemi

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Dear readers of QU Research Magazine,

Welcome to this new edition which reflects the university's relentless pursuit to produce research that is compatible with national and international research plans, and gives influential results that meet the needs of the state and society. This magazine presents pioneering research that keeps pace with modern developments, enhances the university's regional and global position, and contributes to achieving Qatar's National Vision of 2030. This issue culminates in the research of the World Cup 2022, which is being hosted by Qatar for the first time in the region. This research was carried out in cooperation between a number of centers and colleges at QU, along with its local and international partners and have embodied the World Cup's sustainable legacy strategy, and its role in achieving sustainable economic and social development.

In this latest issue, we included a range of research outcomes, including the establishment of a new research UNESCO chair in the field of desalination and water treatment at the Center for Advanced Materials, and the role of the Environmental Sciences Center in improving coral reef rehabilitation techniques. There is also an initiative by the College of Health Sciences for a tobacco-free university campus, and the College of Sharia and Islamic Studies shared a study, the first of its kind in Qatar, that examines the issue of the crime of forging official electronic documents from a legitimate and legal point of view.

This issue also documents a distinguished achievement of the College of Engineering in developing a smart platform for drones, which uses the integration of devices and artificial intelligence. In addition to a project within the International Cooperation Program for Joint Research Grants between QU and Sultan Qaboos University, which used remote sensing applications to monitor the status of pipelines in Qatar. The QAFCO grant enhances the University's research cooperation with the industry sector by improving funding opportunities, developing prototypes and

related systems and programs, in addition to strengthening the university's role in meeting the country's research requirements in areas of national priority, and exploring pathways for marketing and disseminating knowledge and expertise. This issue also presents the national program of the QU Center for Young Scientists, and its role in promoting the interests of Qatari youth in STEM's tracks. In addition to the contributions of the College of Arts and Sciences in historical readings of old advertisements, Novels of the Arabian Gulf, and the writings of travelers. Moreover, the Social and Economic Survey Research Institute presents the agricultural census of the State of Qatar to support sustainable food security.

The Center for Law and Development is also highlighted in this issue; a platform for interaction between academia, government, industry and stakeholders. We gladly host Dr. Elias Yaqoub, a QU scholar, who was named among the top 2% of scientists in terms of citing their papers and research work during their academic career, in a study conducted by Stanford University.

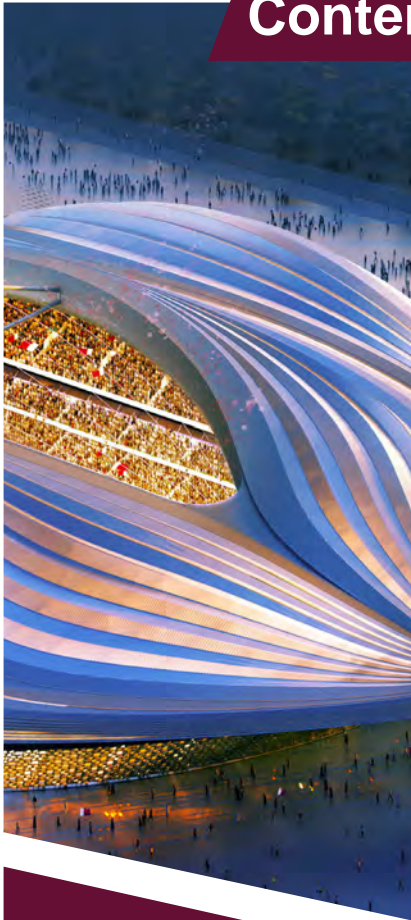
I am also pleased to invite you to visit our most prominent activities of our Wednesday Research Series, and the topics covered in the Qatar University Research Podcast. TED Talks is one of QU's most important platforms for building distinguished postgraduate studies locally and globally. Granted, you will find much more within the pages of this new issue.

I wish you a pleasant reading.

Prof. Mariam Al-Maadeed,
Vice President for Research and
Graduate Studies,
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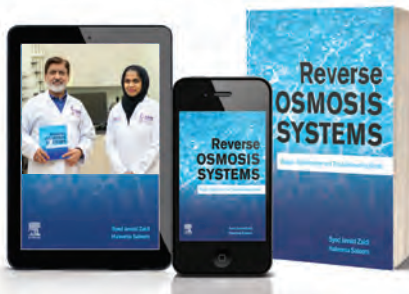
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Launch of UNESCO Chair at Qatar University in Water Desalination: **First of its Kind in the Region**



A tour during Launch of UNESCO Chair in the Water Technology Unit, Center for Advanced Materials at Qatar University.



unesco

Chair

Qatar University (QU) is distinguished among higher education and research institutions at both regional and international levels, mainly in directing research towards achieving the 2030 Sustainable Development Goals (SDGs). QU has recently announced in a press conference, the establishment of a new UNESCO Chair in Desalination and Water treatment at the Center for Advanced Materials within the UNESCO program, which was launched in 1992. This is the second chair hosted by QU, which previously announced the establishment of the UNESCO Chair in Marine Sciences at the Environmental Science Center.

The UNESCO program aims to encourage cooperation between universities and research institutions, as well as facilitate the exchange of research experiences and the transfer of knowledge in various academic fields through the joint work of researchers in various universities in the world. The UNESCO Chair in Desalination and Water Treatment is the first of its kind in the

Gulf region under UNESCO Chair and UNITWIN programs. It will contribute to addressing one of the biggest challenges in the Arabian Gulf, which is water security, by finding sustainable technological solutions to better adapt to the issue of drought and climate change in the region. It is based on cooperation with more than 30 universities and organizations from 15 countries in the region, and internationally, including Texas A&M University-Qatar, Qatar Electricity and Water Company, Sultan Qaboos University in Oman, University of Ottawa in Canada, University of Alabama at Birmingham, Technical University of Berlin, University of South Africa, Ahmed Bello University in Nigeria, Istanbul Technical University in Turkey, Nanyang Technological University in Singapore, University Technology Sydney, University Technology Malaysia, and Aligarh Muslim University, India.

The UNESCO Chair was established in the Water Technology Unit under the Center for Advanced Materials at Qatar University based on the approval of the UNESCO Office. The launch of the UNESCO Chair for Water Desalination and Treatment comes within the framework of cooperation and partnership between QU and the Qatar National Commission for Education, Culture and Science in order to enable and support governmental and non-governmental institutions and agencies in the country to take full advantage of the programs, activities and experiences offered by its partners in regional, Arab and international organizations. This is in addition to strengthening the role of the State of Qatar in international, regional and Islamic forums by contributing to the Commission's work areas and achieving effective local and global partnership.



Agricultural Research Station and New Partnerships



Qatar University (QU) and Mutah University, Jordan discussed means of joint cooperation regarding the fields of agricultural research and studies, and food and water security. Hence, a joint-cooperation agreement was recently signed between the two universities. The agreement was reached as part of the strategic plans of the Agricultural Research Station in Qatar University (QU) that is presented as a new research entity within the research center system in the Research and Graduate Studies Sector. The accord is also based on building external research partnerships with similar bodies that have prior experience in the same specialization. The agreement aims to enhance cooperation in research, training, and joint scientific publication in agricultural research. The agreement includes many objectives and clauses, such as:

- Encouraging faculty and researchers in the corresponding colleges and relevant research centers to spend sabbatical leaves to teach and conduct scientific research, as per the capabilities available on both sides.
- Faculty and researchers exchange between the two institutions on joint research projects, workshops and seminars.
- Taking advantage of faculty and researchers in the corresponding colleges and relevant research centers on acting as external examiners and committee members to discuss university theses or supervise research projects. This is in addition to being joint supervisors of the theses at Master's and Doctoral Degrees in the different programs in both institutions.
- Joint proposals/projects, and research activities on regional areas of interest, particularly in the field of Agriculture.
- Applying for international scholarships related to joint research, projects, and studies in regional and global agricultural fields.
- Designing, developing, and implementing training programs in the agricultural fields and providing qualified and specialized trainers to implement the training programs agreed upon between the two universities' staff or from outside.
- Encouraging visits and exchange of student delegations between the two institutions in other academic and research fields.



A photo of the signing of the agreement, gathering HE Dr. Hassan bin Rashid Al-Derham, President of Qatar University, and Prof. Dr. Arafat Atwi Awajan, President of Mutah University.

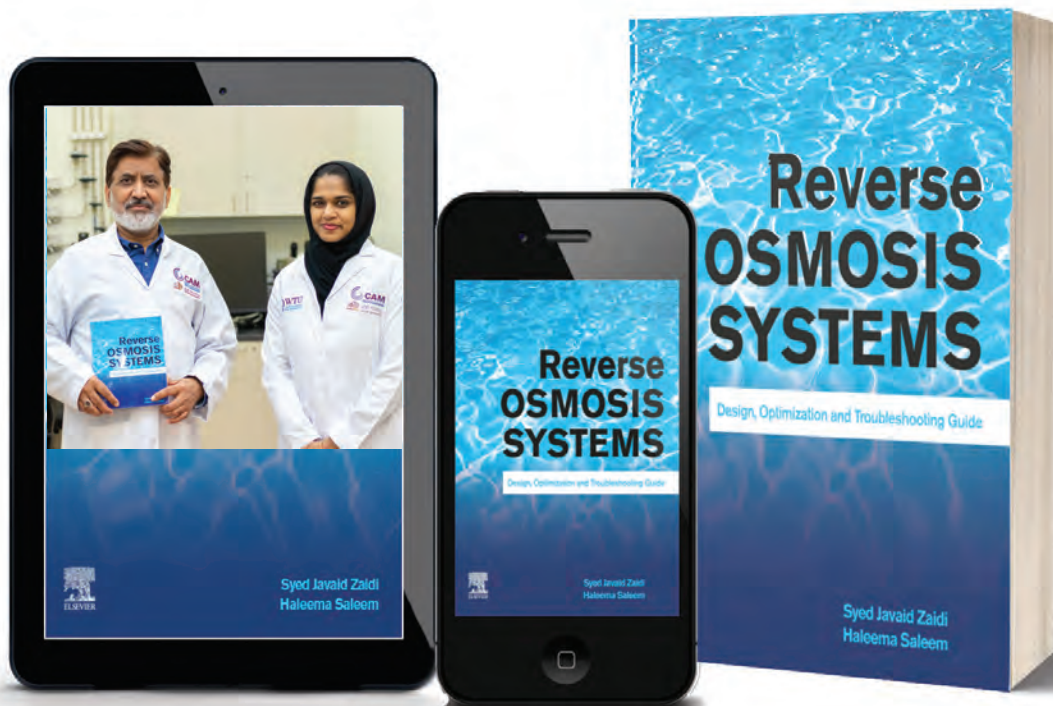
Qatar University Publishes First Book on Reverse Osmosis (RO) Desalination in Gulf Region

Water security is considered as one of the major challenges that the State of Qatar endeavors to achieve in Qatar National Vision 2030. Qatar University attaches great significance to the development of desalination and water treatment researches; as it has recently published a book on “RO Desalination,” which is considered the first book on this issue in the Gulf region. Prof. Syed Javaid Zaidi, QAFAC Chair Professor, has authored the book. Moreover, it is co-authored by the research assistant, Haleema Saleem. Both the author and co-author are from the Center for Advanced Materials (CAM) at Qatar University. Elsevier, the largest science publisher, is the publisher of the book.

The book provides a general overview on RO Desalination in Qatar and demonstrates the progress in such an area. It serves as a fundamental reference for professionals, researchers and students of environmental engineering and other

relevant fields. Furthermore, it is a helpful tool for managers and official decision-makers who are entrusted with tackling water scarcity issues worldwide.

RO Desalination is an advanced technology. So far, there is no specialized book on the RO system design, performance and troubleshooting, published in the Gulf region, which places a special focus on RO Desalination studies carried out in the region. The book under discussion comes in time, considering that desalination industry in Qatar is shifting from thermal-based desalination to membrane-based RO Desalination technology. This work involves the most recent information regarding the design of RO system, its operation and troubleshooting, and can be used as a perfect means for design engineers, plant operators and technicians responsible for RO system design, operation, and maintenance.



QAFCO Research & Development Grant: **An Example of Industry/ Academia Partnership to Promote Research Excellence**

Prof. Abdelali Agouni

Manager of Post-Award, Research Support for Grants and Contracts Department-Qatar
University



In its constant pursuit of excellence in scientific research and innovation, Qatar University is keen to implement its research projects in cooperation with partners and stakeholders from various scientific and industrial bodies, both at the national and international levels. In light of this strategy, Qatar University signed at the end of 2019, a memorandum of understanding (MoU) with Qatar Fertiliser Company (QAFCO) aimed at supporting research initiatives in the field of agriculture to further strengthen and support the agricultural sector in the State of Qatar. The initiative was taken for achieving its goal of sustainable and reliable production of the required quantity and quality of agricultural products for the country. In addition, the MoU advocated for sharing, maintaining, and expanding the knowledge of best global farming practices amongst Qatari stakeholders. The MoU also set the foundations for the establishment of a new research grant targeted at Qatar University faculty and students to develop and implement research ideas on topics of national importance. The purpose of this new competitive grant scheme is to support QAFCO's strategy to disseminate knowledge that enables the State of Qatar to achieve self-sufficiency in food products in line with the goals of Qatar National Vision 2030. Furthermore, this new program supports Qatar University's strategy of sustainable research and development, promoting a culture of research, innovation, and research environment in the University community in addition to fostering academia and industry collaboration.

The QAFCO R&D Grant Scheme was designed in two phases and launched in 2020. In the first phase (pre-prototype stage), Qatar University faculty and students were invited to submit their research proposals that were then reviewed by a joint technical and scientific committee formed between QAFCO and Qatar University. Following the first phase, eight projects were funded for a duration of six months. The funded projects covered a variety of topics of national importance and involved multiple undergraduate and graduate students. At the end of the first phase, the winning teams submitted technical progress reports about their achievements in this phase and research plans proposed for the second phase (prototype stage). Furthermore, lead investigators also presented their findings from the first phase and research plans for the second phase before the joint QU/QAFCO technical committee. After the review of reports and proposals by experts, two projects from the first phase were selected to receive additional funding to complete their research plans in the second phase for one year.



Announcement of the QAFCO grant winners.

The partnership between Qatar University and QAFCO has been a great success due to close cooperation and contribution in all the stages of the grant scheme development and implementation. The industrial partner (QAFCO) has actively participated with the Research Support Office at Qatar University in designing of the funding grant program, the drafting of its main objectives, technical evaluation of the first phase project progress reports, and the selection of winning projects for the second phase of funding. The comments received from the researchers participating in the first phase unanimously shed light on the positive impact of this cooperation between the academia and industry in promoting a culture of innovation and benefiting from funded research to make an economic and societal impact in the State of Qatar. This cooperation between Qatar University and QAFCO will be strengthened in the near future through new initiatives that will expand the participation of QU students in research and development and address key national challenges in line with Qatar University's research priorities and strategic plan.

Qatar University focuses on research cooperation with the industrial sector due to its importance in enhancing research funding opportunities and developing prototypes, systems, and related programs, in addition to strengthening the role of the University in meeting the research needs of the state in areas of national priority and exploring ways to transfer knowledge and commercialize research. Cooperation with industrial bodies also ensures the employment of research capabilities and competencies incubated by the University to find innovative solutions to issues of interest to the industrial sector in the country, in an effort to support the transition to a knowledge-based economy in the State of Qatar.



National Science Promotion Program 2021-2022 (NSPP-1st Cycle)

Inventions and discoveries are the key elements for national development, renaissance, and progress. Many of the breakthroughs are a result of intense research and such research of national importance must be nurtured. Qatar University (QU) also provides immense importance and funding to scientific research, therefore, Qatar University Young Scientists Center (QUYSC), in association with the Research Support for Grants and Contracts Department, has launched a research funding program entitled “National Science Promotion Program (NSPP)” for the promotion of scientific research among the Qatari youth community. The NSPP enabled national high school students to work under the supervision of skilled researchers on various research projects of national interest for a duration of 6 months. The initiative aligns with the goals to support the Qatar National Vision 2030.

The primary objectives of the program are to enhance the interests of national youth in the STEM (Science, Technology, Engineering, and Mathematics) stream. It thereby enables the high school students to augment their research capacity and knowledge through the “Learning by Experimenting” approach. Thus, the program brings an exceptional opportunity for high school students and Qatar University’s undergraduate students to conduct research under the mentorship of extremely qualified faculty members & researchers of Qatar University.

The 1st Cycle of NSPP program had been initially launched in December 2020, and the awardees of the research grants were declared in June 2021. Wherein, all the winning research projects have gone through an extensive review process to select six outstanding research proposals of national/scientific interest. Each project involved 2 Qatari high school students. The 12 nominated student participants of the NSPP-1st cycle were from 5 different public and private schools: Jassim bin Hamad Boys High School, Al Jazeera Academy, Qatar School of Banking and Business Administration for Boys, Zubara High School for Girls, and Al-Arqam Academy for Girls.

The NSPP-1st cycle participants (two high school students, a QU undergraduate student), and the winning project and awardee are in the order as follows: Saqer Hamad Al-Rumaihi, Essa Ahmad Al-Mohannadi from Jassim Bin Hamad Secondary School for Boys, & Khadija Muhammad Abdul Quddus worked on “Silver grafted Ti_3C_2 -MXene nanocomposite as novel anode materials for lithium-ion-batteries” supervised by Abdul Shakoor, Centre for Advanced Materials. In the research project, the Silver grafted Ti_3C_2 nanocomposites were

synthesized through microwave-assisted chemical precipitation technique and their physical, structural and mechanical properties were investigated.

Hajar Aljumaily and Maha Al-Meraghi from Al-Arqam Academy worked on “The Effect of the Aryl hydrocarbon receptor Inhibition on the CTLA-4 Immune System in Colon Cancer Stem Cells,” supervised by Dr. Hesham M. Korashy, College of Pharmacy. The project aimed at investigating the effect of aryl hydrocarbon receptors on immune checkpoints in colon cancer stem cells.

Mohammad Yousef Al-Jaber, Mohammed Khalid Al-Hajri from Qatar Banking Studies and Business Administration School, and Aldana Al-Dosari worked on “Toxicity evaluation of two surfactants with anti-corrosion properties on the embryonic development of zebrafish,” guided by Dr. Gheyath K. Nasrallah of Biomedical Research Center. The project focused on the evaluation of the general toxicity profile of Silicon-Q-22 and Poly-Q-47 using the zebrafish embryo model.

Mohammed Al-Khanji and Mohammed Radwani from Al-Jazeera Academy, and Insharah Ahsan worked on “Application of Carbon Quantum Dots (CQDs) and Ni-Co-S (NCS) – decorated nanosorbents for Wastewater Treatment” guided by Dr. Marwa El-Azazy. College of Arts and Science. The research was to unveil a sustainable material and technology for water treatment.

Sara Al-Sada, Noor Al-Badr from Zubaida Secondary School for Girls, & Salma Muhammed worked on “SIRT1, a novel potential target that underpin CD44-promoted breast tumor cell invasion” led by Prof. Allal Ouhtit, College of Arts and Science. The primary aim of the project was to confirm if SIRT1 is a true transcriptional target of HA CD44 signaling mechanisms by PCR and Western blot.

Sultan Al-Thani and Ali Shams from Al-Jazeera Academy worked on “Bio-sludge Atlas for Qatar: Characterization of bio-sludge from municipal and industrial sources” supervised by Fares Almomani, College of Chemical Engineering. Wherein, the primary objectives of the project included the characterization of municipal wastewater bio-sludge in Qatar, along with the investigation of the concepts of bio-sludge-to-energy conversion.

NSPP has been successful in bridging the Undergrad students and high school students to collaboratively perform scientific research. Thereby the pioneering program provided a valuable opportunity and platform to the Qatari youth to experience the sophisticated research for national interest and attain the skills to contribute to the progress of the country.

Coral Research & Nursery Farm Project—Improving Technologies for Coral Reef Restorations in Qatar



An underwater photograph of Dr. Bruno Welter from the Environmental Science Center at Qatar University.

The coral reef is the most important and threatened marine ecosystem globally, and there is a considerable deterioration of this component in Qatar. This project aims to improve technologies for Coral Reef restorations and represents an ideal strategy for preserving and mitigating coral reefs in the entire Arabian Gulf. We are also setting an example of a systemic collaboration strategy among stakeholders to accelerate the effort in restoring this valuable resource. As a primary stakeholder and leading global energy producer, Qatargas has provided essential industry collaboration, stewardship, funding, and technical support for this pioneering project as part of the Company's Coral Management Program (CMP).

Qatargas is committed to sustaining and preserving Qatar's marine biodiversity, in line with the Company's Long-Term Environmental Strategy (2021-2030) and Qatar National Vision 2030. The Ministry of Environment and Climate Change, as the governmental authority, encourages companies to finance applied research, approves the needed permits for experiments, and provides their aquaculture facility for the nursery experiments. Scientists of the Environmental Science Center at Qatar University, as the academic stakeholders, are using innovative research and R&D (Research and Development) to improve and create products and methods to accelerate this restoration.

The marine scientists of the Environmental Science Center have been studying the experiences of other researchers worldwide, with their failure and success in restoration of threatened coral reefs. They have also noticed that in Qatar, few coral

species survive in threatened marine areas (mostly in coastal areas), and they are considered "resilient" corals. Furthermore, coral reefs in deeper sites and those isolated from anthropogenic impact remain to house the "fragile" coral species and the associated abundant fishing stock. Knowing the technologies required, the biodiversity composition, and the local marine ecosystem, they managed to identify the need for technologies that improve practical "coral gardening" in the Qatar Marine zone.

The selected strategy is improving Qatar's "Coral Fragmentation" technology. By understanding how to produce "baby corals" or "coral-saplings" from a local "mother colony" they can create the needed resources for actively gardening coral species in new marine sites. In this improved technology, the aquaculture facility has been used to evaluate the ideal light and food to accelerate the growth of resilient species. The marine scientists also achieved a better understanding of the ideal sites for planting the "baby-corals" and the perfect strategy for fixing them on natural marine rock.

Another approach is to create new "houses for corals" in deeper sites with good water conditions. With this aim, a new patent has been granted for an innovative Qatari artificial reef (the mushroom forest), which is resistant to water currents, and designed precisely for creating ideal new houses for corals in deeper sites where there are no natural rock formations. This represents a perfect technology for farming corals in deeper locations. With these two main technologies, new methods and tools were provided for the Qatari society for restoring the economic functionality and ecological beauty of this unique marine ecosystem.



The husbandry experiments with mother corals (entire colonies), and baby corals (fragments), in the aquariums at the Aquaculture Facility in the Aquatic & Fisheries Research Center at Ras Matbakh.

Novel Methodology Underscores the Need for Further Institutional Efforts to Support PBL Facilitation in a Post-pandemic Context

Prof. Xiangyun Du, Professor of Educational Sciences, College of Education

Dr. Michail Nomikos, Section Head of Research and Graduate Studies-College of Medicine,
Vice President for Medical and Health Sciences Office

Prof. Marwan Abu-Hijleh, Acting Dean of College of Medicine, College of Medicine

Prof. Kamran Ali, Department Head of Pre-Clinical Oral Health Sciences, College of Dental
Medicine,

Qatar University



A research study entitled “Health educators’ professional agency in negotiating their PBL facilitator roles: Q study” was published in one of the top journals in Medical and Health Professions Education (Medical Education, impact factor 6.251). This was an interdisciplinary collaborative effort between the QU College of Medicine, College of Dental Medicine, College of Education and Malmö University (Sweden). This study was led by Dr. Xiangyun Du from College of Education, Dr. Michail Nomikos and Dr. Marwan Abu-Hijleh from College of Medicine, Dr. Kamran Ali from College of Dental Medicine, in collaboration with Dr. Adrian Lundberg from Malmö University. The authors used a novel methodology to explore health educators’ perceptions of their enactment of professional agency in Problem-based Learning (PBL) facilitation process in a post-pandemic context. Professional agency refers to the ability of individuals and organizations to influence and transform.

In the post-pandemic context, university teachers are expected to play a critical role in promoting student engagement and sustaining learning outcomes, in addition to their pre-existing teaching, research and service duties. Following the major challenges experienced during COVID-19 pandemic that influenced the effective facilitation of distance learning and collaboration, educators must now manage the challenges related to the even more complex teaching practices during the post-pandemic era and the uncertainties of educational conditions after resumption of onsite (face-to-face) teaching. In such a context, university teachers’ practice using learner-centered methods are influenced by complex factors, including personal factors such as motivation, beliefs about teaching and learning, and institutional aspects such as facilities and policies. Problem-based Learning (PBL) is seen as a learner-centered pedagogy utilizing real life problems to trigger the attainment and incorporation of new knowledge through the problem-solving skills and collaborative learning. In higher education literature, PBL has demonstrated well-established advantages in student learning. Recent literature added new insights regarding strategies for the successful implementation of synchronous online PBL.

Qatar University is a national public institution in the State of Qatar, whereby the Colleges of Medicine and Dentistry were recently established 6 and 3 years ago, respectively. In these two Colleges, PBL has been adopted as the major learning methodology in the early years to support learner-centeredness; year two and three students attend PBL sessions for 12-14 weeks each semester. PBL facilitators, employed from diverse educational and cultural backgrounds, are mostly new to the institution and are unfamiliar with the societal contexts of the University. Moreover, some of them have limited experience in PBL methodology either as learners or as facilitators. Although professional development activities are provided to support new faculty members in their role as PBL facilitators, it is still a challenge to transform their pedagogical beliefs and practices. The recent research in the given institutional setting prior to pandemic showed that successful implementation of PBL demands the readiness of faculty not only to adapt their beliefs about teaching and learning, but more importantly to take agentic actions sustainably in their actual implementation. This study explored how PBL facilitators in the given setting enact their professional agency in a post-pandemic context, through exploring the research question “How do PBL facilitators from medicine and dentistry perceive their professional agency?”

Forty PBL facilitators from medical and dental programs in Qatar University participated in the study during the fall semester of 2021, after resuming in-person PBL sessions. To collect and analyze data both qualitatively and quantitatively, Q methodology was employed. A 33-statement Q-set was established based on a proposed theoretical framework of professional agency in PBL facilitation, which included three dimensions— intrapersonal, action, and environment. Q factor analysis identified five significantly different viewpoints regarding how PBL facilitators perceive their professional agency sources, namely, 1) institutional resources, 2) policy guideline, 3) making efforts to improve support for students, 4) beliefs on PBL effectiveness, and 5) agentic actions. While four of the viewpoints were positive, participants reported negative perceptions regarding the second viewpoint (policy guideline) and described lack of interest in facilitation work.



From left: Prof. Kamran Ali, Dr. Michail Nomikos, and Prof. Marwan Abu-Hijleh.

The results revealed a high variation of participants' perceptions of professional agency enactment throughout the three dimensions, indicating the need for establishing a collective understanding of PBL facilitation work in a given context. It was revealed that further institutional efforts are required to support professional learning for PBL facilitation in a post-pandemic context. Alternative approaches highlighting enforcement of agentic actions in all dimensions of intrapersonal values, stance and action taking, and active interactions with students, colleagues and institutional environments are crucial.

Dr. Michail Nomikos, the corresponding author of this paper and the Head of Research and

Graduate Studies in the College of Medicine at Qatar University said, "Q methodology provides new conceptual and empirical insights to explore the subjectivity of actors in health education. Our study showed that in this post-pandemic era additional institutional efforts are necessary to support professional learning for PBL facilitation." Dr. Marwan Abu-Hijleh, the Acting Dean in the College of Medicine at Qatar University added "this study will contribute to future teaching and learning initiatives and pedagogical development activities at Qatar University and internationally."

The full study is at the link:

<https://pubmed.ncbi.nlm.nih.gov/35253256/>

A Hybrid Energy Harvester for Pipeline Remote Sensing Applications in Qatar

Dr. Asan G. A. Muthalif, Associate Professor (Lead Principal Investigator)

Dr. Jamil Renno, Associate Professor

Dr. Mohammed Roshun Paurobally, Associate Professor

Eng. Muhammad Hafizh, Research Assistant

Department of Mechanical and Industrial Engineering, College of Engineering – Qatar University



Qatar's rapid growth in industrialization and infrastructure comes forward with a diversification of the economy. Among the many available projects, Qatar has thousands of kilometers of pipeline dedicated to water, oil, and gas transmission as shown in Figure 1. Reliable pipeline inspections are ultimately crucial to monitor potential risks of failure that may seriously affect the pipeline integrity as well as human health, safety, and the environment. Recent advances in materials, wireless sensing technologies, and data analysis methods have allowed for the innovation of smart wireless networks. Remote sensors can be used to detect corrosion, leak, vibration, sudden pressure, or temperature variations that may disrupt or damage the normal pipeline operation.

This research proposes and investigates a hybrid piezoelectric and electromagnetic hybrid vibration-based energy harvester (PEMHEH) that can power the smart sensors in condition monitoring applications and sustainably. The proposed harvester utilizes vortex-induced vibration (VIV) of moving fluid to convert kinetic energy into electrical energy. The Vortex-Induced Vibration Energy Harvester prototype is shown in Figure 2. This research is supported under Qatar University International Research Collaboration Co-Fund Grant (IRCC-2020-017). The research addresses issues related to energy sustainability while collaborating innovation between Qatar University and Sultan Qaboos University (SQU) of Oman. The collaboration oversees a strategic research study in both water and air transport mediums, where researchers in QU were responsible for the former and researchers in SQU for the latter. The Lead Principal Investigator from Qatar University was Dr. Asan G.A. Muthalif, alongside the project team members from the Mechanical and Industrial Engineering department.

Extensive research has demonstrated that prototyping and mass-producing self-powering systems is possible using additive manufacturing technologies. Additionally, the added novelty of a hybrid system overcomes the main difficulties presented in the current linear vibration energy harvesters that experience a performance drop due to changes in the environment.

This research highlighted that adding a circular bluff body has significantly increased flow-induced vibration energy harvesting performance output. Triangular, elliptical, and quadrilateral bluff body shapes were also investigated and optimized for galloping-based oscillating mechanisms. A



From left: Dr. Asan Muthalif (Lead Principal Investigator), Eng. Muhammad Hafizh, Dr. Jamil Renno, Dr. Roshun Paurobally.

PEMHEH system can harvest 23% more energy than a conventional piezoelectric energy harvester and is up to 52% more effective in dual-mass arrangement and is capable of functioning at different submergence depths. A heavier effective bluff body mass demonstrated better onset synchronization performance and can be optimized for lower-flow velocity in pipelines or water channels. Additional laboratory testing validated analytical models for synchronization with boundless and bounded boundary conditions that can help design a framework for VIV harvesters. A pipe submerged hybrid energy harvester decreased the overall performance output by 71% because of hydrodynamic-added mass effects. Furthermore, nonlinear magnetic coupling improved narrowband performance by increasing the bandwidth by up to 35% within a noticeable peak voltage reduction. Finally, a complete circular array of four tuned hybrid harvesters demonstrated a combined output of 9V with bandwidth enhancement properties from a central magnetic coupler for

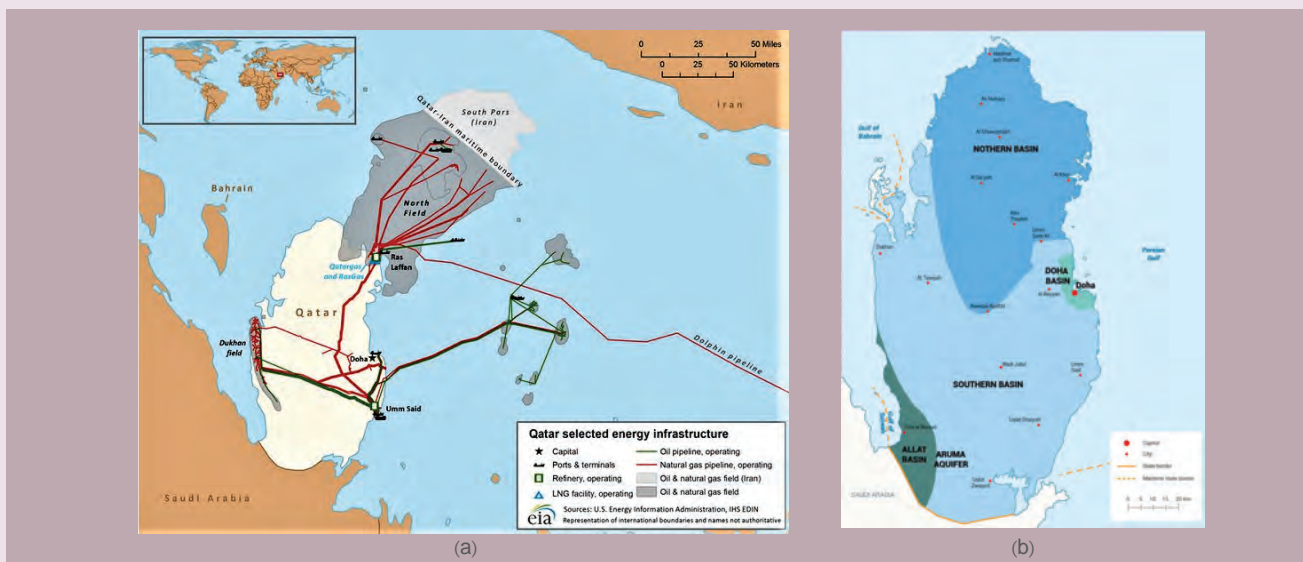


Figure 1. (a) Qatar energy pipeline infrastructure (EIA, 2015) (b) Qatar's water basin distribution (Fanack, 2021).

flow distribution. Overall, robust energy harvesting deployment is possible with low-cost and scalable technologies with additive manufacturing and smart engineering materials.

Successfully meeting all the assigned tasks, the collaborative research has undergone several iterations of prototypes and testing. Currently, at a TRL 6, the integrated system has been demonstrated to work in a laboratory and a suitable fluid flow environment. These prototypes and results have helped propel the contribution to the scientific community and improved Qatar University's research work, which has been attributed to:

- Supervision and training of postgraduate students.
- 7 Web of Science indexed articles with an additional 4 under review.

- Selected to present scientific findings and innovation in the 17th Qatargas Engineering Forum.
- Increased exposure in sustainable student innovations by representing the QU booth in Challenge and Innovation Forum 2021.
- Technology transfer and awarded the best presentation in the International Conference on Electronics, Instrumentation and Devices 2021.
- Delivered a Keynote speech at International Conference on Electronics, Instrumentation and Devices (ICEID 2021), 24 June 2021, Technological University of Malaysia.

Currently, more work is being conducted on the final prototype with a novel self-aligning mechanism towards patenting or licensing opportunities with Qatar Energy companies.

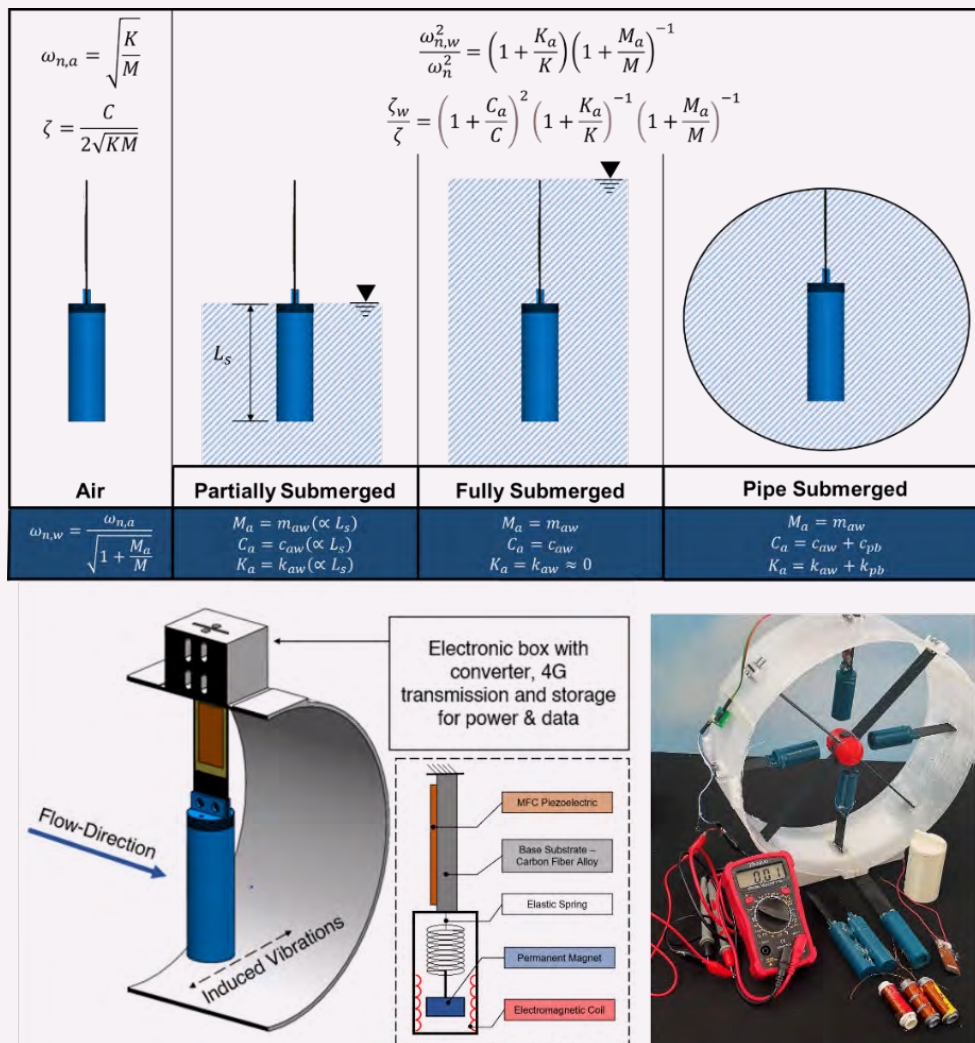


Figure 2. Vortex-Induced Vibration Energy Harvester Prototype graphical summary.



Medication Prescribing by Pharmacists: **Contributing to Global Evidence Base**



**Dr. Zachariah Nazar, Assistant
Professor of Clinical Pharmacy and
Practice,**

College of Pharmacy, QU Health - Qatar University



**Prof. Derek Stewart, Professor
of Clinical Pharmacy and Practice,**

In this article, Prof. Derek Stewart and Dr. Zachariah Nazar of the College of Pharmacy at Qatar University describe how research is informing the development of the practice of pharmacy across the world and specifically within Qatar.

Over the last two decades, there have been significant developments in the practice of pharmacy across the world. This practice has developed from what was traditionally viewed as being product and supply focused, to a more clinical, patient and person focused approach. While prescribing of medicines has traditionally been restricted to doctors, rapid advancements in healthcare policies and practices have led to the introduction of pharmacists prescribing medicines in several countries including the UK, USA, Canada and New Zealand. A number of other countries, including Qatar, are exploring the potential for expanding the work of pharmacists to include prescribing of medicines.

Pharmacist prescribing is most developed in the UK, with legal changes enabling the implementation of prescribing in 2003. In the UK, pharmacist prescribers can prescribe, within their competence, the same range of medicines as doctors. There is a specific, accredited education program at graduate level which must be completed prior to a pharmacist being registered as a pharmacist prescriber with the licensing body, the General Pharmaceutical Council.

Before joining Qatar University in 2019 and at Robert Gordon University, Professor Derek Stewart led the development of education programs for pharmacist prescribers in Scotland and led an internationally renowned research group culminating in more than 40 peer reviewed papers, a significant research grant income and PhD completions. This group collaborated with many key individuals and networks across the world, including the faculty at Qatar University College of Pharmacy (Dr. Mohammad Diab, Professor Ahmed Awaisu, Dr. Alla El-Awaisi, Dr. Monica Zolezzi and Dr. Zachariah Nazar) and Hamad Medical Corporation (HMC) (Dr. Moza Al Hail, Dr. Abdulrouf Pallivalapila, Dr. Wessam El Kassem and Dr. Binny Thomas).

This research has made a significant contribution to the global literature providing overwhelming evidence of the effectiveness and safety of pharmacist prescribing. For example, a review of 46 studies of prescribing by pharmacists compared to doctors for a range of short- and long-term conditions demonstrated that pharmacists were at least as effective and safe as doctors. Dr. Tesnime Jebara is a graduate of the College of Pharmacy at Qatar University who completed her PhD at Robert Gordon University under the supervision of Professor Derek, with input from Professor Ahmed and the HMC team. The first paper from her PhD was a review of all studies across the world researching the views of the public, patients, doctors, nurses, pharmacists, and others on pharmacist prescribing. There was tremendous support with positive benefits in terms of care of patients and satisfaction of that care provided, producing evidence of acceptance of pharmacist prescribing by many different groups. Dr. Tesnime then proceeded to the next study, which involved in-depth interviews with a number of key individuals in Qatar representing senior doctors, pharmacists and nurses from a number of health institutions. She also interviewed representatives from the University, healthcare policy makers, and representatives of patients and the public. There was high level of support for the expansion of pharmacists' roles to include prescribing of medicines. Amongst the important findings was the need to describe how pharmacist prescribing would actually work in Qatar, and to progress the issues of education and training.

The need to discuss licensing of pharmacists as prescribers with the Department of Healthcare Professions at the Ministry of Public Health in Qatar was also taken note of. In the next PhD study, Tesnime worked with the same group to develop a framework to support the potential development and implementation of pharmacist prescribing in Qatar.

A number of related research studies at Qatar University have contributed to developing the knowledge around pharmacist prescribing. Dr. Mohammad Diab and others studied the views of future pharmacists on pharmacist prescribing, and its potential implementation in Qatar. The majority were in favour of implementing pharmacist prescribing in Qatar. Results showed that there was a need for a specific education program to qualify pharmacists to prescribe safely and effectively. A mapping of the Bachelor of Science in Pharmacy at Qatar University against international prescribing competencies found that the program already addressed most of the prescribing competencies.

Since arriving in Qatar, Professor Derek has continued the international research on pharmacist prescribing. Along with Dr. Zachariah Nazar and individuals at HMC, research funding was received as part of Hamad Internal Grant Research Cycle. This study was very recently published in the International Journal of Clinical Pharmacy. It studied HMC pharmacists' desire to become pharmacist prescribers, and how ready they felt to undertake education to become prescribers. The study was a combination of a questionnaire followed up by in-depth discussion groups. Most of those returning the questionnaire considered themselves ready to undertake prescribing, particularly those in senior positions. Discussion group findings provided further explanation of these results, highlighting the desire to improve patient care, safety and personal drive.

Qatar University is leading the Middle East in pharmacist prescribing research. It is important to translate the findings of these studies to actual practice. The group at the College of Pharmacy is now working with Dr. Moza Al Hail (the Executive Director of Pharmacy at HMC), her team, and representatives of the Ministry of Public Health. Plans are developing to submit a proposal to Qatar University to develop and implement an education program for pharmacist prescribers. This is being developed from existing programs across the world, particularly from the UK and Canada.

Finally, the authors acknowledge the input of other key faculty members from the College of Pharmacy at Qatar University to specific research studies included in this program, namely Dr. Mohammad Diab, Prof. Ahmed Awaisu, Dr. Alla El-Awaisi, and Dr. Monica Zolezzi.



United Nations
Educational, Scientific and
Cultural Organization



• UNESCO Chair on
• Marine Sciences
• Qatar University - Qatar

UNESCO Chair in Marine Sciences at Qatar University

Prof. Ponnumony Vethamony,
UNESCO Chair in Marine Sciences, Environmental Science Center-Qatar University



From left: Prof. Ponnunmy Vethamony, UNESCO Chair in Marine Sciences, Prof. Fadhil Sadooni, Research Professor at Environmental Science Center, and Prof. Hamad Al-kuwari, Director of Environmental Science Center.

“UNESCO Chair in Marine Sciences at Qatar University” was formally launched in December 2020. The Science Plan of the award, viz., “Oceanography of the Arabian Gulf with particular reference to the EEZ of Qatar” includes the following components: Arabian Gulf circulation, Climate Change impacts, Sea level rise, Shamal winds and waves, Geomorphological changes due to coastal and offshore developments and Marine pollution. Though the main focus is on the EEZ of Qatar, oceanography of the Arabian Gulf cannot be separated from that of the Arabian Sea/Indian Ocean. Therefore, wherever required, especially in modelling, Arabian Gulf oceanography has been studied, considering the Arabian Sea.

The Environmental Science Center has carried out a number of scientific studies and activities aimed at achieving the objectives of the UNESCO Chair and its research plan. The applied scientific studies include: The Study of a multiscale ocean modelling system for the central Arabian Gulf. The study identified seasonal variability in currents and eddies in the EEZ of Qatar (Figure 1). For the first time in the Arabian Gulf, four prominent anti-cyclonic eddies have been identified in the Gulf of Salwa and south of Bahrain during winter, which were subsequently decayed during spring, re-built during early summer and partially decayed in autumn. At the structure scale, the flow is mostly tidally driven and can be intensified beyond 1 m/s through narrow passages such as between breakwaters or within artificial

waterways. The center also studied the role of Shamal and easterly winds on the wave characteristics along the coast of Qatar. Waves in the Arabian Gulf are dominated by Shamal winds during winter and early summer. Results indicate that Nashi winds influence the east and northeast coasts of Qatar with higher waves than those generated by Shamal winds. It has been found that exceptional easterly (Nashi) waves during March 2019 contribute to the highest monthly mean Hs, which is a deviation from the known long-term wave climate of the Gulf.

The Researchers at the Center found that the maxima in northerly wind speeds and wave heights over the Arabian Sea, the Arabian Gulf and the Red Sea. The analysis of climatology and trends of northerly maximum wind speed and significant wave height (Hs) in the Arabian Sea, Arabian Gulf and the Red Sea, during non-monsoon season derived from 40 years of ERA5 wind and wave data shows that the northern Arabian Sea including the Sea of Oman exhibits significant decreasing trend in northerly maximum wind speed ($- 1.4$ cm/s/year) and Hs ($- 0.67$ cm/year), while the Arabian Gulf and the Red Sea exhibit a sectorial contrasting trend, indicating the dominance of localized effects in modifying the regional climate.

The Center also refers to historical accumulation and composition of polycyclic aromatic hydrocarbons in the sediment cores of Arabian Gulf: The results indicate that the concentration sums of 16 priority

PAHs (Σ_{16} PAHs) in the sediment cores ranged from 0.05 to 2.54 ng g⁻¹ with an average value of 0.74 ng g⁻¹, and these values are lower than those found in other coastal systems.

The calculated ranges of toxic equivalent quantity values of PAHs (0 to 0.88 ng g⁻¹) were much lower than the safe level (600 ng g⁻¹). Also, the ESC researchers have studied spatial distribution, sources and ecological risks of polycyclic aromatic hydrocarbons along the Qatar coast.

In the study of the factors influencing the vertical distribution of microplastics (MPs) in the beach sediments around the Ras Rakan Island, Qatar shows that the pellets were the dominant MPs in the surface layer, whereas fibers were the most frequently observed MPs in the bottom sediments. Figure 2 presents different types (fragments, films, fibers, pellets and foams) of microplastic particles in beach sediments. This is the first study reporting the depth-wise variation of MPs in the Gulf region, and the results are useful to inform the historical MP pollution trend in the Gulf. Also, the ESC researchers have studied the sources, spatial distribution and characteristics of marine litter along the west coast of Qatar.

In addition, the researchers also studied at the Center hitchhiking of encrusting organisms on floating marine debris in the Arabian Gulf. The floating marine debris (FMD) and the associated rafting communities are one of the major stressors to

ecosystem services, global biodiversity and human health. The analysis showed 18 fouling species belonging to 5 phyla (Annelida, Anthropoda, Bryozoa, Mollusca and Porifera) on the FMD (Figure 3). The central and northwest parts of Qatar had more FMD and fouled species than in other locations.

Activities of the UNESCO Chair in Marine Sciences:

- Research & Graduate Studies, QU organized a panel discussion on “The Knowns and Unknowns of the Arabian Gulf” in January 2021 under the Research Wednesday Series to popularize the objectives of the UNESCO Chair. Kuwait University and SQU/Oman also participated.
- UNESCO Chair was invited to speak on “the experience of Qatar University in establishing the UNESCO Chair” at the “Meeting of UNESCO Chairs and UNITWIN Program for the GCC,” organized by the UNESCO Office in Doha, Muscat and Cairo in March 2021. The aim was to introduce Universities and Ministries of Higher Education in the GCC, who wish to explore the opportunity of establishing UNESCO chairs.
- UNESCO Chair participated in the sub-regional panel discussion on “the launch of the 2021 edition of the World Water Development Report-Valuing Water,” organized by the Qatar National Commission of Education, Culture and Science in collaboration with UNESCO Office for the GCC & Yemen and Qatar University in April 2021.
- UNESCO Chair was invited to speak on “Blue Economy related activities in the EEZ of Qatar” in the “Blue economy in the Indian Ocean region towards UN Decade of Ocean Science for Sustainability (2021-2030)” in May 2021, organized by the IOCINDIO/UNESCO.
- UNESCO Chair attended the 8th Intergovernmental Session of the IOC Regional Committee for the Central Indian Ocean held in May 2021.

In conclusion, UNESCO Chair objectives are included in 3 NPRP cycle-14 and 4 QU internal grant proposals. At present, the following projects are in progress: Preparation of atlases for currents and waves, where presently, no comprehensive information is available on the nature of currents and waves in the EEZ of Qatar, except a few sporadic data- essential for coastal and offshore developments and tourism. Therefore, it is planned to generate atlases for waves and currents using in situ, modelling and satellite products. Also, the project, Geomorphological changes due to coastal and offshore activities, aims to the identification of geomorphological changes along the Qatar coast in the last, say, 50 years using ground truth measurements, modelling and

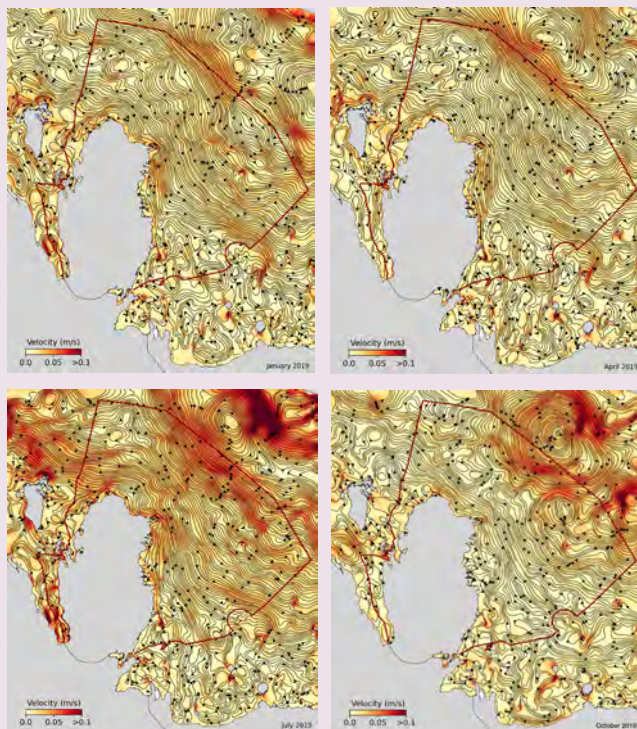


Figure 1. Seasonal circulation patterns in the Qatar EEZ: (a) January 2019, (b) April 2019, (c) July 2019 and (d) October 2019.

remote sensing data, and estimation of sediment transport, especially in the vicinity of developments- to delineate zones of sediment erosion/accretion and suggest remedial measures for critically eroding coasts (useful information for Qatar Tourism, Min. of Industry, Ministry of Environment and Climatic

Change and other Stakeholders). The Center seeks the utilization of drones available with College of Engineering to identify shoreline changes, mapping chlorophyll concentration and distribution, and studying suspended sediments and distribution of shallow water corals and seagrass meadows.



Figure 2. Different types (fragments, films, fibers, pellets and foams) of microplastic particles in beach sediments from the Ras Rakan Island.



Figure 3. Representative stranded floating marine debris (FMD) with encrusting organisms found along the west coast of Qatar.

Innovation Oasis



Interview with an Inventor:

Haneen Wadi Abdelrazeq,

PhD Student in Chemical Engineering Program,
College of Engineering – Qatar University



One of the Sustainable Development Goals (SDGs) in the State of Qatar is to provide clean water. The State of Qatar always seeks to develop and implement strategies to improve its water security. In this regard, QU plays an active role in order to meet the needs of the water desalination industry through innovative technologies based on scientific research for water treatment, and the exchange of experiences between academia and industry. In this issue, inventor student Haneen Abdelrazeq, a PhD student in the Chemical Engineering Program at QU, shares with us a unique innovation for commercial water purification.

Haneen, How would you present yourself to the University community?

I am a 4th year Chemical Engineering PhD Student at Qatar University. I have been studying in Qatar University since 2008 when I was first accepted for admission in the College of Engineering. I graduated in 2013 for my BSc degree in Chemical Engineering and in 2016 for my MSc in Materials Science and Technology, both from Qatar University. In 2018, I received a Graduate Sponsorship Research Award (GSRA) from Qatar Foundation to commence my studies as a PhD student at Qatar University. My PhD thesis is related to membrane synthesis and its application in pilot-scale wastewater treatment technologies under the supervision of Dr. Majeda Khraisheh, Professor and Head of the Chemical Engineering Department at Qatar University.

There is an urgent need for fresh water on the planet, and since your innovation is in the field of water filtration, please tell us about the concept of innovation with a simple explanation.

As an outcome of my PhD thesis, my work is focused on the contribution of technological innovations in water purification using an innovative microfiltration treatment method in the pilot scale. The idea of my innovation to supply clean water through efficient and advanced portable water systems. The filtration performance was optimized using the innovative system. Experimental data was used to validate the commercial performance of the proposed product.

We have been taught since childhood that water is filtered, what distinguishes your innovation from other filtering methods?

The development of novel materials that are able to withstand the harsh conditions posed by industrial processes is very critical. The mechanical stability of water filtration is the most important specification that I am working on to make my designed product unique and applicable in real-life scaled-up processes. The experimental data findings directly support the implementation of the proposed commercialized product and contribute to satisfying the growing global demand of fresh drinking water.

After the innovation is patented, how would it be applied in the local and global markets?

Qatar has one of the highest domestic water consumption rates in the world where Qatari households consume an average of 430 L of water per day. As an industrial state, seawater desalination (i.e. Qatar's primary source for drinking water) supplies at least 50% of the country's water demand. Recent industrial reports have highlighted that the high rates of water consumption in Qatar have led to the over-extraction of groundwater. Therefore, the advanced portable water systems will help meet long-term water security needs in Qatar. This by default reflects the high market relevance of our innovation in the local and global markets.

From your point of view, how do industrial sectors serve engineering innovations?

Technology and innovation are the driving force for the future of industrial production. The technological developments of the Fourth Industrial Revolution have the potential to effectively tackle global production systems through innovative strategies. Innovative technologies have transformed the designing for manufacturing into the designing for performance and product development. Also, the implementation of business model innovations and the proper understanding of customer segments will lead to a significant rise in new production technologies. This results in the formation of new value chains not only within the industry, but also across other industries.

What are the obstacles and difficulties that hinder any invention?

As a young researcher in this field, I realized that the actual invention was not as hard as commercialization. In fact, a commercialization process requires a lot of time and effort to find the right idea and proper design elements to



Prof. Majeda Khraisheh and student Haneen Abdelrazeq.

avoid any possible misconceptions. It was an eye opener for me to learn how the process of making a new technological invention is ruled by “trial and error.” The more I worked on the commercialized invention plan, the better I understood how having a sustainable competitive advantage will help achieve long-term success. In fact, the whole inventing process is full of obstacles, especially in the fields of advanced science and technology. I believe we need to equip ourselves with the proper knowledge and skills for creating useful technological products.

As a student, how do you evaluate the support provided by QU to prepare outstanding students in research and innovation?

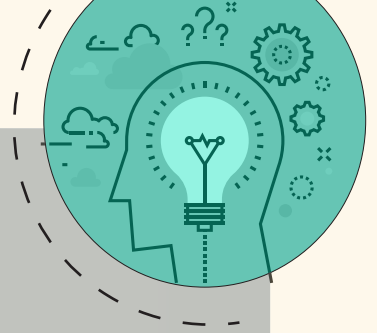
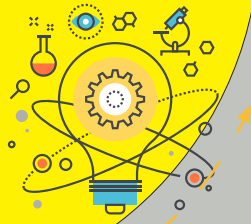
As a student in the College of Engineering, I am thankful for all the efforts of the College and its faculty members in helping the students produce high quality research, which are directly aligned with QU’s research pillars. For all QU students with similar interests in innovative research, commercialization, and entrepreneurship, I highly recommend them

to participate in the innovation programs and workshops offered by Qatar University’s Office of Strategic Innovation, Entrepreneurship & Economic Development (SIEED). Their educational sessions will guide towards the development of research ideas and provide them with all the needed support to turn those ideas into innovative inventions. As a graduate student with keen interest in this field, I consider myself as one of QU’s successful stories with contributions in educational activities combining both technological innovation and advanced engineering methodologies.

Tell us about your future ambitions, and what do you want to achieve with your invention?

The entire innovation process is full of studying and gaining new knowledge in a cutting-edge research topic. However, with dedication and commitment, I aim towards contributing to meet the long-term water security needs in national and global communities. I am working hard on my innovative product to make the biggest impact on society and industry through reaching the commercialization stage.

Innovation Oasis



An Innovation to Raise the Efficiency of Thermoelectric Materials via Simple and Green Techniques

Farah Mohamed El-Makaty

Research Assistant, Material Science and Technology Master Program, College of Arts and Science - Qatar University, Ph.D. graduate student, Material Science and Engineering Program, College of Engineering- Qatar University



Dr. Khaled Youssef, Associate Professor and Coordinator of the Master's Program in Materials Science and Technology at the College of Arts and Sciences at Qatar University, and student Farah El-Makaty.

It has been reported that more than 50% of the energy produced worldwide is wasted in the form of heat. This implies that almost everywhere around us, there is energy that should be harvested and utilized. For instance, the heat from direct sunlight, especially in Qatar, where the temperature reaches more than 40 °C during the summer. Even the heat coming out from your car parts during operation, such as the engine and exhaust system. Imagine being able to recover this waste heat and employ it to power other parts of your car, like the radio or the lights, and even use it to run your wristwatch or charge your mobile phones and laptops.

In fact, thermoelectric devices, which directly convert heat to electricity, are a promising technology to capture abandoned waste heat while being environment friendly. The prominent advantages of thermoelectric devices are all-solid-state, noise-free and portable. To generate electricity from a thermoelectric module, it is only required to have a temperature difference between its hot and cold surfaces (Figure 1).

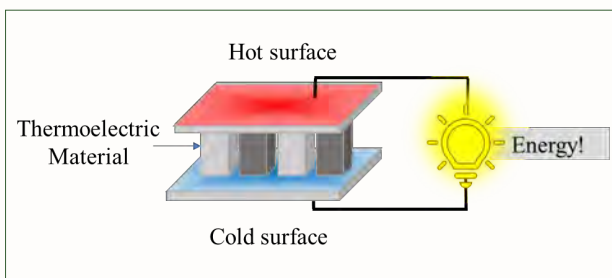


Figure 1. Schematic representation of a thermoelectric device.

Bismuth telluride represents the benchmark of outstanding thermoelectric materials used for near room temperature applications. However, the application of this material is highly restricted by the low energy conversion efficiencies. In order to improve the efficiency of bismuth telluride materials and get them commercialized, the research team from Material Science and Technology program including Dr. Khaled Youssef, the program coordinator, and Eng. Farah El-Makaty, a research assistant and a current PhD student, reported a simple, cheap, and economical process for producing highly-efficient bismuth telluride thermoelectric materials. The novelty combines usage of nanofillers and simple existing processing methods (mechanical milling and hot pressing) in a unique manner to provide high enhancements to the thermoelectric properties of the bismuth telluride materials (Figure 2).

Researchers have been able to produce marginal improvements in bismuth telluride nanomaterials this far, through using either chemical-based synthesis techniques or complicated methods; but the reported efficiency for their materials is low and does not meet the market requirements. The novelty in this work covers the first-ever production of a bulk bismuth telluride with a high efficiency via a simple and existing processing technique. The work was based on optimizing the process parameters systematically, including milling time of nanofiller, sample heating rate, operating pressure, and temperature. The obtained results showed how choosing the proper parameters, leads to huge improvements in the thermoelectric properties of bismuth telluride, hence enhancing the efficiency of the final device.

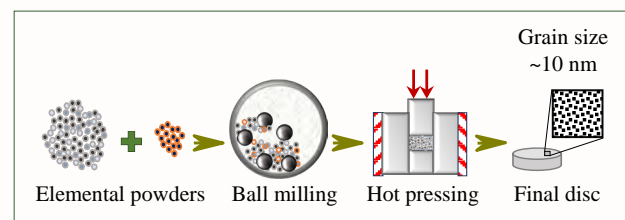


Figure 2. Production of bismuth telluride alloys using economical and green methods.

The need for clean, sustainable, and renewable energy technologies is crucial in this century to meet the increasing demands while reducing the environmental pollution. Each move taken in this field represents a step further towards a more energy-efficient world that meets with the high standards of Qatar National Vision 2030 for environmental and economically sustainable developments.

The research group of Dr. Khaled Youssef at the Material Science and Technology program has published several journal articles in the field since the beginning of their journey on bismuth telluride thermoelectric materials. Scan the barcodes and explore more about these developments.



The effects of structural integrity of graphene on the thermoelectric properties of the n-type bismuth-telluride alloy.



Review: The effect of different nanofiller materials on the thermoelectric behavior of bismuth telluride.



Experimental and modeling analysis of p-type $\text{Bi}_{0.4}\text{Sb}_{1.6}\text{Te}_3$ and graphene nanocomposites.



Development of a Novel Catalyst for Conversion of Syngas to Liquid Hydrocarbons (Fischer–Tropsch products)

Ahmed Soliman,
Senior Chemist, Gas Processing Center, College of Engineering - Qatar University



The most common feedstock materials for syngas production are coal (so-called coal-to-liquids, or CTL) or natural gas (gas-to-liquids, or GTL) or biomass (biomass to liquid, or BTL), as shown in Figure 1. Fisher Tropsch (FTS) technology is used for the conversion of syngas to synthetic fuels. FTS technology is currently being employed in Qatar, Malaysia, South

Africa, and China to produce ultraclean liquid hydrocarbons of ($C_5 - C_{25}$), which can be used as synthetic fuel such as kerosene, diesel and lubricant oil. Synthetic fuels have less impact on the environment because they are Sulphur free and have no contaminants such as heavy metals or aromatics in comparison with crude oil refined products.

The catalysts used is the heart of the FTS technology; that determines the quality of the products. Most of the current FTS catalysts operate at high pressure and temperature, which increases the cost. The catalyst developed in this patent uses lower temperature and pressure to produce high quality liquid hydrocarbons at a lower operating cost. In addition, the catalyst is made of copper and zinc supported on alumina and zeolite.

Only four transitional metals are currently thought to be active in FTS: cobalt, iron, ruthenium, and nickel. Only cobalt and iron have traditionally been considered for industrial application since nickel has been called a methanation catalyst, and simply because ruthenium is expensive. The active phase in FTS is often comprised of cobalt or iron, and its phase use depends on several parameters, including the goal product (fuels vs. chemicals) and cost.

The catalytic performance of the obtained catalysts is superior to all previously reported metal-based, and carbon-based catalysts under the same reaction conditions or parameters as well as the type of the products. The total cost of the catalyst is almost 3 or 12 times cheaper than commercial cobalt or ruthenium catalysts, respectively.

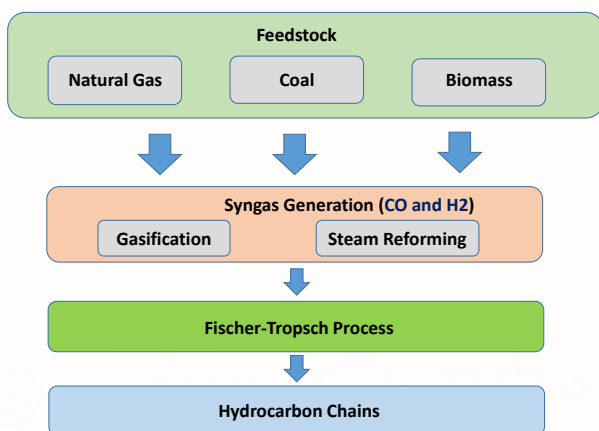


Figure 1. FTS process from Natural gas to hydrocarbon products.

The research goals were to (i) synthesize this catalyst using different syntheses procedures and (ii) optimize the synthesis procedure to obtain a catalyst active phase content with the highest selectivity and stability. The various

synthesis techniques assisted changing the nanostructures while maintaining the same elemental composition facilitating the structure-activity/selectivity and stability studies. The promotional effect of basic oxides and noble metals on catalytic activity was also explored to optimize the activity, stability, and selectivity.

Here, the researcher synthesized and characterized a novel catalyst with different supports. This catalyst could be used in heavy alcohol conversion and Fisher-Tropsch products from Syngas (CO/H₂). The catalyst's efficiency is very high, and it can be prepared easily and used in mass production. The figures below show the wide range of products achieved using this novel catalyst at moderate pressures and temperatures.

The investigation led to the development of a novel catalyst by using the solution combustion synthesis (SCS) method and met the FTS application for hydrocarbon products. The catalyst gives the same stability and activity compared with those usually made of iron or cobalt. The catalyst was also characterized by a wide range of analytical techniques, e.g., X-ray diffraction analysis (XRD), X-ray photoelectron spectroscopy (XPS), scanning electron microscope (SEM), Brunauer–Emmett–Teller (BET), temperature-programmed reduction (TPR), and temperature-programmed oxidation (TPO). Also, The experiments were conducted in a high-pressure bench-scale reactor (fixed-bed) where the condensed liquid was collected and analyzed using the gas chromatography with mass spectrometer and FID (GC-MS), (GC-FID), and Karl fisher techniques in addition to the gas part by GC-TCD.

The novel catalyst has produced liquid hydrocarbons of the same quality as the commercial catalysts but at lower operating conditions and hence potential lower cost. Accordingly, the catalyst has been patented in the United States Patent and Trademark Office (USPTO) and granted the patent number US 11,045,793 B1 on 29-06-2021.



The research team that developed the catalyst comprises of Mr. Ahmed Soliman, Senior Chemist, Gas Processing Center; Dr. Kamel Eid, Research Associate, Gas Processing Center; Prof Ahmed El Zatahry, Dean of College of Arts and Sciences;

and Prof. Aboubakr M. Abdullah, Innovation Acting Manager at Qatar University. The inventors examined and investigated different catalysis synthesis methods, activity, stability, hydrocarbons products, and FTS experiments as shown in Figures 2-3 as an example.

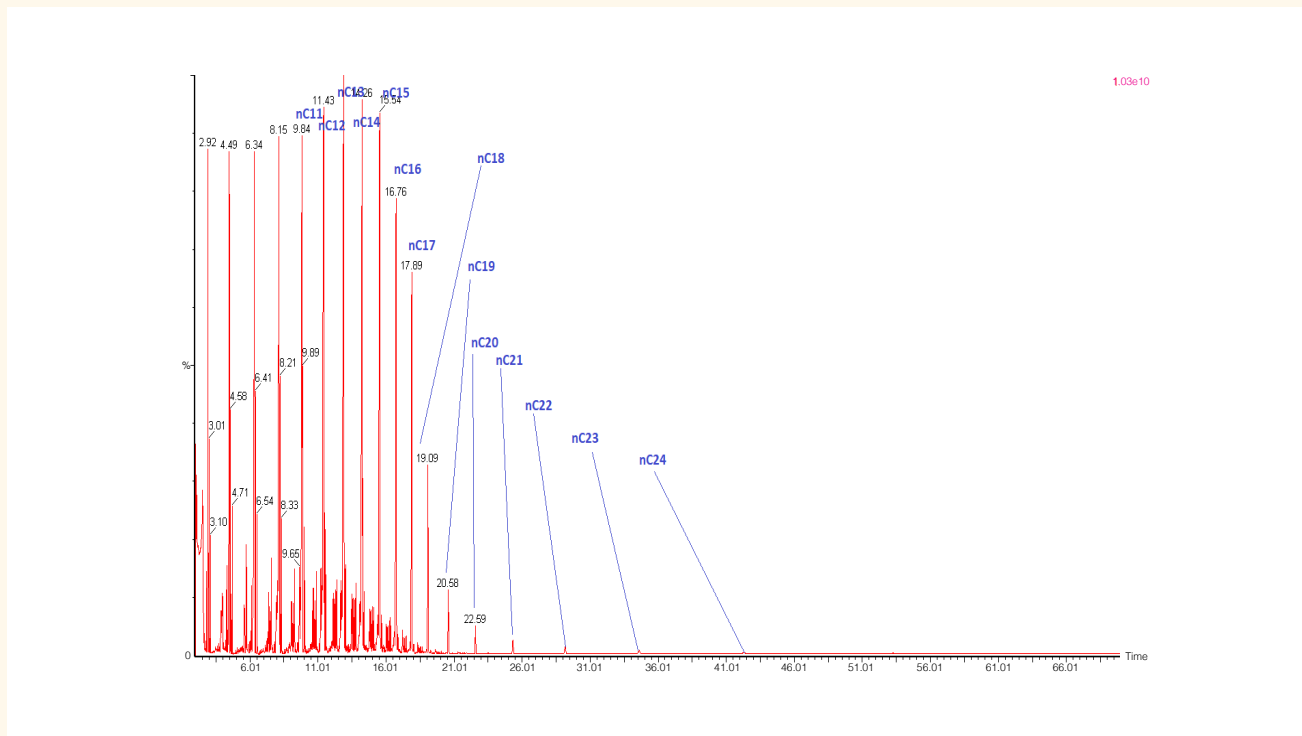


Figure 2. FTS products by GC-MS using the catalyst at 20 bar and 250 c°.

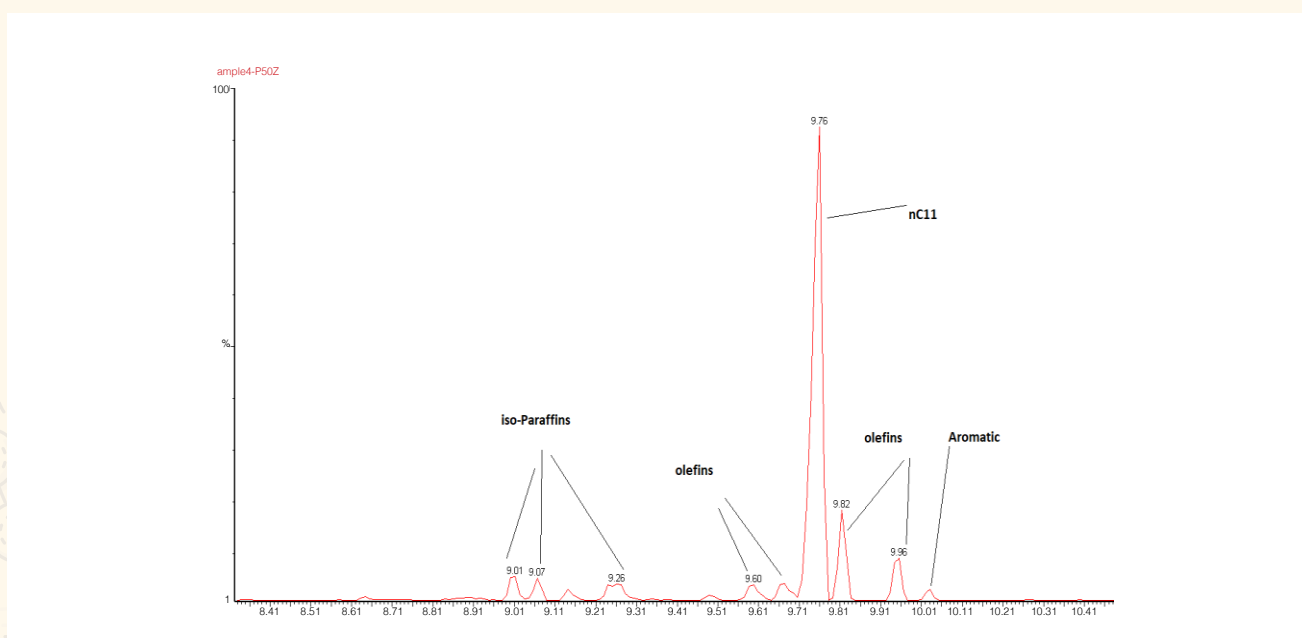
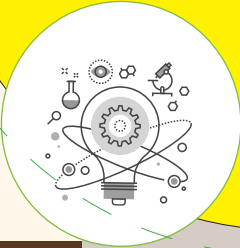


Figure 3. GC-MS showed the hydrocarbon identification of FTS products at 20 bar and 250 c°.



Inventor Business Card

How would you present yourself to the University community?

I am a leading expert in protein biomarkers in disease specializing in diabetes, arthritis and autism. [My website.](#)

What are your most important inventions patented in Qatar University?

Blood test for autism and risk prediction algorithm for diabetic kidney disease

How does Qatar University create a favorable environment for inventions and innovation?

QU stimulates collaboration and encourages a multidisciplinary working environment that provides opportunities for innovation. There are special grants for innovative ideas to transform these into commercial entities.

If you were to create an invention to develop medical services, what would it be?

Blood test for autism. My group is currently validating blood test for autism. This test could diagnose autism within a day with 95% accuracy. Autism is a condition that affects 1 in 87 children in Qatar and 1 in 51 children in USA. It takes months (in Qatar) to years (in USA and Europe) to diagnose autism with an accuracy of only 70 to 80%. My group and I would very much like to see our blood test become available to clinicians for improved, timely and accurate diagnosis of autism.



Prof. Naila Rabbani

**Professor of Basic Medical Sciences,
College of Medicine - Qatar University**



What are the research goals you plan to achieve?

My research goals are to improve prevention and treatment of diabetes and early stage diagnosis of osteoarthritis and autism. For achieving this, I also plan to train, motivate and inspire young students in skills and expertise of biomedical research and innovation.

In a word, describe your journey in research and invention.

Pioneering!

Q-Hummingbirds: **Distributed Cooperative Multi-UAV Platform for Agile Coverage and Surveillance**

Abdelrahman Soliman¹, Mohamad Mohamad Ali Bahri¹, Mohamed Daniel Izham¹, and Dr. Hend Gedawy²

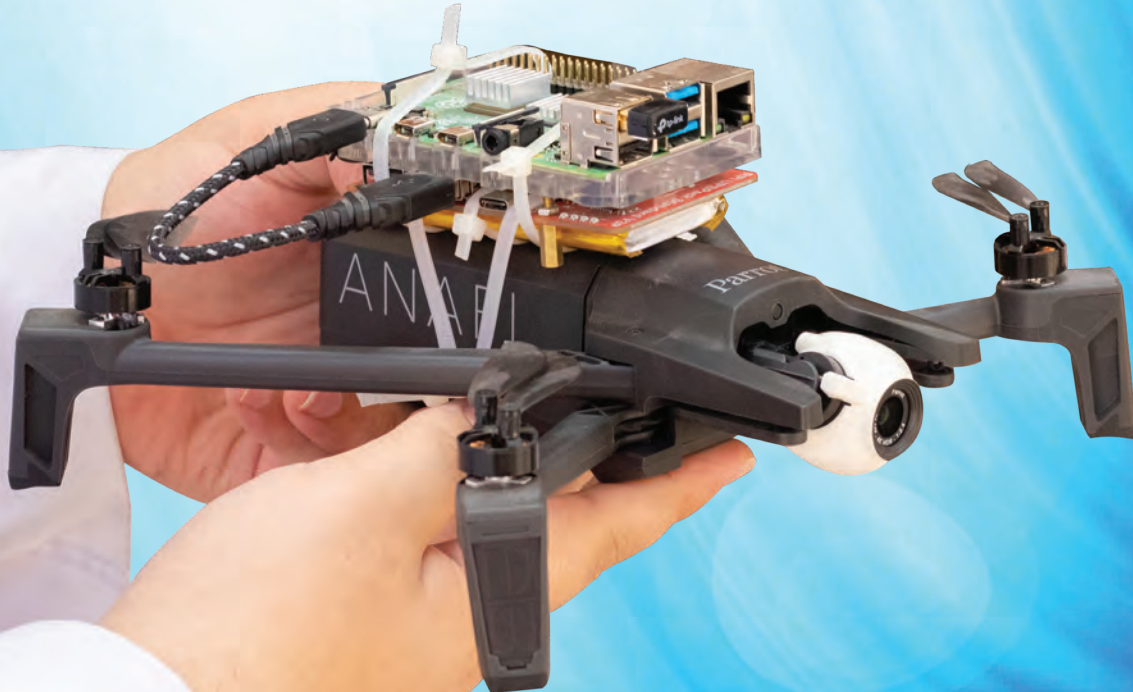
¹BSc in Computer Engineering, Qatar University

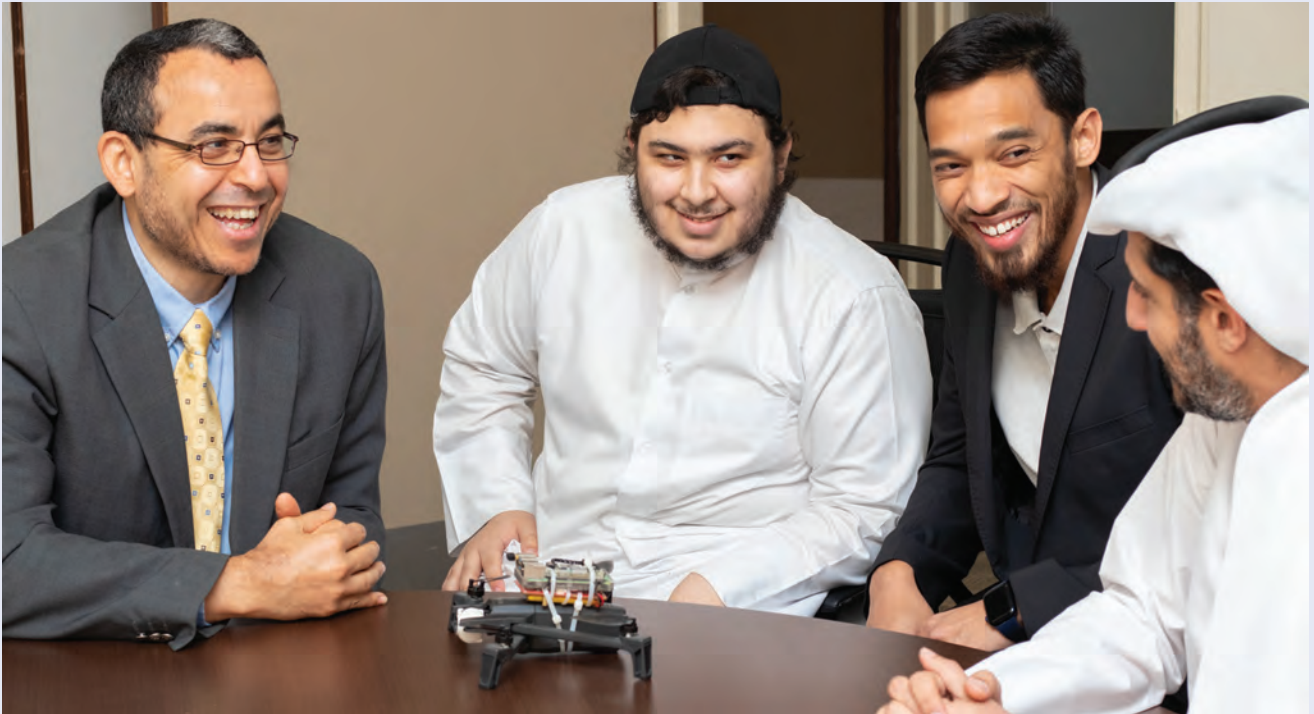
²Postdoctoral Research Associate, Carnegie Mellon University in Qatar

Supervisor: Prof. Amr Mohamed, Professor in Computer Engineering,

Co-Supervisor: Dr. Abdulla Al-Ali, Head of Computer Science and Engineering Department,

College of Engineering - Qatar University





From left: Prof. Amr Mohamed, Abdelrahman Soliman, Mohamed Daniel Izham, and Dr. Abdulla Al-Ali.

As part of a high impact grant project no. QUH-CENG-20/21-1 entitled “Q-Hummingbirds: Distributed cooperative multi-UAV platform for agile coverage and surveillance,” supported by Qatar University, a research team have worked on developing an intelligent UAV platform using hardware integration and artificial intelligence (AI) techniques for search and tracking of mobile targets without knowing their exact locations. The team was led by Dr. Abdulla Al-Ali, and Prof. Amr Mohamed, and includes researcher Dr. Hend Gedawy. The UAV platform has many such as in military, national boarder security, farming, and marine biology.

Unmanned aerial vehicles (UAVs), more commonly known as drones, represent a highly promising technology that could revolutionize many fields in our lives. From home security to livestock tracking, and military reconnaissance to traffic monitoring, drones are indispensable. Unlike remote sensing using satellites, which has limitations recognizing detailed patterns due to far distances, autonomous UAVs flying over low altitudes provide efficient solutions for fine-grained monitoring, and hence they proliferated in countless number of Internet of Things (IoT), and cyber physical applications. However, the short battery life of the commercial micro-drones due to high mechanical energy requirements can be a major limitation, especially in applications that require drones’ long trajectories to discover distributed targets (i.e. targets could be humans, vehicles, animals, etc.).

The objective of this project is to develop an integrated UAV system that can detect and track distributed targets at the shortest time possible with minimum energy consumption. The UAV is controlled from an on-ground command and control system that sends high-level commands to the drone dictating the best AI-based scanning strategy to cover the targets with minimum energy consumption and without knowing the exact targets’ locations in advance.

The proposed approach relies on two major sub-parts, 1) A machine learning-based technique that can detect and identify targets, and 2) A reinforcement learning (RL) technique that can learn the mobility patterns of targets, and later tries to track the targets without knowing their exact locations. Targets are either fixed or mobile. In the case of fixed targets, the drone tries to learn the targets’ locations assuming their distribution is fixed (e.g. military deployed fixed tanks). For moving targets, the problem is even more challenging, requiring the drone to learn a dynamic moving pattern of the targets. The object detection part is based on machine learning model that is pre-trained on images of targets taken from the drone’s camera, to detect, identify, and count the number of targets in any camera frame. Many models were trained in this process, and the performance of one model can be seen in Performance the new state of the art YOLOv5 model has been used as part of this object detection algorithm. The location of the

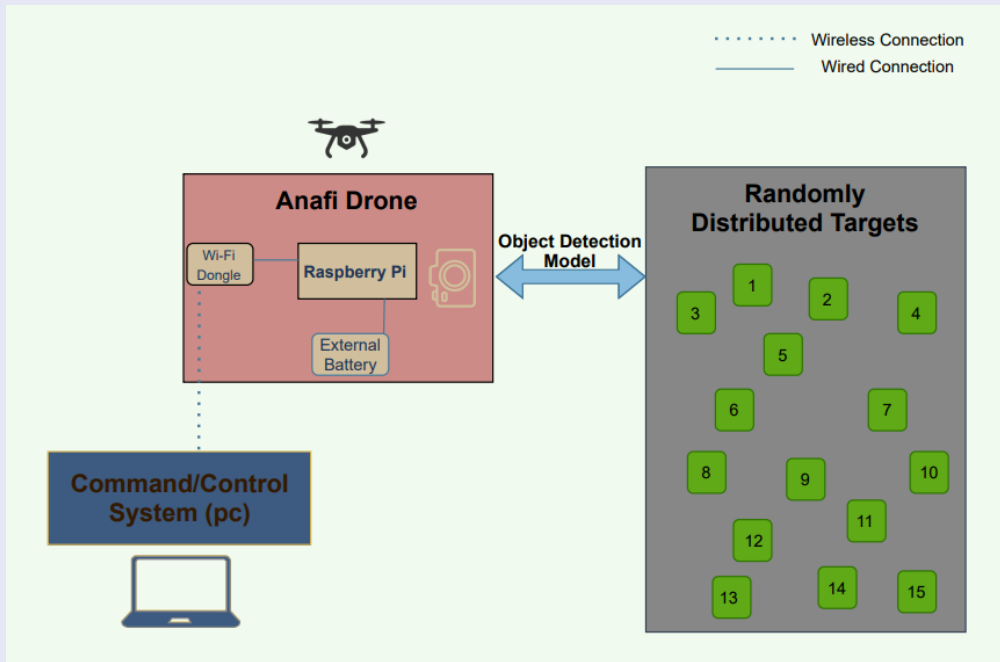


Figure 1. An illustration of the system design.

drone and the number of targets within its frame will then be fed to the reinforcement-learning algorithm to estimate the reward of the drone existing in any location. The more the drone finds targets in a certain location, the higher the reward achieved by the drone. With enough trials and explorations, an RL model can learn the mobility pattern of the targets with maximum number of targets. Upon the model deployment, the drone will be able to autonomously move and complete its trajectory to find and track all targets in the shortest time possible, thus saving energy.

To facilitate the autonomous navigation of the drone, and run all the AI techniques and models, the team has designed a small computer (based on a Raspberry pi) with the required integrated sensors/adaptors (e.g. Wi-Fi and GPS adaptors) to attach to the drone. This hardware module will then provide all the intelligent control commands to navigate the drone, detect, identify, and count the targets in certain areas. An overview of the entire system design can be seen in Figure 1.

To make the system more practical, since the RL training in real systems may take a long time, the team has also designed a digital twin (simulated) environment that mimics exactly the real environment, and can be used for drone's learning and training. A software called Gazebo is used for simulating the environment as illustrated in Error! Reference source not found. and the sphinx plugin is used to publish data about the virtual drone. After

training and testing the models within the simulated environment, the experiment is done in the physical world using the pre-trained models to see how the drone will perform, assuming the targets use the same mobility pattern in the real environment. The interaction in the simulated environment is shown in Figure 2.

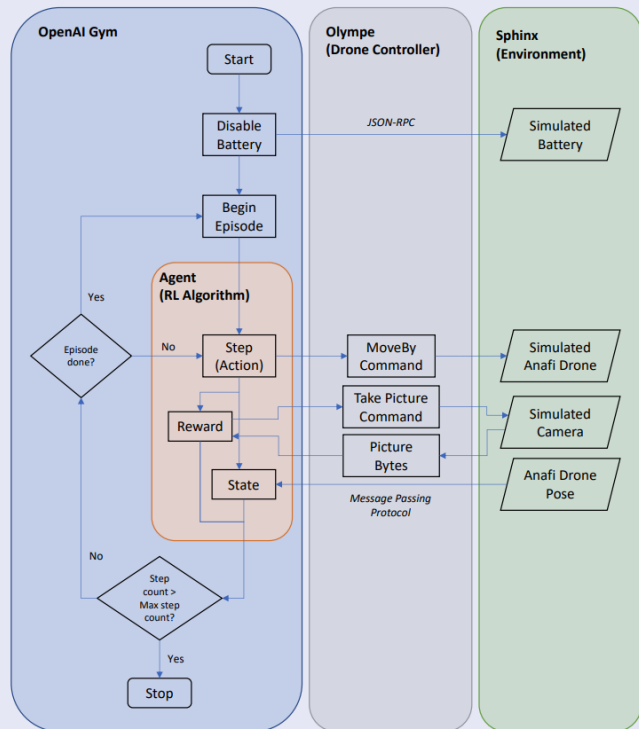


Figure 2. The interaction in the simulated environment.

Using Twitter to Track the Impact of COVID-19 on Dentistry

Ola Al-Hayk & Alghalia Al-Mansoori, Year 3 students,

Sharifa Qassmi, Year 2 student,

Layan Mohamed, Year 1 student,

College of Dental Medicine - Qatar University

Fatima Haouari, PhD candidate, College of Engineering - Qatar University

Dr. Tawanda Chivese, Teaching Assistant of Population Medicine, College of Medicine

Supervisor: Dr. Alaa Daud, Assistant Professor of Restorative Dentistry and Assistant Dean for Student Affairs,

Co-supervisor: Prof. Faleh Tamimi, Associate Dean for Academic Affairs, College of Dental Medicine - Qatar University



From left: Dr. Tawanda Chivese, Prof. Faleh Tamimi, student Alghalia Mansoori, student Sharifa Qassmi (front), student Ola Al Hayk, student Layan Mohamed, and Dr Alaa Daud.

Several epigenetic modifications, mainly DNA methylation, are also found to be involved in the pathophysiology behind T1DM development as it alters the expression of certain genes involved in insulin secretion, b-cell survival and autoimmunity (Zullo, 2017). DNA methylation is the process of methyl group binding to the fifth carbon of cytosine, leading to the formation of 5-methylcytosine. Although T1DM patients are found to have unique DNA methylation patterns compared to healthy controls, the mechanism behind the influence of such patterns on T1DM is not clearly understood.

The following study represents a collaborative effort between students and members from 3 different faculties at Qatar University, namely, the College of Dental Medicine, College of Medicine and College of Engineering.

Introduction

COVID-19, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is thought to spread via close contact through respiratory droplets and aerosols. Owing to aerosol generation at the dental chair as well as close proximity to patients, dentistry is thought to be associated with the spread of infection. It is crucial to investigate the risk of bidirectional spread of infection between patients and dental professionals to take additional precautionary measures to halt the spread of COVID-19.

Predicting the number of suspected or confirmed cases of COVID-19, the spread of infection, and implications are crucial in the prevention and control of virus outbreak. An “infoveillance” approach using Twitter has been proposed in the literature to measure public perceptions and track levels of disease activity during pandemics.

In the current descriptive study, a tweets crawler (Twitter search algorithm) which exploits the Twitter Academic research API, was developed to retrieve historical tweets during the breakout period of COVID-19, reporting infections and deaths in dental practices. Content analyses was performed and geographical landmarks outlined on a map (Figure 1). The research team spearheaded by Dr. Alaa Daud, an Assistant Professor of Restorative Dentistry and the Assistant Dean for Student Affairs, present the following study, which has been accepted at the 2022 International Association for Dental Research IADR/APR conference. IADR is a prestigious dental conference presenting ground breaking dental research annually worldwide.

The College of Dental Medicine is proud to have 4 undergraduate dental students participate in collecting the data and analyzing the tweets. Teamwork and collaborative practice was a driving force to the success of the study.



Figure 1. Map showing tweets by users reporting death of a dentist, dental staff or dental patients worldwide.

Abstract

Twitter data has been used in a descriptive or predictive context during COVID-19 pandemic. Even though Twitter proved being a useful tool for tracking the impact of COVID-19 pandemic worldwide, data on the effect of Covid-19 on the dental profession remains scarce. Here, we investigated reported COVID-19 infections and deaths in dental practices. Two approaches were adopted to collect tweets from 1st January 2020 to 31st March 2021. A manual approach using tweetdeck, a user interface provided by Twitter allowing search through keywords or phrases. The second, an automated approach using a tweets crawler utilizing the Twitter Academic research “API”. Queries included keywords on infection or death of dental staff and patients caused by COVID-19, e.g. (dental OR dentist OR dentists) AND (death OR deaths) AND (COVID-19 OR covid OR corona). Inclusion–exclusion principle was adopted. Tweets registering events on infection or death of dentists, dental staff, and patients as part of their conversation were retrieved.

A total of 5,639 eligible tweets were retrieved of which 1,581 were deemed relevant after applying the inclusion and exclusion criteria. Of the relevant tweets, 309 described infections at dental practices, where 1,168 infection cases were reported amongst dentists, 132 dental staff and 41 patients. Of these, 30 were males, 43 females, with remainder gender not reported. Most common Countries reporting were USA, India, followed by Canada with an age range of 20–51. Six hundred deaths were described, of which 253 were dentists, 22 dental staff, and 7 patients. Of these, 98 male and 32 females. Most common Countries reporting were USA, Pakistan, then India with an age range of 23–83.

The data suggests analyses of twitter may provide useful information regarding the impact of COVID-19 pandemic on the dental profession. However, further research is needed to assess its validity.

Nutritional Status as Epigenetics Modulator in Type 1 Diabetes in Pediatric Population of Qatar

Amira Kohil, master's graduate in Biomedical Sciences, College of Health Sciences-Qatar University
Supervisor: Dr. Annalisa Terranegra, Principal Investigator – Assistant Level–Laboratory of Precision Nutrition, Sidra Medicine-Qatar

Co-Supervisor: Dr. Mashaal Al-Shafai, Assistant Professor of Biomedical Sciences and Section Head of Research and Graduate Studies-College of Health Sciences, Vice President for Medical and Health Sciences Office-Qatar University



Type 1 Diabetes Mellites (T1DM), is an autoimmune disorder caused by the destruction of pancreatic b-cells and is among the most prevalent chronic conditions in Qatar. The pathophysiology behind T1DM development is complex and it involves the interaction between genetics, environment, and the immune system. Moreover, different environmental factors, such as infection, diet, early nutrition, mode of delivery and antibiotic use are implicated in the onset and progression of T1DM (Rewers, 2016).

Several epigenetic modifications, mainly DNA methylation, are also found to be involved in the pathophysiology behind T1DM development as it alters the expression of certain genes involved in insulin secretion, b-cell survival and autoimmunity (Zullo, 2017). DNA methylation is the process of methyl group binding to the fifth carbon of cytosine, leading to the formation of 5-methylcytosine. Although T1DM patients are found to have unique DNA methylation patterns compared to healthy controls, the mechanism behind the influence of such patterns on T1DM is not clearly understood.

Several studies conducted in other metabolic disorders, such as obesity and Type 2 Diabetes Mellitus (T2DM) have found that the interaction between gut microbiome and immunity acts through epigenetic mechanisms. However, it is not clear yet whether such mechanisms are relevant for T1DM development as well.

The hypothesis of this study is that T1DM patients have a unique methylation status, and this plays an important role in the onset and progression of the disease. Moreover, external factors, such as different dietary habits, body mass index (BMI), and gut microbiome composition, can affect the DNA methylation and can contribute to the pathogenesis of T1DM in the young Qatari population. Therefore, this study aims to identify differentially methylated loci in T1DM patients compared to healthy subjects as well as to correlate DNA-methylation patterns with clinical data, dietary parameters, and gut microbiome. In the DNA methylation analysis, two genes were found to be hypermethylated in T1DM patients in comparison to healthy subjects: Suppressor APC Domain Containing 1 (SAPCD1) and Astrotactin 2 (ASTN2). SAPCD1 gene is known to be involved in the establishment of mitotic spindle orientation, whereas ASTN2 has a role in neuronal cell adhesion. Based on the literature,

there is no published data that correlate SAPCD1 and ASTN2 genes with T1DM disease. However, there are studies that showed their correlation with different types of cancer (Matta, 2018). The nutritional analysis revealed that T1DM patients have lower intake of fats and saturated fatty acids, as well as a higher intake of pantothenic acid. Finally, T1DM patients have a lower microbial richness and diversity compared to healthy subjects.

In order to identify the potential interplay between dietary components, DNA methylation and gut microbial flora, a network analysis was used to correlate these three factors and its association with T1DM. Based on the network analysis conducted in this study, a negative correlation was found between the methylation level of SAPCD1 gene and the intake of monounsaturated and polyunsaturated fats in T1DM patients. In addition, a negative correlation of the SAPCD1 methylation levels was identified with the microbial genus *Clostridium* and *Ruminococcus*. It could be proposed that both monounsaturated and polyunsaturated fats intake affect the microbial flora (*Clostridium* and *Ruminococcus*) leading to its reduction as it is seen in patients with ulcerative colitis (Prossomariti, 2017). However, how the hypermethylation of SAPCD fits in this association is yet to be identified (Figure 1).

In conclusion, this study showed the potential interaction between nutritional factors, DNA methylation, and gut microbiome and how this might define the development of T1DM in children and could open new avenues in nutritional personalized therapy. However, more research studies are needed for further exploration of such association.

For more information about this student project, you can browse the following link:

<https://qspace.qu.edu.qa/handle/10576/21206>

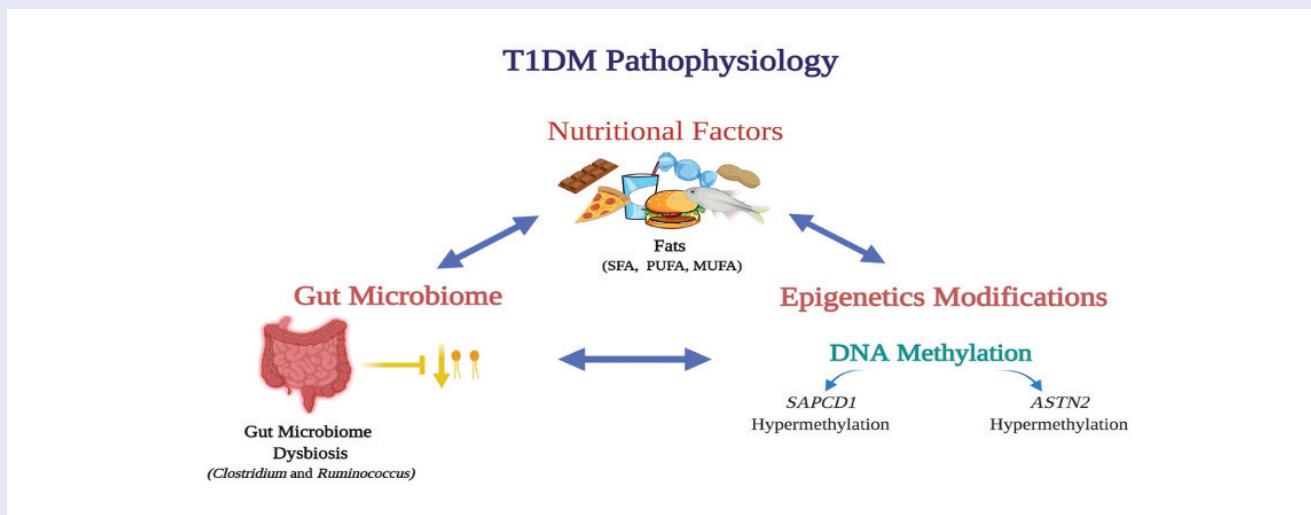


Figure 1. Schematic representation of the potential mechanism of T1DM pathophysiology due to the interplay between diet, gut microbiome and epigenetic.

The Tobacco-Free Campus Initiative: **The Nexus of Teaching, Research, and Public Health Action**

Dr. Hanan Abdul Rahim, Dean of College of Health Sciences,
Dr. Ghadir Fakhri Al-Jayyousi, Assistant Professor of Public Health,
Dr. Diana Alsayed Hassan, Assistant Professor of Public Health,
Dr. Mujahed Shraim, Associate Professor of Public Health,
Ms. Rana Kurdi, Lecturer of Public Health,
College of Health Sciences-Qatar University



Tobacco use is a leading cause of preventable death and illness worldwide. Thanks to persistent tobacco control efforts, global prevalence rates are expected to decline in the coming five years. Unfortunately, the Eastern Mediterranean region, where one in three persons is a tobacco user, is projected to show the smallest decline. Smoking is a common risk-taking behavior among university students in the region, and in recent years, newer forms of tobacco use have become increasingly popular, such as e-cigarettes and chewable products. In addition to raising awareness about the short- and long-term health risks of various forms of tobacco use, tobacco-free policies are cost-effective interventions in the fight against tobacco.

In consideration of the health and safety of its community, the 2013 Qatar University No-smoking Policy allows smoking only in designated areas beyond a minimum specified distance of buildings. However, the current policy is not 100% tobacco-free and can be further strengthened by including emerging forms of tobacco products and by eliminating even designated spaces where tobacco can be used on campus. Clear penalties for smoking-specific violations can also support the enforcement of the policy. Tobacco-free spaces align with the country's goal to designate Doha and Al-Rayyan (in addition to other municipalities) "Healthy Cities" by WHO in 2022. The Healthy Cities initiative calls for "Health in All Policies" to provide the optimal levels of appropriate public health and illness care services available to all and provide a clean, safe and healthy physical environment.

QU College of Health Sciences initiative on a tobacco-free campus

In November 2019, the Department of Public Health represented by Dr. Hanan Abdul Rahim; Dean of College of Health Sciences (CHS), joined the fifth cohort of the Tobacco-Free Generation Campus Initiative, a program by the American Cancer Society's Tobacco Control Center providing grants to 'accelerate and expand the adoption and implementation of 100% smoke-and tobacco-free policies on college and university campuses" (<https://www.cancer.org/health-care-professionals/center-for-tobacco-control/tobacco-free-generation-initiative.html>) with The *Tobacco-Free Campus Initiative (QU Health-y)*. Qatar University is the first and the only international organization to join this cohort, with the aim of moving towards a 100% smoke and tobacco-free campus.

Throughout the project, award activities were integrated into the research and educational experiences of students in the Public Health program, allowing them an opportunity to put their learning into practice and co-author research papers in this area. In March 2020, Dr. Ghadir Fakhri Al-Jayyousi supervised students in conducting the first environmental assessment scan of tobacco use on QU campus (<https://drive.google.com/file/d/1gNAiRHG9RjymUjMTF8X1eDSDycsJWOFV/view>). In the fall 2021 semester, Dr. Ghadir Al-Jayyousi and Ms. Rana Kurdi supervised students in administering a baseline survey that assessed knowledge, attitudes, and behaviors of



From left: Dr. Mujahed Shraim, Dr. Ghadir Fakhri Al-Jayyousi, Dr. Hanan Abdul Rahim, and Dr. Diana Alsayed Hassan.

the QU community towards tobacco products and towards the existing QU No-smoking Policy. The survey also identified barriers to seeking tobacco cessation services by students. Three publications in international peer-reviewed journals were the outcome of these projects. Also included in the grant activities is an analysis of the existing No-smoking Policy, along with recommendations on how the policy can be upgraded to a 100% smoke- and tobacco-free policy.

To enhance awareness about tobacco use and prevention, educational videos on tobacco use, the extent of the public health issue in Qatar, types of tobacco products, harmful effects and consequences of tobacco use as well as how to access cessation services were created by Public Health students and disseminated through various CHS social media platforms. The Department of Public Health also organized two seminars: the first about tobacco cessation services delivered by Dr. Ahmad Al Mulla, the Director of the Tobacco Control Center at Hamad Medical Corporation, and the second about the experience of the American University in Beirut in becoming a tobacco-free campus, presented by Dr. Reema Nakkash, Associate Professor at the American University of Beirut.

The ultimate aim of these combined efforts is to promote an updated policy that would ban all forms of tobacco on campus and strengthen the provision of cessation support services. The strategies used in this project, including mobilizing the QU community and enhancing collaboration between QU and key health stakeholders echoes the priorities of the “Healthy Cities” initiative, which is to enhance citizens’ high level of participation and management in decisions that affect their lives, health, and well-being and enhance inter-sectorial collaboration among the different stakeholders.

Looking Ahead

Currently, two more research projects are ongoing at the Department of Public Health:

The first project is a second assessment survey of QU community (students, faculty, and staff) knowledge, attitudes, and behaviors towards tobacco products and their perceptions towards implementation of a “tobacco-free” policy and have 100% smoke-free, tobacco-free, and vape-free campus at QU. The project is led by Dr. Hanan Abdul Rahim and co-led by Dr. Ghadir Al-Jayyousi, Dr. Diana Alsayed Hassan, and Dr. Mujahed Shraim. The second project is a qualitative research study to understand the barriers to seeking cessation services among QU students. This is a public health capstone project that is supervised by Dr. Ghadir Al-Jayyousi.

Selected Findings from the Survey

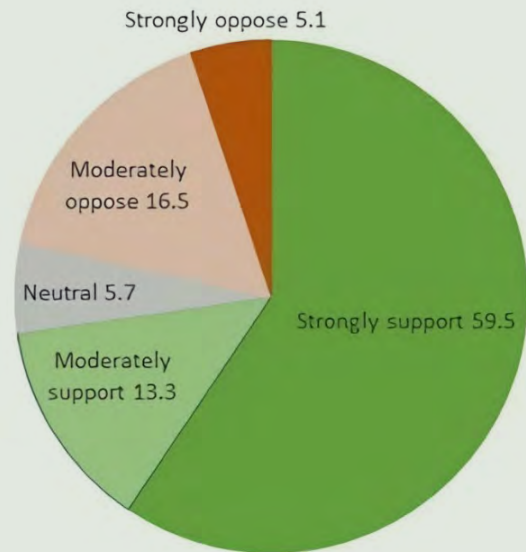


Figure 1. Support for being smoke/tobacco/vape-free campus, the spring semester 2020.

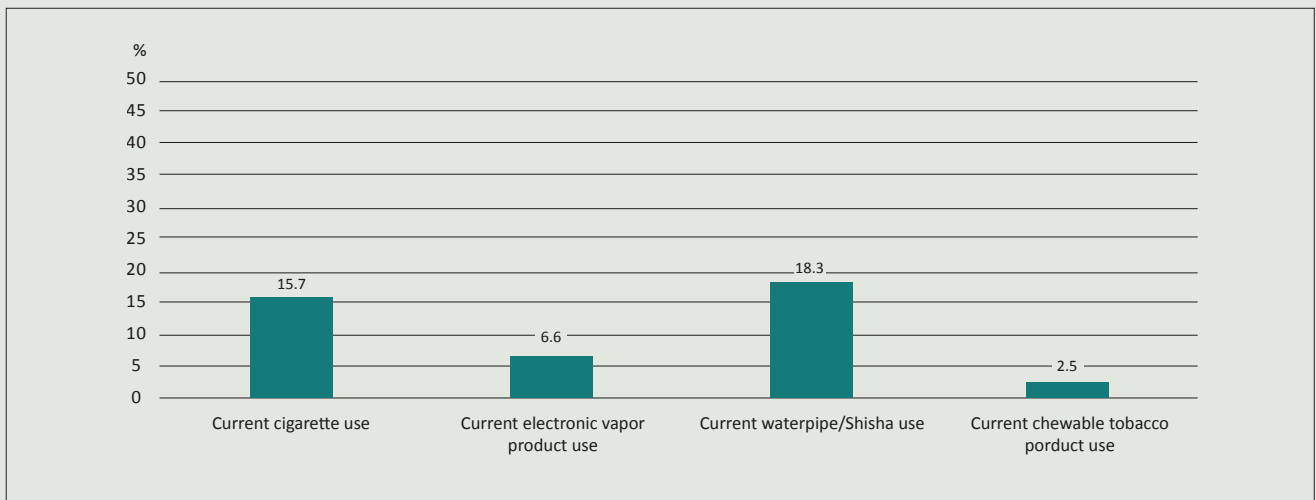


Figure 2. Tobacco products use among QU students in the spring semester 2020.

The State of Qatar Agriculture Census 2021 towards Sustainable Food Security



Dr. Elmogiera Fadlallh Elawad
Section Head of Field Operations, Social
and Economic Survey Research Institute
(SESRI)–Qatar University



Introduction:

One of nine individuals around the world suffers from food insecurity, and the situation has not been getting any better since 2015 regardless of all the effort exerted by the International Community. By 2050, the world must sufficiently feed 10 billion people under the climate change repercussions. For this objective to be realized, we must reconsider our agricultural and food systems and support sustainable rural development.

The Qatar National Vision 2030 envisages the transformation of the State of Qatar to an advanced State, which is able to provide sustainable development and secure a prosperous living for its people one generation after the other. Accordingly, food security is a crucial topic in this context. Food security is achieved whenever individuals and communities have access to the financial, social, and economic resources to guarantee sufficient and nutritive that satisfies individual needs according to their Preferences. Therefore, all the relevant institutions are relying on research and information to offer their services and develop their strategies in this regard.

In September 2020, Qatar University signed a mutual collaboration agreement with the Ministry of Municipality (MM) in the field of agricultural research, surveys, and performing the agriculture census. The agriculture census is considered to be an extension of the University's methodology, which includes relying on coordination and cooperation with the State Institutions in the field of expertise and information exchange to promote scientific and research collaborations. This agreement reflects one of Qatar University's objectives in promoting a collaborative culture and providing institutions with expertise and knowledge serving the objectives of the State and society.

Challenges and Objectives:

The main challenge to complete an agriculture census is how to provide data that support the plans and strategies relevant to Food Security and how that data reflect the position of the agricultural sector in the State. Only a comprehensive agriculture census can provide reliable data.

According to the definition of the agriculture census, "it is a statistical operation to collect, process, and publish data regarding the agriculture system and structure; this must include all the vegetative farms and livestock holdings and cover the entire state." The census is a reliable source of data for government officers, researchers, and decision-makers. The first agriculture census was conducted under the supervision of the FAO in 1950, and it is revised every 10 years approximately. This is the tenth global census, while the last census in the State of Qatar was conducted in 2000. The agriculture census in the State of Qatar envisages providing reliable data regarding the agriculture structure, reflecting the true volume of the agriculture sector, supporting the preparation of development plans, designing the agriculture policies, and assuring agriculture security.

Methodology:

Agriculture Census in Qatar 2021 follows a traditional statistical method, according to Food & Agriculture Organization (FAO) recommendations, which is a one-time enumeration in which all information is recorded. This approach includes long and short surveys, where long surveys can be completed during a second visit.

This traditional method includes gathering and counting all basic items, including the determination of agricultural property, livestock, their locations, overall areas, cultivated areas, cultivation and irrigation methods, economic activities as well as the agricultural labor force.

In Qatar, Agriculture Census was concluded in two periods, summer and winter, to include all growing seasons. During data gathering, pocket PCs were used that were connected to the Internet and to a Geographic Information System and were equipped



Agriculture Census data collector completing the information of greenhouses, 2021.

with software that allowed to draw the crop maps of each farm individually as well as all agricultural holdings in the State upon concluding the census.

The Agriculture Census project in Qatar 2020/2021 was supervised by a research team from Qatar University's SESRI, which included technical committees from the University and the MME. The SESRI planned the counting process including conducting fieldwork, training data collectors, field supervisors, and quality officers in addition to publishing reports and data.

Teams and groups of veterinarians and agricultural engineers participated in the execution of the counting process, reaching around 100 field researchers, in order to include all holdings within the State of Qatar.

Moreover, data was collected via laptops and pocket devices equipped with applications to measure the cultivated crop areas and sheds. The two mentioned visits were concluded during the period from January to July 2021. Additionally, Quality Assurance Standards were implemented during each phase of the counting process.

Main Findings:

Active Holding

During the census, operating holdings reached 7831 (6815 plantations and 1016 farms), in which agricultural activity represented 5% of the overall activity, livestock made up 87%, while integrated holdings represented 8%, as shown in table 1.

Table 1. Number of active holdings according to activity:

Activity	Plantations No.	Farms No.	Total
Agricultural	0	369	369
Livestock	6,815	25	6,840
Poultry	0	6	6
Integrated	0	616	616
Total	6,815	1,016	7,831

Agricultural crops

Cropped areas are divided into four main groups: vegetables, fruits, grains, and green feed, as shown in Figure 1. The findings show that the green feed group occupied the largest area, reaching 75656355 m² with a percentage of 56% of the total cropped area, followed by the vegetable group at a percentage of 21% then the fruit group at a percent of 20%. Meanwhile, the grains group made up 3% of the total cropped area.

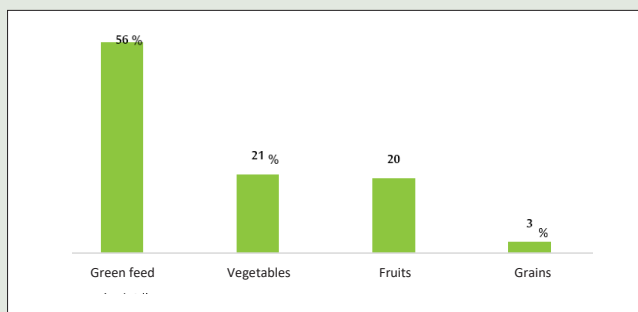


Figure 1. Percentage of the cropped area by group.

Farm areas

Findings have shown that the total area actually used by agricultural holdings reached around 141580513 m², forming 34.2% of the total agricultural holdings area.

Areas irrigated by conventional and modern irrigation of vegetables

Modern irrigation methods were used on 88.8% (18651670 m²) of vegetable-planted open areas, while conventional methods were used on the remaining 11.2% (2348, 192 m²).

Open-field vegetables

Open-field cultivated areas include 51 kinds of different vegetables and leafy greens, where the largest portion of the total open vegetable-cultivated areas was that planted with zucchini, by a percentage of 12%, tomatoes 11%, pumpkin 9%, parmigiana 8%, cabbage 7% and other crops from 1% to 5%.

Areas cultivated with greenhouse vegetables

The total vegetable-planted protected area was estimated to be around 6664427 m², 29% of which were planted with tomatoes, 27% cucumber, 8% sweet pepper, 7% parmigiana, 6% both beans and a black-eyed peas, and 14% other vegetables.

Greenhouses

The total number of greenhouses observed by the agriculture census is 13,601 with an area of 6,960,829 m², and by monitoring in-farm cooling systems as per municipality, it was found that 352 farms were using a cooling system (cooled) and 579 farms were not using cooling systems (not cooled).

Fruit Trees

The total number of fruit trees reached 900,221 trees in operating farms, where the number of deciduous trees (fruit and fruitless trees) was 533,380 trees and that of non-deciduous trees (fruit and fruitless) reached 366,841 trees, while the number of palm trees reached 711,866 trees, representing 79% of the total number of trees and fruits in operating farms.

Livestock Holdings

The total number of livestock holdings reached 7462 and are distributed as follows: 41.5% in compound plantations, 22.3% in portable farms, 8.8% in Al Rayes compound and Al Nakhsh area plantations, 8.7% in integrated farms, 6.2% outside of the rural house "Beit al-Bar" and 3.7% plantations outside farm planning.

Additionally, the number of barns located in livestock holdings (wire fences-conventional-modern) reached 65,968 barns, with an estimated area of 21,568,933 m². The total number of wire fences and wooden barns was 12,303 barns reaching an area of 6,038,461 m², the total number of conventional barns was 50,291 with an area of 13,462,803 m² and the number of modern farms reached 3,374 barns with a total area of 2,067,669 m².

Economic Animals

The number of economic animals included in the current census reflects the animal number details at the reference period pertaining to the stable husbandry within the holdings, where the census results had shown that a number of economic animals in the State reached 1,476,363 heads of which 62% are sheep, 26% are goats, 8% are camels and 3% are cows.

Regarding the economic animals distribution percentages among livestock holdings, 38% of economic animals were found in portable plantations, 22% in integrated farms, 21% in compound plantations, 6% in plantations outside the farm planning and plantations outside of "Beit al-Bar", 5% in area plantations and 2% in Al Rayes compounds plantations.

The effect

Census findings help in formulating the strategic plans of the agriculture sector, as they provide an accurate image of the real situation, which facilitates supporting the said sector and the producers as well as providing production inputs, which will contribute to Qatar's food security strategy.

Moreover, Agriculture Census assists in estimating the expected growth in livestock and their contribution Al Nakhsh in achieving food security, as well as providing and documenting plentiful data pertaining to natural resources and the capabilities of the agriculture and livestock sectors, in order to make the most out of stuffing the said resources.

The Arabic Novel: **The Interaction of East and West**

Arina Shalkinskaia,

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Nowadays, the world is witnessing an increasing interest in the Arabic language and a steady increase in the number of its learners. This happens due to various initiatives carried out by the Arab countries in general and the State of Qatar in particular with the aim of building bridges of civilized communication with other countries, and promoting the principles of dialogue and tolerance.

The project, titled “Research-based posters for non-Arabic speakers concerning the Arabic novel’s approach to the issue of interaction between East and West,” aims to create posters with QR codes. They can be used by students of the ANNS Center at Qatar University. These posters contain information about how the modern Arabic novel reflects the problems of interaction between East and West. This problem is considered as one of the main topics that concern the students learning Arabic; that is why these posters are an important factor in increasing the motivation of the foreign learner of Arabic. Literary texts contribute to the educational process through their topics and information. This project is based on the Center’s position that the student is the focal point of the learning process. In addition, this project is consistent with the integrated learning and communicative approach that is applied in practice in the creation of educational materials.

There is a lack of educational resources that would give the student a comprehensive idea of how the Arabic novel deals with the problem of interaction between the West and the East from different points of view, and using different expressive mechanisms that reflect the ideological and aesthetic position of the author.

The proposed posters solve this problem through the selection and classification of contemporary novels depicting the problem of interaction between East and West. Students can find classification of these novels in accordance with different patterns, description of these works and information about their authors, a summary of the main events and an analysis of how the text deals with the problem of relations between East and West, where at the end there is also a quote from the text, confirming the author's position. The poster contains a QR code; students can use it to get information about the novel. This technology helps the user to understand better the content of the poster. These posters can be easily converted into interactive online materials that will help foreign students around the world in learning Arabic.

Literary texts of this type, highlighting the problem of interaction between East and West, make a significant contribution to the education of students of the ANNS Center. The use of literary texts in Arabic lessons is consistent with the principle of the communicative method of teaching foreign languages, including the method of "discussion of meaning"; according to this method, students should read complex texts with a large number of possible interpretations, that allow them to ask questions, formulate their point of view, answer questions, etc. Literature contributes to the formation of a student's language skills, stimulates him to interact with classmates, express his/her point of view despite his limited language skills. Reading novels contributes to the expansion of vocabulary of students, the development of communication skills,

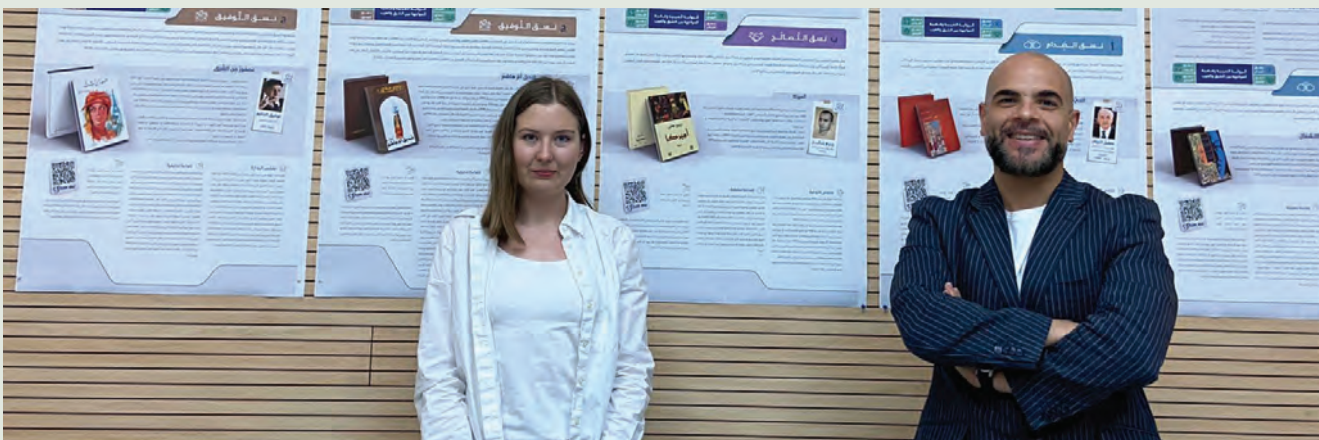
the formulation of ideas and thoughts in their own manner.

The Arabic novel is a literary genre that is best suited for achieving a number of communicative goals of teaching Arabic, especially with regard to the motivation of the student, since by reading a novel a student can correlate the knowledge gained with his life experience and views. Reading literature in the language of origin allows the student to believe in himself in terms of applying language skills in practice, gives him the opportunity to read a complex, multidimensional text, and a sense of independence in the learning process.

The research is based on contemporary novels that present the issue from different points of view, in different time periods and in different countries. The authors of these novels are known worldwide, most of them are still alive and regularly participate in conferences, forums and television broadcasts, the reader can contact them through social networks, which makes the author more accessible to an average reader. Among these novels are "Latin Quarter" by Suhail Idris, "America" by Rabi Jaber, "Chicago" by Alaa Al-Aswani, "Oasis of Alienation" by Baha Taher, "Season of Migration to the North" by Tayeb Salih, etc.

The methodology of research is based on the principles of cultural criticism, which considers the text as a "cultural phenomenon" (and not just a literary aesthetic text), which goes beyond criticism of the form and structure of the novel, its linguistic constructions and methods.

This project includes four phases, first: making a statistical study of the novels that deal with the problem of interaction between East and West, secondly making a systematic classification of these novels, thirdly defining the paragraphs representing the central semantic focus of the novels, and finally: creating the posters and using them in the classroom by different teachers.

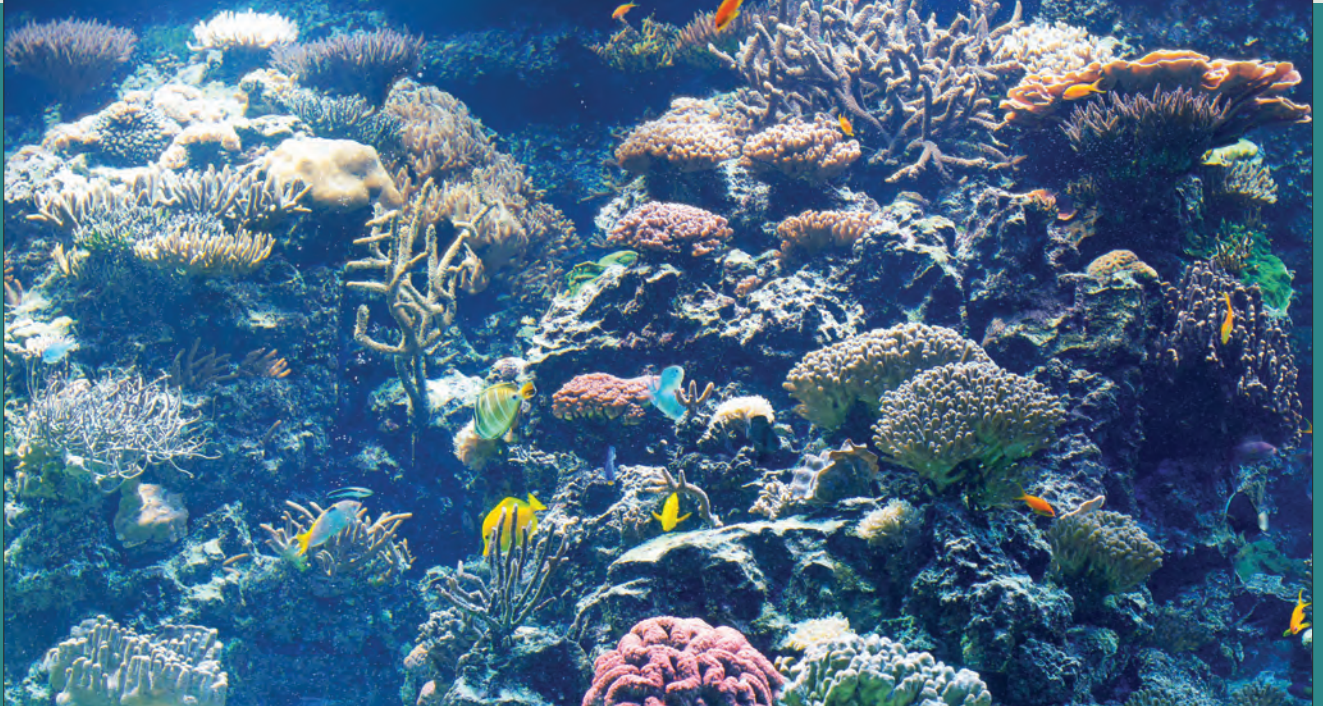


Student Arina Shalkinskaia and Dr. Alaa Ibrahim.

Efforts of Biomedical Research Center towards Unravelling Novel Species from Qatar's Rich Marine Environment Using Genetics and Molecular Tools

Dr. Fatiha Benslimane

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“We need to care for our natural environment for it was entrusted to us by God, to use it with responsibility and respect for the benefit of human kind. If we nurture our environment, it will nurture us.” A quote from Her Highness Sheikha Mozah bint Nasser Al-Misnid that inspired the initiation of this effort.

Sustaining social and economic growth is impossible without a holistic environmental vision that places environmental preservation for Qatar's future generations at the forefront. According to the Ministry of Development Planning and Statistics, the Qatar National Vision (QNV) 2030 aims to direct Qatar towards a balance between developmental needs and the protection of its natural environment, whether land, sea or air. As such, the QNV 2030 includes an emphasis on establishing institutions that can serve as the guardians of Qatar's environmental heritage. The QNV 2030 also emphasizes the importance of increasing citizens' awareness of their role in protecting the country's environment for their children and the nation's future generations.

The State of Qatar has chosen to pursue the path of sustainable development, making it the focus of the Qatar National Development Strategy. Given the large-scale industrialization and the limited land availability, the urban environment will be crucial in maintaining native species. The presence of heavy petrochemical firms in Qatar necessitates stressing on researches related to biomonitoring of environmental ecosystem with the aim to understand and provide impactful solution for different environmental challenges affecting health, and damaging the local ecosystem. Due to the extreme temperatures and salinities in the Gulf region, the national biodiversity has adapted to survive under extreme conditions. Furthermore, the barriers that isolate the Arabian Gulf has created an environment that is rich with endemic species that are specific to the region.

The Environmental Science Center (ESC) has identified a number of these biological and environmental species using phenotypic description and their taxonomy classification is under development. Several specimens have already been classified as new species but due to the absence of facilities for genetic studies, some possible new species remain unconfirmed. Unfortunately, the identified species were not internationally recognized due to the lack of a Phylogenetic analysis. Importantly, The Qatar National Museum demonstrated their interest to include this collection as part of their scientific branch with the wet collection placed in Qatar University. They have requested the initiation of an addendum exhibition in Qatar University to parade those species.

The Biomedical Research Center (BRC), led by Prof. Asmaa Al Thani, is a unique facility at Qatar University that is equipped with the necessary equipment to run genomic analysis. It has also strong collaboration with other stakeholders in Qatar such as SIDRA and WCMC on this subject matter.

Based on the aforementioned information, BRC has expanded its research strategies to decipher the genetic landscape of different endangered animal species, such as the Dugong and other marine species. Qatari officials have expressed great interest in preserving the cultural biodiversity of the country, which includes falcons, camels, and aquatic mammals inhabiting the Arabian Gulf. This has lead the BRC team to think about creating a highly impactful research track with the primary goal to expedite research related to deciphering the genomics of habitats in Qatar. Believing in working together to tackle scientific problems, the BRC and ESC initiated collaborations with different sectors to launch a project that aims at covering the gap in the genomic identity of several species that were identified as potentially new and unique to the marine environment of Qatar.

The BRC has developed well-equipped laboratories that can tackle recent advances in molecular protocols including genomic, metagenomics, transcriptomic and proteomics. Such OMICS-based research is closely linked to various disciplines in biology, health and biomedical sciences. Current national genome projects have drawn the BRC researchers' attention on genomics research as an initial thought. In addition, the urgent need for extensive research to identify/decipher the genetic landscape of different wild and endangered animal species together with the great interest of Qatari nation in preserving its cultural heritage specially in the fields of sports animals such as falcons, camels, and aquatic mammals inhabiting the Arabian Gulf, had lead them to think about the creation of such a highly impactful research project with the primary goal to expedite research related to preserving/deciphering Qatari national genomic habitat.

Dr. Fatiha M. Benslimane, a Research Associate at the BRC, and Dr. Bruno Giraldez, an Assistant Professor at the ESC, in collaboration with national and international researchers have created a group to tackle this project. With generous funds from Qatar Petroleum and the support of Qatar University's Vice President of Research Office, Dr. Benslimane has established a genetic lab that is solely dedicated to genetic studies of marine species. She introduced the latest third generation state-of-the-art sequencing technology, Oxford Nanpore Technologies (ONT) GridION and MinION, to facilitate the achievement of the aims of this project. The team selected over twenty potentially new species for genetic studies. To date, eleven new species were identified using their genetic print. Of these species, three shrimps that were



Photo of the research team, from left: Dr. Sonia Boughattas, Post-Doctoral Researcher at the Biomedical Research Center, Dr. Fatiha Benslimane, Research Associate at the Biomedical Research Center, Dr. Bruno Welter, Research Assistant Professor at the Environmental Sciences Center, and Dana Al-Batsh, Research Assistant at the Biomedical Research Center.

named in reference to Qatar (*Alpheus Qatari*), the location where they were collected from (*Palaemon Khor* collected from Al-khor) or to the Arabic culture (*Alpheus Arabicus*) (Figure 1). The project creates the first milestone to preserve Qatar's heritage through identifying its unique rich marine species and recognizing them internationally.

Another important subject regarding this study is the fact that it is increasing the TRL (Technology readiness Level) of the ONT for its use on Qatari marine environment assessment. It is reaching the

TRL 6 as it has been validated for the genetic studies with Qatar marine species. A TRL improvement is related to the speed for doing this genetic analysis and species identification, a major concern to understand what species are adapted for farming (aquaculture) in Qatari waters, for instance.

Finally, this research is of great importance and its outputs are expected to put the State of Qatar at the forefront in this field of marine genetic studies in the region, in addition to the international recognition of its rich environment.

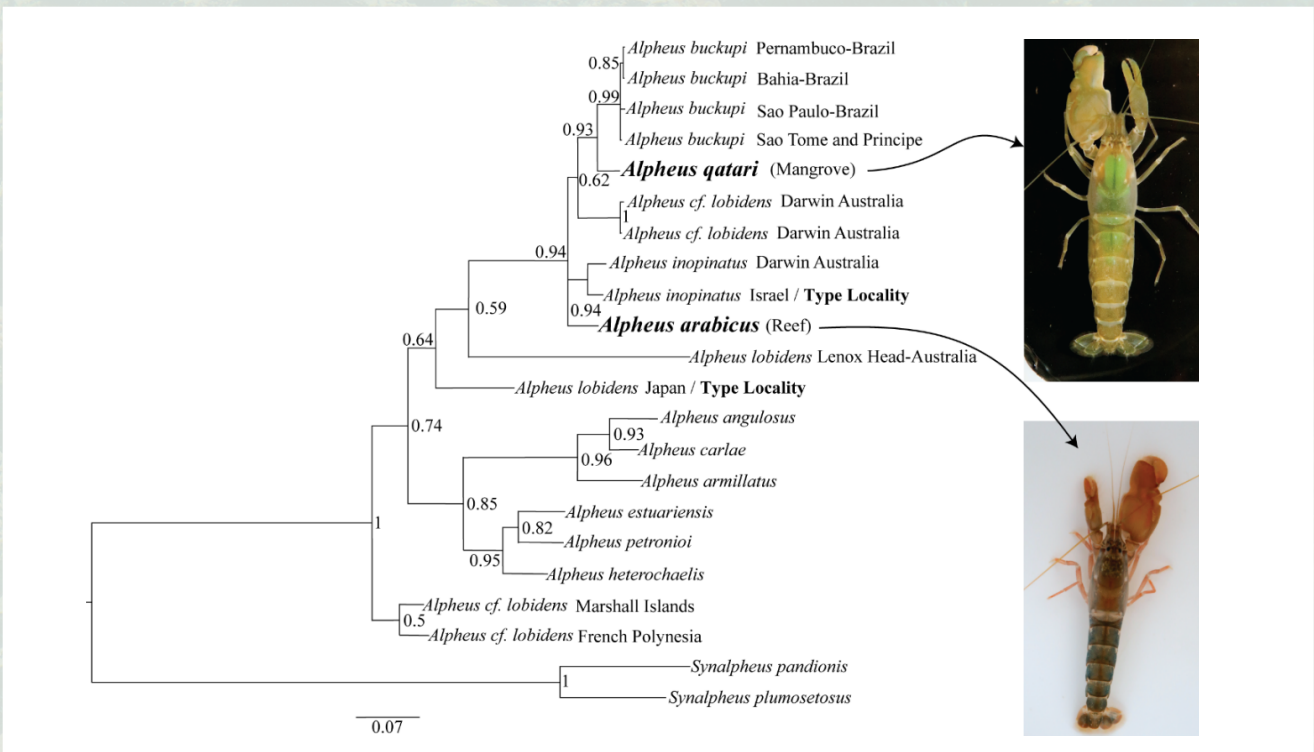


Figure 1. Phylogenetic tree showing the newly identified shrimp species, *Alpheus Arabicus* n. sp., *Alpheus Qatari* n. sp.

Cyber Security for Next-Generation Healthcare System

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Dr. Devrim Unal and Dr. Abdulla Khalid Al-Ali.

Introduction

Some of the problems of current healthcare system such as inadequate response to medical emergencies, delays in diagnosis of acute cases, improper monitoring of chronic patients, readmissions can be prevented, and these preventable errors are the third leading cause of deaths. IoT-based healthcare has the potential to change this. Timely specialist diagnosis of critical and ambulance-bound patients and early detection of deterioration in monitored chronic cases can improve the chances of full recovery and survival. The researchers' vision for securing next generation of medical systems revolves around advanced physical layer security at the device level and support of a deep learning network in the hierarchy of clouds where most of the analytics takes place.

Internet of Medical Things (IoMT)-based healthcare system is based on wireless medical sensors (IoMT) and cloud. IoMT devices manage and convey the productive management of finite resources by assuring service and usage for various patients. In this environment, individual data records are maintained by e-health records, which are accessible by authorized personnel upon request. From Figure 1, the researchers depict system architecture of the IoMT-based healthcare system. It mainly comprises three domains—the IoMT domain, the cloud domain, and the user domain. These domains behave as source, storage, and diagnosis domains respectively. A brief explanation of these three domains is given below:

IoMT domain: It consists of wireless medical devices, actuators, sensors and other devices. This domain retrieves patient data from IoMT devices and conveys it for diagnosis. Every IoMT device performs its task such as monitoring of blood glucose or blood pressure or recording electrical impulses through Electrocardiogram (ECG), etc. For ambulance bound patients, IoMT devices monitor patient's activity, saves the critical moments of the patient records and triggers alerts to the medical staff inside the ambulance or to remotely monitoring devices through the cloud. All these IoMT devices are connected to the edge cloud through the edge node; it undertakes the responsibility of delivering the patient data to further nodes. IoMT devices use different protocols for communication, which is a challenging task from a security perspective. The security and privacy concerns are high in IoMT devices due to its limitation of power, global accessibility, deployment of various protocols and untrusted network. The key element is resource constraints, which differ from device to device, based on the usage characteristics. However, the functionality and purpose of the IoMT devices are the same, to transmit, to receive and to store the patient data.

Cloud domain: In the researchers' approach, this domain is stratified of edge and core clouds. Edge computing is a distributed computing architecture where resources from centralized clouds and data centers are moved as close as possible to the originating source. The edge cloud is placed in the

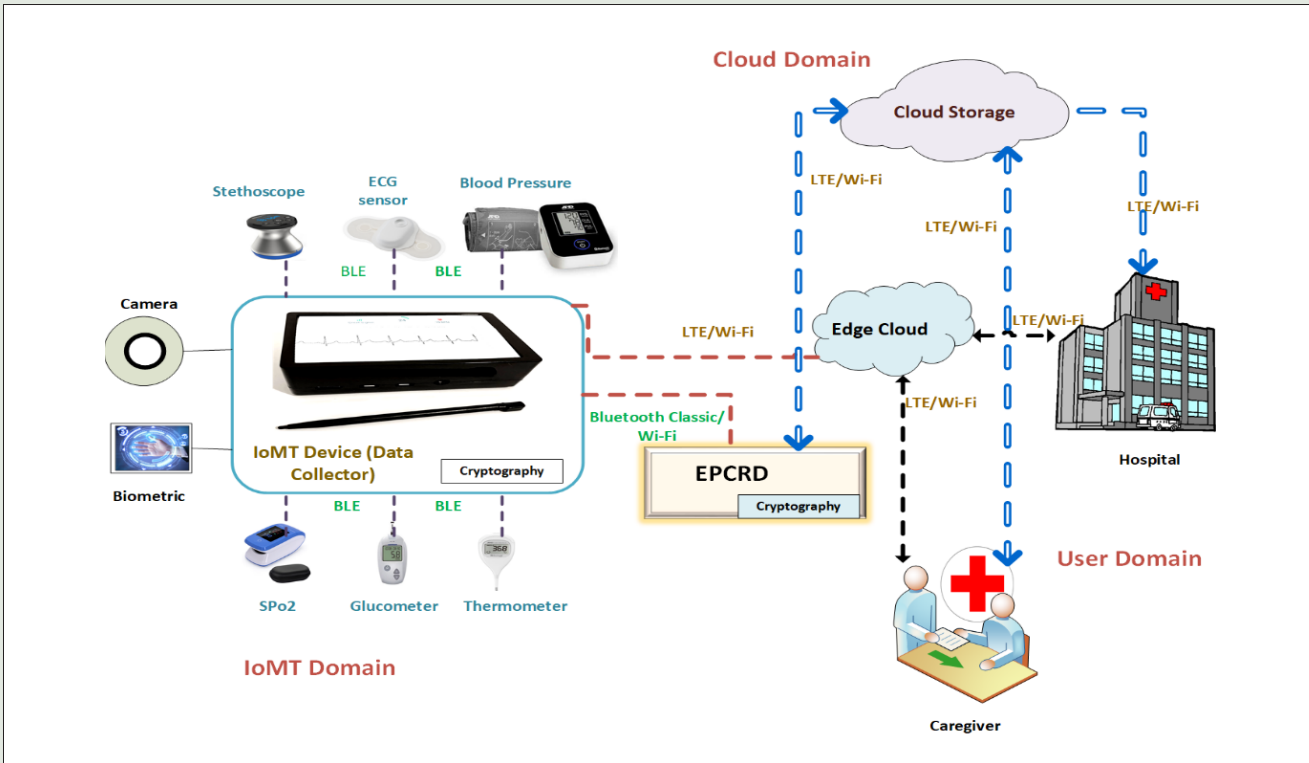


Figure 1. IoMT Healthcare System.

premises of the medical facility to ensure continuous connectivity and low latency, also to diagnose acute cases quickly. Core cloud provides massive storage and comprehensive analysis of data, and it helps in the diagnosis of current symptoms based on the previous related records.

User/action domain: In this domain, the processed data from other domains is delivered to the authorized clinical staff. Integration and streaming of vast volumes of data from different sources are visualized in various forms such as graphics, images, tabular and other forms. It eases the medical practitioner in analyzing and diagnosing the accurate causes of the disease. In case of emergency, the doctor must assist the paramedic staff in taking necessary action for patient care by summarizing the huge information (current and historical). Having a glance at the events, ambulance staff will enhance the safety precaution before the early signs of complication arise.

Outcomes

There are many situations where sensors can capture the state of the processes and clouds can store and process them. In a mature system, many of these activities would go on unsupervised by humans. There are numerous known and unknown ways adversaries may attempt to jeopardize the system, putting patients' life, health, and privacy at risk. Such a complex system would have complex cyber-security issues, which is resolved in this research. The researchers provide the

security to protect data right from the point of generation to the clouds and back to the visualization points by considering the following issues. For the devices in the IoT domain, the researchers propose to develop innovative schemes for hardening and protecting endpoints and communication among devices:

- **Device and Device-to-Device (D2D) Communication protection:** The researchers provided D2D communication protection by exploiting the IoMT devices and designed and deployed the Intrusion Detection System to secure the device and its communications using Deep Neural Network (DNN).
- **Authentication Mechanism:** The researchers developed and deployed authentication mechanism on the edge device of the paramedic staff to authenticate themselves before accessing the vital information of the patient.
- **Data in the cloud:** A hierarchy of deep learning algorithms that would work at the gateways, edge clouds and core levels to ensure the confidentiality and integrity of data stored at various points in the network.
- **Data in motion:** The vital information of the patient is encrypted using biometric cryptography, in addition to this, a deep learning model is deployed to find anomalies in inter-domains stream of data to identify malicious intent.

Gulf Novel and Travelers' Writings



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Referentiality is described as any reference outside the text, but the view to it did not always have that identification and certainty. The views of logicians and linguists as well as grammarians to explain the limits of this referentiality and fantasy were different. The last is described from the Logic point of view for example, as that refers to “denotation null” in order to deprive the concept of the indications that may lead it outside the limits of fantasy. From their point of view fantasy is **“what refers to a meaning not to a reference.”** However, in the narrative texts that are nourished by the reference tale, we may not find trouble in touching that thin thread separating the two worlds. So, we can comfortably define referentiality as **“everything that refers to outside the text of historical personalities, places, events and times.”** We mention that when we refer to referentiality here, we are talking about it in this context **“as the corpora which are present inside the narrative corpus”** or which support and provide it with a group of historical facts and rhetorical structures on which any text that can be called **“Historical Novel”** is based.

Therefore, the presence of referentiality in the Gulf's historical novel is so clear that making the way to history through novel seems possible and smooth. It is also possible that the opposite is true, and that the alternation between the two is "legitimate" and acquires its legitimacy from the frankness in revealing the relationship with history shown by the narrative text, whether through the threshold which forms the elements surrounding the text, or the accompanying texts that play a role in that relationship between the novel and history. Perhaps this seems to be more obvious in the Maritime Conflict Novels, which is one of the themes of historical novels in the Gulf. The events of these novels take place on the Gulf Coast or in the sea; they depict the wars that took place on board ships. Their heroes are sailors, regardless of their social classes; they are masters of this sea, or "Nawakhethah" (ships' captains), pirates or followers of all of them. In such novels, the alliance between the novel and referentiality seems to reveal itself clearly. There are several examples of this type of novels such as "The Sacred Sail" by Abdul Aziz Al Mahmoud or "The Rebellious Prince" by Sultan bin Muhammad Al Qasimi and others.

Nevertheless, what about the nature of the referentiality, which is present in those novels? And what are the type of sources that supported them and documented their relationships with the referentialities? In other words, where did the novelist get his material? No doubt, that a long preparation for the novel material is made before entering into making the narrative world based on history. In fact, thinking about this question gives answers, most of which are in favor of material made by "the writing of the travelers" who crossed this region and recorded an important part of its history through their written studies. Here we can talk about (Niebuhr) for example, whose writings were the back gardens of the Gulf "historical" novels. This may be directly as we see in the novel (The Rebellious Prince) which – exaggeratedly – denies its connection to imagination, and acknowledges its complete reliance on documented historical sources and references. There is no doubt that the travelers' writings formed a rich reference material behind this novel and others in a way that allows us to say the reference of travelers' writings is a prominent feature of the Gulf Historical Novel, that contributed to the interaction between the narrative corpus and its transcendentalisms.

In the novel "The Second Appearance of Ibn Laaboun" by the Kuwaiti novelist Ismaail Fahd Ismail, Saqr Al Shabib, one of the main characters of the novel tells his friend Jan Dark the British pharmacist: "Most of the travelers who crossed the region and the foreigners who lived there wrote books about it that resonated in their countries." In fact, this phrase was a key to many historical novels whose materials were based on travelogues prepared by travelers, whether they came on a commission from their governments or out of personal motives. Niebuhr's book was mentioned more than once by Charles Belgrave, and it is known that Belgrave's book (Pirate Coast) is another important book that is significant in the study of the region. But who is Niebuhr? How did his

writings acquire that importance? What is his relation to the narrative corpora, which dealt with the Gulf history?

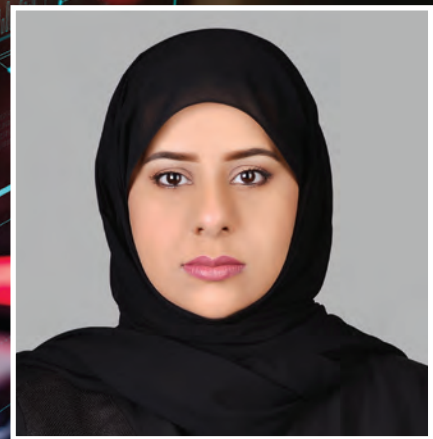
According to the Encyclopedia Britannica, Carsten Niebuhr was born in Hanover, Germany, and was one of the members of the Danish expedition sent by King Frederick V to collect information about the Arabian Peninsula. This expedition consisted of five people; four of them died during the expedition, Niebuhr was the only survivor. His book "Niebuhr Expedition to Arabia," which was published for the first time in the Dutch language is considered the most important book for a well-informed person of the history of the Arabian peninsula to pass through. Notably, we found that some of them had referred to it mentioning Niebuhr, such as Belgrave in his book "Pirate Coast" when he mentioned Prince Muhanna who is the main character of the novel "The Rebellious Prince." Furthermore, a view of Niebuhr's book shows that there is conformity between the book and the novel "The Rebellious Prince" particularly in the aspects of the personal characteristics of Prince Muhanna. It narrates tales about his life, such as his relationship with his parents and other family members. No doubt, anyone who decides to write a novel that includes a part of the Gulf history should refer to one or both of these books.

In Niebuhr's book we also find a mention of the Arab customs in all regions that he passed by. He described their habits in food, drink, clothes, marriage and other social customs or rituals that often slip into the novel from the description technique which plays an important role in the historical novel, especially, when narration brings forth spatial mobility. At that time the descriptions of the traveler reveal themselves but on the lips of either the characters of the novel or the narrator.

Sometimes we find that this announcement about the referentiality of travelers' writings is at the front of the novel through its thresholds, just as Maqbul Al Alawi did in his novel (Turmoil in Jeddah) which he started by mentioning shreds of the writings of the travelers who passed by Jeddah and described it in their writings. He uses the description in Johan Ludwig Burckhardt's book (Travels in Arabia) in the introduction of his novel. In addition, writings of other travelers were shown at the same introduction. This accumulation of writings built a narrative text that provides answers to what history has been silent about and fills the gaps of the reference tale with a stock of a well-structured fantasy to perform one of the important functions of the historical novel, which is filling the gaps of the written history.

These examples of novels that adhered to the descriptions in the travelers' books, reveal cleaving to referentiality in the aforementioned shape. This allows us to say that the Gulf Historical Novel is faithful to its referentiality, whether it is in the form of writings and descriptions in the travelers' writings or diaries written in some of these novels. No doubt that this alliance between the Gulf Historical Novel and the travelers' writings casts its shadow over the nature of "references" of the Gulf history, which was reflected in these writings, so that it formed an indispensable material to anyone who carries on writing a historical novel.

Forgery Crime of Official Electronic Documents: A Comparative Study between Qatari/Jordanian Laws and Islamic Shariah



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Allah, the Almighty, said: {And do not mix the truth with falsehood or conceal the truth while you know} surah Al-Baqarah Verse 42 (2:42 Quran).

In 2021, this study was submitted as a doctoral thesis to Sharia and Law Department at the Islamic Academy of University of Malaya, Malaysia. It is the first-ever study in the State of Qatar that tackles the forgery crime of official electronic documents as per legal and legitimate aspects. Additionally, it is a comparative study between Qatari and Jordanian laws owing to their approach in the legislative experience in this field. Following the endless acceleration of information technology and telecommunications tools on a global scale, the information network has become an effective means to facilitate daily transactions between state bodies and individuals on one hand, and between individuals with one another on the other.

The pace of technology adoption similar to the global trend, is speeding up in the State of Qatar. The latter is currently heading to activate e-government in its official transactions, along with the unlimited economic growth it is witnessing. According to a survey conducted by the Ministry of Development Planning and Statistics in cooperation with the Qatar Central Bank, the volume of increasing foreign investments in Qatar was estimated at QR665 billion. The number of existing industrial facilities recorded at the industrial registry at the Qatari Ministry of Energy and Industry reached about 730, with investments of more than QR260 billion. Trade also had a share of growth. As declared by Qatar's Government Communications Office, Doha's foreign trade volume was increased by 16%. During the first three quarters of 2018, Qatar's trade balance recorded a surplus of about QR91 billion, compared to QR64.3 billion in the same period of 2017.

The Law approving the State's General Budget for the fiscal year 2019, issued by HH the Emir of Qatar, also states that the total revenues amounted to about QR211.0 billion, while the total expenditures amounted to QR206.6 billion. Accordingly, the budget recorded a surplus of QR4.4 billion.

Considering all these huge economic changes in the State of Qatar, the legislative movement had to be consistent with the technological development of electronic transactions. These changes have prompted the Qatari legislator to introduce legislations with a view to protecting the market and regulating its electronic transactions. This has been achieved through the legislative amendment of Penal Code No. (11) of 2004, in which the legislator added a chapter under the title "Computer Crimes" of (18) article on dealing with cybercrimes. However, this method has been neither sufficient nor satisfactory to address the new electronic criminalization. In addition, it has not provided the prospective solutions, which has also constituted an obstacle to the judiciary, in order to resolve this type of dispute, including the forgery crime of electronic documents under study.

Due to the considerable economic growth in Qatar and the entry of governmental and non-governmental economic projects, estimated at hundreds of billions into the Qatari market as well as the high volume of investments in the country, while Qatar being the official sponsor of the FIFA World Cup, the issue of the study lies in the transformation of the entire economic system in the country into an electronic system. It was essential to apply legislations that can deal with the avant-grade systems and their capacity for capital and investors' protection. Therefore, the question to be raised here is: Is the criminal legal system in the State of Qatar by virtue of the economic changes, able to provide the criminal protection orders required for electronic transactions, mainly the electronic documents that are subject of the study? Is this system compatible

with the jurisprudence of our Islamic Sharia?

One of the reasons that has prompted the researcher to choose this issue in particular is that the State of Qatar is currently heading towards the activation of the "E-government", as well as the fact that the forgery crime of electronic documents is among the most serious crimes impairing the prestige and position of the country and undermining the individuals' confidence in official documents which are certified by the State. This is in addition to the insufficiency of court decisions in the State of Qatar with respect to the crime at issue, the lack of recent researches on electronic forgery in Qatar and Sharia references regarding such a crime.

Hence, the study is conducted with the intention of clarifying and analyzing the concept of this crime and its elements in both law and Islamic Sharia, together with defining its elements and effectiveness of the Qatari and Jordanian laws in this context, and the field of electronic evidence and its evidential weight in criminal cases in order to answer the fundamental question of this study.

Through reviewing previous studies, the researcher has found that the majority of other researchers discussed only one of the legal aspects of the issue of forgery of electronic documents, whether those legal aspects were procedural or objective. On the other hand, few studies dealt with this issue from a legal perspective. Moreover, the researcher has not found any research carried out on the issue of forgery of electronic documents in Qatari law. Therefore, we can say that all of these aspects have been covered by the researcher in this study.

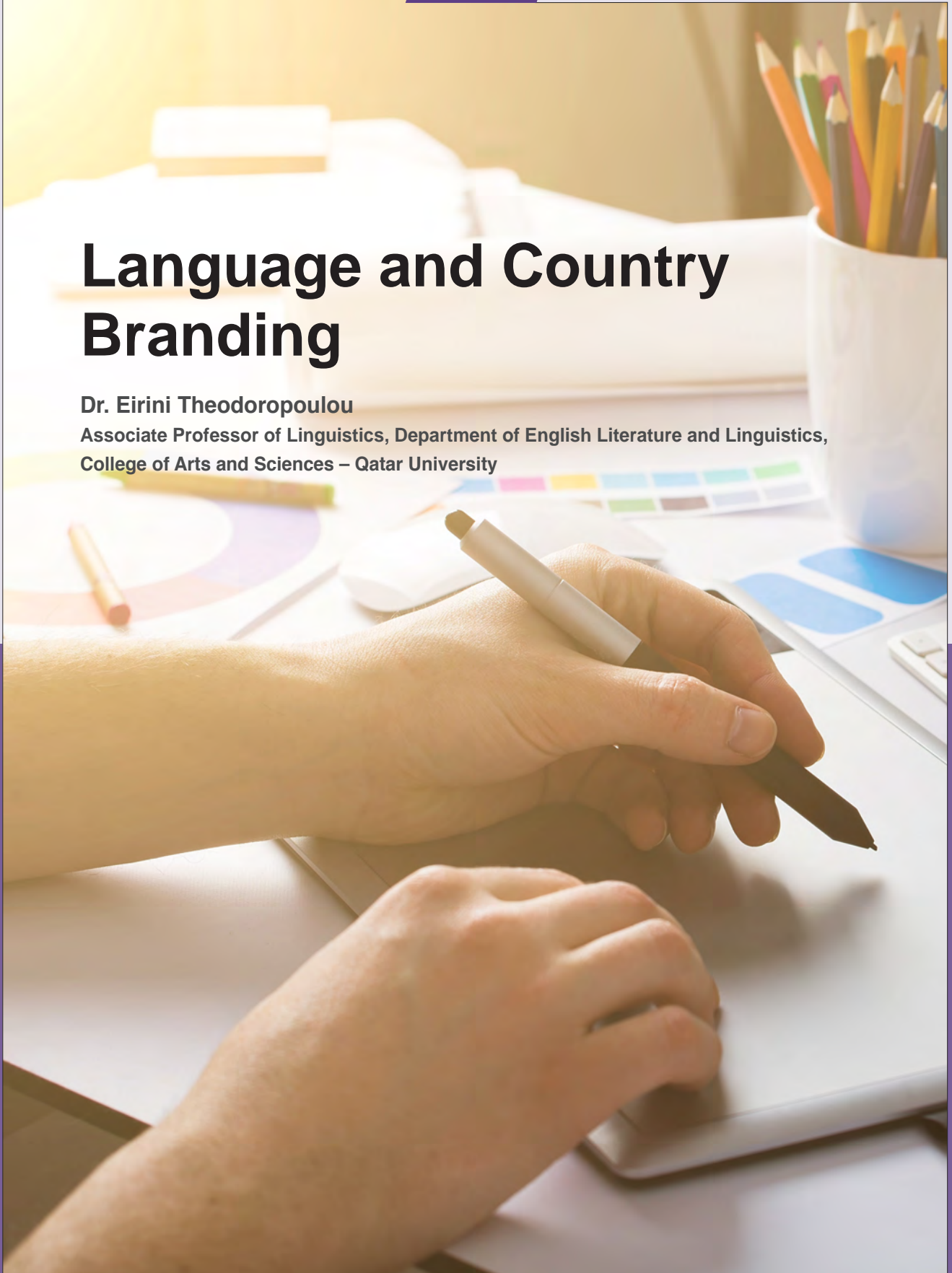
This study includes introduction, five chapters, a conclusion and a summary, then the results and recommendations. It yields several legal and legitimate, theoretical and applied results, including: the cyberspace that has been imposing its presence on all aspects of individual life in daily interactions, which have increased on a large scale around the world due to the conditions created by the Corona pandemic. Consequently, legislators have found themselves in front of major challenges, similar to those challenges facing contemporary jurists in dealing with developed crimes, such as the crime of forging official electronic documents under study.

For that reason, this study recommends that both the Qatari legislator and judiciary should interfere in order to define the terms of electronic forgery, electronic fraud and electronic evidence. It also recommends the establishment of a department in the Islamic Fiqh Academy, which contains all jurisprudential schools relating to the electronic changes in order to apply the Islamic Sharia approach with regard to contemporary electronic transactions. Furthermore, it suggests that a jurisprudential branch, which deals with the issues of jurisprudence of modern electronic transactions should be established.

Language and Country Branding

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Brands are omnipresent in our lives and they help us make choices as consumers. Historically, they began life as a mark of ownership (for example on livestock) as well as a form of primitive guarantee - attesting to quality in provenance – and over the years brands have evolved to become a complex mix of the tangible and intangible. They have arisen in the context of fierce competition that exists globally which has resulted in the need to differentiate ourselves, and our businesses from each other.

How are brands relevant to sociocultural linguistics, though? More specifically, what is the role of language in branding, and how does branding shape our language? These questions can be answered empirically, among other ways, if we look into the relationship between language and country branding.

Like human beings, countries form their own identities that distinguish them from each other. The equivalent process of human identity construction is country branding, namely the process whereby a distinctive physiognomy and, eventually, a value is attached to a country, with the hope of rendering it attractive for tourism, investment, studying, working, and strategic and military coalitions.

At the same time, the process of language-based country branding is also relevant to harmonious intercultural communication, inasmuch as the key to a good country brand is to be distinctive without, nonetheless, being offensive to other (usually neighboring) countries. In that respect, language-based country branding can be seen as a highly interdisciplinary field, which draws together ways of thinking, ways of acting, and ways of designing strategies and implementing policies from diverse fields, including (but not limited to) politics, geography, anthropology, marketing, sociology but also political science, and diplomacy.

Language is dealt with as a set of social practices. It is seen as a wider communicative code, including written, oral and digital realizations of single linguistic items, phrases, and sentences, or even whole dialects associated with countries functioning as brands but also branding and branded discourses, which are indexed through specific uses of language.

Language is also descriptive, associative, and abstract. In its descriptive role, what is highlighted is its informative character relevant to what it is that the country brand actually does, means, or offers. Its associative aspect is identified with an attempt to



Dr. Eirini Theodoropoulou

create a clear association with the desired benefit of feeling that the place under discussion offers. In addition, branding-related language can be abstract, in the sense that it can include made-up or creative linguistic items associated with a specific country. Such creativity is usually very evident in country branding logos and advertisements.

The role and impact of language as a signifier of a country brand is considerable. The range of linguistic tones or registers, which belong to an individual language offer a rich and diverse range of communicative resources whereby the overall process of country branding can draw upon. At the same time, socio-linguistic variation paves the way for branding the richness of the socio-demographic and physical landscape-based mosaic that is usually found in various countries. Such diversity, more often than not collides with a general attempt to reproduce a nationalist discourse of homogeneity through the process of country branding, and it is exactly at that level that the analysis of language becomes pertinent, useful, and essential.

In order to understand these dynamics in a more deep way, you are invited to read the Routledge volume I recently co-edited with Johanna Tovar titled "Research Companion to Language and

Country Branding,” where the focus is on the ways whereby countries, as places and nations, employ language to imagine and portray themselves today, tomorrow, and in the past. The volume explores nation and place branding in relation to many subjects, including nationalism and populism (with chapters on Modi, Bolsonaro, Brexit, Putin, and Trump), cosmopolitanism, authenticity, time, tourism, and mega events such as the Olympic Games, FIFA World Cup and Expo, among others. The countries explored in the volume include (in alphabetical order): Australia, Brazil, Cameroon, Chile, China, France, Germany, Greece, Iceland, India, Italy, Japan, Kazakhstan, Peru, Qatar, Russia, Singapore, South Korea, the United Kingdom, and United States.

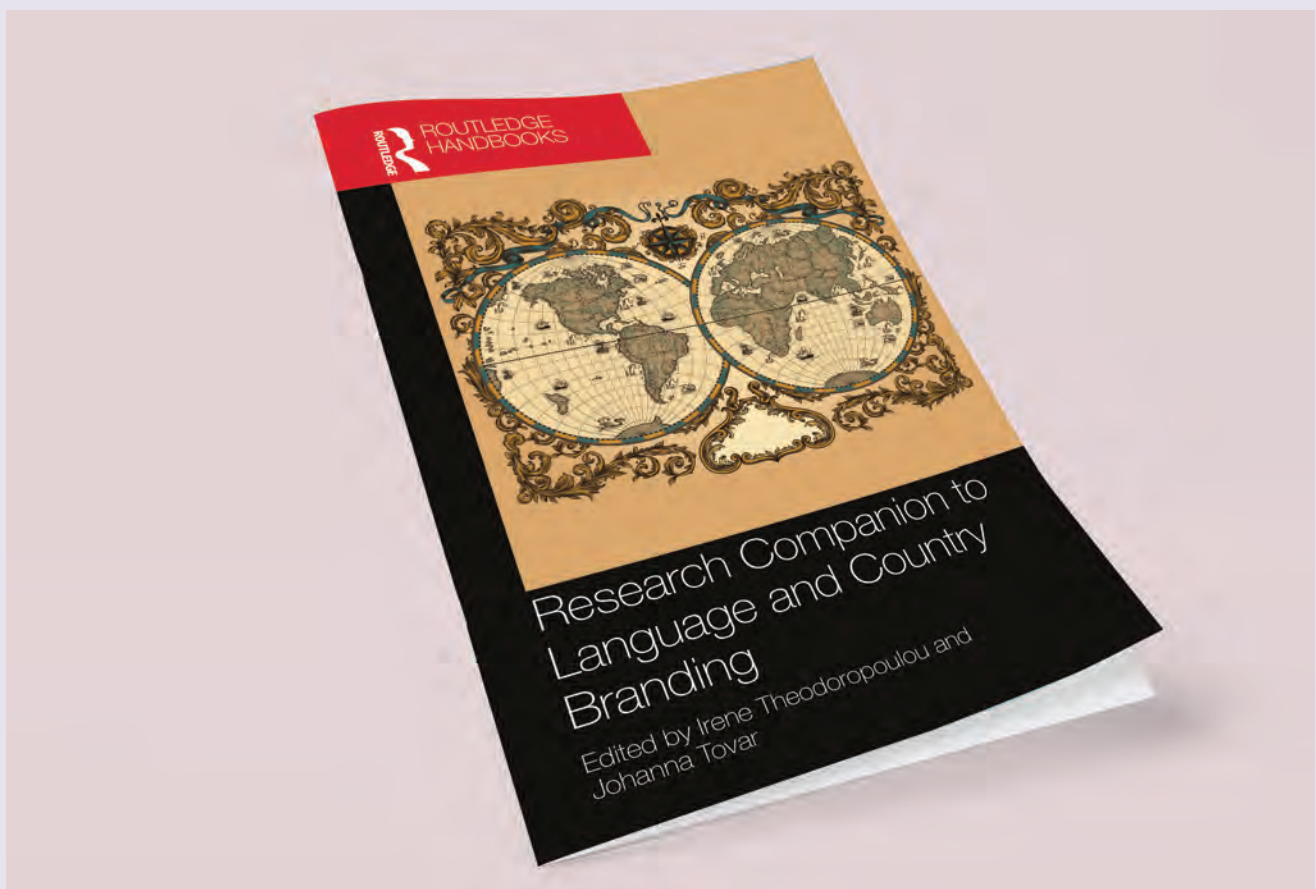
In the current context of the COVID-19 pandemic, one of the reasons we are all suffering so much all over the world is because we cannot travel to (or within) our own native countries, or to other countries we have always wanted to visit. Such lack of mobility points at exactly how important it is for countries, especially in the highly anticipated post-pandemic era, to brand themselves as safe

destinations offering high quality life and memorable experiences, but, above all, a robust public health care system. Inevitably, the role of language will be important in that process, especially in persuading travelers to choose a particular country as their most desired destination. Given the financial recession that will follow in the post COVID-19 era, coupled with the general insecurity regarding traveling but, at the same time, the intense psychological need to make trips and to “be somewhere else”, travelers will have to make limited choices regarding their traveling, so countries will have to act strategically in terms of how they will brand themselves.

I hope that readers will find in the aforementioned volume ideas on how to research and how to design and implement language-based country branding strategies and policies in the challenging but, at the same time, exciting, era that lies ahead of us, once the pandemic is over...

Link to the volume:

<https://www.routledge.com/Research-Companion-to-Language-and-Country-Branding/Theodoropoulou-Tovar/p/book/9780367343590>



The Routledge Volume.



Research Excellence: **From Concept to Application**

Dr. Basem Shomar,
Manager of Research Excellence, Research Planning and Development Department,
Office of VP for Research and Graduate Studies-Qatar University

Preface

Research Excellence plays the most significant role in human development, economic growth and cultural progress. Hence, the role of scientific research should be emphasized at all levels. Otherwise, achieving excellence in engineering locally, for example, and rising in the world rankings in a country that has no infrastructure and lacks water supply and sanitation, would be pointless. Similarly, excellence in medicine and medical research would be in vain if the annual death rates due to epidemics, which became extinct in other places, were to increase. Furthermore, excellence in observatories and astronomy research would be inadequate if there was a frequent disagreement over determining the beginning and end of the lunar months. The social sciences and humanities, also, should play a significant role in bringing about positive changes in the behavior of people, their culture, belonging and identity. Otherwise, research in these fields would be of little value.

Research Excellence

“Research Excellence” is commonly used to describe the output of the scholarly activities at institutions in the United Kingdom. Elsewhere, the concept carries the same meaning and has essentially the same scope employed in measures of “institutional performance” or “efficiency indicators.” Generally, Research Excellence encompasses the methods and tools required to deal with the main issues and methodological challenges in activating and evaluating complex and multifaceted ideas leading to clear and measurable outcomes with sustainable impact. Moreover, it is a methodological and interactive approach with internal and external stakeholders. Such approach combines different perspectives and includes a wide variety of information sources and quantitative indicators within a transparent and dynamic analytical framework. Accordingly, the Research Excellence outcomes should be positive, if they are to be used as a tool to initiate a well-informed scientific debate. The outcomes must also form advanced techniques and social and developmental methods, along with clear indicators through analysis and benchmarking studies.

Research Excellence Tools

Excellence is an integrated concept that includes the idea itself, the individual, the community, the department, and the institution. Such concept is set by the institutions (colleges, research institutes, centres of excellence, departments/units, and others) and may be posted on their websites in possibly different versions. The excellence should result in outcomes promoting the individual and institution within a positive, encouraging and integrated environment, including finance, human competencies, global rankings, strategic partnerships, etc. It should be recalled that Excellence, as a concept, requires a set of elements so that it can be transferred from theoretical frameworks to prospects of practice and application, including:

- Studying the past, present, institutional context and various challenges for future planning.
- Possessing practical tools with the most recent methods and means and applying them properly.
- Multiple partnerships to reach the strategic goals and achieve major objectives.
- Cooperation with stakeholders in the institution, the state, the region, and establishing international cooperation with leading authorities.
- Membership and active participation in the leading international bodies, gatherings and forums.
- Observation of the highest ethical standards of competition to reach the goals, disseminate knowledge and transfer it through clear and direct mechanisms.
- Seeking the highest levels of quality and professional, cognitive, legal and social discipline.
- Demonstration of the highest degree of flexibility,



Dr. Basem Shomar,

openness over urgent issues, utilization of the available expertise of all parties, and promotion of teamwork in problem-solving.

Accordingly, the question arises as to under what conditions, or which criteria, can scientific research be considered distinguished. Here are some points worth considering:

- The research adds significantly to knowledge in the relevant field;
- It is authentic and innovative;
- It contributes to increasing knowledge about a particular topic;
- It is carried out seriously, professionally and ethically;
- It yields publishable results, in the form of peer-reviewed scientific articles and books or refereed patents;
- It attracts the attention of scholars, researchers, the media and society in terms of the presence of interested readers who can rely on it; or quote from and cite it;
- The research results are beneficial to the sponsor;
- The research achieves the expected results and beyond, and these results can be reproduced;
- If it yields new results that are not expected, but can be repeated and verified;
- It has a social and intellectual revival effect (which takes time);
- It does not produce results, but it brings to the fore a scientific issue that stirs controversy among researchers, to an end;
- It benefits from multiple and integrated scientific means, techniques and methods (combines a theoretical framework with a practical framework, field experience, artificial intelligence, etc.); and
- It can be interdisciplinary: integrate diverse sciences, knowledge and expertise that enrich the outcomes and enhance the scientific and cognitive impact (engineering, natural sciences and humanities).

Finally, Qatar University has included research excellence as a fourth goal in its strategy (2018-2022), which motivates researchers and scientists to strive hard to achieve this goal.

Old Advertisements: A Historical Reading¹

Prof. Sherine El-Menshawy

Professor of Ancient History, Humanities Department, College of Arts and Sciences,
Qatar University



Most students think that the subject of History is a combination of names and dates that must be remembered and written in the exam. They generally do not realize that they can think of different historical facts through reading and interpreting the source. Asking and trying to answer several research questions using the supporting evidence is very enjoyable. Therefore, this article aims to bring forth the experience of a teacher of the subject by using a primary source (advertisement) as an educational tool for critical thinking in teaching history. The history teacher aims to share her experience with other history teachers.

(1) The scientific material was reviewed by Professor Ibrahim Shahdad, Professor of Modern and Contemporary History, Humanities Department, College of Arts and Sciences.

The presentation depends on introducing one of the work models applied by the teacher inside the classrooms for interpreting and explaining the primary source (advertisement) in addition to asking research questions about the details of the advertisement in a way that trains the student on critical thinking, communication, and cooperative learning skills by asking research questions about history such as where? how? what? why? and who?, through primary sources that help to interpret the source. The activity presents an advertisement which is used for the way of thinking in history as well as its explanation and interpretation. At the end, one suggests adopting the use of primary sources including old advertisements as a source to teach history.

It should be noted that the primary sources of history are defined as the production of one person or a group of people who participated in the action or were eyewitnesses to it, primary sources also include archaeological, textual, and pictorial evidence on which the historian depends as evidence in understanding, explaining and analyzing the past.

We will use the following advertisement as a source to ask research questions, whereas the students read the advertisement then they start to ask research questions including:

عبدالله عبد الغني والاشقاء
مخشي فارك - تجارة - مقاولات
الريضة قطر - الخليج العربي

البنك الذي يتعامل معك
 البنك العربي الحديث
 البنك الشرق الحديث
 البنك البريطاني للتداول
 البنك العمارة

تليفونات
 مكتبه ٣٣١٤
 منزله ٣٤٠٧
 الشركة ٣٣١٣
 ص. ب. ١١١
 ابنها (رئيس - قطر)

النشاطه:
 • استيراد السيارات الموثوقة بجميع الأنواع • تشغيل
 • كاردات • استيراد • استيراد • استيراد • استيراد
 • قطع الطرق • استيراد • استيراد • استيراد
 • استيراد • استيراد • استيراد • استيراد

القيام بتنفيذ كافة المقاولات في قطر مثل:
 • إنشاء المباني والمرافق العامة والخاصة والمباني • تنفيذ الطرق
 • كاسه بتنفيذ طرق العرة - المرمر وبنافط طوله ٥٥ كيلومترا
 • طريق الركية - الركية وبنافط طوله ١٧ كيلومترا
 • قامت بتشغيل مرفق ابراج المارنفة الحديث • انشاء مدينة الركية
 • عمل كبير من المراسم الموجودة في قطر وبنافط • يعمل بها اكثر من مائة
 من العمال وبنافط ٥٠٠ عامل وبنافط قامت على ما تقوم بتنفيذ جميع المقاولات
 المصارة والبنافط في العاصمة

يقول ادارته
 دكتور احمد
 قاضي وملا

عبدالله عبد الغني
 • مارس مائة التجارة منذ ١٥ عامًا
 • بدأها بتجارة اللؤلؤ ثم تنوع الى التجارة
 بأمره بالبناء على المصارة والمقاولات العمومية
 أهم فروع الشركة هي:
 الريضة - المصيدة - أبو ظبي
 دبي - بيروت

Source: Al-Sharq Newspaper, special edition about Qatar's past: newspaper pages and clippings that were published in the fifties and sixties about Qatar in Arabic prints - Monday 17th December 2007.

Who is Abdullah Abdulghani?

When were quad phone numbers used? (To identify the time of the advertisement)

What trade did Abdullah Abdulghani start?

What were the most important banks that Abdullah Abdulghani & Brothers dealt with?

What activities did Abdullah Abdulghani & Brothers Company do?

What are the most important branches of Abdullah Abdulghani & Brothers Company?

What indicates national belonging in the advertisements?

After answering the research questions that were asked, we can spotlight one of the aspects of the history of Qatar during that period.

Who is Abdullah Abdulghani?

Mr. Abdullah Abdulghani Al Abdulghani is considered among one of the first generations of Qatar's population. He learned in Kuttab (Quran schools) in Qatar until he was fifteen years old. He started practicing the profession of pearl diving with his companions in the pearls fisheries which are abounding in the Arab Gulf waters as he liked the hard work and stucked to it sincerely. Then, he turned to pearl trade that opened wide doors of different kinds of trade in various fields of life until the trade of artificial pearls appeared from Japan and competed with natural pearls because of its cheap price, that pushed him to look for work in another field, where he established a company for contracting and private and governmental buildings. He is considered one of the oldest contractors in the State of Qatar, as he built the new building of Knowledge Department, Al Wakrah School, and many other Qatari schools in Doha and its neighborhoods at the beginning of the fifties when education spread in Qatar.

When were the quad phone numbers used? (To identify the advertisement time)

The advertisement shows quad phone numbers that were used in communication at the beginning of the fifties, so the date of this advertisement under discussion was the beginning of 1950s.

What trade did Abdullah Abdulghani start?

He established a contracting company for which 12 Arab engineers and 500 workers and employees worked. In 1952-1953, the company implemented many projects in the capital and its suburbs. He directed the company by himself with the help of his brothers Abduljalil and Abdulghani. Abdullah Abdulghani & Brothers Company continued to

work in different fields and specialties of trade and contracting. This trade evolved due to the hardwork and faithfulness of its members in their national and private work as they were devoted to work and encouraged their employees to pay attention to the quality of their work.

What were the most important activities of Abdullah Abdulghani & Brothers?

The company completed the Doha-Al Khor Road which was 55 km long, and then the Al Wakrah-Al Wukair Road, Which was 13 km long. The company continued working in the field of contracting and infrastructure works for the Qatar government. The company's trade expanded to other fields including importing cars and its spare parts.

In 1952-1953 the company became a local agent to supply all kinds of American cars (Chevrolet, Cadillac, Imperial, Studio baker, and others) as well as car spare parts and requirements. During the years 1962 and 1963 the company abandoned some American car agencies for some of his colleagues such as Al-Jaidah and Al-Mannai to go in a new direction as he succeeded in concluding a new agreement with the Japanese company Toyota which needed an active agent to market its products in Qatar.

What were the most important banks Abdullah Abdulghani & Brothers dealt with?

The advertisement mentioned their dealing with some banks which existed in Qatar at that time including:

(Arab Bank limited) which is still existing today.

(Eastern Bank) which stopped working and no longer exists.

(British Bank) which is still existing.

(Othman Bank) which stopped working and no longer exists.

What are the most important branches of Abdullah Abdulghani & Brothers?

The advertisement mentioned that the company's branches were in Doha-Mesaieed, Qatar, Abu Dhabi and Dubai in the Gulf, and Beirut in the Arab World.

What indicates the element of national belonging in the advertisement?

The advertisement mentioned the statement "Directed by a patriotic Qatari businessman" as he was known for his love of his homeland Qatar where he helped all who deserved to be helped including locals and residents. It was known that



Prof. Sherine El-Menshawy

he distributed food supplies to most of the families in Al Wakrah, particularly before Ramadan and he was generous as he received his guests every day. He was also known for his love of scientists, reading, and students whom he gave educational support. Moreover, he was known for his love of mosques, serving God's houses, and helping their visitors.

This indicates his belongingness to this good land to which he gave a lot and he devoted himself to its love. The gentleman Abdullah Abdulghani, mercy of God be upon him was faithful to his homeland and did a lot of hard work in the name of our beloved Qatar.

In this study, using primary sources (advertisement) we tried to train students on critical thinking in history courses. The aim is to make the teachers of history use this model to design similar educational models appropriate to the scientific material taught to their students. Therefore, the elements of the model design are primary sources from which we can get the information we need through several research questions. After that, we make sure that the design achieved its goal, when the student can connect between the source and the available evidence to conclude the correct answers which require cognitive efforts to conclude these answers using other secondary and verbal sources. Moreover, for such application students were required to combine both critical thinking, communication and cooperative education skills to deliver historical facts and information through the participation in designing the research questions taken from primary historical sources. Using primary sources leads to taking the students to the place and time of the event with the person at discussion and that draws their attention and interest in the topic.



Story of a Knowledge Platform:

CLD

مركز القانون والتنمية

CENTRE FOR LAW & DEVELOPMENT

The Centre for Law and Development at Qatar University is a platform for interaction between academic circles, government, industry and stakeholders, and a source for research related to law and policy in the State of Qatar.

For more details about the establishment of the Center and the areas it covers and the outputs of law research, we interacted with Dr. Jon Truby, Director of the Centre for Law and Development at Qatar University.

First, when was the Centre for Law and Development established, and why?

The Centre for Law and Development was established in 2016 with a mission of delivering law and policy-related objectives of the Pillars of the Qatar National Vision 2030. Its legal objectives are aligned with the Qatar National Development Strategy, the Qatar National Research Strategy, the Qatar University Research Priorities and the College of Law Research Plan. Its primary objective is to produce interdisciplinary legal research output relevant to the needs of Qatar. This involves connecting with other research teams within Qatar University and externally. It also seeks to develop capacity of legal expertise relevant to the needs of Qatar. Our Centre seeks to include all faculty interested in working with us and writing in areas relevant to our specialism.

The Centre seeks to be the benchmark of success as the GCC's leading institution for innovative interdisciplinary legal academic and professional research and development activities across academia and industry.

Delivering excellence in our law and policy research Centre requires the highest performance and ambition of our team and partners. We build national capacity and develop talent in law-related subjects required by the Qatar National Vision 2030, through clinical education and training programs designed to meet the needs of the present and the future. We conduct interdisciplinary law and policy research in fields required for Qatar's development, to promote national economic growth in a sustainable manner as required by Qatar's Permanent Constitution and National Development Strategy.

Could you walk us through the departments and specializations currently available at the Centre?

Emerging technologies and their connection with sustainable development has been a high priority research field, as we seek to publish and research on cutting-edge topics relevant to Qatar. This has enabled the Centre to specialize in areas such as Blockchain, FinTech, Artificial Intelligence,



Dr. Jon Truby

Cybersecurity, DAOs, NFTs and other technologies. Our Centre has over 100 high quality publications in these and related subjects.

The Centre focuses its research and activities in two main areas: economic development, and energy and environment. These two pillars cover a wide range of topics.

Associates and Affiliates of the Centre for Law and Development have published law and policy articles in Artificial Intelligence and the Law; Economic Development; Environmental Development; Human Development; Social Development; Qatari Law and Policy.

How does the Centre support Qatar University students?

The Centre offers Executive Legal Training for professionals and students in Qatar, to build local capacity and expertise needed for industry. Such training includes specialized training programs designed according to the needs of stakeholders. The Centre also offers clinical legal education for students in Qatar on selected legal cases that have a measurable impact upon Qatar's development. Training helps develop human skills for the needs of Qatar, while benefiting all parties.

What are the aspects of cooperation between the Centre and academic and industrial institutions in the State of Qatar?

We are available to conduct research projects with the public and private sectors, and undertake

consultancy work for professional bodies. We work with community stakeholder institutions on our legal training programmes, to deliver grants and to conduct research. We have recently signed the MoU between QU and Barzan Holdings to deliver legal training and research relevant to the needs of Qatar. Our Centre has also won and delivered on multiple Qatar Foundation funded grants including NPRP-S and NPRP-C. We currently have 4 NPRP projects as well as our external projects, and have completed several more.

What is your assessment of the law and policy research outputs related to economic and environmental development in the State of Qatar?

Our law and policy research Centre offers a platform of interaction between industry, academia and government, to offer measurable solutions to the legal needs of Qatar's national development. The Centre promotes legislative and policy development in conjunction with national and regional ministries, interested originations and research communities. Through research and training we are able to deliver a high-quality impact for the environmental and economic development of Qatar.

Does the Centre have relations with various international institutions?

Our Centre has relations with numerous academic and non-academic institutions. Recently our Centre became the first in the Middle East region to win the European Commission's ERASMUS+ Jean Monnet module. The "Doha Courses on European Union Law" is the first Jean Monnet Module in Qatar and the GCC, and the courses will be delivered for 3 years. In a funding competition, the CLD won a competitive grant and was one of the 360 awarded applications out of the 1447 eligible applications for funding in 2020. We also work with Fulbright and other partners to deliver excellence in scholarship.

What role does the Centre play in achieving Qatar National Vision 2030?



Part of the Center for Law and Development activities.

The Centre conducts and publishes research necessary for the needs of Qatar's national development. It undertakes specific research projects mostly related to environmental development or economic development. We have successfully undertaken a range of funded research projects resulting in measureable benefits to beneficiaries. The research outcomes including publications are published on our Publications Page. The Centre also conducts research Roundtables involving a panel of law and policy experts from academia, industry, government and regulators.

Tell us about the plans for the Centre's future direction.

Our Centre is growing and we plan to expand our team and outreach as our grant funding grows. We hope to continue and expand our relationship with the European Union through further grant proposals, and plan to play a pivotal role in the Qatari community by increasing our work with stakeholders such as Barzan. We will continue winning and delivering grants and publishing high quality research on cutting-edge themes relevant to Qatar's development. Importantly, we are open to work to all interested in helping fulfil Qatar's research needs.



Part of the Center for Law and Development activities.

Interview with a Researcher:

Dr. Elias Yaacoub,

Associate Professor of Computer Engineering,
College of Engineering - Qatar University



The engineering disciplines in the College of Engineering at QU are diverse, which has helped provide technological solutions to many problems and issues in society. It has also paid attention to providing its researchers/students with the necessary skills for innovation and entrepreneurship, and to supporting the knowledge-based economy of Qatar.

In the College of Engineering there is the designer, producer and developer of engineering technologies. To learn more about one of the engineering disciplines, we are pleased to meet in this issue Dr. Elias Yaacoub, Associate Professor of Computer Engineering.

Dr. Elias, how would you present yourself, and what is your academic specialization?

I obtained the Bachelors of Engineering degree in Electrical Engineering in 2002 from the Lebanese University, and the Masters and PhD degrees from the American University of Beirut in 2005 and 2010, respectively, in the area of Electrical and Computer Engineering. My main work was on wireless communications and resource allocation in cellular networks.

Tell us about your research interests and most relevant achievements.

In addition to my research on cellular networks, I have worked on diverse research areas throughout my career, including: internet of things (IoT), mobile health (mHealth), vehicular and railroad networks, and cybersecurity. I have worked on several international research projects during my employment at the Qatar Mobility Innovations Center (2010-2014) and Qatar University (2019-Current). I have more than 200 publications in international journals and conferences, including a book published in 2012 by Wiley/IEEE press.

Information and Communication Technologies is one of the pillars of research priorities at Qatar University. How does your research support these priorities?

Naturally, my research is at the core of Information and Communication technologies, which is one of the four research pillars of Qatar University. In addition, my research touches on other pillars. For example, my work on IoT for healthcare, and on lightweight security techniques for preserving the patients' privacy, also contribute to the "Health and Biomedical Sciences" pillar. Moreover, I have recently supervised a master's

thesis at Qatar University, where the topic was to use technology and virtual reality to increase empathy. This kind of research is also related to the "Social Sciences and Humanities" pillar.

As a researcher, what are the main challenges you have faced?

Some difficulties are due to the decreasing funding amounts in research grants, and sometimes because of the delays in the hiring of researchers. I try to address this by collaborating more with other colleagues, involving researchers in multiple ongoing projects, and dedicating more of my time to make sure that research progresses according to the planned schedule.

According to a study conducted by Stanford University (USA), you are one of QU researchers who is among the top 2% of the world's most-cited scientists during 2020, and the top 2% of the world's most-cited scientists for career-long citation until August 2021. What does this mean to you, and how have you reached this research excellence?

This is a nice recognition with good credibility since it comes from Stanford, which is one of the best universities in the world. I think I made it to the list because, in addition to considering the overall citations, the study gives more weight to publications where the researcher is the first or single author. I had published a lot during my PhD studies at the American University of Beirut. I also had a strong career start afterwards at the Qatar Mobility Innovations Center. Moreover, in the last few years, I benefited from the support and atmosphere conducive to research at Qatar University to focus more on high-quality, highly-cited publications. More important and more challenging is to remain on this list in the coming years.

Through your experience with QU students, what are the most important skills that they must acquire to excel as engineers and researchers?

Qatar University contains remarkable students who have great talent and ambition. Many of them will end up being excellent engineers, and several of those who pursue a research career will be strong researchers. They need to set their goals and targets, and do what it takes to reach them through perseverance, hard work, and intelligent planning.

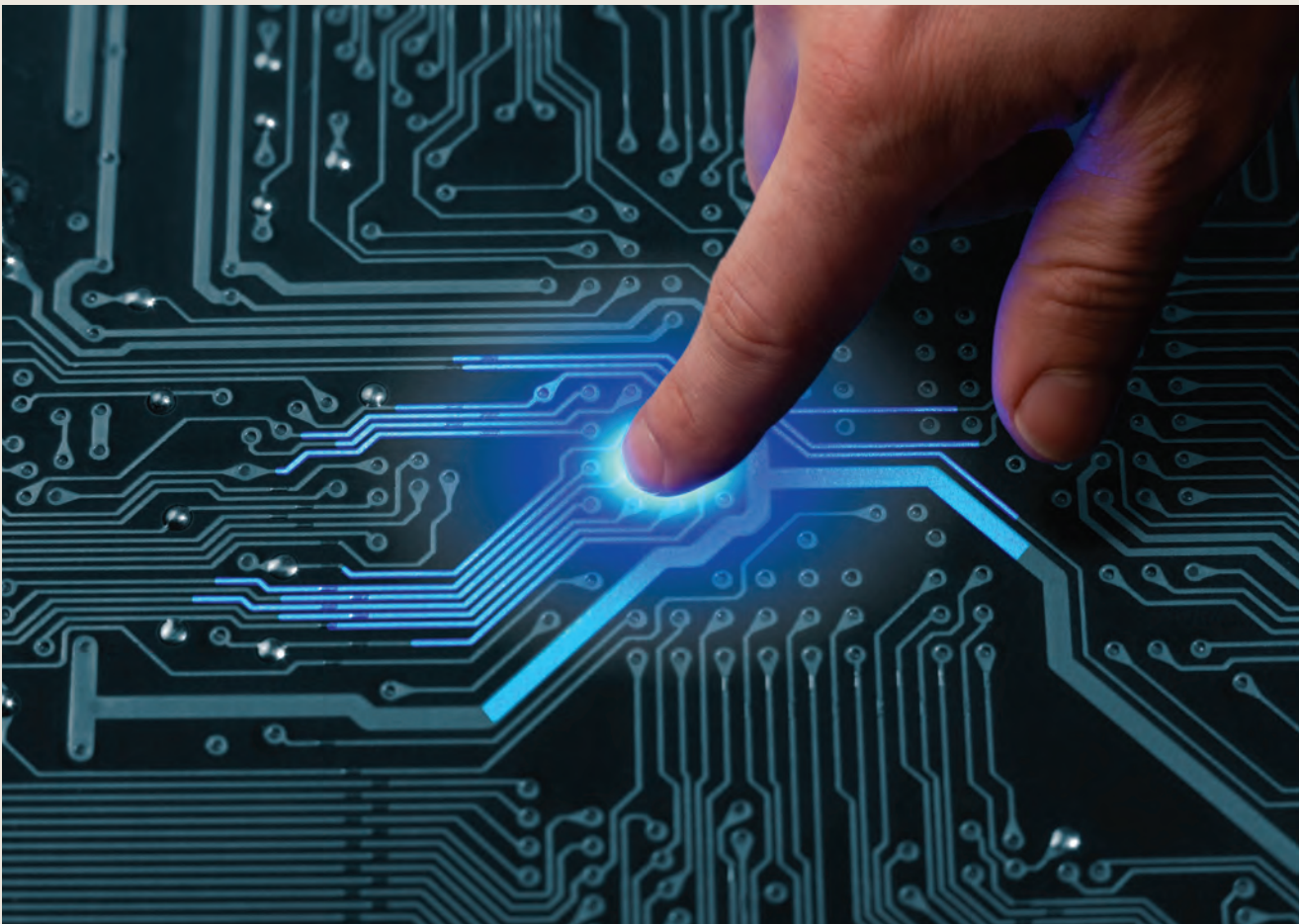
From your point of view, how does engineering research help in supporting a knowledge-based economy?

As mentioned in Qatar’s National Vision 2030, Qatar aims to build a “knowledge-based economy characterized by innovation; entrepreneurship; excellence in education.” In my opinion, engineering research, and specifically computer engineering and computing research, have the most important role in building and sustaining a knowledge-based economy. The recent crisis caused by COVID-19 has demonstrated the importance of using online platforms in order to continue the education process, maintain business activities, and so on. Such platforms, that everyone is used to now, would not exist without computer engineering research. Moreover, engineering research is fostering innovation at an unprecedented pace, which is unlocking horizons that were until a few years back considered part of the realm of science fiction: self-driving cars, remote robotic surgery, extended reality, intelligent robots, drone-based delivery, advanced medicine and genome research (using artificial intelligence), among others. These innovations

might be within reach in the foreseeable future, although a couple of decades ago they seemed unlikely until centuries in the future.

What are your research projects for the academic year 2022-2023, and what are the areas that these research projects will address?

In the academic year 2022-2023, I plan to work on several research areas such as continuing my ongoing research on IoT for healthcare, focusing on using artificial intelligence techniques in detecting heart diseases, while maintaining the security of communications and privacy of patients. In addition, I will be working on 6G wireless communications, along with the synergy interplay between artificial intelligence and 6G. Moreover, I plan to investigate the issue of providing connectivity to rural and underprivileged areas that are not equipped with the necessary infrastructure for advanced connectivity (like 5G/6G), in addition to research in the area of communications for railroad networks. Finally, I plan to work on a study that analyzes stress, relaxation, focus, etc., of students during online education while immersed in a virtual environment.



Researcher Business Card

Could you introduce yourself, and tell us about your specialized work at Qatar University?

I am Dana Al Abdulmalik, Assistant Professor of Physics and Academic Coordinator of the Physics Program in the Department of Mathematics, Statistics, and Physics. My duties include teaching, research, and academic coordination. I would like to say here that Qatar University is my second home where I spent my time as a student and received my B.Sc. in Physics. I started my career here as a teaching assistant after coming back from UK where I did my M.Sc. and PhD to join the faculty members in the Physics department.

Tell us about your most important practical and academic research achievements?

One of my most important research achievements is participating in building the positron research lab at Qatar University. This lab is the only lab in the region that contains almost all positron annihilation spectroscopies which are unique techniques for studying defects in all types of materials. I have performed high level of research in this field in my PhD for which I received a Platinum medal in Qatar Education Excellence Day for the PhD degree holders.

What is the importance of “Physics major” in professional life?

Physics is the most important subject as it underlies other sciences and applied sciences like engineering, and it is the origin of most inventions and modern technologies in our life starting from the light bulb and the microwave oven to the LASER, MRI, and ultrafast computers.

From your research experience, could you tell us how can a researcher achieve excellence?

Doing scientific research and getting valuable outputs is not easy. It requires great effort and time.



Dr. Dana Ali Al Abdulmalik

**Assistant Professor of Physics,
College of Arts and Sciences
- Qatar University**



Excellence in research can be achieved if the researcher is passionate, motivated, and dedicated to his research work.

What are the most important outputs of physical research at Qatar University?

There are lots of important research outputs shown by physics researchers at Qatar University. These include outputs in theoretical studies as well as experimental work. The experimental work is mainly directed towards materials research to study the properties of materials and develop them for useful applications in the industry.

In a word, what does physics mean to you?

Physics is life.

Interview with a Graduate Student:
Nousaiba Tayab Boumaraf,

Post-graduate Student of Masters in
Religions and Dialogue of Civilizations,
College of Sharia and Islamic Studies -
Qatar University



The master's degree in Religions and Dialogue of Civilizations offered by the College of Sharia and Islamic Studies is one of the quality programs not only in the State of Qatar but also at a regional and international level. It is a program that connects religious and civilizational frameworks and opens a window to several majors such as Sociology, International Law, Philosophy, and History.

Moreover, the program seeks to enable students to understand the foundations of dialogue upon which Islam built its relations with other civilizations. To learn more about this specialization, we invite you to an interview with the student Nousaiba Tayab Boumaraf. In the interview, she is going to tell us about this specialization and her research about "Religions and Dialogue of Civilizations."

Nousaiba, would you please introduce yourself and tell us about your educational background?

My name is Nousaiba Boumaraf. I am working as a Research Assistant in Ibn Khaldon Center for Humanities and Social Sciences, Qatar University. I got a bachelor's degree in Da'wa and Media, from Qatar University back in 2017, and then I joined the master's program in Religions and Dialogue of Civilizations at Qatar University in 2018.

What makes the master's in "Religions and Dialogue of Civilizations" distinct and what is the motivation for students to join this program

Those who are familiar with the reality of the history of the Religions know that Arab universities lack these specializations. We hardly find post-graduate studies or majors specialized in this field, and even if they exist, they are just branches of the Creed or theology departments, not independent departments. They just exist in few countries such as Malaysia, Turkey, and Qatar. This specialization was opened in the year 2018 in Qatar University besides a master's program at Hamad Bin Khalifa University where many students graduated before it was closed. Therefore, there are only few Arabic postgraduate programs on the science of history and comparison of religions. This is reflected in the quality of writings within this science, as many books are methodologically unclassified and are based on different specialized backgrounds such as Islamic Religious Studies, Arabic language or Islamic Jurisprudence, and they have nothing to do with the Sciences of History or comparison of religions. Therefore, the reason for joining this major is realistic and cognitive, as it is among the few Arab university majors that is concerned with the history and comparison of religions, and because it is the only regional major which combines Religions and the Dialogue of Civilizations.

Your research aims at revealing the Confucian concept of the other in the foundational texts. Could you tell us about this concept and its importance?

In the field of history and comparative religions, the concept of the other was studied at the level of the monotheistic Religions to explain the attitude of these religions towards "the other" who is different. As for the religions of Far East, this concept was scarcely studied, and I wish to fill that gap with my research especially because China has become a rising and influential power in the world. This fact requires developing cumulative knowledge about China and the Chinese culture, thought, and religions.

Confucianism is one of the original and rooted Chinese religions in the deep structure of the Chinese people. The research aims at revealing the perceptions of Confucianism of the other. What is its nature? Is it an exclusionary clash perception with the other? Or is it an accommodating perception of the other and coexisting with him?

What research methodology did you adhere to? What did you find out?

The research focused on tracing the positions of the other in the Confucian foundational texts, represented in the four sacred texts (Analects of Confucius, Mencius book, Great Learning, and Doctrine of the Mean). The research was also concerned with forming a comprehensive vision of the contemporary other to Confucianism; a vision that exceeds the existing other such as the Taoist and the Mohism who met Confucianism during the period of writing the sacred texts. Therefore, I used the descriptive, analytical methodology to deal with the subject.

Furthermore, the research shows that in spite of criticizing the other on the basis of what is right from the Confucian point of view, Confucianism accepted and coexisted with the other. The contemporary concept diffused by China about harmony and consistency is rooted in Confucianism.

What is your evaluation of the availability of references regarding different civilizations in the library of Qatar University?

The library is rich in books, and has always served me in the field of religions. I hope that the library expands its bookshelves on Eastern Religions; perhaps a special corner can be allocated for this group of books (the Chinese corner) similar to the American corner that previously existed, why not!

Students and researchers face some obstacles in scientific research, what advice do you give to the students in this regard?



From my own experience, what helped me and my colleagues was focusing on a certain scientific line. Some of us used to choose a specific field to write about among the courses, despite the topic of the course. When the course was about Dialogue of Civilizations, I wrote about the Arab-Chinese Civilization Dialogue, when it was about religions, I wrote about the Chinese Religion; when it was about the monotheistic religions, I combined monotheistic religions and Non-monotheistic religions. That allows us to enrich our knowledge of the main topic in which we are interested, and will contribute to facilitate identifying the problem of the thesis and any other future research. Whoever studies a certain field thoroughly, can easily identify its problems that are worthy of research.

What has the specialization of Religions and Dialogue of Civilizations added to you?

Religions and Dialogue of Civilizations is an interdisciplinary major as you mentioned, i.e. it opens windows to many sciences such as Sociology, Politics, Philosophy, and other sciences. Above all, it is acquainted with other religions and different cultures, intellectualism and language related to those religions. No doubt, this is similar to traveling without leaving your place; through it, perceptions expand, and you gain intellectual openness and acceptance of the other.

Personally, I was honored to know and learn from great professors at College of Sharia and Islamic

Studies, such as Prof. Abdelkader Bekhouche, Department Head of Aqeedah and Dawa, Prof. Muhammad Khalifa Hasan, Professor of Creed and Dawa, who is specialized in Judaism, Dr. Mohammed Aieash Al-Kubaisi, Associate Professor of Islamic Creed, and others, each one of them has his own fingerprint in that field.

What are your future research goals?

The field of the thesis often determines the research direction of the student, and because my specialization was the Chinese Religion thought so, with God’s will I am going to complete my way trying to develop an Arabic Islamic cumulative knowledge about that specialization.

In addition, I am also interested in the Qur’an, which I consider as a treasure for the students of “Religions and Civilizations.” I wish to delve more and more into it.

How do you evaluate what Qatar University offers to the students in general and to graduate students?

It is not a secret that Qatar University is keen to offer the best quality programs with a distinguished faculty. We, the students of the University, are aware of that. Students from other Arab universities have often contacted us, praising our professors and how lucky we are to have them as guides; this is a positive thing to be praised.

Graduate Student Business Card

How do you introduce yourself to the University community?

I am a bachelor's and master's degree holder in Applied Statistics from Qatar University first, and then as an employee working in the research sector, trying to benefit from all the sciences because of the opportunities given to me by my University in the service of my country and society.

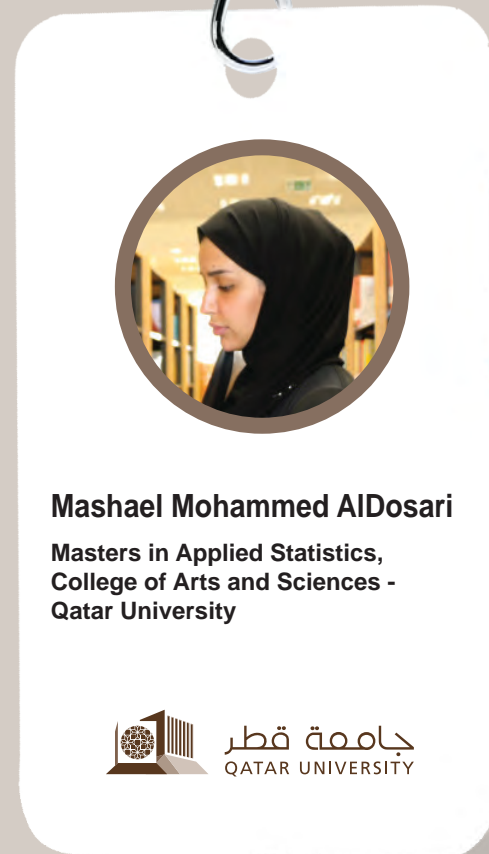
What motivated you to choose MSc in Applied Statistics program?

After I completed my Bachelor of Statistics, I realized its importance in all sectors of the society. Wherever we go, we find statistics present, and the scarcity of those coming to this specialty made me a curious person who wanted to complete the journey to delve deeper into this field and excel in it.

How does your major serve the professional aspect of your work at SESRI?

As we know, Social and Economic Survey Research Institute aims to contribute to the development and improvement of society by providing high-quality data extracted from field surveys with the aim of supporting the policy-making process and setting priorities, supporting databased planning, and conducting research in the social and economic sectors. Therefore, my study of statistics served me in two main aspects: preparing social research-based on data analysis by multiple statistical methods, in addition to revising the data in a proper manner that enables consumers to prepare research-based on high-quality data analysis, and this is what the Institute aims for.

Research experiences tone the skills of students. From your experience, what is your advice for students at Qatar University?



From my point of view, I consider that research experiences are not a goal for obtaining grades only, but they are an essential factor to make the student mindful and aware of the life around him. If he/she does not go through research experiences and apply them on the ground, the master's degree will be just words on the CV.

Tell us Mashael about your ambitions and future goals?

Currently, I am working on more than one research paper in the social field to be able to do more in this field and give myself a chance to prove my name. In addition to my ambition to complete my studies.

Interview with an Author:

Prof. Maryam Al-Naemi,

Author of the book “Representation of Women in the Poetry of Sheikh Ali bin Saud bin Thani Bin Qassim Al Thani (1932-1999)” (in Arabic)
Recently Published by Qatar University Press





Prof. Maryam Al-Naemi.

Arabic poetry is considered one of the literary arts that describes life from the poet's perspective. In the conclusion of the book "Representations of Women," the author says that she perceived the poet Ali bin Saud Al Thani's heedfulness of poetic imagery, which is a distinguishing feature in his poems, especially in his first book, where the use of figures of speech ranges from similes, metaphors, and symbolism to paradoxes that rely on language elements. Here, we have decided to interview the author of the book Dr. Maryam Al-Naemi, Professor of Classical Arabic Criticism and Arabic Rhetoric.

Prof. Maryam Al-Naemi, how would you introduce yourself to the University community?

I am Maryam Abdulrahman Al-Naemi, a professor in the Arabic Department. I have been working in community service for a long time because I firmly believe that universities are the most important social and communal institutions, not to mention that the functions and objectives of universities are entangled with other community-based establishments. Consequently, a university should serve society by contributing in connecting the scientific research and presenting scientific models from amongst its cadres to promote the language of scientific research throughout the society. From that perspective, I consider myself responsible, in my field of specialization, for striving to fathom the needs of the cultural community and the extent of its need for research and scientific collections, in addition to discovering the heritage wealth reflected

in literary and cultural aspects.

We found out that you specialize in Classical Arabic Criticism and Arabic Rhetoric, so why did you choose that field?

My motive was fondness of all sorts of heritage, as classical criticism is among the most important studies of literature appreciation and its history, discovering the secrets of its aesthetics, differentiating between ugliness and beauty as well as tracking the history of the critical movement from Jahiliyyah (pre-Islamic period) until the pinnacle of Arabian intellectual maturity in the Abbasid era. We saw, in this field of specialization, that poetry and literature transform from mere recitation to beautiful art and an exquisite craft, however, one cannot study Classical Criticism away from studying Arabic Rhetoric that allows us to distinguish between well-spoken and shoddy words. I believe that studying criticism and rhetoric allows researchers to uncover their Arabian Legacy and unveil its beauty and rarity. I thank God; I have implemented those studies on the poetry and prose of the Qatari heritage poetry and prose, and have presented studies and writings up to 16 books and researches.

What role does Qatar University assume in developing the skills of researchers and enabling them to write books?

Developing scientific research is considered one of the most crucial roles of universities, as it is one of

the main pillars of university studies. Additionally, Qatar University has had much luck, as it has been awarded the scientific research fund grants and all that needs to be done is to encourage those who want to work on scientific research. Regarding book writing, the establishment of QU Press was convenient to serve writing and encourage authors. At this interview, I would like to thank those in charge of the scientific research, including the Vice-President, Professor Mariam Al-Ali Al-Maadeed, and Professor Talal Al-Emadi, in whom I found the positive energy needed for attracting the researcher and paving the way for the researcher to publishing.

The book title, “Representations of Women in the Poetry of Sheikh Ali bin Saud Al Thani,” why was this title chosen in your study of Ali bin Saud’s poetry specifically?

The term “representations” refers to cultural and intellectual constructions and contexts. It is a critical term closer to cultural criticism. I chose the title “Representations of Women,” because the poet has amassed explicit names for women until women in his poetry have become a phenomenon bearing social, aesthetic, and cultural dimensions. This phenomenon requires a cultural critical study, which falls within my research interest in the country’s literary heritage in the first place, secondly, it is my field of specialty and it is included within my national duties to unmask the role of authors in forging all sorts of Qatari literature.

What is the meaning of poetic imagery in the language?

Poetic imagery is a critical term, a fundamental pillar of literary work and an element of poetic construction of the poet. Critics’ interest in poetic imagery was reflected in old criticism, where Al-Jahiz referred to it and considered it one of the aesthetics of the literary text, when he said: “Indeed, poetry is a craft, a manner of weaving and a kind of imagery,” so the poetic image is a critic’s tool in judging the quality of the literary text.

You have a collection of books and papers published in Arabic literature. Tell us about your most outstanding research achievements.

My research interests, which were evident in my works, are focused on the study of eloquent Qatari literature, including two books in the poetry of Hassan Al-Nema and a book in which I collected Qatari commendations (Madih) of Qatari poets that spanned for 100 years. There are studies in the verification and checking of Qatari heritage named “The Good Friend in Ethics and Heart Soothing” and “The Masterpiece in Qatari Ethics and Customs.” I

also have interests in research into Arab heritage, such as the book “Bloodstock Horses” and the book “Ambergris”. I am currently working on a major project called the “Qatar Cultural Encyclopedia”, a series of up to 13 lexicons dealing with Qatari vocabulary, proverbs, professions, clothing, ornaments, etc., which has been in progress for two years and, thankfully, five parts of the encyclopedia on just daily vocabulary will be issued soon.

Qatar University pays close attention to preparing future leaders. How would you describe your own experience with QU students throughout your rich academic experience?

My experience with female students in the Arabic Language Department comes through an experienced curriculum, the graduation project, in which I focus on motivating female students to research all aspects of Qatari heritage.

Are there any Qatar University students who demand to study Arabic literature today? What advice would you give them?

The study of Arabic literature consists of the courses learned by the student as part of his/her study plan, and my advice to the Qatari students is to pay attention to collect and study the Qatari heritage.

This book is part of the Qatar University Press series called “Qatari Studies,” could you tell us what you think about its importance to writers and, in general, about series and their qualitative additions to books in publishing houses?

No doubt, the importance of the Qatari books is due to the importance of Qatari literature in all its forms, which spanned 100 years ago. Therefore, the competent authorities should encourage and motivate the Qatari researcher to pay attention to that matter. Perhaps QU Press since an early stage has given a serious attention to this important fact and allocated a separate theme under “Qatari Studies”. In my opinion, I believe that these studies seek to achieve goals including: introducing social, cultural, literary, economic and educational studies in the State of Qatar, determining the future vision of the role as conceptualized by the QU Press, uncovering the Qatari heritage represented in the literary movement and the role of parents and grandparents in producing a solid Qatari culture. In addition, encouraging the Qatari researcher and highlighting his/her role in preserving the Qatari identity. There is no doubt that QU Press, with its interest in Qatari studies and attracting researchers, has put its efforts in profoundly enriching the Qatari library with various studies in local affairs.

QU Continues to Provide Platform to Research Issues and Special Activities under Research Wednesday Series



Qatar University Research

For Webinars



QU Research

Live Instagram



QU Research

Podcast

“Research Wednesday Series” is where a distinct group of specialists, researchers and learners join hands across several research platforms. Its seminars include s research topics through which pioneering researches that support the research priorities in Qatar University are highlighted. Such seminars also tackle the cutting-edge international activities related to research and education.

Here, we present the episodes and activities from the second season of the Research Wednesday Series, which was held during the spring of 2022. The sixth episode of the series was broadcasted on QU's research Podcast under the title "Resilience in the Fields of Education and Learning." The episodes were moderated by Chaker Ayadi, Lecturer of Mass Communication at the College of Arts and Sciences at Qatar University; Dr. Saba Mansour Qadhi, Associate Director of Core Curriculum Program; Dr. Maryam Al-Kuwari, Assistant Professor of International Affairs, and Amani Al-Louh, a master's student at the College of Education, who participated in these episodes.

The seventh episode is beneficial for researchers and students, since it helps answer the question: "How can you publish a book with Qatar University Press?" The dialogue was held by Dr. Badrane Benlahcene, Research Associate Professor at Ibn Khaldoun for Humanities and Social Sciences Center at Qatar University, and Mr. Mohamed Bousserghine, Senior Acquisitions Editor-Humanities at Qatar University Press.

Under "Research Wednesday Series" umbrella, the eighth episode was broadcast as an integrated event that included Qatar University's celebration of the International Day of Women and Girls in Science 2022, under the slogan "Water Unites Us." Such event brought together a distinguished group of female scientists, researchers and activists in Qatar, including: Ms. Anna Paolini, Director of UNESCO Regional Office in Doha and UNESCO Representative in the Arab States of the Gulf and Yemen; Dr. Mai Al-Ghanem, Senior Biologist, at the Department of Agricultural Research, Biotechnology Department at the Ministry of Municipality, and Dr. Marwa Al-Ghanem, Environmental Lab Head, Ministry of Environment and Climate Change. Prof. Zahra Saif Al-Abri, Research Assistant UNESCO Chair on Aflaj Studies-Archaeohydrology, Nizwa University, Oman; Ms. Mashael Al-Mass from ConocoPhillips Qatar; Ms. Noor Bader, Research Assistant at the Center of Advanced Materials at Qatar University; Prof. Rima Tayem, Professor of Human Nutrition from the College of Health Sciences at Qatar University; Ms. Fatima Al-Mesnad, Head of Community Awareness and Development, Kahramaa, and Ms. Munera Al-Kuwari, Administrative Affairs Expert at the Qatar National Commission for Education, Culture and Science participated in that episode. The event was administrated by Dr. Noora Al-Shammari, Senior Research Assistant at QU's Environmental Science Center.

Coinciding with Qatar Environment Day, the ninth episode of "Research Wednesday Series" on the QU's Podcast was titled "Vegetation cover in Qatar between Land and Sea." Such episode hosted Dr. Jassim Al-Khayat, Manager of Research Vessel, and Dr. Talaat Youssef, Associate Research Professor of Plant Molecular Genetics from the Environmental Sciences Center at Qatar University.

Under the title "Success Stories: Women in Nanotechnology," the tenth episode of "Research Wednesday Series" broadcasted via the Webex platform hosted Prof. Tetiana Tatarчук, Associate Professor of Chemistry and Director of the Educational and Scientific Center for Materials Science and Nanotechnology at

Vasyl Stefanik Prikarpathian National University (Ivano-Frankivsk, Ukraine); Prof. Lee Hooi Ling, Associate Professor at the School of Chemical Sciences, Sains University Malaysia; Prof. Pinar Yilgor Huri, Professor at the Department of Biomedical Engineering and Medical Design Research and Application Center at Ankara University in Turkey, and Prof. Dounya Barrit, Research Engineer on Next Generation Photovoltaic Reliability (Total for Energy/Ile-de-France Photovoltaic Institute (IPVF)) in France. This episode was moderated by Prof. Dr. Majeda Khraisheh, Head of Department of Chemical Engineering at Qatar University.

Episode 11 entitled "Al Zubarah: Qatar's World Heritage City" on the research podcast platform shed light on the history and ancient monuments of Qatar. The episode featured the participation of Mr. Faisal Abdulla Al-Naimi, Director of the Department of Archaeology, Qatar Museums; Dr. Okasha Eldaly, Head of Acquisitions Section, Qatar University Press.

Episode 12 of the second season is a virtual special episode under the Research Wednesday Series, which tackles the issue of obesity-disease of the age. This episode was moderated by Prof. Dr. Basem Shomar, Manager of Research Excellence, Research Planning and Development Department in the office of Vice President for Research and Graduate Studies at Qatar University, and was participated by Dr. Hanan Abdul Rahim, Associate Professor and the Dean of the College of Health Sciences at Qatar University; Dr. Maher Khalifa, Associate Professor of Psychology Program, Department of Social Sciences, College of Arts and Sciences at Qatar University; Dr. Monoem Haddad, Associate Professor in Sport and Exercise Physiology, Physical Education Department, College of Education at Qatar University; Ms. Grace Attia, Teaching Assistant of Human Nutrition Department, College of Health Sciences at Qatar University and Ms. Sahar Al-Shamari, Head of Dietician Bariatric and Metabolic Surgery Hamad Medical Corporation.

Episode 13 "Reflections on Arabic Poetry" was launched through the research podcast. Episode 13 hosted Dr. Mahmoud Kaheel; Dr. Zainab Almahmood, both assistant professors from Arabic Language Department, College of Arts and Sciences at Qatar University, in addition to Mr. Abdel Hameed Al Yousef, Qatari writer, poet and journalist.

The second season of the Research Wednesday Series concluded with Episode 14, in which we chose to highlight and discuss cancer research by recording the Qatar University research podcast. Episode 14 hosted Dr. Mohammed Ussama Al Homsy, Senior Consultant, Deputy Medical Director of Education, Clinical Research & Quality, National Center for Cancer Care and Research, Hamad Medical Corporation; Prof. Allal Ouhtit, Professor of Molecular/Cell Biology & Biochemistry, Biological and Environmental Science Department, College of Arts and Sciences at Qatar University and Dr. Hamda Al-Naemi, Director of the Laboratory Animal Research Center at Qatar University.

Finally, we invite you to visit the [Research Wednesday Series website](#), Research and Graduate Studies Sector at Qatar University in order to follow the research issues discussed during the first and second seasons.

Office of Graduate Studies organizes the 4th Annual tadTalks 2022 Event



The 4th annual tadTalks event organized by Graduate Learning Support (GLS) in the Office of Graduate Studies was held on March 24, 2022 at Qatar University's College of Law with event sponsor, Huawei. tadTalks (thesis and dissertation) was established in 2019 to build a strong graduate community in Qatar, voice the experiences of graduate researchers from around the globe, and share strategies for success in graduate studies with the current and prospective graduate students.



HE Dr. Hassan bin Rashid Al-Derham, President of Qatar University, and Prof. Mariam Al-Maadeed, VP for Research and Graduate Studies, during the signing of the Memorandum of Understanding (MoU) with University of Houston-Clear Lake (UHCL).

In the past four years, 21 universities from 13 countries have participated in tadTalks. This year, Qatar University (QU) welcomed graduate students from the United States, South Africa, Italy, New Zealand, Malaysia, and Qatar including speakers from Qatar University, Texas A&M at Qatar, Doha Institute for Graduate Studies, Hamad bin Khalifa University, and University of Calgary, Qatar. This year's event also showcased QU's rising researchers in the Junior tadTalks segment in which students from the Core Curriculum Program (CCP) and Young Scientists Center (YSC) shared their experiences participating in research projects in front of an audience of nearly 300 current and prospective graduate students.

Qatar University President, HE Dr. Hassan Al-Derham stated in his opening remarks, "the diverse audience of prominent figures in higher education, industry, and media in attendance at this year's event signals our shared commitment to supporting the graduate community in Qatar. This is evidence of the value placed on graduate researchers' contribution to the knowledge economy."

Vice President for Research and Graduate Studies, Professor Mariam Al-Maadeed, added, "events like QU's tadTalks, tad Boot Camp, National 3MT, and the MENA 3MT (a collaboration with HBKU) are initiatives to build a strong graduate community in Qatar and strengthen relations with other universities and stakeholders. We are already seeing the fruits

of these efforts, and we are looking forward to what's to come." The keynote address was delivered by Qatar Press Center President, Mr. Saad Al-Rumaihi, who shared his journey of resilience in becoming a media icon, inspiring current and prospective graduate students to take up the challenge of making a meaningful and lasting contribution to the society.

The opening ceremony also included the signing of a memorandum of understanding (MoU) between Qatar University and University of Houston Clear Lake (UHCL) for joint cooperation in the areas of research and graduate studies; the MoU marked the first tadTalks event to be held outside of Qatar at UHCL next fall. The event drew in many high-profile guests including former minister of Energy, HE Dr. Mohammad Al-Sada, with Director of Higher Education Affairs, MOEHE, Dr. Khalid Al-Ali, Dr. Amal Al-Malki, the Founding Dean of the College of Humanities and Social Sciences (CHSS) at Hamad bin Khalifa University, representatives from ConocoPhillips Qatar and Exxon Mobil, and professional footballer, AlMoez Ali who contributed an autographed jersey to the event giveaways.

Throughout the event, the audience participated in a number of engaging activities including a memory challenge, Q&A session with speakers, and a mini professional development activity on developing a verbal business card delivered by the Director of Studies at AFG with the University of Aberdeen, Dr. Lyn Batchelor. tadTalks 2022 concluded with an honoring ceremony followed by a research networking lunch intended to foster future collaborations and interdisciplinary research.

For more on tadTalks and other exciting research events, follow the Qatar University Research and Graduate Studies sector @quresearch on Twitter, Instagram, and YouTube, or, explore the QU Research Podcast on Soundcloud @QUResearch.



QUYSC Concludes Fourth Youth Research Forum

Qatar University Young Scientists Center (QUYSC) in cooperation with Qatar National Commission for Education, Culture and Science, concluded the Fourth Youth Research Forum that was held on 9-10 March 2022 under the theme “The World Cup and Qatar 2022: Challenges and Aspirations.” The Youth Research Forum is held annually to discuss the most important contemporary research topics and is considered one of the most important events, organized by QUYSC. It aims to promote scientific research culture, improve cultural tourism and build a society of knowledge, by exploring the research capabilities of youth in scientific and cultural fields that is related to 2022 FIFA World Cup issues.

About 150 participating researchers from 15 Arab and foreign countries, exchanged their experiences and shared their research capabilities. All researchers presented their researches through the Forum in a virtual event, while participants in the Research Poster Competition presented their research posters. A group of expert judges specialized in various scientific aspects evaluated the participants. The participating researches and research posters were evaluated according to the novelty of the presented topics, their relevance to the Forum themes, and the clarity of the objectives

and outputs. The Forum focused on three main themes, which were the national identity, social and cultural heritage theme, the legal theme, and the science, engineering and medicine theme. The first theme included many different researches that discussed the concepts of social security, the cultural identity and heritage of Qatar, as well as the architectural history of Qatar and its impact on the design of stadiums. The legal axis included many distinguished researches that discussed social legal aspects and the legal challenges that guarantee health, safety and sports during the FIFA World Cup and aspirations for gaining intellectual properties related to this event. While for the science axis, it included many active participations that discussed scientific aspects to facilitate the access of fans to Qatar, maintain their safety during the matches, and ways to secure the environment of Qatar. At the end of ceremony, the three best research papers and the best three research posters were announced.

The evaluators and attendees expressed their appreciation for all the participating researches, and highlighted the importance and the role of the Forum in discovering youth research capabilities to contribute for achieving the Qatar National Vision.2030



Honoring of the referees committee at the Fourth Youth Research Forum 2022.

Arab Physics Society Launches Scientific Event

Prof. Abouzeid Mahamed Abouzeid Shalaby

Professor of Physics, College of Arts and Sciences – Qatar University



At the welcoming speech of HRH Prince El Hassan bin Talal, at the launch of activities of the Arab Physics Society.

On April 7, 2022, the Arab Physics Society held a scientific event, which included well-known figures in Physics as invited speakers. Professors from Qatar University were among the founders of the Arab Physics Society, where Dr. Mariam Ali Al-Maadeed, Professor of Physics in QU and the Vice President for Research and Graduate Studies is a member in the Advisory Committee. Besides, Dr. Abouzeid Shalaby, Professor of Physics in QU, serves as a focal point of the Society.

The event started with a short speech by the President of the Arab Physics Society, Professor Shaaban Khalil, followed by a welcoming speech by HRH Prince Alhassan bin Talal. The Nobel Lauriat Takaaki Kajita (Nobel Prize winner in Physics, 2015) started the scientific talks where he gave a presentation on “Neutrino Oscillations”). Then Sir Roger Penrose (Nobel Prize winner in Physics, 2020) gave a speech on “Black Hole Singularities to Cyclic Cosmology.” The third speaker was the famous Nobel

Laureate Gerard’t Hooft (Nobel Prize in physics, 1999) where he talked on “The foundations of Quantum Physics and the Standard Model of Elementary Particles.”

The event was a condensed one where other pioneers in physics gave very interesting speeches. Prof. Claudia Felser from Max Planck Institute for Chemical Physics of Solids (winner of James C. McGroddy Prize for New Materials, 2019) gave a talk on “Topology and Chirality.” In addition, Prof. John Ellis (awarded the Paul Dirac Medal and Prize, 2005) talked on “Which way beyond the Standard Model of Particle Physics.” The famous physicist Prof. Edward Witten who was awarded the prestigious Fields Medal in 1990 presented an interesting speech entitled “Black Home Thermodynamics Then and Now.” Also, Prof. Pablo Jarillo-Herrero from MIT (Wolf Prize in Physics, 2020) gave a talk on “The Magic of Moire’ Quantum Matter.” Professor Charles Kane from University of Pennsylvania (Dirac Prize, 2012) gave the last speech of the launching event on “Symmetry, Topology and Electronic phases of Matter.”

With such big figures in physics invited to the launching event of the Arab Physics Society, one can claim that this might be the most rigorous event in physics to be held in the Arab world.

The recorded event can be accessed on the link:

[Launching Event of the Arab Physical Society on Thursdays April. 7, part1 - YouTube](#)

QU Press Booth at 31st Doha International Book Fair

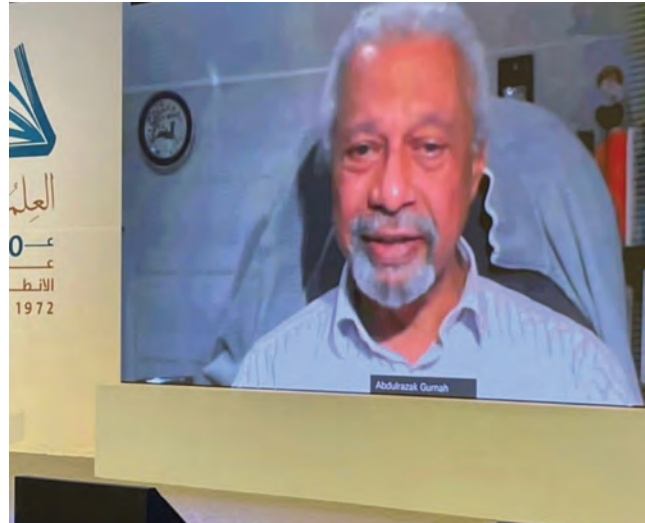
Its Large Turnout and Outstanding Cultural Activities



The Qatar University Press (QU Press) booth at the Doha International Book Fair 2022 (DIBF) witnessed distinguished presence of dignitaries, as it introduced various publications to the readers, hosted different activities and visits from other notable guests. QU Press organized a literary evening talk as part of its activities in the Fair, with the presence of novelist Abdul Razzaq Garnah, winner of the Nobel Prize in Literature 2021. QU Press Director Dr. Talal Al-Emadi, chaired the session with Professor Garnah on authoring and publishing. Prof. Garnah highlighted the aspects of the influence of Arab and Islamic culture and its pioneering role in international literature, noting the great importance of publishing in terms of communication and the interaction of ideas. The discussion was viewed by a large number of viewers on social media platforms, highlighting the importance of this topic to a wide spectrum of intellectuals and followers.

QU Press presented to its readers at the DIBF a variety of publications in many scientific, academic and intellectual fields. At the top of the exhibited publications list was “Al Zubarah: Qatar’s World Heritage City.” A book in Arabic and English published in collaboration with Qatar Museums Authority. The 248-page book, written by a large group of specialized researchers, addresses the historical, social, economic, and scientific background of the Al Zubarah archaeological site, and the challenges to its preservation and maintenance. It also details the steps taken to include Al Zubarah in the UNESCO List of World Heritage Sites. The book has several submissions from collaborating parties.

A launching and discussion event was held at the DIBF’s main theater to talk about the book. The session was moderated by Mr. Mohamed Hammam Fikri, Heritage and Rare Books Adviser at Qatar Foundation, and attended by Mr. Faisal Al-Naimi, Director of Archeology at Qatar Museums, and Dr. Fatima Hassan Al-Sulaiti, Director of International Cooperation at Qatar Museums, with the participation of artist, Fahad Al-Maadeed, who designed the cover page of the book. The session was attended by QU Vice President for Research and Graduate Studies Prof. Maryam Al Maadeed, one of the authors of the book, and QU Press Founding Director and Professor of Oil and Gas Law, Dr. Talal Al-Emadi, who presented the book on behalf of the publisher. HE Sheikh Hassan bin Mohammed Al Thani, Cultural Adviser to Qatar Foundation and President of the Museum of Modern Art, and Mr. Ahmed Al-Namla, CEO of Qatar Museums, also attended the event; in addition to members of media and interested visitors.



Prof. Abdul Razzaq Garnah's session.

In addition to “Al Zubarah”, QU Press booth displayed many other publications, including the academic book and reference, “International Organizations: History, Politics, Economics, Law, Management” by Prof. Muhammad Al-Musfir and Prof. Dina Abu Rumman; and a book titled “Museums: Philosophy and Genesis” written by Prof. of Archeology and Museums Management, Dr. Mohammad Gamal Rashed. The book, “Prohibition does not encroach to a second party: A theoretical and practical study on financial transactions” by researcher Hossain Mohamed Hoque, addresses financial issues with a jurisprudential viewpoint, in addition to ‘Cyberspace Attacks’ by Dr. Harith Al-Khattab. Among the university textbooks in this group is the book titled “Cost Accounting and Management Accounting” by three professors at QU, Dr. Osama Mansour, Dr. Ghassan Mardini and Ms. Fathia Lahyani. In addition, following its



Attendance of Prof. Mariam Al-Maadeed, VP for Research and Graduate Studies, the launch of Al Zubarah book.





HE Sheikh Faisal bin Qassim Al Thani.



HE Minister of Culture, Sheikh Abdulrahman bin Hamad Al Thani.



QU Press Director Dr. Talal Al-Emadi.

success in Arabic, the Press published the English translation of the book “Gestures and Signs: Non-Verbal Communication in the Qatari Culture” by Dr. Montasir Al-Hamad, translated by Ms. Al Reem Mehsin Al-Adba, Research Project Manager at QU Press.

QU Press also showcased books in the field of literature and poetry, such as “Poetic Deviation-A Research in Criticism Issues” by Prof. Hassan Bouijelabn. Also, a book that covers the creativity of a late Qatari poet titled “Representations of Women in the Poetry of Ali bin Saud bin Thani Bin Jassim Al Thani” by Dr. Maryam Al-Naimi, Professor of Literary Criticism at Qatar University.

The Press also placed specialized references in English for interested visitors like “The Role of Water and Landscape in the Occupation of Qatar” by Dr. Phillip Macumber, and a specialized book in radiation oncology therapy entitled “Specialty Portfolio in Radiation Oncology” which describes itself as a global certification roadmap for trainers and trainees.

Significantly, QU Press is setting the stage for a major publication, titled “The Encyclopedia of Occidentalism.” This is the first encyclopedia in the Islamic world to observe the West, published in cooperation with the Qatar Committee for the Alliance of Civilizations in the Ministry of Foreign Affairs and the Islamic Educational, Scientific and Cultural Organization (ISESCO) Chair in the Alliance of Civilizations at Qatar University.

QU Press’s participation comprised of other activities such as collaboration with the Qatari Forum for Authors, which covered the launching of textbooks, in addition to an introductory session within the Research Wednesday Series entitled “How to Publish an Academic Book.”

The QUP booth draws high interest, as it is a university academic press that strives for excellence in the research field, aiming to benefit researchers, academics and students. QU Press also values the artistic aspect of its publications, contacting prominent artists and graphic designers to design cover pages for its publications, in line with the content of the book and displaying original works at the Fair.

This year, the booth hosted guests including ministers, ambassadors, academics, authors, and intellectuals. Among them are HE Sheikha Al Mayassa bint Hamad Al Thani, and HE Minister of Culture, Sheikh Abdulrahman bin Hamad Al Thani; Chairman of the Qatari Businessmen Association, HE Sheikh Faisal bin Qassim Al Thani; Ambassador of Malaysia, HE Mr. Zamshari Shaharan; Ambassador of the Syrian Arab Republic, HE Dr. Bilal Turkeia; Ambassador of the Republic of Turkey, HE Dr. Mustafa Göksu; Ambassador of Japan, HE Mr. Satoshi Maeda; Ambassador of the Islamic Republic of Iraq, HE Mr. Omar Al-Barazanchi, as well as many other dignitaries and interested people.

It is worth noting that QU Press is the only Arab university press that has signed up with the sustainability goals, in order to achieve the Global Vision of Sustainability, Qatar National Vision 2030, and the directives of Qatar University. Therefore, QU Press booth at this year’s DIBF was designed to achieve the UN Sustainable Development Goals (SDGs).

As part of the Book Fair’s activities and in collaboration with the Seashore Group, QU Press also held a remote session entitled “Paper Recycling in Qatar,” which reflects the importance of paper recycling, and the efforts and measures undertaken by the relevant bodies in this regard to maintain a sustainable environment.

QU Hosts World Congress on Sciences and Applied Sciences (WCSAS 2022) under the Title “Advances in Nanoscience and Nanotechnology”



Prof. Mariam Al-Maadeed, VP for Research and Graduate Studies, presenting her participation as a Professor of Physics and Materials Science at the conference.

Qatar University (QU) hosted World Congress on Sciences and Applied Sciences (WCSAS 2022) under the title of “Advances in Nanoscience and Nanotechnology.” The two-day event kicked off on 28th of March 2022 at the Research Complex at Qatar University.

The aim of the Congress was to bring together academicians, students, scientists and industrialists to create an interdisciplinary platform to discuss the most recent research findings in all aspects of Nanoscience and Nanotechnology. It also aimed to provide attendees with the opportunity to network and debate the various innovative solutions in health, environment, energy, water and food security.

Nanoscience and Nanotechnology represent today a fertile ground for interdisciplinary interactions between various areas of basic sciences, and offer new tools that can be harnessed to solve current problems faced by humankind. Given its range of potential applications, Nanoscience has known major developments, which have revolutionized current technologies, and led to more effective and precise applications in various fields including medical, engineering, energy production, and environmental protection. In

parallel, Nanotechnology has become integral to advanced manufacturing production in an increasing number of industrialized countries.

The Congress was attended by HE Dr. Hassan Al-Derham, Qatar University President; HE Sheikh Dr. Faleh bin Nasser bin Ahmed bin Ali Al Thani, Minister of Environment and Climate Change; Prof Mariam Ali Al-Maadeed, Vice President for Research and Graduate Studies at Qatar University, a constellation of distinguished Nano scientists, students and stakeholders. In addition, there were guests from the Gulf Cooperation Council countries from King Saud University, Kuwait University, Sharjah University and Sultan Qaboos University.

The event covered on its first day–“Discussion of nanotechnology in the sustainability of food, energy, water and a clean environment” included several topics. The first topic highlighted Food, Water and Precision Agriculture. The second topic discussed Nano remediation and Clean Environment. In the third topic, participants discussed Oil, Gas and Renewable Energy. The second day of the event featured a session on Health and Life Sciences that lead to topics including Nanomedicine, Drug Delivery, Bio-Nanomaterials and Biomedical Devices.

Research and FIFA World Cup 2022



Al-Janoub Stadium

Research and FIFA World Cup 2022



Qatar's hosting of the FIFA World Cup 2022 is a turning point that demonstrates the progress the State of Qatar is witnessing and the strength of its economy. This hosting is an opportunity to increase awareness and knowledge of sports management inside and outside the State, and to promote investment in the sports sector industry. This in turn has paved way for the implementation of mega sports projects in the State and has contributed to accelerating the wheel of development, achieving development goals, and preserving a lasting legacy for the State of Qatar. In this context, and due to the utmost importance of hosting this event, research efforts at Qatar University have been exerted to study and explore this mega tournament, the first of its kind in the Arab countries and the Middle East. In this forthcoming issue of the journal, ahead of the launch of this event, we would like to shed light on the research efforts at Qatar University, the most prominent of which is the air-conditioned stadiums project titled [Cool Stadiums for 2022 World Cup](#). Then, simultaneously recurring research works followed and focused on this event highlighting its various dimensions while taking into account QU research priorities.

Researchers from various colleges and research centers at Qatar University have embarked on studying the economic, cultural, and social impacts of hosting the FIFA World Cup. They have also

researched the World Cup event assuming that it is a tool or an indicator that would distinguish and promote the ranking of Qatar at the local and international levels, sports marketing regarding the consumption and promotion of sports products and services, and the participation of fans, in addition to sports management systems and strategies of all kinds, the reforms that have been prepared and implemented regarding community sports and high-level sports.

From a health perspective, researchers have taken care of football fans throughout the spread of the Corona pandemic (COVID-19), in addition to sports as an effective and influential means of international relations, and diplomacy. They also paid attention to media broadcasting, cultures, and identity politics in the Middle East and North Africa region; and especially refuted the misconceptions relating to the risk of organizing the FIFA World Cup in the Arab and Muslim-majority countries.

In this special profile of the tournament, we are pleased to introduce QU Library as a beacon of knowledge that has added to its achievements a blog that includes more than seventy research papers addressing various aspects of Qatar's hosting of the 2022 FIFA World Cup.

You can browse and read them [here](#) or scan the barcode below:



We would like to share with you a set of research works in detail conducted by our researchers.

Intelligent Crowd Management and Control Systems for FIFA World Cup 2022



Prof. Sumaya Ali Al-Maadeed

Professor of Computer Engineering, College of Engineering–Qatar University

In collaboration with the Supreme Committee for delivery and Legacy, Qatar University (QU) College of Engineering has developed intelligent crowd management and control systems, including multiple components for crowd counting, face recognition, and abnormal event detection (AED). The QU research team, led by Prof. Sumaya Al-Maadeed as the lead principal investigator in the study, includes Dr. Noor Al-Maadeed, Associate Dean of Graduate Studies for Academic Affairs and Associate Professor of Computer Engineering, Dr. Khalid Abualsaud, Lecturer of Computer Engineering, Prof. Amr Mohamed, Professor of Computer Engineering, Prof. Tamer Khattab, Professor of electrical engineering and Acting Director of Excellence in Teaching and Learning Center, Dr. Yassine Himeur, Post-doctoral Researcher, and Dr. Omar Elharrouss. Post-doctoral Researcher, Najmath Ottakath, Master's student.

The security and safety of FIFA World Cup Qatar 2022 players, spectators, and other people present at the event is at the center of the attention of the Organization



From left (in front): MA student Najmath Ottakath, Prof. Sumaya Al-Maadeed, Dr. Noor Al-Maadeed, (behind) : Dr. Yassine Himeur, Dr. Khalid Abualsaud, Prof. Amr Mohamed, Prof. Tamer Khattab.



“Advanced and interactive technologies to achieve full effectiveness...”

Committee. Typically, security risks increase multi-fold, considering the large scale of the event and the significant number of fans expected to attend it (more than 1.5 million fans). Thus, the security of the FIFA World Cup Qatar 2022 is challenging due to the increasing number of possible threats and use of technology.

Using edge technologies, such as AI, drone-based computer vision, and ICT provides promising perspectives to ensure the security and safety of the players, spectators, and other people attending the event and helps efficiently manage crowds and identify people and abnormal events.

This project aims to use AI and drone-based video surveillance to optimize crowd management and control in FIFA World Cup 2022 sporting facilities. Typically, the team's effort focuses on (i) ensuring stadium safety and security plans where the fans do not need to think about their security, (ii) detecting abnormal events, (iii) tracking and recognizing suspicious persons using face recognition tools, (iv) maintaining the privacy of the fans by using edge-computing platforms where recorded data are processed locally.

Crowd management at the World Cup stadiums and their perimeters is crucial to ensure the safety and smoothness of the World Cup events due to the inherent occlusion and density of the crowd inside and outside the stadiums. FIFA World Cup 2022 will rely on the deployment of cutting-edge technologies, such as surveillance drones, ICT, and AI, to optimize crowd management. In this respect, the QU research team has first developed a crowd counting system from drones' data, which exploits the dilated and scaled neural networks to extract pertinent features and density crowd estimations. As portrayed in Figure 1, the proposed system includes a VGG-16 backbone to derive features and a cascade network. The latter represents an ensemble of consecutive blocks scale enhancement module (SEM) with convolution-pooling layers. This framework has been validated using a challenging dataset, namely VisDrone2020, and the results have been compared to 10 state-of-the-art algorithms. The proposed system has shown a clear superiority even under non-drone datasets, such as UCF_QNRF, UCF_CC_50, and shanghaiTech_(A, B).⁽¹⁾

Additionally, a new dataset for crowd counting in

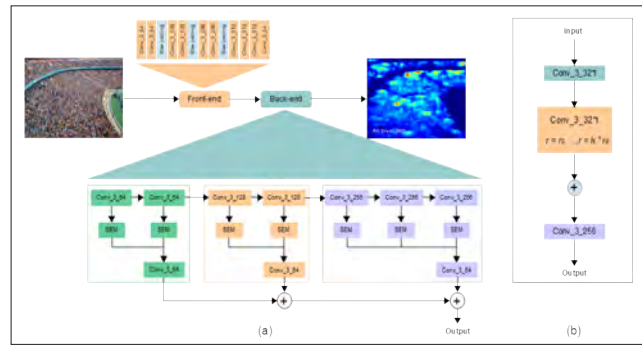


Figure 1. (a) Flowchart of the proposed method. (b) SEM architecture.

sports facilities named Football Supporters Crowd Dataset (FSC-Set) is introduced. It includes 6000 images labeled manually and representing various types of scenes, containing thousands of people gathering in or around the stadiums.⁽²⁾

The research team's effort has also focused on developing a face recognition system, which considers faces under pose variations using a multitask convolutional neural network (CNN). Specifically, a cascade structure was employed to combine a pose estimation approach and a face identification module. The CNN-based pose estimation approach has been trained on three categories of face images, including left side, frontal, and right side captures. Moving on, three CNN architecture, namely VGG-16+PReLU left, VGG-16+PReLU front, and VGG-16+PReLU right, have been deployed to identify faces based on the estimated pose. Additionally, a skin-based face segmentation scheme, based on structure-texture decomposition and a color-invariant description, has been introduced to remove useless face information (e.g., background content). Empirical evaluations have been conducted on four popular face recognition datasets, where the proposed system has outperformed related state-of-the-art schemes. Figure 2 portrays the flowchart of the multitask pose invariant face recognition system.⁽³⁾

Recently, using drone-based video surveillance, abnormal event detection (AED) is receiving increasing attention due to its reliability and cost-effectiveness. Typically, drones augmented with cameras can spot violent behaviors in crowds during sports events. They can monitor crowds in the perimeter of stadiums and/or other public venues during the FIFA World Cup 2022. To that end, the research team, led by Prof. S. Al-Maadeed,

(1) This research has been published in IEEE Transactions on Aerospace and Electronic Systems, 2021 (10.1109/TAES.2021.3087821).

(2) This research has been published in IEEE Access 2022, 10.1109/ACCESS.2022.3144607.

(3) This work has been published in Neural Computing and Applications <https://doi.org/10.1007/s4-06690-021-00521>.

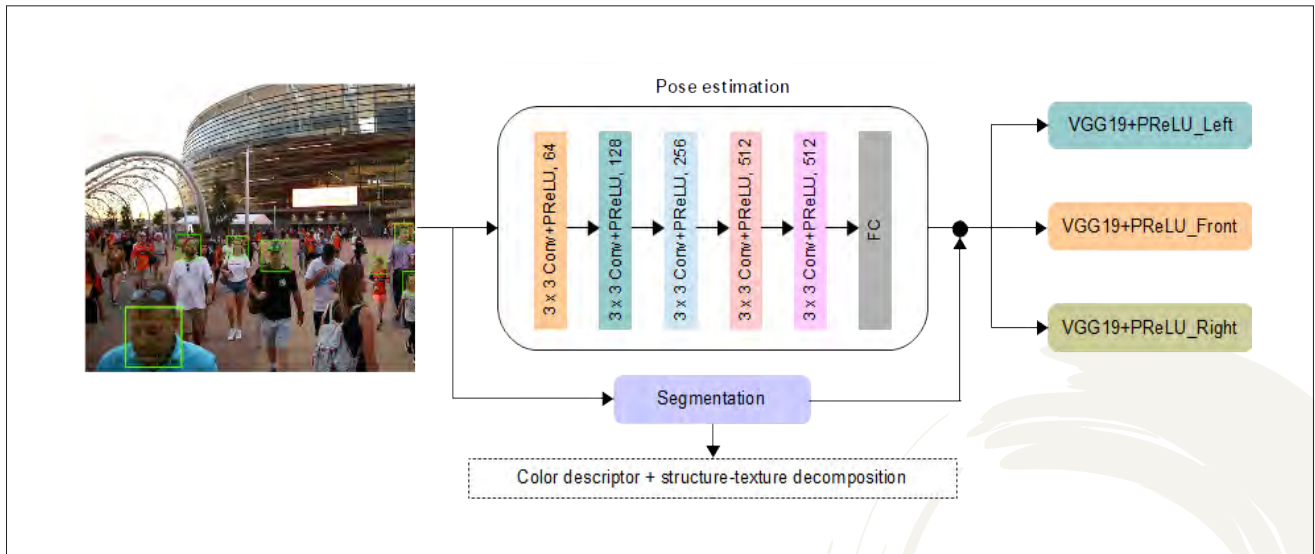


Figure 2. Flowchart of the multitask pose-invariant face recognition.

has developed a novel AED (Figure 3), which aims at learning abnormal actions using both normal and abnormal segments. It enables to avoid the annotation of anomalous events in training video sequences to reduce the computational cost and hence be easily implemented on drones. Therefore, abnormal events are learned using a deep multiple instance ranking scheme, which leverages weakly annotated training video sequences. Put simply; training annotations are put on whole videos instead of specific clips.

Moreover, normal and abnormal videos are considered as bags, while video segments represent instances in multiple instance learning. Lastly, temporal smoothness and scarcity constraints in the ranking loss functions are

introduced to effectively localize abnormal actions during the training.

Despite the progress already made by the team, many contributions are ongoing to address other problems that remain unresolved. Typically, future work will focus on using deep transfer learning in the different visual intelligence tasks to reduce the computational complexity of developed DL algorithms and enable their implementation on drone-based platforms. Additionally, federated learning will be adopted to overcome the privacy preservation issues when using drone surveillance. Accordingly, sensitive data will be processed locally, and only training model parameters will be shared in the fog nodes (without uploading drones' raw data).

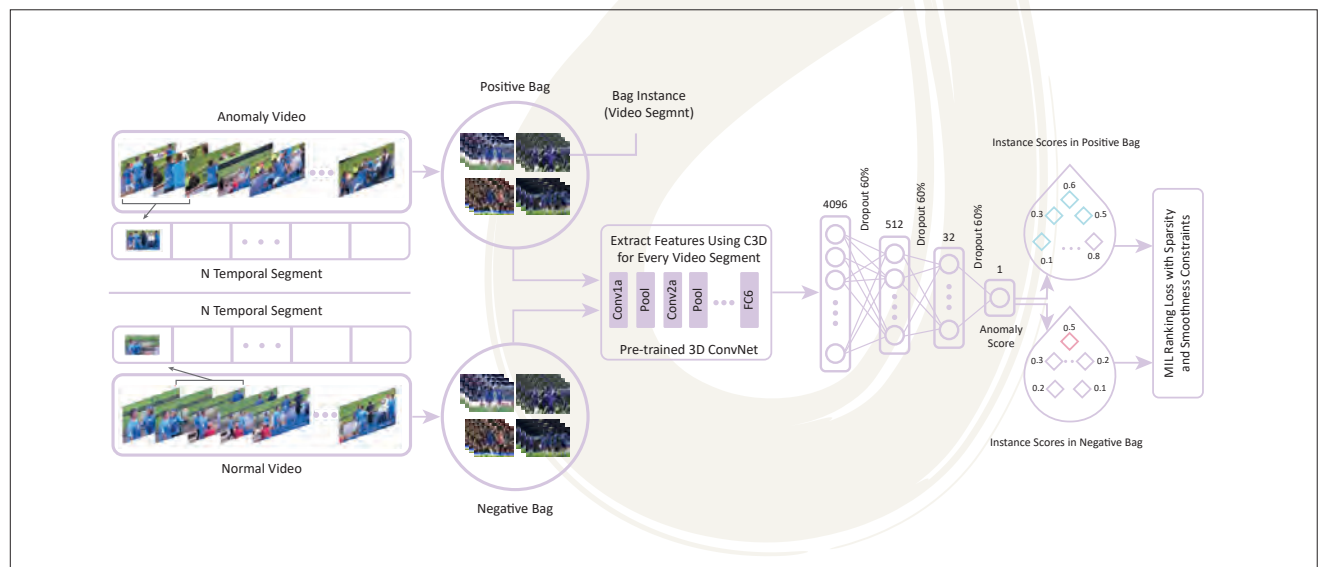


Figure 3. Flowchart of the abnormal event detection system.

Intellectual Property within the Scope of FIFA World Cup 2022



Shaikha Mohammed Al-Kubaisi

M. A. in Private Law, College of Law –
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The essence of intellectual property rights lies in that they are the product of innovation and creativity in various aspects of human activity. Creativity and innovation are considered types of thinking processes. Legally protected innovation is born of one's own ideas by initiating and creating it from the beginning, thus being characterized by freshness, creativity, and the individual's personal character,

which allows distinguishing the product from other products of the same type. The Qatari legislator, by regulating intellectual property rights under Article 7 of 2002 on the protection of copyright and neighboring rights of the author, gives legal protection to all literary and artistic works. This law regulates the moral and financial rights of authors objectively and procedurally. The importance of this study lies in the demonstration of intellectual property rights to owners within the scope of the FIFA 2022 World Cup. As a general rule, an author has the moral or financial right over his/her mental product, and he/she is also entitled to obtain full





and undiminished legal protection, whether he/she is a natural or a legal person, and whether the protected items are individual or joint.

The main problem in this study is the extent to which national laws and international legislations guarantee intellectual property rights within the scope of organizing the FIFA 2022 World Cup. Several questions arise from controlling this problem which needs to be clarified, the first of which relates to the quality of the works that are the

subject of legal protection for copyright within the scope of organizing the FIFA 2022 World Cup.

The second is about the nature of the author's financial and literary rights in the field of organizing the World Cup. The third is about the extent of legal protection for the owners of neighboring rights within the scope of organizing the FIFA 2022 World Cup. The fourth is about the extent to which the Qatari legislator and comparator can protect the rights of radio and television broadcasters.

Finally, the last is about the adequacy of the objective legislative regulation related to the protection of the rights of performers and producers of audio recordings. The Qatari legislator has paid close attention to the protection of intellectual property rights within the framework of organizing sports tournaments, and as a result, issued Law No. (27) of 2004 regarding the protection of trademarks, logos, compilations, and rights related to the fifteenth Asian Games- Doha 2006, which confirms the Qatari legislator's awareness of the importance of protecting such rights, as the attack on them entails compromising the financial and moral rights of their authors.

Since the study is connected to intellectual property rights related to the FIFA 2022 World Cup, and before the start of this tournament, which will be held in the Arab State of Qatar, FIFA (Fédération International de Football Association) has warned against the abuse of intellectual property rights related to the tournament, especially sports image rights in its broadest sense. The FIFA has also repeatedly warned against the use of industrial property rights related to the FIFA World Cup Qatar 2022™ without the prior written consent of FIFA, including the official logo of the tournament, the visual design of the Championship Cup, the FIFA trademarks, "Qatar 2022" and other trademarks, which are exclusively owned by FIFA.

This study has concluded several results:

- The protection of copyright within the scope of the FIFA 2022 World Cup is related to artistic and literary works. An artistic work is defined as:

"An intellectual creation in the field of arts based on emotional communication between the innovator and the recipient".

- The author's financial and literary rights within the organization of the FIFA 2022 World Cup are related to the literary and financial rights. The significance of the author's financial rights is that it gives its owner direct authority over the item, subject of intellectual property, in the mechanism of its use, exploitation or disposal and benefit from its financial proceeds without any dispute in that by anyone. Aspects of exploitations include the right of reproduction, the right of public representation or performance, the right of distribution, the right of lease, the right of tracing, the right of translation and adapting. Moreover, financial rights have a set of subjective characteristics, namely, that the financial right is disposable, that it is a timeless right and can be transferred to heirs.

- Satellite sports channels are among the channels most vulnerable to multiple attacks as to their intellectual rights, due to the monopoly of some of these channels of audio-visual broadcasting of sports tournaments such as the World Cup and other international and local tournaments. The Saudi BEOUQ channels hacked the satellite broadcasts of Qatar's beIN SPORTS channels by unjustly transmitting the events of the 2018 World Cup in a clear violation of intellectual property rights, which angered the whole world. The World Trade Organization (WTO) has issued a report on 16/06/2020, which ended up condemning this network and its backers for the intellectual theft of rights of the official channels of the tournament.



From this point, it shall be noted that the legislator has recently issued Law No. (11) of 2021 regarding the protection of trademarks, copyright and neighboring rights of the FIFA, as well as Law No. (10) of 2021 regarding the measures to host the FIFA World Cup Qatar 2022 in Chapter six regulating FIFA rights related to intellectual property, as well as regulating the issue related to broadcasting and advertising in Chapter seven thereof, which confirms the State of Qatar's interest in protecting intellectual property rights related to the organization of the World Cup.

Possible Cultural Benefits of Hosting the 2022 FIFA World Cup in Qatar

Dr. Senaid Salem Almarri

Assistant Professor of Physical Education,
College of Education-Qatar University



Since Qatar was selected to host the 2022 FIFA World Cup, the country has been the focus of global attention due to several reasons. Individuals in the Middle East are also excited because the tournament provides an opportunity for people from different regions to experience the local culture (Al-Emadi, 2017). Even though global assessment of the decision to allow Qatar to host the event focused on political and environmental issues, Al-Emadi et al. (2017) indicated there are important cultural benefits the world should pay attention towards. While it is important for the Middle East to host the FIFA World Cup for the first time, Qatar is regarded as a suitable country in the region due to infrastructural developments, which the country has initiated to improve the movement of people from one place to another (Al-Emadi et al., 2017). Mahfoud Amara (2013) highlighted the significance hosting such an event can bring to any country, but more specifically for Qatar, as he suggested many different aspects become emphasized when analyzing various statements from political leaders, the local press, as well as decision-makers in the sport, as they are related to an understanding for staging international sporting events. Amara (2013) continued on to specifically list the aspects which Qatar could focus on and gain in the preparation process for hosting, and the aftermath of the 2022 FIFA World Cup, including:

Qatar's response to globalization trends, which mixes traditional culture with modernity, Qatar's adherence to the universal values of democracy, solidarity and human rights, Qatar's respect for cultural differences, and Qatar as a meeting point between East and West.



While these can all be benefits both given and gained from this process, it is important to understand Qatar better in order to fully interpret the benefits mentioned here. Since the nation is a peninsula with the smallest land size in the Middle East, measures which have been put in place to make the World Cup a success have a significant impact on people's lives. According to Al-Emadi et al. (2017), most of the stadiums to be used for the event are located within a radius of 20 kilometers, which implies many remote parts of the country will be opened up by the event. The government has also engaged in marketing campaigns, which aim at popularizing the region's unique cultural sites that soccer fans are expected to tour, besides watching games in different stadiums. Even though some individuals are concerned about the region's simmering heat, Al-Emadi et al. (2017) showed the World Cup allowed the country to demonstrate to the international community measures, which residents have put in place to make life comfortable despite high temperatures.

There have been many challenges for this event (Matsuoka De Aragao, 2015). Paramount was the challenge to change the international perception of the Arab and Muslim world (Green, 2015). Western media commonly paints both the Arab and Muslim world in negative images, masking the great contributions which the many civilizations who emanated from these regions contributed to world civilization over hundreds of years. According to

Green (2015), the western world has had a view of Arabs and Muslims, which holds a strong notion of Islamophobia. According to Green (2015), Islamophobia is the, "hatred, hostility, and fear of Islam and Muslims, and the discriminatory practices that result". Qatar, along with all of the vastly heterogeneous nations in the Middle East and North Africa (MENA) region, has been misunderstood by the western world due to the Islamophobia which has existed in the representation and interpretation of Arab and Islamic culture (Green, 2015). This notion has been applied to the people and the region as a whole (Green, 2015). Hence, as the media in the Western region continues to present headlines and images linking Muslims and Islam with violence or terrorism, this has instilled a fearful attitude towards people of other religions (Green, 2015). Consequently, as Qatar prepares to host the FIFA World Cup event, the country is facing a series of challenges, as people are being disinformed by what they are reading in the news or media platforms.

According to Brannagan and Giulianotti (2015), discussions with most people in Qatar indicated they have experienced various changes since the country won the bid to host the 2022 FIFA World Cup. The authors supported the findings of their study with the documentation of the Supreme Committee for Delivery and Legacy (SCDL), the organizing committee for the event, released. The report noted the Qatari government has put





مرحباً بالمنتخب الأرجنتيني

BIENVENIDA LA SELECCIÓN ARGENTINA

emphasis on improving the relationship between workers and contractors. This has been done through measures such as setting up bank accounts for employees irrespective of the skill level. Brannagan and Giulianotti (2015) identified the changes aimed at enabling foreigners in the region to appreciate the fact the country was hosting a major global event like other individuals. While the tournament is several years away, ongoing preparations have highlighted further cultural changes Qatar is expected to experience in the future. Qatar's success in the bid to host the World Cup has been considered a national and regional triumph. To demonstrate to the world that the Islamic region is a secured region, Brannagan and Giulianotti (2014) contended Muslims have been depicted in Western media in highly disparaging ways. Even before the September 11 attacks in the US, Arabs had been vilified in Western cartoons, television programs, and films due to their culture. The opportunity to demonstrate to people from other cultures the reality of life in the region has been a main benefit for hosting the 2022 FIFA World Cup in Qatar (Brannagan & Giulianotti, 2014). The widely followed event has allowed Muslims to deconstruct negative perceptions of their religion and culture. While the Arab community is culturally rich, Bandyopadhyay, Naha, and Mitra (2017) showed most international media channels have still portrayed Muslims as enemies of the West. Therefore, the World Cup

in Qatar has been and will continue to be used to promote the region as a place where people co-exist regardless of their cultural or religious backgrounds.

According to Campbell (2010), there were celebrations in most parts of the Middle East when Qatar was announced as the host of the 2022 FIFA World Cup. One main reason for the excitement was the opportunity to create multi-cultural ties between the Middle East and the rest of the world. In sociology, Campbell (2010) described that cultural diffusion is achieved through the spread of ideas from one community to another. For many years, the FIFA World Cup has been the event with the highest number of spectators. Apart from entertainment, it has highlighted the diversities and complexities of everyday life in hosting nations. It has also proven to be a reflection of the cultural nationalism, communal identity, distinctive ethnicity, and cultural specificity of countries. Since the Middle East is one of the regions which has not been associated with integration into the global culture, the 2022 FIFA World Cup is an opportunity to assert its identity at the international stage.

For more information about this research, you can browse the following link:

[The Promotion of Qatari Culture: Qatari Sport Leaders' Experiences of Hosting the 2022 FIFA World Cup™ - ProQuest](#)

High Vaccine Coverage is Crucial for Preventing the Spread of Infectious Diseases During Mass Gathering

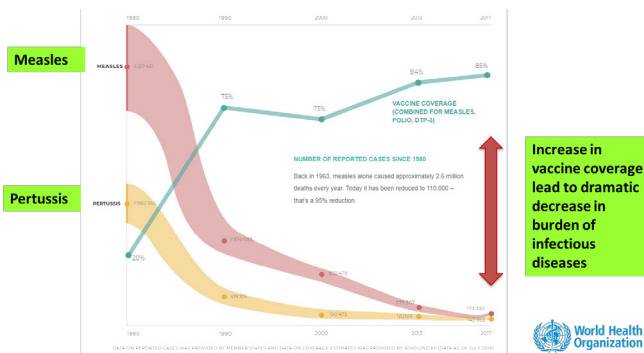


Prof. Susu M. Zughaier
Associate Professor of Basic Medical Sciences, College of Medicine - Qatar University

Background

Vaccines are the most cost-effective intervention in public health as they prevent the spread of highly contagious infectious diseases. Because of vaccine implementation and high coverage, Measles was eradicated in 2000, however the recent reappearance of measles in the United States, Europe and globally is alarming.

Vaccine Coverage Reduces Burden of Disease

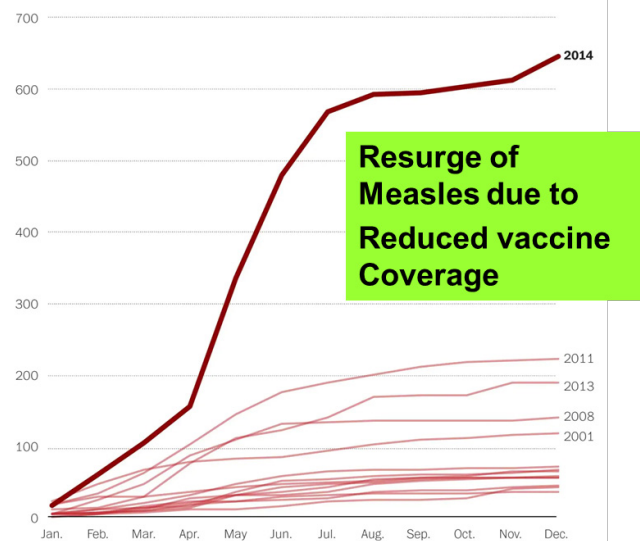


Measles Resurgence due to Reduced Vaccine Coverage

The resurgence of Measles, Diphtheria and Mumps is due to a reduction in vaccine coverage and herd immunity. Vaccine hesitant parents, antivaxxers, and fake news on vaccines are driving the surge in those infectious diseases. The World Health Organization issued the Global Vaccine and Immunization Action Plan to reiterate the importance of vaccine implementation and coverage for several vaccine-preventable infectious diseases in the world.

Measles resurgent

New U.S. measles cases, cumulative, by month of rash onset, 2001 to 2014



WASHINGTONPOST.COM/WONKBLOG

Source: CDC

Why do we need vaccines?

- Vaccines reduce disease burden in communities, save lives and money
- Vaccines protect individuals against infection and prevent symptomatic illness
- To date, 17 infectious diseases are prevented by vaccine administration
- Vaccine coverage impacts public health

Vaccine coverage induces community protection (Herd Immunity)



Methods

Methods: Literature search for vaccine coverage rates, resurgence of vaccine-preventable infectious diseases and risks of mass gatherings.

Results

Qatar is preparing for the upcoming FIFA World Cup 2022, therefore maintaining high vaccine coverage is critical in preventing the spread of infectious diseases during such mass gatherings.

“GULF TIMES : Qatar tops region in providing coverage of vaccines”

Qatar Vaccine Coverage is 95% which is one of the highest in the world

- Seventeen infectious diseases are currently vaccine-preventable.
- The cost-effectiveness of vaccine is documented, as it is estimated for each dollar spent on vaccines, 10 dollars are saved in disease treatment (1,3).
- A drop in vaccine coverage rates to under 90% lead to the resurgence of measles (2).
- Vaccine coverage rates in Qatar is currently at 95% which is one of the highest in the world.
- Qatar must maintain this high coverage rate to prevent any measles outbreaks during mass gatherings.
- The planned World Cup event will take place from November 21 till December 18 2022, which is the peak for seasonal influenza.
- FIFA 2022 mass gathering event: Qatar should encourage residents and visitors to be vaccinated not just against measles and seasonal influenza, but also hepatitis and meningitis.

Qatar National Immunization Program

Qatar Immunization Schedule

Schedule/Vaccines	At Birth	2 MONTHS	4 MONTHS	6 MONTHS	12 MONTHS	15 MONTHS	18 MONTHS	2 YEARS	4 - 6 YEARS	11-16 YEARS
BCG	Yes									
HEPATITIS B	Yes									
HEXA		Yes	Yes							
PENTA				Yes						
TETRA					Yes					
DTaP								Yes		
Tdap										Yes
ROTAVIRUS		Yes	Yes							
OPV			Yes	Yes			Yes (Oral)		Yes (Oral)	
PCV13		Yes	Yes	Yes		Yes (Oral)				
MMR					Yes		Yes			
VARICELLA					Yes				Yes	
HEPATITIS A							Yes			
INFLUENZA				Yes						
PNEUMOCOCCAL ACYW135								Yes		

Conclusion: Maintaining 95% vaccine coverage rate is critical for preventing the resurgence of vaccine-preventable infectious diseases during the World Cup mass gathering in Qatar.



Circular & Sharing Economy: Towards Sustainable 2022 FIFA World Cup™

Dr. Murat Kucukvar, Associate Professor of Industrial System Engineering,

Dr. Nuri Onat, Research Associate Professor, Qatar Transportation and Traffic Safety Center (QTTSC),

Adeeb A. Kutty, PhD Candidate, Engineering Management Program, College of Engineering–Qatar University



Stadium 974

FIFA
Qatar 2022

A team of sustainability experts from Qatar University headed by Murat Kucukvar from Department of Mechanical and Industrial Engineering, and Nuri C. Onat from Qatar Transportation and Traffic Safety Center (QTTSC), with an interdisciplinary team from Kazan Federal University, Russia, Divisions of Sustainability at Hamad Bin Khalifa University and Qatar Foundation published an article in world's renown journal, the Environmental Impact Assessment Review, Elsevier. The research presented a cradle-to-cradle Social Life Cycle Assessment (S-LCA) of Ras Abu-Aboud (RAA) stadium, one among the 8 stadiums in Qatar to host the world's first carbon neutral mega sporting event, the FIFA World Cup Qatar 2022™. Researchers analyzed the entire life cycle phases of the RAA stadium including the raw material production, construction, operations, and end-of-life (Figure 1).

Indeed, over the last decade, global climate change and environmental concerns gained an increased interest particularly in terms of their impact on host cities, residents, and audiences. As a result, Qatar's obligation to deliver FIFA World Cup™ 2022 as a net zero event has set standards for environmental stewardship by managing water and waste practices, applying sustainable building standards, and implementing solutions with low CO₂ emission. Indeed, this is seen in Kucukvar et al. (2021), where reducing the ecological burden from the carbon-gushing games compels circular and sharing economy strategies, giving ways to new thinking on environmental effectiveness and economic efficiency to sustain legacy in global sports. Despite best efforts, to green, the FIFA World Cup is challenging and requires critical analysis on possible burdens and leverage points to leave a long-lasting legacy not only on the environment but also on the socio-economic dimensions.

As highlighted by the research team, embarking on the World Cup journey with circular and sharing economy strategies can positively impact the environment and socio-economic outcomes towards a prosperous development at the center of sustainability. These practices can reshape the event design to deliver long-term socio-economic benefits to the host city and its neighbors before, during and after the FIFA World Cup 2022. Kucukvar mentioned that despite sustainability



From left: Dr. Murat Kucukvar, Adeeb A. Kutty, and Dr. Nuri Onat.

being of vital significance in mega-events, the socio-economic dimensions of sustainability have not yet been discussed in any previous studies concerning FIFA World Cup. The research team in the article pointed out that, innovation in modular stadium designs can bring long-lasting legacy post-event, through reuse and recycling from a socio-economic perspective. Adeeb Ali, Sustainability Researcher at QU, outlined the fact that several materials within the defined system boundaries of Ras Abu Aboud stadium can be put into use by applying environmental waste (e-waste) management and Circular Economy principles. The viable initiatives to bring out the essence of post-event legacies of World Cup™ 2022 tournament include: 1) Converting World Cup stadiums as training grounds for national teams of Asian and African football federations 2) Demounting the modular infrastructure of Ras Abu About stadium for possible reuse alternatives.

The research revealed the production of raw material phase responsible for the highest contribution to the total damage to human health with a Disability Adjusted Life Year (DALY) value corresponding to 8,207. An interesting outcome that resulted from carrying end-of-life management was the significant reduction in the damage to human health, which was estimated to be 5822.1 DALY. This helps the research community in thinking outside the box when attempting to tackle the significant environmental concerns from land-filling large quantities of construction waste generated annually.

The research findings show that negative human health impacts can be reduced by various strategies like using some examples of alternative low-energy materials, applying prefabrication to reduce construction emissions, and end-of-life recycling. Concrete can be substituted by using blended cement that contains a high volume of cementing complementary materials. Whilst recycling and reuse of steel and metals can result in considerable saving of energy. Additionally, a shift towards sustainable construction and environmental preservation can be embraced by a circular model or approach for end-of-life materials recycling. The wastewater from the stadiums during the event can be treated and reused in the district cooling plants and for possible irrigation purposes within the State as an end-of-life management strategy. This ensures proper utilization of existing resources to support the zero-waste initiatives of Federation Internationale de Football Association during mega events.

RAA stadium being a reusable container stadium can be dismantled and brought back to picture at ease in relation to the traditional tip-toe construction, where the stadium design proposed by the research team acts as a blueprint for any sustainable mega event across the globe in the future. It is important to align the possible re-use alternatives of shipping containers with the FIFA World Cup post-event strategies and United Nations 2030 Sustainable Development Goals (UN SDGs) to bring the essence of a true sustainable World Cup event with ever-lasting legacy from the eye of circularity, as stated by Nuri C. Onat from QTTSC. This is well reflected in the article where the experts have mapped possible reuse alternatives of steel shipping containers with Qatar's Supreme Committee (SC) vision of rethinking legacy to understand how well these alternatives support



in harmonizing SDGs post-World Cup from a socio-economic viewpoint (Fig 2). The research promotes awareness in sustainability benefits of an innovative circular design, supporting the United Nations 2030 Agenda for Sustainable Development Goals (SDGs) under related goals such as health and well-being (SDG3), industry, innovation, and infrastructure (SDG10), sustainable cities and communities (SDG11), responsible production and consumption (SDG12), and climate action (SDG13).

The article is available via the following link:

<https://www.sciencedirect.com/science/article/pii/S0195925521001153>

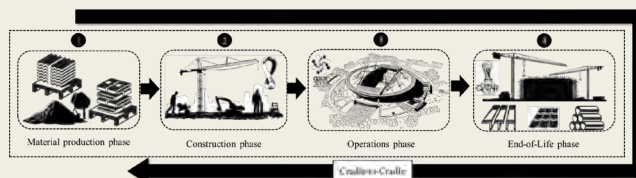


Figure 1. Life cycle stages considered in the research.

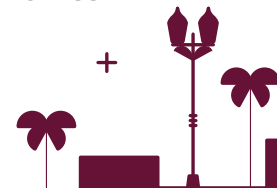


Figure 2. Strategic mapping for post-event container use strategy with UN-SDGs and FIFA 2022 World Cup™ vision.

Impact of FIFA's Official Announcements on Stock Market of Qatar: **The Case of 2022 World Cup**

Dr. Hisham Al Refai, Associate Professor of Finance,

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Dr. Mohamed Mahmoud Eissa and Dr. Hisham Al Refai.

The Fédération Internationale de Football Association (FIFA) announced on December 2, 2010 that the 2022 World Cup would be hosted by Qatar, the first country in Middle East to do so. Qatar has promised to stage a remarkable sporting event with futuristic, state-of-the-art infrastructure and many entertainment facilities funded by governmental, quasi-governmental and private companies. Qatar has committed to build state-of-the-art stadiums, new and improved transportation systems and entertainment venues and residential buildings to meet the FIFA requirements of this global sporting event and the expectations of football fans. The main motivations and benefits for Qatar from hosting such mega-sports event are

global recognition, cultural exposure, and prime destination for tourism, education and business.

Since the day Qatar was declared as the host of the 2022 World Cup, FIFA's decision provoked a widespread criticism and suspicion over a longer period of time than any previous controversy in sports. A number of events surrounding FIFA's decisions related to such an event signalled either the demand to withdraw the hosting offer to Qatar and open a new bidding process, or confirm Qatar's winning bid. While no

host country has ever been stripped of hosting the FIFA World Cup before, such uncertainty over the fate of hosting the event had influenced local and international investors' sentiments and impacted their decisions on holding financial assets in the stock market of Qatar (DSE), leading to portfolio reallocation and market volatility.

In our paper, we examined the impact of FIFA's official announcements on the Qatar Stock Exchange (QSE) with respect to FIFA's decision to award Qatar with the hosting of the 2022 World Cup. Using the abnormal unsystematic volatility method of Hilliard and Savickas (2002), the results revealed that the QSE reacted significantly to four



out of six FIFA's announcements about the 2022 World Cup. The significant reactions of the QSE to the announcements were due to investors' positive and negative sentiments about the fate of medium- and long-term infrastructure projects that would affect future stock prices in QSE. When good news arrived in QSE after confirmation of Qatar as a legitimate host, such news imbued local and international investors with optimism that Qatar's planned spending on infrastructure would take place and increase the future stock prices of listed firms. On the other hand, when there were speculations in QSE about Qatar losing hosting of the event, such uncertainty dampened the investors' optimism and reduced their enthusiasm for holding

financial assets in QSE, due to uncertainty about the long-term spending plans related to the World Cup event. Our study concluded that any future announcement relating to the 2022 FIFA World Cup would prompt investors to react accordingly and trigger portfolio reallocation decisions, leading to increased stock market volatility.

The speculation over whether the 2022 FIFA World Cup in Qatar will take place has finally ended since the new FIFA president, Gianni Infantino, confirmed that the World Cup will be definitely hosted by Qatar. However, Qatar has been asked to comply with international standards on improving workers' welfare and meet all FIFA requirements. Besides, the unique challenges and geopolitical risks facing the Middle East and the GCC in general could still pose the main source of speculations on the fate of the tournament. The results have implications to investors in QSE related to this sporting event.

Our empirical evidence proved that any future FIFA announcements is likely to affect the share prices of listed companies on QSE market and trigger portfolio reallocation by investors, leading to increased volatility.



The Power of Sports: Small States and Sports Diplomacy in Qatar

(MA Global Diplomacy, SOAS
University of London, 2021)



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Diplomacy has undergone many shifts in response to different challenges, like Globalization, which has led to increased complexity in the global context and challenged diplomacy with imposed interconnectedness. Diplomacy had to adapt to become sustainable in a changed and changeable environment. As a result of the shift in power balances and the reality that some countries are or have become more powerful than others, new forms of diplomacy and new tools of international interchanges have emerged. One of these recent devices is the soft power of sports. The attractive characteristics of sports can affect different levels, and can have an impact on complex interactions and relationships. Sports is considered an integral part of a society, and it has also become an important tool for enhancing diplomacy and visibility among nations, including small countries. States with populations of 1 million or less have increasingly become aware of the potential impact of these diplomatic tools. They can play a crucial role, furnishing these countries with a favorable image and international popularity, which can compensate for small states' demographic and geographic vulnerabilities.

This study proceeds on the assumption that sports play a significant role in pursuing national goals. Examples of these goals include objectives linked to improving a country's external image and enhancing its internal development. Previous studies have not fully examined sports as a tool to achieve a state's national interest and solidify its domestic development plans, as well as creating and influencing its global image. This academic lacuna leaves an opening to investigate further the employment and application of sports diplomacy by a specific country to intensify its development and create change in its level of influence and space on the global map. This research responds to that opportunity by engaging with the ideas related to soft power and sports diplomacy within the specific context of small states and their utilization of sports diplomacy, using Qatar as a case study.

In 2008, Qatar announced its National Vision 2030 to establish sustainable growth through diversification of its economy. This national vision highlighted Qatar's aim to diversify its economy through reliance on non-oil revenues, with the sources of these alternative revenues emanating from different sectors, including sports and tourism. Qatar makes an interesting case study. A small, wealthy Arab state located in the Arabian Gulf region, will become in 2022 as the first Arab state to host the FIFA Football World Cup, one of the most popular sports mega-events globally.



“ The 2022 FIFA World Cup has also functioned as a catalyst for overcoming conventional cultural and societal obstacles... ”

This dissertation explores the factors and drivers behind Qatar's sports diplomacy and examines how different stakeholders and parties narrate Qatar's sports diplomacy. The key research question addressed in this dissertation is: "What is the place of sports diplomacy in Qatar's wider foreign policy and diplomatic strategy?" Sports represent an important element of Qatar's foreign diplomacy. This dissertation considers a number of key features that have played an observable role in Qatar's sports diplomacy. Diversified sports investments, networks, sports for development and international relief, community inclusion through sports, and use of sports ambassadors in Qatar demonstrate the aspects of Qatar's sports diplomacy.

This dissertation concludes that the 2022 FIFA World Cup has also functioned as a catalyst for overcoming conventional cultural and societal obstacles regarding domestic female participation in sports. Success in hosting the FIFA World Cup could shift the entrenched perceptions of the region as being closed, hostile, and impenetrable. It could lead to hosting other sports mega-events such as the FIFA Female World Cup, and maybe even the Olympic Games.

Tajseer - A Journal for Interdisciplinary Humanities and Social Sciences releases its Special Issue on:

Culture as a Soft power Tool: The Case of Qatar's FIFA World Cup 2022 Hosting



For the aim of achieving Qatar University's strategic goals, in addition to considering its role, as a resource institution for the different establishments in Qatar, Tajseer Journal issued its second issue of the third volume titled "Culture as a Soft power tool: The Case of Qatar's FIFA World Cup 2022 hosting," in the context of the State of Qatar hosting the FIFA World Cup 2022. The issue included eight researches, five of which are in Arabic and three in English, where they all enforce the idea that the field of sports is no longer just for entertainment and leisure, but it has transformed into a new soft power, especially sports events like the world cup tournaments, that attract millions of spectators from across the globe.



Accordingly, significant reflections of sports and many interactions in the fields of culture, the economy as well as international relations can be seen outside of stadiums; where sports events have become a major global event for cultural communications between different peoples. Additionally, the said researches discussed multiple questions and followed variable methods to arrive at objective scientific answers; they also adopted multiple perspectives of the said answers by multidisciplinary perspectives.

The first study titled “The Normative Image of Qatari Society: A Study of Residents’ Perceptions” written by Dr. Asma Hussein Malkawi, Dr. Chedli Baya Chatti, Elmehdi Lahmamed, and Afrah Al-Otaibi, showed that Qatar possesses great capabilities in the Soft Power field, being an attractive state for numerous expatriates who can contribute to Qatar’s efforts in pitching the country’s image, as the study aimed at understanding the residents’ perceptions of the Qatari state, culture, and society, using a qualitative methodology. Whereas the studies gathered data from intended samples, including 111 residents of different nationalities, and concluded that the State of Qatar has both positive and negative cultural features (Figure 1), however, the residents’ views of Qatar are mostly positive and subject to certain conditions: personal experience and cultural frames of reference. Moreover, according to residents, the State of Qatar will face cultural challenges, of which the most significant pertains to entitlements that contradict the local culture and religious beliefs, while other challenges are rights-based.

On the other hand, the study of the researchers Elmehdi Lehmamed, Sarah Al-Ansari, and Afrah Alotaibi, titled “Social Determinant in Shaping the Country Image: The Case of 2022 World Cup in the State of Qatar,” addresses the way Qatari elite sees Qatar’s hosting of FIFA World Cup 2022. Whereas the study adopted a qualitative approach that examines the opinions of non-randomly selected samples. The importance of this study lies in that it is one of the few studies that addressed the hosting of the FIFA 2022 World Cup

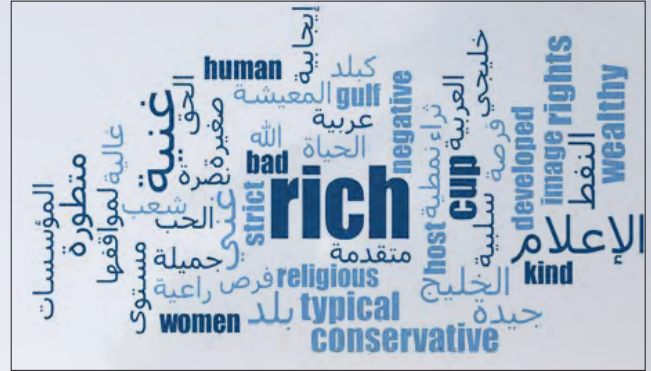


Figure 1. Tag cloud of the general image of Qatar people have abroad.

through in-depth interviews that qualitatively examine views of the Qatari influencers themselves. Instead of the study assuming that the Qatari society being ruled by customs and traditions and having its cultural specificity sprouting from religion, the State, and family, will strive to create a standard image to promote such image through hosting this global sports event, the study findings showed a rejection of promoting an image of the Qatari society that is specially created to satisfy external audiences attending a temporary event. Furthermore, the findings showed a tendency among participants to regulate the consumption practices of some categories of citizens to undermine a mental image prevailing abroad regarding a rentier lifestyle in Qatar.

Moreover, in consideration of the legal aspects in this major event, the research conducted by Sara Al Sallabi and her colleague Anwar Al Bakri dealt with “Qatari Constitutional Identity and its Implications for the Organization of 2022 World Cup.” Whereas the study highlights the constitutional aspects in enacting soft power as well as the role played by the constitution and legislations in creating an image of the State of Qatar among the visiting audience during the FIFA World Cup Qatar 2022. Additionally, the study stood for multiple findings and recommendations, the most important of which are those about the reflection of the ethnic and religious aspects in addition to the reflection of pillars of the social order on the event, to reach a set of recommendations, most notably the need to make the visiting audience aware of the legislation, to implement the principle of balancing benefits and harms and to base such principle on legal grounds.

The paper covered two other titles:



“Islam as a Soft Power for the State of Qatar in Organizing the FIFA World Cup 2022,” which was done by Hossain Mohammed Naimul Hoque and Latifa Menadi Al-Kaabi, and “The Role of Qatari Ministry of Culture and Sports in Forming the Country’s Image during Organization of the World Cup” by Noora Al-Hajri and Abdulrahman Salem Al-Marri.

On the other hand, the three other English-language papers shed light on the role of sports in activating the soft power of Qatari politics and went to the use of past Country experiences in setting up major events, reviewing the literature on the topic.

The paper written by Nouf Al Dosari “Sports and International Relations: Qatari Soft Power and Foreign Policy Making” emphasized the important role of sports in politics and international relations. Additionally, the relationship between soft power and hosting mega sports events such as the Olympic Games and the World Cup is obscure. With most of the literature available on the role of sports in the Qatari soft power adhering to the Realism theory of international relations and tending to emphasize the size of the State in understanding its motives for engaging in sports diplomacy, Dr. Nouf’s paper bypasses this proposal based on an approach between post-structuralism and discourse theory, taking into account the differences in how sports

diplomacy is used in different cultural contexts, as Qatar is deemed to represent a distinguished cultural history and tradition, in which sports form a political identity for the State as shown in Figure 2. Moreover, the paper analyzes the official speeches accompanying Qatar’s hosting of the 2022 FIFA World Cup and discusses how the use of sports diplomacy contributed to the achievement of many foreign diplomatic objectives of the State.

Meanwhile, the paper “Soft Power and the 2022 World Cup in Qatar: Learning from Experiences of Past Mega-Sporting Event Hosts” issued by Dr. Mehran Haghirian and Paulino Robles-Gil, adopts an approach to Qatar’s 2022 World Cup through applying and adapting the previous hosting experiences to understand the potential of the host country’s soft power. It is noteworthy, that the international challenges concerning the status of migrant labors in Qatar and the quality of Islamic and cultural values prevailing in Qatar, which are different from the Western public, will continue to challenge the administration and international reputation of Qatar’s organization of the Mondial. Qatar’s continuous commitment to regulating this event following the most environmentally friendly standards, its permanent presence in international football through sponsorship, ownership, and winning world sports championships, as well as

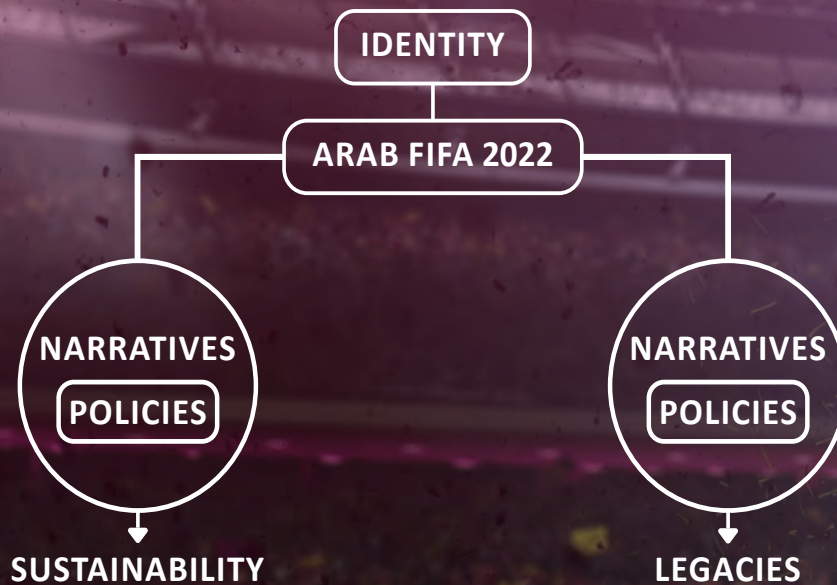



Figure 2. Qatar sports narrative achieving foreign policy goals.



its constant endeavors for strengthening and improving the State's status, will help the country achieve empowerment goals during the pre-event organizing stage. Additionally, the country's commitment and dedication to creating a lasting legacy after December 2022 will help empower the country in the post-organizing phase.

Moreover, the issue was concluded with Thomas Bonnie James' paper "Soft Power and the 2022 World Cup in Qatar," which provided a recent review of current studies on Qatar's strategy for sports, related either to investments or to diversification of State revenues or foreign policy and diplomacy objectives.

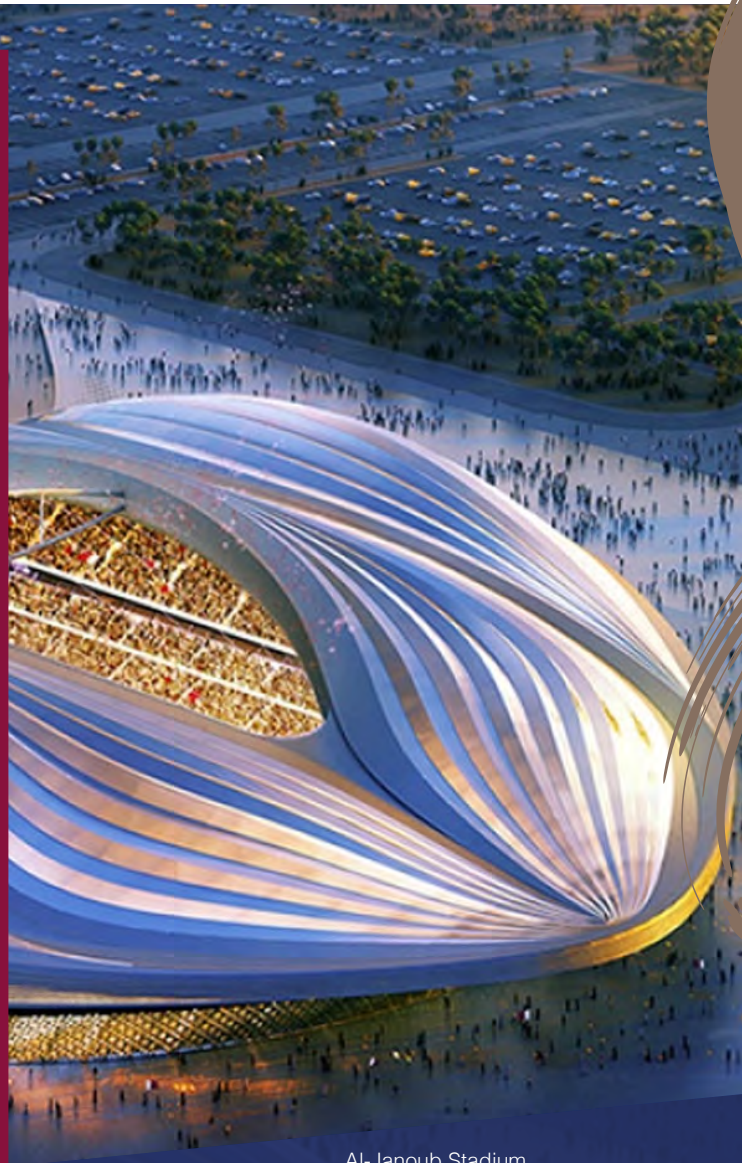
Finally, it is noteworthy that the papers included in this issue are the result of a research project supervised by Ibn Khaldon Center for Humanities and Social Sciences, and in celebration of issuing of this highly important issue for Qatar, Tajseer held a webinar on 5th of December, 2021 during which participants presented their papers that were broadcasted live on Qatar University's (QU) YouTube channel as well as that of Ibn Khaldon Center.

Bidding for Sports Events and Place Branding—Qatar and the 2022 FIFA World Cup



Dr. Mahfoud Amara
Associate Professor of Sport Management, Department of Physical Education, College of Education – Qatar University

Qatar's strategy of using sports to (re) position itself on the world map and international sports system started with the hosting of the 2006 Asian Games. The first major multisport event to be held in the country, considered the second biggest sports event after the summer Olympics taking into account the number of countries and sports represented. One of the most important legacy of these games is the development of Aspire Zone, with its two pillars for elite sport development Aspire Academy, and Aspetar for Sport Medicine. Science provision and intervention in improving and analyzing sports performance, in recovery from injuries, and the training of elite athletes in state of the art facilities and most advanced equipment, are among the conditions for success in elite sports. The fruit of this strategy can be seen in the improved performance of Qatari athletes, alumni of Aspire Academy,



Al-Janoub Stadium

in track and field, weight lifting and football as well as in other sports. Aspire Zone with its developed facility is becoming a destination for a number of world class athletes and top European clubs, when their image is associated with a number of global brands and well known products. They are using the facilities to benefit from the offered services as well as the logistics for travelling and hospitality, thanks to the influence of other national Qatari brands, Qatar Airways and Hamad International, which have heavily invested in associating their images with global sports through the likes of Paris Saint Germaine and Bayern Munich, to name a few.

Since 2006 Qatar has continued hosting major events and tournaments in different sports ranging from motor racing, tennis, swimming, handball, boxing, beach games, fencing, gymnastics, athletics, and of course football. Winning the bid for hosting the FIFA 2022 World Cup was another significant moment in Qatar's international sports strategy. The announcement took many observers in the world of football by surprise, although one needs to mention that Qatar following the success of the Asian Games bid first to host the Olympic Games (and was committed to bid again for the 2032 summer Olympics). The other important move was direct investment in the football club of the capital of fashion and arts, Paris Saint Germain. Qatari investment has transformed the club to a global brand with millions of followers around the world. All the eyes of the media were focused onto this small country with big ambitions. There was curiosity, to criticize, or to doubt the capacity of the country and its culture over hosting such a mega sport event, for the first time in a Muslim majority country. Qatar and its association with the World Cup and international football dominated the headlines. It put the country under spotlight as never before. It will be interesting to analyze the number of mentions of Qatar in general and its association with

sports and especially football in international news outlets, before and after winning the bid. It is usually argued that bad publicity is good publicity. Media and other analysts started to examine every single aspect of the country from its geography, politics, economy, society, culture and religion. Narrative of criticism about the country's legal system, culture and weather conditions (before the decision to reschedule the world cup to the winter season) was coupled with the narrative of pragmatism and business rationale. In other words, all opportunities for investment surrounding the planning of the FIFA World Cup in terms of stadia infrastructure and everything else from roads, hotels, transportation, estates, retails, and hospitality was under focus. Qatar became the place to be for a number of investors hence attracting unskilled and skilled workers from all over the world in all sectors, attracting a number of sports professionals, sports scientists, coaches, fitness instructors, sports and event management specialists, last and not the least, the sports TV broadcasting and production specialists. We cannot mention sport (football) and place branding in Qatar without mentioning the significant role of Aljazeera Sports, rebranded as beINsport in 2014, in the positioning of Qatar in the global industry of sports media broadcasting. beINsport is now present in all continents delivering content of major sports events and tournaments in different languages (including in different Arabic dialects).

The design of the FIFA 2022 World Cup stadia





Al-Bayt Stadium

is an important pillar in the re-branding of Qatar as the host country. One of the major themes is to reconcile between authenticity with (post) modernity. These two aspects are usually projected in the collective imagination when addressing the Middle East as being contradictory and incompatible. Orientalist depiction of the Middle East usually presents Arab (including Khaliji) and Islamic cultures as antagonistic to modernity in the sense of rationality and progress. One of the most iconic stadium to reflect authenticity is that of Al-Bayt Stadium which symbolizes nomadic tradition and lifestyle. The stadium will host the opening match of the FIFA World Cup 2022. Interestingly the Macdonald restaurant (the symbol par excellence of globalization and macdonialization of the world) close to Al-Bayt stadium had to embrace its design to reconcile between global and local culture. The other iconic stadium with a more futuristic outlook is Ras Abu Abud, named 974 stadium. It symbolizes Qatari innovation and culture of sharing. It will be the first FIFA World Cup venue to be fully dismantled and repurposed following the tournament. The successful organization of the 2021 FIFA Arab Cup, and the testing of the newly built stadia, one year before the World Cup had already made an impact not only in the Arab region, but also internationally. Hence changing the perception of those who initially doubted the country's capacity and resilience when confronted with challenges, contributing thus in changing the narratives in media outlets about the

region usually dominated by conflicts and crises.

Last and not the least is the mega urban regeneration project surrounding planning of the football stadia for hosting the World Cup matches. Sports is central to this project, which links cities in the south and in the north of the country through a network of parks, cycling and walking pathways. An important legacy of the World Cup is the promotion of physical activity and community sports, to counter the image of sedentary life style and chronic disease resulting from physical inactivity. All the aspects mentioned regarding Qatar's strategy for sports and place branding, nationally, in the region and internationally, will have an impact in the years to come, in preparation for another major sports event, which is the 2030 Asian Games.

To extend your readings about the themes highlighted in the short essay, we invite you to read our publications on links:

<https://www.e-ir.info/2013/11/29/the-pillars-of-qatars-international-sport-strategy/>

<https://www.taylorfrancis.com/chapters/edit/10.4324/9781315745480-23/islamic-sport-marketing-sport-marketing-muslim-cultures-communities-guillaume-bodet-mahfoud-amara>

https://link.springer.com/chapter/10.1007/978-3-030-69795-2_13