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Qatar University Research Magazine

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QU Earns Three Academic Chairs in the Arab League Educational, Cultural and Scientific Organization (ALECSO)

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Distinguished Readers of Qatar University Research Magazine,

Qatar University (QU) Research Magazine continues to focus on the university's most prominent research and activities. It highlights new achievements and inspiring innovations that enhance QU's pioneering role in developing the society. In our twenty-first issue, we announce the joining of QU as the first academic member of the esteemed Gulf Petrochemicals and Chemicals Association (GPCA) through the seventeenth annual GPCA Forum, in an effective partnership between the academic, research and industrial sectors on the path to achieving sustainable development.

In addition, QU's Biomedical Research Center was accredited as a collaborating center with the World Health Organization and one of six collaborating centers with the organization in the State of Qatar. QU has also secured three academic chairs in the Arab League Educational, Cultural and Scientific Organization (ALECSO).

In this issue, the Civil Service and Government Development Bureau unveils the "Researcher" program in cooperation with Qatar University, with the aim of developing human capabilities at government bodies, train and enable Qatari employees. In addition, the issue features the "Innovators in Education" project, the interface for innovation in educational methods, sponsored by the National Center for Educational Development in the College of Education, the Innovation and Engineering Education Unit in the College of Engineering. and the QU's Center for Leadership and Institutional Excellence, funded by ExxonMobil Qatar.

Among the research centers' projects are the pearl oyster project, an indicator of the health of the Qatari marine environment at the Environmental Science Center, the Qatari family structure and functions project at the Ibn Khaldon Center for Social and Human Sciences, and a study currently underway in the Central Laboratory Unit regarding the possibility of removing pollution from solutions of heavy and trace elements, and inventing a solar panel station; equipped with self-dry cleaning technology in the QU's Center for Advanced Materials.

QU Colleges share with us their research projects and innovations aimed at supporting the sustainability of food and water security in Qatar, including the project to develop a comprehensive approach to the nexus between food, water and the ecosystem, which received a high-impact grant, in addition to the hydrogel agriculture project. One of the achievements is the first bilingual register of its kind that focuses on argumentative writing skills for Qatari university students, in addition to systems and methods for directing patients remotely to medical facilities.

In the issue, we also learn about the concept of basic security interests in international trade law, Arab values in the context of Qatari culture, together with discussing the integrity of authorship in scientific research.

The issue includes awards won by QU students, including first place in the National Scientific Research Promotion Program (NSPP). A Qatari student won second place in the novice student category in the Hatton Competition at the International Association of Dental Research (IADR) conference held recently in New Orleans, USA.

We also have the participation of the first female doctoral student registered in the QU and the Royal College of Surgeons in Ireland joint doctoral program, who is researching the interaction between environmental factors and the gut microbiome and its relationship to cancer. Postgraduate students have special coverage by the Student Learning Support Center, which follows specific tracks to support the development of academic and research writing.

In the issue, we met distinguished researchers and students. It features our most prominent activities, including QU's participation in distinguished scientific seminars within the Expo 2023 horticulture activities. The proceedings of the international conference, which aimed to discuss the challenges and opportunities for achieving the sustainable development goals.

I invite you to browse this issue and get to know more of our achievements and activities. I hope it will be beneficial for all of you.

Prof. Mariam Al-Maadeed,

Vice President for Research and Graduate Studies,
Qatar University

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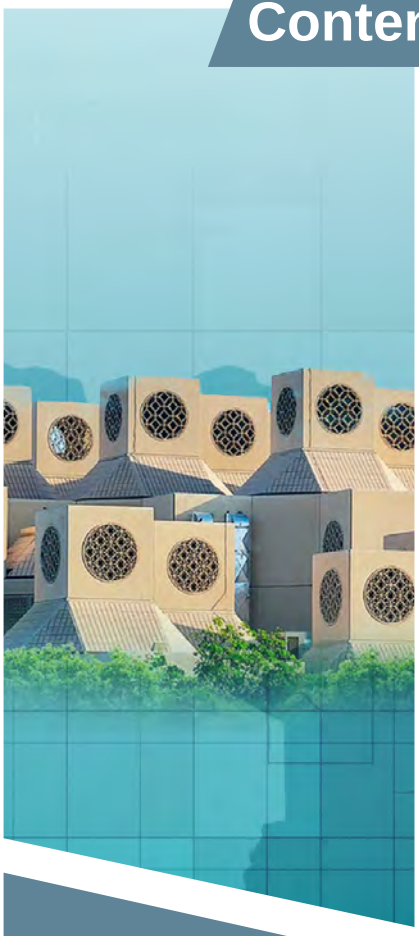

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QU Earns Three Academic Chairs in ALECSO

In a press conference on 4 February 2024, Qatar University (QU) announced that it is the first university in the Arab Gulf region to have secured three academic chairs from the Arab League Educational, Cultural and Scientific Organization (ALECSO). These academic chairs include the ALECSO Chair of Sabkhas Ecosystem in the Arabian Gulf region, the ALECSO Chair for Interdisciplinary Studies in Humanities and Social Sciences and the ALECSO Chair for Water. The conference was attended by Prof. Mariam Al-Maadeed, Vice President for Research and Graduate Studies, and Mr. Ali Al-Marafi, Secretary General of the Qatar National Commission for Education, Culture, and Science. The event was also attended by the Directors of Departments and Research Centers, Deans of Colleges, Assistant Deans for Research and Graduate Studies, Heads of Departments, researchers, and representatives from the press, television, and the Qatar News Agency (QNA).

ALECSO established these chairs to enhance the capabilities of higher education and scientific research in the Arab world. The objectives encompass fostering knowledge exchange and collaboration among universities research centers regionally and globally, developing academic and research programs in partnership with leading international universities to enhance scientific capabilities, and providing information exchange infrastructures, in addition to developing comprehensive policies for scientific research to generate and localize knowledge and technologies, supporting the development of scientific research and higher education institutions in the Arab world to meet present and future needs.

ALECSO Chair in Sabkhas Ecosystem in the Arabian Gulf Region

Chair Manager: **Prof. Hamad Al Saad Al-Kuwari**, Director of Environmental Science Center

Sabkhas are an integral part of Qatar's ecosystem. It is one of the most well-preserved sabkhas globally, thanks to the efforts of the concerned authorities, including the Ministry of Environment and Climatic Change, in protecting these fragile and unique environments. The best sabkhas in Qatar are found in Khor Al-Adaid, Dukhan, Doha Fashakh, Mesaieed and other areas. This rare ecosystem hosts simultaneous chemical, biological and geological processes. Sabkhas are studied in many universities worldwide for several reasons, including:

1. Modern Sabkhas help understand the geological processes depositing carbonate hydrocarbon reservoirs in the region, which are believed to have formed in similar environments through different geological eras.
2. Sabkhas enhance the formation of microbial-mediated minerals called "biominerals." Among these are dolomite, the main mineral forming the oil and gas reservoirs in the region and some clay minerals.
3. Some Sabkhas areas contain "microbial mats," intricate micro-ecosystems vital for CO_2 fixation processes and crucial for climate change studies.
4. Sabkhas represent a terrestrial equivalent to the early environment of Mars, attracting global interest in these environments.

The aforementioned ALECSO Chair aims to support research on the said topics by encouraging researchers at QU and other interested entities, as well as cooperating with researchers in various universities worldwide. Additionally, it aims to organize a series of workshops and lectures on its various aspects, promote the study of this ecosystem among primary and higher education students, publish an atlas of the biological and geological structures of Sabkhas in Qatar in cooperation with QU Press, and prepare for the 2nd World Conference on Sabkhas, scheduled for next year.

ALECSO Chair for Interdisciplinary Studies in Humanities and Social Sciences

Chair Manager: **Dr. Nayef Nahar Al-Shamari**, Director of Ibn Khaldon Center for Humanities and Social Sciences

The ALECSO Chair for Interdisciplinary Studies in Humanities and Social Sciences aims, in the long term, to develop and renew the structure of humanities and social sciences and foster integration among these disciplines, as well as between them and other fields of knowledge, to better meet the theoretical and practical needs of our societies. This will be achieved through collaboration with leading institutions and researchers in humanities and social sciences at local, Arab, and international levels to work on the production and management of central projects. The following objectives are derived from this main goal:

1. Foster systematic interaction among branches of the social sciences and humanities, establishing a systematic bridge to address issues arising from one-sided methodological approaches inherent in specialization.
2. Facilitate greater engagement of local researchers and experts with the humanities and social sciences at the global level, thereby enhancing and evolving enabling local researcher to contribute their perspectives, methods and questions to enrich human knowledge.
3. Enhance higher education and scientific research capacity in the Arab world by achieving interdisciplinarity.
4. Promote knowledge exchange and collaboration among experts across diverse humanities and social sciences fields and Arab researchers in universities and research centers locally, regionally, and internationally, while harnessing their expertise to generate and produce knowledge.
5. Strengthen collaboration and knowledge sharing, and develop academic and research programs with successful international universities (Twinning), aimed at enhancing scientific capabilities and establishing infrastructures for information exchange, knowledge localization and production.
6. Promote collaborative efforts between the public and private sectors at the local level, while fostering regional partnerships among Arab countries on scientific, intellectual and cultural issues of common interest.

Group photo of ALECSO Chair Directors with Prof. Mariam Al-Maadeed, Vice President for Research and Graduate Studies and Mr. Ali Al-Marafi, Secretary General of the National Committee for Education, Culture and Science.

The Chair also endeavors to engage and educate students, researchers, academics, professionals and members of the research community, as well as stakeholders, on the significance of interdisciplinary studies within the humanities and social sciences domain. This will be accomplished through discussions, workshops, seminars, conferences and scientific publications, aimed at raising the awareness of a wide array of stakeholders, researchers, professionals, scientific and educational decision-makers, and policymakers. The objective is to emphasize the importance of interdisciplinary studies, advocating for their inclusion in educational and research policies, and informing human knowledge and development projects at local, regional and international levels, with the ultimate goal of achieving sustainable development.

Regular meetings, discussions, workshops, training sessions and annual conferences will be convened. Additionally, the Chair will publish scientific papers, publications and research in journals with significant scientific influence and credibility. Upon completion of the chair project, its outcomes will be disseminated through a final report, media interviews, and press articles.

ALECSO Chair for Water

Chair Manager: **Dr. Maryam Al-Ejji**, Research Assistant Professor at the Center for Advanced Materials

The ALECSO Chair for Water is relevant to the Water Technology Unit at the Center for Advanced Materials. The chair's focus encompasses several research areas, including:

1. Wastewater treatment.
2. Fabrication and development of membranes used in water purification
3. Controlling biofouling of membrane
4. Integrating nanotechnology with water treatment practices to enhance the efficiency of water treatment techniques.

It also aims to train water workers. In this regard, the Center for Advanced Materials launched a two-day training workshop entitled "Advanced Technologies in Desalination and Water Treatment", in cooperation with the ALECSO Chair. The workshop was attended by several interested individuals and engineers working in Qatar General Electricity and Water Corporation "Kahramaa" and Qatar Electricity and Water Company. The workshop encompassed a number of topics, including membrane foulants and pretreatment of salt water, pre-treatment in RO desalination plants, design parameters in the reverse osmosis desalination, membrane fouling and design parameters in RO desalination process, guidelines for pre-treatment system selection, brine treatment, boron removal and Lithium recovery from brine. Moreover, there is a plan to host a joint international conference to unveil the latest scientific developments in water studies and accompanying technology.

These scientific chairs occupied by QU represent a strategic step for the University in enhancing cooperation with the ALECSO and the National Commission for Education, Culture and Science to achieve common goals in promoting higher education and scientific research in the region. ALECSO scientific chairs represent a notable addition to the scientific research process and promote the excellence in the QU strategic plan. Such partnerships contribute to supporting research and innovation and qualifying researchers who contribute to enriching the knowledge economy, meeting national needs and supporting the vision of Qatar 2030.

QU Joins GPCA as First Academic Member, Taking Center Stage at the

“17th Annual Forum: Mobilizing Chemistry for Impactful Transformation”

Prof. Mariam Al-Maadeed, Vice President for Research and Graduate Studies, delivering a keynote lecture on the second day of the 17th Annual Forum of the Gulf Petrochemicals and Chemicals Association (GPCA).

Qatar University (QU) participated in the 17th Annual GPCA Forum held under the theme "Mobilizing Chemistry for Impactful Transformation." Demonstrating its commitment to driving sustainable practices and innovation within the chemical industry, QU engaged in dynamic panel conversations featuring experts from the university. The dedicated booth displayed QU's latest advancements, emphasizing its pivotal role in reshaping the industry landscape. As the forum's premier international gathering in the Gulf region, QU's involvement marks a significant milestone in fostering collaboration and knowledge exchange. Qatar University, now a proud member of GPCA, looks forward to playing a crucial role in driving purposeful change through collaboration with industry leaders and institutions in the Gulf Cooperation Council region.

Qatar University's President, H.E. Dr. Omar Al-Ansari, emphasized the university's pivotal role in fostering innovation and nurturing talent within this sector, as well as its commitment to research excellence, and its capabilities in supporting the industry. He also underscored QU's research capabilities and collaborative efforts with industry partners to address global challenges, including climate change and resource scarcity.

Prof. Mariam Al-Maadeed, Vice President for Research and Graduate Studies, expressed her interest in the university's role in this transformative event. She emphasizes that collaborating with leading industrial companies is a catalyst for meaningful change in achieving sustainable goals through effective collaboration between academia and industry. Highlighting QU's strong track record in sustainability, she looks forward to increased collaboration with the Gulf industry for future advancements in sustainable practices.

Prof. Mariam Al-Maadeed delivered a compelling keynote lecture on the second day of the 17th Annual Gulf Petrochemicals and Chemicals Association (GPCA) Forum. Focused on the pivotal role of research in fostering a sustainable future, Prof. Mariam, highlighted research as a driving force for advancing sustainability, particularly in industries like oil and gas. Emphasizing the critical importance of research and innovation, she underscored the potential for universities like QU, with their deep expertise and research capabilities, to collaborate with industry in translating fundamental research into impactful real-world applications that promote sustainability. She displayed Qatar University's research strengths across diverse disciplines, providing examples of groundbreaking innovations such as polymers and coatings for corrosion protection in oil pipelines and novel bio refining

techniques converting waste into fuels and chemicals. Her advocacy for expanded university-industry partnerships and a focus on sustainability underscored the pivotal role research institutions play in driving innovative technologies and solutions for a sustainable future, not only within the chemical industry but also beyond.

Prof. Aboubakr Mohammed Abdullah, Director of Research Excellence at QU, presented a captivating talk on 'Intellectual Property: Fueling Innovative Solutions for Petrochemicals Industries.' As part of the Solutions Xchange sub-forum, dedicated to addressing industry challenges. He emphasized the transformative power of intellectual property (IP) in driving innovation within the petrochemical sector. Acknowledging the industry's current challenges such as disruption, sustainability goals. and global competition. Dr. Abdullah provided strategic insights into effective IP management, including patenting, licensing and collaborations. His expertise sparked engaging discussions on the potential of IP tools, such as patents, trade secrets and trademarks, to accelerate solutions for critical issues like energy diversification and environmental protection. His talk accentuated the vital role of intellectual property in realizing Qatar's vision for a knowledge-driven economy.

QU Booth Innovations

The Qatar University booth stood out through exceptional collaboration among various university centers and colleges, including the Center for Advanced Materials (CAM) and the Central Laboratories Unit (CLU) from the Research and Graduate Studies sector, alongside the Gas Processing Center (GPC) from the College of Engineering and the Colleges of Pharmacy and Health Sciences.

Some of the innovations featured in the booth were the results of interdisciplinary collaboration between these different units at Qatar University. By bringing together expertise from across disciplines, the university was able to highlight cutting-edge research relevant to the oil, gas and chemical industries.

This participation illustrates Qatar University's comprehensive capabilities and its ability to harness knowledge across fields to develop impactful solutions. The breadth of participation reflects the university's commitment to supporting research excellence and engagement with industry partners.

QU's participation in this forum highlights its commitment to leading impactful research and engagement with partners for the development of Qatar and the region. Key collaborations and outcomes from the forum will help shape the future of the chemical industry and enhance sustainability in the region.

H.E. Dr. Omar Al-Ansari, President of Qatar University and Prof. Mariam Al-Maadeed, Vice President for Research and Graduate Studies, touring the Qatar University pavilion.

QU's Biomedical Research Center Named WHO Collaborating Center for Research and Capacity Building on Emerging, Re-emerging Zoonotic Diseases

During the accreditation announcement at the office of H.E. Dr. Hanan Al-Kuwari, Minister of Public Health, attended by H.E. Dr. Omar Al-Ansari, President of Qatar University, Dr. Rayana Ahmed Bou Haka, Representative of the WHO Office in Qatar and officials from the Ministry of Public Health and Qatar University.

The Biomedical Research Center (BRC) at Qatar University (QU) is pleased to announce the establishment of a "World Health Organization Collaborating Centre (WHO CC) for Research and Capacity Building on emerging and re-emerging zoonotic diseases." Established in 2014 under the directorship of Prof. Asma Al-Thani, the Biomedical Research Center aims to become a leading hub for biomedical research in the region. The center hosts several research programs with a focus on communicable diseases.

Throughout the COVID-19 pandemic, the BRC was the main hub for sequencing SARS-CoV-2 variants, providing essential information that supports effective mitigation programs to assess and control the epidemic. With the newly established WHO Collaborating Center Status, among six centers in Qatar, the BRC aims to serve the WHO Eastern Mediterranean Region (EMR) in fighting emerging and re-emerging zoonotic diseases through six activities:

1. Support laboratory diagnostic techniques to identify and characterize agents associated with emerging and re-emerging zoonotic infections in the EMR.
2. Support research activities to understand and address the burden of emerging/ re-emerging zoonotic diseases in the EMR.
3. Support the World Health Organization's work on operational activities on emerging/re-emerging zoonotic diseases in humans and animals.
4. Support assessing and addressing gaps related to One Health in the EMR.
5. Participate in clinical research under WHO leadership for emerging/re-emerging zoonotic diseases.
6. Develop, conduct and disseminate up-to-date knowledge and best practices for clinical management of emerging and re-emerging zoonotic diseases including evaluation and assessment of clinical management strategies for priority zoonotic diseases in the EMR.

The ultimate goal of this collaborating center is to build a national and regional capacity that helps prevent and mitigate the threat of zoonotically transmitted diseases and confront any potential outbreaks, such as Disease X, which poses a significant and imminent threat akin to the spread of H1N1 influenza pandemic in 2009 and the COVID-19 pandemic in 2019. The center, with its Biosafety Level 3 lab and essential facilities, represents an alliance between major stakeholders in Qatar, including MOPH, HMC, and Ministries of Municipality and Environment, among others.

The center's accreditation was announced during a ceremony at the office of Her Excellency Dr. Hanan Al Kuwari, Minister of Public Health, on 21 February 2024, in the presence of Dr. Omar Al Ansari, President of Qatar University, Prof. Asma Al-Thani, Vice President for Medical and Health Sciences at Qatar University, Dr. Rayana Ahmed Bou Haka, representing the World Health Organization's office in Qatar, Dr. Hamad Al-Romaihi, Deputy Chairman of the National Committee for Epidemic Preparedness and the Director of Health Protection and Communicable Disease Control at the Ministry of Public Health, Dr. Abdullatif Al Khal, Deputy Chief Medical Officer and Director of the Department of Medical Education at Hamad Medical Corporation, Dr. Muna Al Maslamani, Medical Director of Communicable Disease Center at Hamad Medical Corporation, Dr. Hadi Yassin, Section Head of Research at the Biomedical Research Center and Dr. Haya Al Sulaiti, Research Associate in the Basic Research Department - VP Medical and Health Sciences in Qatar University. The Accreditation papers were presented to the President of Qatar University during the meeting.

A Novel Initiative by the College of Pharmacy for the Care of Older Adults Receiving Multiple Medications in Qatar

Group photo of the initiative participants.

In this initiative, Qatar University's College of Pharmacy, in collaboration with the Qatar Rehabilitation Institute (QRI), hosted the "Capacity-Building Workshop on Deprescribing Program for Older Patients with Polypharmacy in Tertiary Care Hospitals in Qatar." The two-day workshop aimed to enhance and equip healthcare professionals with the required knowledge and skill competencies to address the complexities of deprescribing for older adults with multiple chronic diseases and polypharmacy, which refers to the use of multiple medications by a patient.

Deprescribing, defined as the planned and supervised process of reducing or stopping a medication, is crucial for older adults as it ensures that they receive the most appropriate and necessary medications, minimizing adverse effects and drug interactions.

To our knowledge, this comprehensive workshop is the first of its kind in Qatar and the Middle East. Attended by approximately 30 multidisciplinary healthcare professionals from Hamad Medical Corporation (HMC), the workshop provided a unique opportunity for participants to learn from local and international experts in deprescribing and medication use optimization. High-quality presentations, engaging case-based discussions, and interactive learning activities using real-life scenarios facilitated knowledge exchange, providing attendees with an invaluable opportunity to learn from experts in the field.

The initiative is part of a larger Qatar University (QU)-funded project, led by Prof. Ahmed Awaisu, Head of the Department of Clinical Pharmacy and Practice at QU, entitled "Development and Evaluation of a Patient-Oriented Inpatient Multidisciplinary Team Deprescribing Program for Older Patients with Polypharmacy in a Tertiary Care Hospital in Qatar." This project exemplifies and symbolizes the collaborative efforts between QU's College of Pharmacy and Hamad Medical Corporation (HMC). This project aimed to develop a comprehensive deprescribing protocol to be tested at the Qatar Rehabilitation Institute (QRI).

The initiative involves a team of experts, including: Dr. Noor Alsalemi, Assistant Professor of Clinical Pharmacy at the QU College of Pharmacy, Dr. Lama Madi, Clinical Pharmacist at QRI, Ms. Amani Zidan, Graduate Teaching Assistant and PhD Clinical and Population Health candidate, Dr. Ikram Zoukh, Clinical Research Assistant and PhD Clinical and Population Health candidate. Alongside them, Dr. Ali Elbeddini, Assistant Professor of Family Medicine at the University of Ottawa and Dr. Daoud Al-Badriyeh, Professor of Pharmacoeconomics and Outcomes Research at College of Pharmacy at QU are also part of the team, where Dr. Ali shared his international experience on deprescribing. The diverse backgrounds of the project team, spanning clinical pharmacy practice, rehabilitation care and pharmacoeconomics and outcome research, added valuable perspectives to the initiative.

Dr. Hanadi Al Hamad, Medical Director of QRI and Dr. Moza Alhail, Executive Director of Pharmacy at HMC, have provided crucial support to the initiative. Their endorsement reflects the commitment of key stakeholders to foster impactful collaborations and to improve healthcare practices and health outcomes in the State of Qatar.

Prof. Ahmed Awaisu expressed his satisfaction with the workshop's success, stating that, "This workshop was the culmination of almost a year's work developing a comprehensive curriculum, guidelines and tools on deprescribing. The workshop was well-organized and implemented, providing attendees with the evidence-based competencies they need for deprescribing, especially among older adults. Attendees gained the principles and solid framework for both the theory and practice of deprescribing. The preliminary feedback and assessments showed that attendees were satisfied with the workshop and gained the required knowledge. We believe that implementing deprescribing will ultimately reduce medication burden and improve clinical and patient-reported outcomes."

Dr. Halima Saadia, a PharmD graduate from Qatar University and Clinical Pharmacist at Rumailah Hospital, praised the organized structure and informative sessions that covered a wide range of deprescribing topics. She described her experience at the workshop, stating: "This was a truly remarkable experience, and I am grateful to the rest of the team for providing me with this opportunity." Dr. Nadin Kamel, another PharmD graduate from Qatar University, who facilitated the delivery of the workshop, expressed enthusiasm about the initiative and practice advancement opportunity.

Undoubtedly, this capacity-building workshop has played a significant role in advancing the understanding and implementation of deprescribing practices for older patients with polypharmacy in tertiary care hospitals in Qatar. The collaboration between Qatar University's College of Pharmacy and Hamad Medical Corporation's Qatar Rehabilitation Institute demonstrates the commitment of these institutions to research networking, promoting interprofessional care and professional development, and the delivery of quality healthcare services.

Qatar University's College of Pharmacy, through novel initiatives like the deprescribing program, continues to play a pivotal role in advancing healthcare knowledge and practices in the State of Qatar. The success of this initiative not only benefits Qatar, but also positions it as a trailblazer in addressing the unique healthcare challenge of deprescribing for an aging population in the Middle East and beyond.

Qatar University Young Scientists Center (QUYSC) Researchers Develop Innovative Theoretical Model for Undergraduate Research Internships

A team of researchers from Qatar University Young Scientist Center (QUYSC) has developed and tested a novel model based on a new theoretical framework for enhancing research competencies and learning outcomes among undergraduate students in STEM fields. This model is grounded on the new research learning theory named "Research Cognitive Theory (RCT)," established by QUYSC under the leadership of Prof. Noora Jabor Al-Thani, the Director of QUYSC.

This pedagogical model called the Outcomes-directed Research Internship Model (ODRIM) is a first of its kind model that is believed to offer an impactful learning framework for universities worldwide to tailor teaching and learning experiences to bridge the gap between classroom theory and practical experience. It is grounded in the principles of Research Cognitive Theory (RCT) and integrates the concepts of Course-based Undergraduate Research Experience (CURE) and Outcomes-based Education (OBE) to offer students a comprehensive and immersive research experience.

The researchers empirically tested the effectiveness of ODRIM; it significantly improved students' abilities in conducting research, demonstrating technical skills, collaborating within teams, and disseminating research outcomes. This pedagogical model (ODRIM) yielded tangible outcomes in the form of scholarly publications in high-impact journals and conferences, demonstrating the potential of this approach to foster innovation and creativity among undergraduate students.

This study, titled "A Tailored Innovative Model of Research Internship" has been published in the journal "Higher Education, Skills and Work-Based Learning."

https://www.emerald.com/insight/content/doi/10.1108/HESWBL-07-2023-0180/full/html

The researchers at QUYSC believe their innovative model will inspire other higher education institutions to adopt similar approaches to enrich the research-learning environment for undergraduate students in STEM disciplines. "The theoretical framework of this model is very revolutionary, and this recognition underscores the QUYSC's commitment to advancing scientific knowledge and innovation. We invite universities and educators to join us in harnessing the transformative potential of this model and, together, redefine the STEM education landscape," said Prof. Noora J. Al-Thani, the Director of QUYSC.

For more information, please contact:

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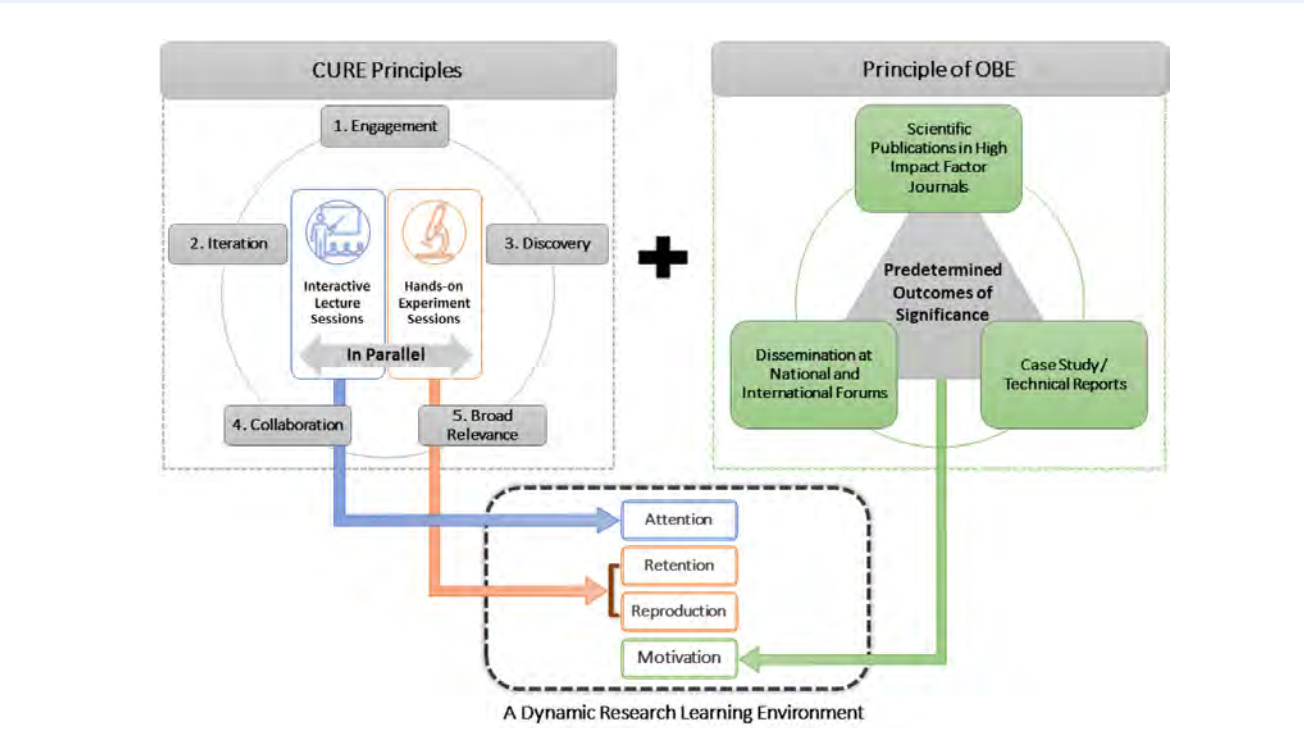


Source(s): Figure by authors

The “Innovators in Education” Project:

Pioneering Innovation in Teaching Aids

The inaugural edition of the "Innovators in Education" project commenced during the academic year 2022-2023, aiming to fulfill the vision of the National Center for Educational Development at the College of Education, the Technology Innovation and Engineering Education at the College of Engineering and the Center for Entrepreneurship and Organizational Excellence at Qatar University (QU). Funded by ExxonMobil Qatar, it aims to foster a culture of creativity and excellence in educational innovation, keeping in mind Qatar's Vision 2030 aimed at bolstering a knowledge-based economy, and QU's role in sponsoring initiatives supporting innovation and creativity.

The project's vision is to establish an educational environment of innovation and creativity and build professional learning communities dedicated to sustainable educational achievement. Its mission is to foster creativity and innovation, encouraging educators and higher education students to design educational tools that increase excellence in the student learning process, promoting intellectual development and constructive cooperation within the educational community.

The project endeavors to develop viable educational tools to improve learning opportunities. It also encourages educators and university students to devise effective solutions to challenges encountered within the educational and professional domains. Furthermore, it aims to form professional learning communities for educators within and outside Qatar as well as, exchange ideas on innovative teaching methodologies.

The 'Innovators in Education' project is open to educators in schools, universities, colleges and university students in Qatar in two categories namely, Digital teaching aids and Non-digital teaching aids.

To participate, the university students are to be residents of Qatar and be enrolled in a diploma, bachelor, higher diploma, masters or doctorate university program. Students may participate individually or in teams of up to three members.

Interested educators must be residents of Qatar and be employed in a local educational institution at the time of application. Participation can be individual or in teams of up to three members. Students' age and developmental characteristics must be considered and correlated with educational goals.

The product must be innovative, original, safe, accurate, modern, enforceable and applicable, while also adhering to religious teachings and public values and ethics. Captivating students' attention and supporting their inclinations and interests, would make the product valuable and desirable. The product must not have been awarded in any previous participation.

H.E. Buthaina bint Ali Al Jabr Al Nuaimi, Minister of Education and Higher Education, visit to the innovative products exhibition at the project's closing ceremony.

The norms of the process from registration, acceptance, product submission and evaluation criteria are available on the QU website: https://www.qu.edu.qa/ar/conference/innovators-in-education.

In the second stage, participants commence product implementation, adhering to standards and timelines while engaging in the project's professional development program. Participants receive feedback from a specialized committee. Ultimately, they deliver the product and its electronic file in their final format to the organizing committee.

During the third stage, participants proceed to evaluation and assessment according to the criteria and norms specified by the organizing committee. Successful participants from the previous stage are nominated to present their projects to the evaluation committee, comprising university professors and academics specialized in the project fields. The committee conducts an objective assessment based on the specified evaluation criteria, ensuring confidentiality.

In the fourth stage, finalists exhibit their products. This is concurrent with the closing ceremony. Subsequently, winners are announced and prizes are distributed.

H.E. Dr. Omar Al-Ansari, President of Qatar University and Dr. Ibrahim Al-Nuaimi, Deputy Secretary of the Ministry of Education and Higher Education, touring the innovative products exhibition at the project's closing ceremony.

Finally, QU Center for Entrepreneurship and Organizational Excellence supports the winning products in the fifth stage while safeguarding intellectual property rights.

The winners in the 'Innovators in Education' project walk away with varying handsome prize money. In the university student category, QAR 15,000 is awarded to the first place, QAR 10,000 to the second place and QAR 7,000 to the third place winners. For educators, the first place winner is awarded a prize of QAR 20,000, the second place receives QAR 15,000 and the third place receives QAR 10,000. All the winners receive an appreciation certificate and a plaque for each field. Participation certificates are given to all participants who reach the final stage.

During the academic year 2023-2024, around 250 participants submitted their interests, 140 entrees were accepted, 60 of whom progressed to internal evaluation and 21 advanced to external evaluation. Dr. Abdulnaser Abdulraheem Fakhrou, from the College of Education, QU, secured the first place with his project titled 'The Challenge Bag' in the category of Non-digital tools. His project comprised a set of tools presented on two-sided cards, encompassing several educational materials, that were challenging and progressively difficult to stimulate student thinking. These tools could be used bilaterally or collectively. It also included a set of wooden pieces collected to form specific forms for progressively challenging tasks. Dr. Khaled Ibrahim Mohammed Abdul Hadi, the theater education teacher from Abu Obeida Preparatory School, achieved the second place with his project title, 'The Plays of the Stories of the Qur'an'. It involved crafting stories of values and meanings from the Holy Qur'an and the Prophet's Sunnah and turning them into theatrical performances.

In the Digital tool's category, the Mathematics Coordinator, Mr. Najeh Muhammad Suleiman, at Saad bin Muaz Primary School, won third place with his project, 'STEAM Projects Production in the Metaverse.' This project explored building STEAM projects within a metaverse environment to enhance students' mathematical problem-solving skills. The second place winner was Ms. Alaa Mohammed Al-Tas, an English language teacher at Mozah bint Mohammed Primary School, with her 'Strong Muslim' application, tailored for girls to enhance Islamic identity and contribute to promoting values.

The first place was won by Mr. Yaman Kashto, an Arabic language teacher at Abdul Rahman bin Jassim Preparatory School, with his 'Cartoon Assistant' project. It introduced the idea of producing cartoon videos to support the Arabic language curriculum for the preparatory school level. It entailed involving students in teaching and learning activities in a distinctive and motivating manner.

The 'Innovators in Education' project hosts an annual event titled 'Meeting with an Innovator', where winning participants present their projects openly to the public, aligning with its vision of fostering sustainable learning communities. An added advantage is the winning projects receive ongoing sponsorship, including the opportunity for participants to join the Entrepreneurship Support Program offered by the Center for Entrepreneurship and Organizational Excellence.

QU in Cooperation with Civil Service and Government Development Bureau Introduces “Researcher” Program for Research and Development Skills

Qatar University (QU) is advancing its programs and curricula to lead the process of research, innovation and capacity building aimed at the development of the economy and local and international partnerships. In order to achieve this goal, the university introduced a program called “Researcher” focusing on Research and Development Skills in cooperation with the Civil Service and Government Development Bureau. The program spans three months, running from March to May 2024.

The program aims to enhance the skills of graduates, particularly job seekers, with the ultimate goal of enhancing the performance of the government sector. Through its cooperation with QU, the Civil Service and Government Development Bureau seeks to develop and improve human capabilities at government bodies, train and enable Qatari employees and provide them with functional skills required to carry out their assigned job tasks. In addition to, contributing to the release of creative potential and cultivating a highly productive national workforce.

In its initial phase, the program was conducted in cooperation with the QU’s Research and Graduate Studies Sector, targeting 20 female job seekers specializing in various literary fields including Law, International Affairs, Sociology, Business Administration, Media, Information Science and Libraries, as well as International Politics, Politics, and Planning and Development. The program aims to:

1. Provide the participants with fundamental and intermediate skills essential for succeeding in a research environment.
2. Enhance capabilities in effective communication, meeting organization, professional writing of correspondences, technical reports and presentations.
3. Develop skills in data creation, classification and analysis, along with proficient use of Microsoft Office Programs and Research Programs efficiently.
4. Gain proficiency in using scientific research databases such as Scopus and SciVal to search, collect and analyze data and access research studies.
5. Utilize social science databases such as JSTOR and ProQuest and humanities databases such as Project MUSE and EBSCO.
6. Apply acquired skills to a real research project at one of the research centers or colleges at Qatar University.

The training plan of the program is structured around two main fields. The first training field aimed at enabling participants to qualify and develop their skills in research methodology, data and chart analysis, scientific productivity measurement and tracking and enhancing research performance. Additionally, to develop effective communication skills. This is

Mr. Saif Al Kaabi, General Director of the Civil Service and Government Development Bureau, delivering a speech at the honoring ceremony for participants in the “Researcher” project.

achieved by holding a series of training sessions led by a group of researchers, administrators and trainers affiliated with the Research and Graduate Studies Sector in the Research Planning and Development Department, Research Support Department, the Engagement and Communication Office. As well as the research centers, Ibn Khaldon Center for Humanities and Social Sciences and the Social and Economic Survey Research Institute (SESRI), which are appropriate to the literary specializations of participants in the program.

The second training field focuses on practical application and graduation projects, designed to apply the acquired skills in a real research setting. This includes conducting field visits to research centers and implementing a research project that includes a research plan, data analysis and a proposal for improving processes according to specialization.

Among the most significant outcomes of the program is the understanding of scientific research, its goals and types, as well as how to formulate research questions in different fields, crafting and testing research hypotheses, and learning about data collection tools, research resources and databases. Furthermore, the role of electronic publishing houses and foundations of library classification. Participants also learned about humanities interpretation techniques and recognition of surveys, types of interviews and observational studies. Also, they learned how to search in Scopus, manage references and citations using EndNote and to how to write legal research and studies.

Moreover, job seekers were trained on how to write, register, market patents, use artificial intelligence techniques, make benchmark comparisons with universities and institutions and analyze the results. The participants also learned about the importance of grants and their role in promoting scientific research, conducting research, writing research papers, preparing presentations and analyzing data, etc.

This program underscores QU’s role as a hub for expertise, bolstering its vision to be the preferred destination for knowledge seekers and a driver of sustainable economic and social development in Qatar.

The Pearl Oyster: Sentinel of the Qatari Marine Environment

Dr. Alexandra Leitão-Ben Hamadou

Research Associate Professor, Head of the Marine and Terrestrial Ecology team, Environmental Science Center - Qatar University

The pearl oyster is an iconic ecosystem builder in the Arabian Gulf, forming the oyster beds, one of the larger seascapes in this semi-enclosed sea. Historically, the pearl oyster formed extensive oyster beds on the western side of the Arabian Gulf. For centuries, the economy of Qatar was based on the pearl oyster industry and fishing activity on the historically abundant oyster bed resources. Nowadays, the Qatari pearl oyster has a new important role as a sentinel and guardian of the health of the Qatari marine environment. To gain a better understanding of the connections between human-induced pressures, climate influences, and their impacts on marine ecosystems, it is crucial, among other things, to develop and validate innovative monitoring technologies to better understand how ecosystems work in order to provide accurate information to support marine protection policies. For the past 4 years, the Environmental Science Center (ESC) at Qatar University (QU) has developed a strong collaborative research relationship with TotalEnergies Qatar (namely the TotalEnergies Research Center Qatar-TRCQ), around the use of the Qatari pearl oyster Pinctada radiata as a sentinel to assess the quality of the Qatari marine environment. The HFNI valvometer (HFNI for High Frequency, Non-Invasive) is a biosensor used to monitor 24/7 the welfare of bivalve molluscs and have a better knowledge of their ethology. It is a cutting-edge remote technique of the latest generation, developed to study online the behavior of bivalve molluscs in situ. The method's principle relies on the regular opening and closing behavior of bivalve mollusks' valves, and how physical or chemical stressors can disrupt their natural pattern of gaping. Stressors alter their normal valve behavior, indicating perturbations in the environment. This technology allows the recording of multiple life traits, biological rhythms, growth rate, death, spawning events, and abnormal group closings. The strength of valvometry is that it can be employed to monitor both changes in bivalve mollusk physiology in situ and water quality in their vicinity.

In the context of a collaborative Qatar National Research Fund/National Priorities Research Program (NPRP11S-0115-180308)-funded project, co-funded by TotalEnergies and together with the collaborative institutions: Université de Bordeaux, CNRS (Centre National de Recherche Scientifique), and Adera, this innovative in situ biotechnology

From the left: Zainab Hizam and Razan Khalifa, Research Assistants at ESC, Mathieu Carrara, Environmental Engineer at TotalEnergies Qatar, Shafeeq Hamza, Lab Technician at ESC, Dr. Alexandra Leitão-Ben Hamadou, Research Associate Professor at ESC, Dr. Bruno Welter Giraldes, Research Assistant Professor at ESC, and Dr. Alexei Godina, Senior R&D Project Leader at TotalEnergies Qatar.

Figure 1. HFNI valvometer on the Qatari pearl oyster.

monitoring tool was applied for the first time to the Qatari pearl oyster (Figure 1).

The project objectives were, among others, to better understand if the combination of less studied pollutions important in the Gulf, such as noise and light pollution, hypoxic events (due to low O_2 in water), and chemical stressors, could influence the behavior and reproductive ability of P. radiata. The Arabian Gulf is ranked highest in terms of noise and light pollution. Nevertheless, the effects of these two forms of pollution on marine invertebrates remain largely understudied. The pearl oysters were equipped with valvometers to evaluate, for the first time, the effect of light and sound pollution on the Qatari pearl oyster. The results of the study clearly showed that when exposed to noise and light pollution, oysters exhibited prolonged closure, consistently reduced valve opening amplitudes, and tighter valve closure. Their social behavior was also impaired, with the oysters presenting a dispersal behavior when subjected to the two stressors instead of clustering as they would in their natural habitat (Figure 2).

The results also clearly showed a decrease in growth rate and that reproduction was impaired, with a lower number of spawning events, as a consequence of light and noise stress.

Moreover, in the context of this collaborative project, the reproductive cycle of the local current populations of the pearl oyster was also determined. The extended spawning period observed, high gonadal regeneration capacity, and high gonadal development rate evidenced in this study would allow almost year-round aquaculture production of larvae without the need for expensive and extensive broodstock conditioning. These results are a major milestone for the future development of the aquaculture production of this species in Qatar, by providing the optimal time for artificial spawning induction in aquaculture. The intensive hatchery production of juveniles would enable the development of restocking and stock enhancement programs of the treasurable, depleted Qatari pearl oyster beds.

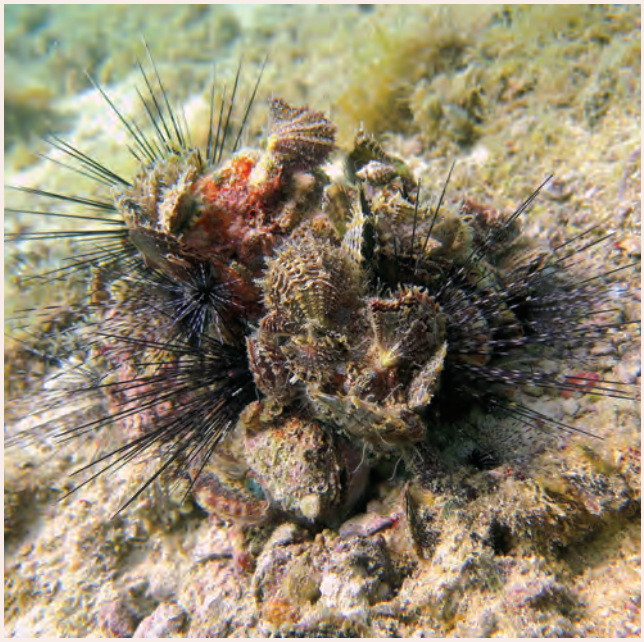


Figure 2. Oysters clustering in the natural environment.

A Research Team from the College of Dentistry Wins Second Place in the International Hatton

Dr. Aala Daud
Assistant Dean for Student Affairs, College of Dental Medicine – Qatar University

From the left: Dr. Aala Daud, Assistant Dean for Student Affairs, Ola Al-Hayk, Abdullah Mansoor, Prof. Kamran Ali, Acting Associate Dean for Academic Affairs, Shahd Al-Najdi, Dr. Najah Al-Hashimi, Clinical Associate Professor and Ms. Rula El Chami, Lecturer of Clinical Oral Health Sciences.

A research team from the College of Dental Medicine, represented by Qatari student Abdullah Mansour, participated in the inaugural conference of the International Association of Dental Research (IADR) in New Orleans, United States, last March 2024. Abdullah presented the findings of their project entitled "Evaluation of Mental Health of Students at Healthcare Education Programs at Qatar University." The decision to delve into mental health educational research stemmed from recognizing its crucial role in overall well-being.

Mental health issues among students pursuing healthcare education, including dental students, have gained increasing recognition in recent years. Globally, the prevalence of mental health problems among healthcare students has been on the mount, raising concerns about their overall well-being. According to the World Health Organization (WHO), health encompasses not only physical well-being but also mental and social well-being. Therefore, based on Qatar University's mission to enhance its student's mental health and wellbeing, the research team, including students Abdullah Mansoor, Shahd Al-Najdi and Ola Al-Hayk, supervised by Prof. Kamran Ali, Acting Associate Dean for Academic Affairs, Dr. Aala Daud, Assistant Dean for Student Affairs, Dr. Najah Al-Hashimi, Clinical Associate Professor and Ms. Rula El Chami, lecturer of Clinical Oral Health Sciences, worked collaboratively to explore this pressing issue in the region.

Ethics approval was obtained from the institutional review board. 1378 health-care students were invited to participate, and two validated questionnaires were used in collecting data, including the Patient Health Questionnaire (PHQ-9), and Depression, Anxiety and Stress Scale (DASS-21), in addition to two open-ended questions investigating risk factors and participants' recommendations. A total 0f 270 students completed the survey, and the results of PHQ-9, Figure 1, showed that 37.7% of participants had mild depression symptoms, 25.5% moderate, 14.8% moderately severe and 10% severe symptoms. DASS-21, on the other hand, revealed that 34.7% displayed severe to extremely severe anxiety symptoms, 15.4% severe to extremely severe stress symptoms and 21% severe to extremely severe depression symptoms, as shown in Figure 2. Results also show that students aged 18-21 years had significantly higher depression and stress scores and that Qatari students had significantly higher anxiety scores. The study revealed factors influencing depression, anxiety and stress among healthcare students, and possible ways to overcome them. Responses to open-ended questions were categorized and grouped by theme. Most students reported exam stress and workload as key factors contributing to their negative mental health and recommendations included reducing academic workload through better curricular planning, training faculty to better support students mentally, and improving mental health services.

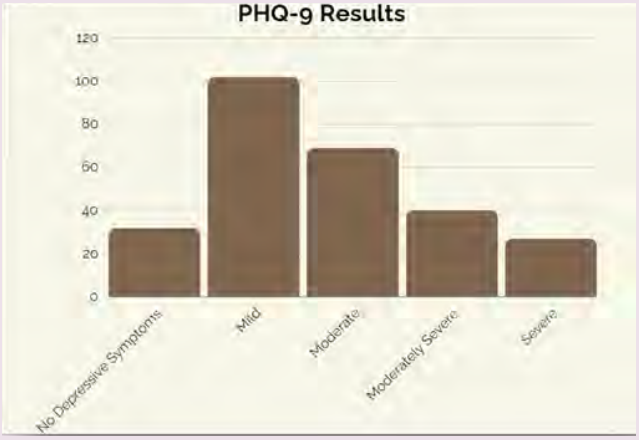


Figure 1. The Prevalence of Depression According to PHQ-9 (Patient Health Questionnaire).

The study's compelling findings on depression, anxiety and stress among healthcare students secured the research team a spot to compete for the IADR "Hatton" Award in New Orleans. As the team's representative for the Hatton competition, Abdullah secured the second place award in the junior category at the competition, making him the first Middle Eastern student to achieve such a distinction of this prestigious award often named as "The noble prize of dental research." He was recognized during the Opening Ceremonies of the 102nd General Session of the IADR, which was held in conjunction with the 53rd Annual Meeting of the American Association for Dental, Oral and Craniofacial Research and the 48th Annual Meeting of the Canadian Association for Dental Research. This recognition has made Qatar University overall, and the College of Dental Medicine in particular, proud and has opened doors for future collaborations to address mental health challenges worldwide.

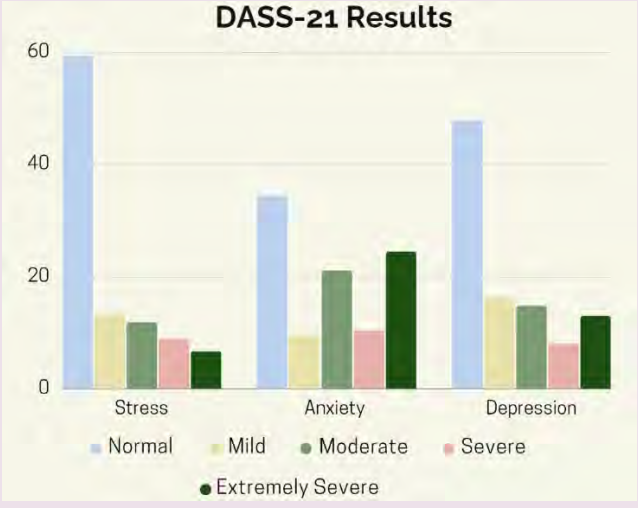


Figure 2. The Prevalence of Different Mental Health Issues According to DASS-21 (Depression, Anxiety, and stress Scale).

Al-Swidi Receives Saudi Award for Environment Management in Conference of Environment Ministers in Islamic World Organized by the ICESCO

Dr. Abdullah Kaid Al-Swidi

Associate Professor of Management, College of Business and Economics - Qatar University

The Kingdom of Saudi Arabia's Award for Environment Management in the Islamic World is provided by the Ministry of Environment, Water and Agriculture in the Kingdom of Saudi Arabia and the Islamic World Educational, Scientific and Cultural Organization (ICESCO). This Award is dedicated to encouraging and stimulating interest in joint environmental endeavours in the Islamic World. It also aims to get exposed to the global experiences in environment protection from an Islamic perspective. By recognizing the merit of the efforts of individuals and institutions concerned with managing natural resources for the benefit of present and future generations alike, this award also contributes to encouraging resource conservation and addressing sustainable development issues in general. The award is granted during the opening session of the Conference of Environment Ministers in the Islamic World, organized by the ISESCO in cooperation with the Ministry of Environment, Water and Agriculture in the Kingdom of Saudi Arabia. Moreover, This Award was launched in 2004 and is granted every two years.

The Award includes the following four categories:

1. Best individual or collective research, achievement or practice in the environment and sustainable development.
2. Best leading practices or activities in the field of environment and sustainable development in Non-Governmental Organizations.
3. Best women's leading activities in the environmental actvities field. Thus, three Awards are allocated to women as follows:
   A. Women's Award in Research, Achievements and Successful Practices;
   B. Women's Award in Public Associations and Non-Governmental Organizations;
   C. Women's Leadership Award in private or government sector institutions.
4. The best environment-friendly Islamic City that fulfills requirements and obligations for achieving environmental, social and economic sustainability.

Dr. Abdullah Al Swidi, Associate Professor in the Management and Marketing Department at the QU College of Business and Economics, was granted the Kingdom of Saudi Arabia's Award for Environment Management in the Islamic World at the Ninth Islamic Conference of the Environment Ministers which was held on the 19th of October in Jeddah. The award was given for the category of Environmental Research and Practices. The following were among his published research studies considered by the Award organizers:

First Research Study: The Consumer's Effect on Green Innovative Practices of Companies

This research focused on studying the importance of the Consumer Effect on promoting companies' orientation toward green or environmentally friendly innovations. Although the Consumers' Effect has become a key factor in motivating companies to adopt green innovation, the mechanism of this effect is still ambiguous. This study contributed to presenting green or environmentally friendly Human Resources Management as a factor that explains how this effect happens by exploring the mediating role of green HRM practices on the relationship between the pressure of consumers who have become more aware of environmental issues and more concerned with them and green innovation. The results of the study showed that the pressure practiced on companies by consumers to become more concerned with the environment makes Human Resources Departments in companies more concerned with the environment, so they provide the necessary training for their employees regarding environmental issues and how to use resources, in addition to how to enhance their capabilities for providing creative and innovative solutions through companies' processes, products or services.

https://onlinelibrary.wiley.com/doi/pdfdirect/10.1111/beer.12459

Second Research Study: Relationship between Green or Environment-Friendly Manufacturing Practices and Corporate Sustainable Performance

This study focused on the relationship between Green or Environment-Friendly Practices and Corporate Sustainable Performance (CSP) by focusing on the mediating effect of Green Innovation (GI) and the moderating effect of green organizational culture. Through the data collected from manufacturing small and medium enterprises in the Kingdom of Saudi Arabia, results confirmed the positive impact of Green Manufacturing Practices (GMP) on Green Innovation, which positively affects Corporate Sustainable Performance. The results also confirmed the positive effect of GMP on CSP through GI, which is enhanced by the presence of Green Organizational Culture. This reflects the importance of developing a strong, environmentally friendly culture to help companies translate GMP into sustainable organizational performance that achieves the company's long-term goals.

https://www.sciencedirect.com/science/article/pii/S095965262203918X

Third Research Study: Role of Green Human Resource Management (GHRM) in Enhancing Employees' Green Behavior and Corporate Environmental Performance

This study emphasizes the role played by Green or Environment-Friendly Human Resource Management, Green Leadership Practices and Organizational Culture in enhancing Employees' Green Behavior that is positively reflected in the environmental performance of organizations. Data was collected from employees in both the public and private sectors in the State of Qatar. The results confirmed the effect of environmental concern, green human resource management and green leadership behavior on green organizational culture. Furthermore, green organizational culture was confirmed to have a significant positive and meaningful relationship with employees' green behavior and organizational environmental performance. Moreover, green organizational culture mediates the relationship between environmental concern, green human resource management, green leadership behavior, and employees' green behavior.

https://www.sciencedirect.com/science/article/pii/S0959652621023301

Fourth Research Study: Determinants of Consumer's Green Purchasing Behavior

Based on studying a sample of university students in the State of Qatar through the development of an integrated model depending on various theories, this research focused on studying and determining factors that motivate citizens to adopt green purchasing behavior.

The results revealed that Green Purchase Behavior is directly influenced by green attitudes and social influence, advice from close people, that reflect environmental concern. In addition, variables such as perceived consumer effectiveness, knowledge about green products, and green initiatives implemented by the government influence the perceived behavioral control, capabilities of persons, to purchase green products, which are reflected in the actual green purchase behavior. Furthermore, other variables such as green values, awareness of environmental issues and ascription of responsibility constitute orientations and attitudes that motivate green purchase behavior, which enhances the actual purchase behavior. Consequently, the developed model offers crucial insights to the policymakers who are concerned with the design of green policies and strategies.

https://link.springer.com/article/10.1007/s10668-020-01220-z

Fifth Research Study: Relationship between Corporate Social Responsibility and Positive Electronic Feedback of Consumers

This study focused on examining the influence of positive Electronic Word of Mouth (eWOM) on the procedures of Corporate Social Responsibility (CSR) by studying the potential influences of the three activities related to social responsibility, whether those associated with the environment, society, or stakeholders on the customer's affective commitment and positive eWOM on the Internet. The research was conducted on a sample of hotel customers in Malaysia. The results revealed that environment-related CSR and stakeholder-related CSR have significant and direct impacts on customers' eWOM and demonstrated the mediating role of affective commitment between the three activities of CSR and eWOM. This study is important for hospitality companies because it confirms the importance of their social responsibility initiatives in improving the satisfaction levels of customers who have become more aware of environmental issues and more positive in addressing them.

https://www.tandfonline.com/doi/full/10.1080/09669582.2020.1818086

Sixth Research Study: The adoption of green building practices in construction projects in Qatar

It is widely known that carbon dioxide emissions and climate change are among the most critical global challenges. This matter led to increasing official concern about all that would reduce bad practices related to the environment. This interprets the concern of governments to adopt green or environmentally friendly practices in the construction sector. This study focused on examining and analyzing the influences of several environment-related variables such as (environmental concern, governmental support for green practices, individual commitment to green engagement and social influence in this direction) on a sample of contractors and engineering consultants toward their adoption of environmentally friendly practices in the field of construction. The results of the study showed that environment-related variables such as individual green engagement, sustainable government support and environmental concern have strong effects on the individuals' orientation to adopt environmentally friendly practices in the field of construction.

https://www.emerald.com/insight/content/doi/10.1108/MEQ-12-2018-0208/full/html

NSPP First Winner QU Student Shares Her Research Achievement on International Level

Dr. Jolly Bhadra

Senior Module Development and Publication Specialist, Qatar University Young Scientists Center

In pursuit of the strategic goals of Qatar University to distinguish its graduates and enhance their research and scientific skills, Qatar University Young Scientists Center (QUYSC) selected Sarah Abu Al-Ela to share her research experience at the Saudi International Pharmaceutical Sciences Conference (SIPHA) 2024 in Riyadh - Saudi Arabia, from 22 – 24 January 2024. Her selection to participate in this conference came after winning first place in the second cycle of the National Science-Research Promotion Program (NSPP). NSPP is one of the most important programs offered by the QUYSC in cooperation with the office of Research Support (Grants & Contracts). It aims to provide an opportunity for high school and undergraduate students to explore the world of research and innovation and to strengthen their creative and leadership skills, in addition to supporting and empowering youth in the fields of Science, Technology, Engineering and Mathematics (STEM) and preparing them for the future as a highly skilled workforce in these fields. NSPP was established in December 2020, based on the center's belief in the importance of enriching the scientific research skills of young people and enabling them to contribute to the scientific renaissance of Qatar.

Through the SIPHA Conference, Sarah Abu Al-Ela presented a research poster on a research project "A Novel treatment for sepsis-induced cardiac inflammation" under the supervision of Dr. Zaid Hussein Hasan Alma'ayah, Assistant Professor of Pharmaceutical Sciences, from College of Pharmacy at Qatar University. The research focused on developing a new treatment for cardiac inflammation resulting from sepsis, a critical medical condition that is one of the world's biggest health challenges due to the limitation of available treatment options. Her participation in the conference is an evidence to the distinguished level of scientific research presented by researchers at Qatar University. Furthermore, to being an opportunity to present her research results

Student Sarah Abu Al-Ela presenting her participation in the conference Saudi International Pharmaceutical Sciences (SIPHA) 2024.

at the international level and to learn about the latest developments and medical solutions that help in the growth of the healthcare sector. Sarah expressed, by saying, "My participation in this event was an enriching experience where I had the opportunity to present our research project and discuss the scientific procedures and results we have reached, as well as to learning about scientific developments and valuable information shared by experts in the field of pharmacy. This would not have been possible without the continuous support of the NSPP team, which qualified me to participate in this conference."

Prof. Noora Jabor Al-Thani, Director of Qatar University Young Scientists Center (QUYSC), emphasized the center's continuous commitment to cultivating in students the essential qualities of creativity, research, lifelong learning and awareness of national and international issues using various modern methodologies. She highlighted the critical role that continuous learning and diverse experiences, encompassing research, seminars and conferences, play in nurturing the skills that empower students to realize their aspirations and elevate their ideas to a level of sophistication that exerts a tangible impact on society and the world in general.

New Strategies for Developing a Sustainable Air Conditioning System in Poultry Houses in Hot and Humid Regions

Dr. Djamel Ouahrani

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

Research Team:

Dr. Nesreen Ghaddar, American University of Beirut

Dr. Kamel Ghali, American University of Beirut

The global population growth has led to an increased demand for animal products, particularly poultry. Poultry farming is preferred due to its smaller footprint and lower environmental impact.

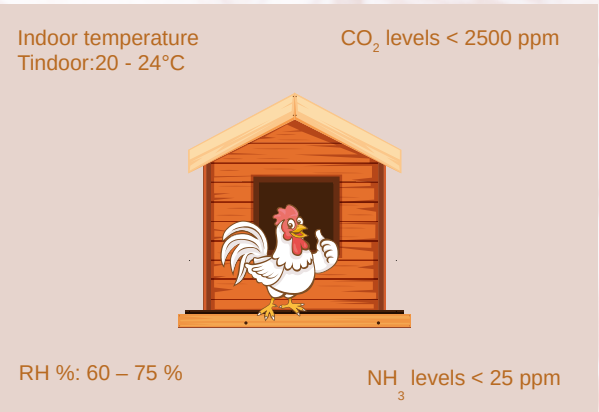


Figure 1. Indoor comfortable environment for poultry house.

Poultry production faces many challenges specially to provide optimal environmental conditions inside poultry houses. The welfare of poultry is crucial for high-yielding meat production. Factors like indoor temperature, relative humidity and air quality inside poultry houses significantly affect bird welfare, especially in hot and humid regions like Qatar where high indoor temperature and humidity can lead to heat stress in birds and increase the risk of fungal diseases. This can result in higher mortality rates and reduced meat production quality and quantity. Furthermore, the high production of ammonia (NH_3) and carbon dioxide (CO_2) by chickens can deteriorate air quality inside poultry houses, affecting bird health. Therefore, maintaining optimal conditions inside poultry houses is essential, including temperature (20°C–24°C) and humidity (60%–75%), while keeping NH_3 and CO_2 levels below certain thresholds (Figure 1).

Most if not all commercial poultry houses are equipped with ventilation and cooling systems, such as direct evaporative cooling (DEC) systems, to maintain the desired conditions. DEC systems become less effective in highly humid climates, which necessitates the exploration of alternative cooling methods.

In this research project, **Dew-Point Indirect Evaporative Cooler (DPIEC)** is projected as an alternative to DEC, capable of providing cooling while maintaining constant humidity. However, its efficiency decreases in highly humid conditions. To address the limitations of DPIEC in humid climates, **a hybrid system combining DPIEC with a desiccant system** is projected. This system can reclaim water. However, the choice of adsorbent material in the desiccant system is critical. Conventional materials like silica gel have been used, but new materials called metal organic frameworks (MOFs) offer advantages such as higher water uptake and lower regeneration energy. Here comes **Cost Considerations** in the selection of adsorbent material (silica gel or MOFs) that affects the system's investment and operational costs, including energy consumption. To optimize system performance, mathematical models and artificial neural networks (ANNs) have been used to develop a sustainable ventilation system for poultry houses in hot and humid regions. Furthermore, **Life Cycle Cost (LCC)** analysis was conducted to evaluate the economic feasibility of the optimized systems and provide recommendations.

Description of the components and operation of the System

The key components and how the system work as follows:

System Components:

1. Dehumidification System (comprising adsorbent beds 1 & 2 and HX 1):

- Solid adsorbent beads are packed in cylindrical beds.
- Two beds operate out of phase to ensure continuous dehumidification.
- An air-to-air heat exchanger (HX 1) preheats one bed's purge airflow with the hot feed outlet from the other bed.

2. Evaporative Cooling System (DPIEC and water tank):

- A cross-flow DPIEC configuration is selected for efficient cooling.
- A water tank stores the water required for DPIEC operation, ensuring uninterrupted cooling.

3. Water Reclamation Unit (HX 2):

- Moisture in the air is condensed and collected in the DPIEC water tank.

System Operation:

The system operates based on outdoor air conditions and the desired indoor conditions. Here's a step-by-step explanation of how it works:

1. Dehumidification Stage

- Outdoor air enters the dehumidification system.
- The required dehumidification level depends on outdoor humidity.
- A fraction of the airflow is bypassed as needed to meet indoor conditions.
- The remaining air is mixed with the DPIEC working airstream.
- The resulting air mixture is dehumidified in the desiccant bed undergoing adsorption.

2. Heat Recovery

- The hot and dry air is mixed with the remaining outdoor air.
- The resulting air is sensibly cooled with outdoor purge air for heat recovery.

3. Evaporative Cooling

- Outdoor air enters the DPIEC, where it's divided into two streams.
- The product air is cooled in dry channels and supplied to space.
- The working airflow absorbs heat and evaporated water in wet channels.

4. Desiccant Regeneration

- The second desiccant bed is regenerated using temperature swing.
- The pre-heated purge airflow is heated to a regeneration temperature.
- The heated air enters the desiccant bed to desorb water vapor.
- The cooled and dehumidified purge air is discharged outdoors, and condensed water is collected.

Operation Optimization:

- The system operates hourly to maintain indoor air conditions (temperature, RH, CO_2, and NH_3 concentrations) while regulating supply air conditions and flowrate.
- The supply air humidity is controlled by the air humidity at the bed outlet, which affects the DPIEC's operation and supply temperature.

The system provides efficient ventilation, cooling and dehumidification for the poultry house

while reclaiming water to reduce the reliance on external water sources. The optimization of various parameters is crucial to achieving these goals while minimizing energy consumption. Here are the key points and findings:

1. System Sizing and ANN Training

The results and discussion are based on the mathematical models, validation, system sizing, artificial neural network (ANN) training, performance evaluation and economic analysis for a hybrid ventilation and cooling system designed for a poultry house in a hot and humid climate in Qatar. Key points and findings are:

- The subcomponents of the hybrid system, including DPIEC and packed beds, were sized for both silica gel and MOFs metal organic frameworks (MIL-101-Cr).
- An ANN was trained to predict water vapor adsorption on these materials.
- The ANN was trained with datasets covering a range of inputs, including airflow rates, temperatures, humidity levels and regeneration temperatures.

2. Performance Evaluation

- The hybrid system was optimized over the entire cooling season in Qatar (April to November). It achieved higher water reclamation and lower energy costs.
- The system successfully maintained indoor temperature, humidity, CO_2, and NH_3 levels within acceptable ranges.
- The optimal operating conditions (airflow rates, bypass fraction, and regeneration temperature) were determined for different months with varying outdoor humidity levels.

Figure 2. The experimental set-up at Zero Emissions lab at Qatar .University

3. Economic Analysis

- An economic analysis was conducted to compare the overall costs (investment, operating, and maintenance) of the hybrid systems using silica gel and MIL-101-Cr.
- The cost analysis indicated that the MIL-101-Cr-based system had a payback period of 11 years compared to the conventional silica gel-based system. MIL-101-Cr also offered lower running costs.

4. Conclusion

- Both silica gel and MIL-101-Cr were found to meet the indoor air quality constraints of the poultry house. However, MIL-101-Cr significantly reduced thermal and electrical energy consumption by 17% and 48%, respectively, compared to silica gel over the entire cooling season.

This study was part of collaboration research project between Qatar University and American University of Beirut Lebanon financed by Qatar National Research Fund (NPRP12S-0212 190075).

Dr. Djamel Ouahrani

The Qatari Corpus of Argumentative Writing

Dr. Abdelhamid Ahmed
Assistant Professor in English Language Education, Core Curriculum Program, Deanship of General Studies - Qatar University

In fulfilment of Qatar National Vision (2030), the current research project aligns with developing the first pillar of this vision: Human Development. The Qatari Corpus of Argumentative Writing, the first corpus of its type, is the outcome of a three-year National Priorities Research Program (NPRP) research grant (2019-2022) funded by the Qatar National Research Fund (QNRF) in Qatar. It is a ground-breaking bilingual writer corpus focusing on Qatari university students' argumentative writing skills in L1 Arabic and L2 English. The main aims of this project were twofold: First, to build the Qatari Corpus of Argumentative Writing to analyse students' use of metadiscourse markers and voice in L1 Arabic and L2 English. Second, to analyse students' metalinguistic understanding of their use of metadiscourse and voice markers. These rhetorical devices refer to the various linguistic ways through which writers project themselves and their voice into their written arguments to signal their orientation to the content of writing and engage with their readers. By analysing texts from a diverse academic background, this corpus offers rich insights into the bilingual writing process, revealing patterns in language use. This makes it a vital resource for researchers and L1 Arabic and L2 English educators and corpus linguists, helping to inform teaching methods and cross-linguistic studies in a bilingual environment.

Experts from the following universities collaborated to build this corpus: Qatar University (QU), the University of Exeter (UoE) in the UK, and Hamad Bin Khalifa University (HBKU) in Qatar. This project was led by Dr. Abdelhamid Ahmed, an Assistant Professor in English Language Education at the Core Curriculum Program. The Qatari Corpus of Argumentative Writing was developed in partnership with an expert team comprising Prof. Debra Myhill, Professor Emerita of Language and Literacy Education and Dr.Esmaeel Abdollahzadeh, Senior Lecturer in Language Education from the School of Education at the University of Exeter. Additionally, Dr. Wajdi Zaghouani, an Associate Professor in Digital Humanities at HBKU, contributed his expertise. Their combined knowledge of language education and digital humanities significantly enriched the project, offering a multifaceted approach to understanding argumentative writing in L1 Arabic and L2 English.

The size of the Qatari Corpus of Argumentative Writing is about 200,000 tokens of argumentative writing by Qatari university students in L1 Arabic and L2 English. The corpus contains 195 argumentative essays in L1 Arabic and 195 in L2 English, written by the same group of students (159 females and 36 males) on diverse topics. The students were native Arabic speakers proficient in English as a second language. The corpus is divided into Arabic and English sections, tagged for part-of-speech (POS) annotated files in UTF-8 encoded text format. Meta-data in CSV format contains information about the students (gender, major, first and second languages) and the essays (text serial numbers, word limits, genre, writing date, time spent and location). Details on essay writers, topic selection, pre-analysis text modifications, proficiency level and gender are also included. Statistical analyses were applied to examine the corpus. The corpus offers a valuable bilingual data source in L1 Arabic and L2 English, which can serve as a useful repository for researchers and educators of first and second language writing.

Building the Qatari Corpus of Argumentative Writing as a learner corpus has significant implications for language education and research. It aids in understanding the language learning process by analysing learner errors and usage patterns, which can help identify common challenges learners face. Using this corpus, researchers and educators can develop more effective teaching materials tailored to the specific needs of Qatari university students. It also enables the evaluation of language teaching methods and materials, fostering learners' linguistic competence and offering insights into second language learners' writing, as well as pragmatic and interlanguage development. This corpus is thus a valuable tool for enhancing language education and research in both Arabic and English.

Dr. Abdelhamid Ahmed

The Qatari Corpus of Argumentative Writing offers several opportunities for future research. These include contrastive rhetoric studies to understand the rhetorical and linguistic differences in Arabic and English argumentative writing, researching L1 Arabic and L2 English writing development among Arabic-speaking students and analysing language transfer effects on argumentative writing. It can also be utilised to inform writing pedagogy for Arabic-speaking students. Additionally, this corpus could aid cross-linguistic research, examining various linguistic aspects and their impact on argumentative writing in both Arabic and English.

In conclusion, the Qatari Corpus of Argumentative Writing represents a significant advancement in language education and bilingual corpus research. It not only aligns with Qatar's National Vision 2030 by enhancing human development but also provides a unique, dual-language resource for understanding the intricacies of bilingual argumentative writing. The collaborative efforts of Qatar University, the University of Exeter, and Hamad Bin Khalifa University have resulted in a comprehensive corpus that opens new avenues for linguistic research, teaching methodology refinement and cross-cultural communication enhancement. With its rich data set, the corpus is a substantial contribution to academic and practical aspects of language learning and teaching in a global context.

Innovation
Oasis

Interview with an Inventor:

Abdulrahman Abdulaziz Al-Harami

Assistant Data Collection Specialist, Social and Economic Survey Research Institute (SESRI) - Qatar University

Qatar University seeks to develop innovation among Qatari youth and promote technological progress and sustainable development. To this end, it has established an environment that nurtures young individuals in all fields, empowering them and providing opportunities to showcase their capabilities. In response, Qatari youth are eager to translate their ideas into innovative projects that benefit the environment and society. As an example of the creative young minds, we have the privilege to interview Abdulrahman Al-Harami, a Data Collection Specialist from the SESRI, to discover his innovation and contribution to sustainable environmental solutions.

Abdulrahman, tell us about yourself.

My name is Abdulrahman Abdulaziz Al-Harami. In 2010, I commenced my career in survey research. Throughout this time, collaborating with professionals at Qatar University, undergoing rigorous training at the Research Institute at the University of Michigan, and attending esteemed universities like the Dutch University of Utrecht and the National University of Singapore, has developed my skills and broadened my comprehension of survey research. This endeavor facilitated achieving success and enabled me to contribute to this field. Leveraging this experience, I found an opportunity to impart knowledge and expertise to the community. With the grace of Allah, I successfully trained over 850 individuals in this domain. I have also been engaged in supervising data collection processes for over 85 survey research projects. Undoubtedly, there are constant opportunities for learning and skill development, prompting me to persist in my learning journey and try to develop my skills in my professional specialization continuously.

Tell us about your patented invention.

The invention pertains to drinking straws utilized for beverages and may be referred to as “air-reduction drinking straw.” Its purpose is to reduce the amount of air ingested by the user while drinking beverages. Consequently, this mitigates bloating and discomfort typically induced by conventional drinking straws. The problem with existing drinking straws in the market lies in their tendency to accumulate air within the straw’s internal space. When the user drinks any drink using regular drinking straws, users inadvertently ingest the air trapped inside the straw during drinking until it reaches their mouth. Subsequently, when the user ceases drinking, the liquid within the straw descends back into the cup, resulting in the reformation of air inside the straw. The user repeatedly ingests air until the beverage is consumed, repeating this process several times until the drink is finished. The consumption of liquids through straws is a known factor that can contribute to increased gas in the digestive system, as highlighted in articles published by health organizations like the Mayo Clinic. By minimizing the amount of air within the drinking straw, the present invention resolves this issue.

What motivated your innovation despite working in a slightly different research environment? Additionally, how has Qatar University supported you?

One of the primary things I aim to change for the youth of our nation is the idea that innovation is limited to certain individuals with specific expertise and attire. The common perception of an innovator or inventor often includes someone wearing glasses and a lab coat, utilizing specialized instruments beyond our comprehension. However, the truth is that everyone of us has the potential to innovate. It simply requires a shift in mindset and perspective. We should strive to develop the tools and our surroundings enabling us to innovate and enjoy the rewards that come with it. Simply, whenever you encounter a problem with a tool, notice a flaw or identify an opportunity for improvement, you have the potential for innovation.

As for the support I received from Qatar University, I am grateful for the assistance provided by the Intellectual Property Office, which has supported me in the process of patent applications. Over the course of nearly four years, the office coordinated and facilitated communication between the patent attorney and myself. Ultimately, thanks to Allah Almighty, we were able to secure the patent. Additionally, the Intellectual Property Office finalized the patent registration procedures. I extend my heartfelt gratitude to the management and staff of the office for their support.

Did you find difficulties on your way to innovation and how did you overcome them?

Undoubtedly, I encountered numerous challenges, particularly in 2018, due to my limited experience and knowledge in the realms of innovation, research and product development. Additionally, I grappled with technical and legal challenges as someone inexperienced in the field at that time. With gratitude to Allah, persistent efforts and a

commitment to continuous learning, I successfully overcame these obstacles. I dedicated significant time and effort to researching and reading relevant literature to enhance my knowledge and understanding of these processes. Additionally, I sought counsel and guidance from experts in the fields of innovation and development. Furthermore, I conducted practical experiments at home using the simple available tools, enabling me to explore ideas and learn from both failed experiments and mistakes. Through the guidance of Allah, I honed my skills, deepened my understanding, and bolstered my confidence in the innovation development process, thereby overcoming the challenges I encountered. I was able to develop my skills, thanks to Allah, and increase my understanding and confidence in the process of developing innovations, thereby overcoming the challenges I encountered.

Drawing from your innovation experience, what advice would you offer to young minds today? What elements do our students require to enhance their research and innovation capabilities?

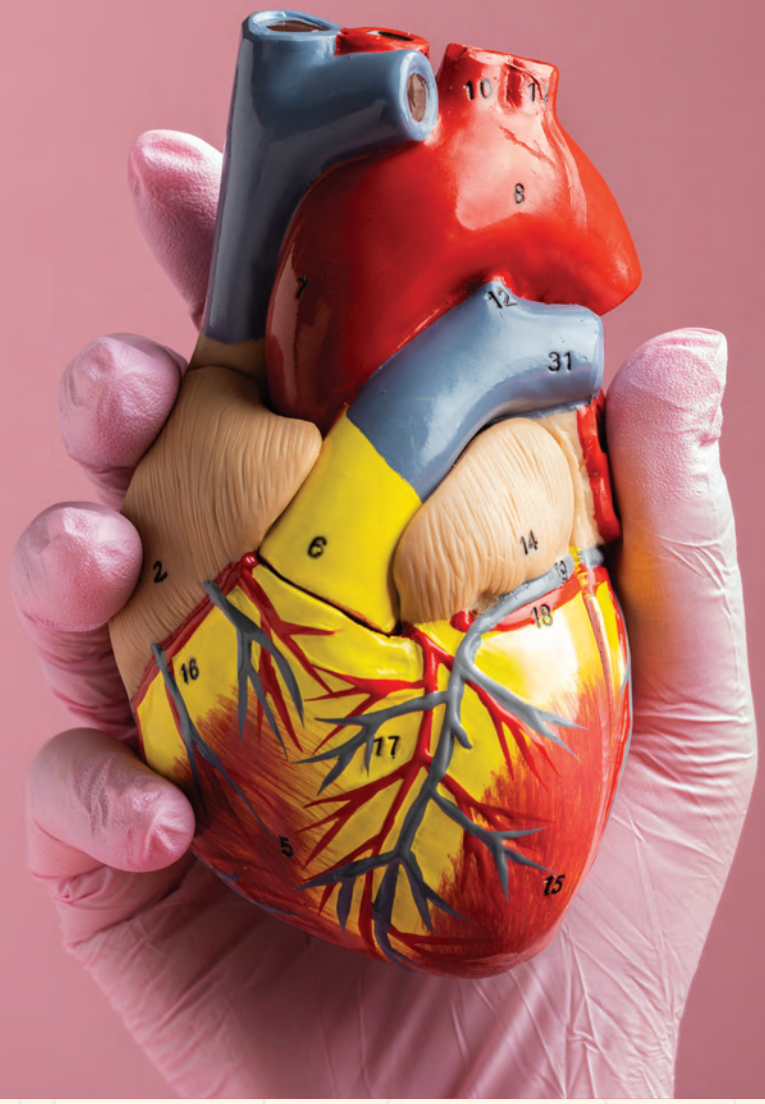
I encourage both myself and my fellow young individuals to avoid staying in our comfort zones and instead use our time to improve ourselves and contribute to our nation. We should confront challenges and overcome them, as there is a sense of fulfillment in tackling obstacles and achieving our goals. Ultimately, these accomplishments require hard work and determination. Let us be prepared for challenges and approach them with no fear of failure. The path to innovation demands the courage to explore new ideas and achieve change. With a view to fostering the innovation skills of my fellow male and female students, I encourage their participation in workshops and training programs focused on innovation, such as those offered by Qatar University in this regard. In addition, reading books and articles on innovations can be highly beneficial. In my opinion, one of the most effective methods for enhancing innovation skills is learning to make handicrafts, even if they are simple things. Through crafting, individuals become accustomed to using tools, creating and modifying objects. This practical experience lays a solid foundation for pursuing innovative ideas in the future.

What are your upcoming research goals? How do you see the future of innovation at Qatar University?

My main goal is to share knowledge about discovering innovative ideas, making innovation and marketing it, with the aim of making these concepts accessible to individuals within the community. Over the past years, I have dedicated myself to writing a book that aligns with this goal. Furthermore, I am currently developing a comprehensive plan to foster the growth of this field in both Qatar and the Arab world in the near future. Regarding the second part of the question, I envision a promising future for innovation at Qatar University. The university boasts substantial resources and capabilities dedicated to fostering research and innovation. Through its commitment to providing an advanced learning and research environment, offering funding and support programs and fostering collaboration and communication with innovators, Qatar University can play a prominent role in influence in achieving progress and success in the realms of entrepreneurship and innovation.

QU-Vitro: A Programmable Pump for Cardiovascular Investigations in the Laboratory

Dr. Huseyin Yalcin
Research Associate Professor, Biomedical Research Center – Qatar University

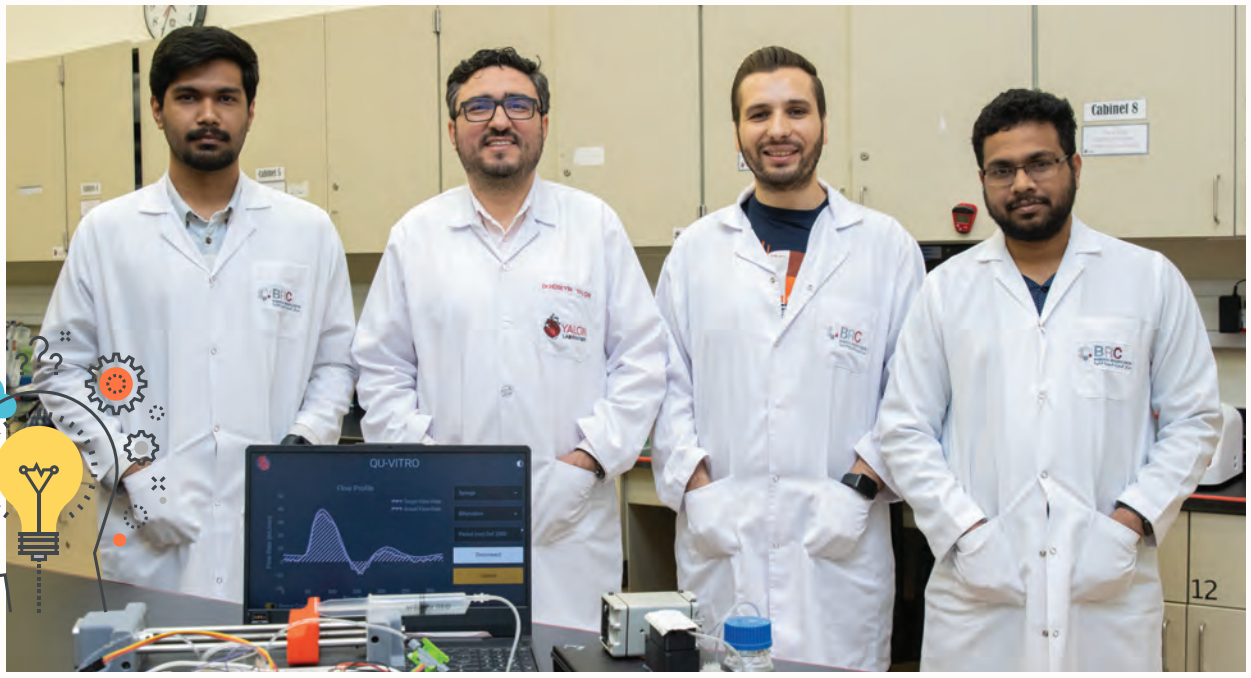


Qatar University researchers are carrying out an important project that is expected to have a significant impact on cardiovascular investigations. The project is on designing and developing a programmable pump for mimicking the blood flow in the cardiovascular system. This pump will be useful for laboratory experiments on cultured cardiac cells to investigate the biology of these cells in healthy and diseased states.

Dr. Huseyin Yalcin, among the principal investigators at Biomedical Research Center, leads the project team. Other team members are Dr. Muhammad Chowdhury, Assistant Professor from Electrical Engineering Department, Dr. Abdulla Khalid Al-Ali, Associate Professor from Computer Engineering Department and Dr. Abdelali Agouni, Professor of Pharmaceutical Sciences from the College of Pharmacy. Research assistants working on the project are Sajid Islam, Onur Mutlu, Noaman Mazhar and Muhammad Zohaib.

Before getting into details about this innovative project, let us start with a brief description of the cardiovascular system, which is within the scope of this work. The cardiovascular system is responsible for circulating nutrients and oxygen throughout the body and removing waste and carbon dioxide from the tissues. Heart is the driving pump, and vasculature is the distribution network. Inside surface of blood vessels and heart walls are lined with a single layer of endothelial cells and these cells are constantly exposed to mechanical forces from the flowing blood, known as hemodynamics. Hemodynamic forces are critically important for maintaining a healthy cardiovascular system through biological signals. Abnormalities in this balance due to disturbed hemodynamics have been shown to contribute to many cardiovascular diseases (CVDs) such as aneurysms and atherosclerosis. In-vitro (i. elatin meaning in the glass, is defined as growing cells outside the body) systems provide a valuable platform to culture cardiac cells in the laboratory and expose them to native-like physiological environment for studying the initiation and progression of CVDs. Such systems are also very useful for testing cellular responses to drug therapies as well as for tissue-engineering applications since an important factor for the growth of tissue engineered cardiac replacements are mechanical signals by the fluid flow. Blood flow within the cardiovascular system is complex in nature and is pulsatile from the beating heart. For in-vitro systems, replication of pulsed flow over cultured cells matching hemodynamic parameters such as shear stress and flow velocity is required for accurate results. Perhaps, the most important aspect of such an approach is how closely the generated flow matches the native flow, which is closely related to the way it is generated. In current practice, there are several systems such as peristaltic pumps, piston pumps, pneumatic pumps, or syringe pumps for the generation of continuous fluid flow over cultured cells. However, all of these systems have major limitations and none of the existing systems in the market fully replicate complex flow profiles over extended durations while maintaining a sterile environment.

One of the major research groups conducting cardiovascular research in Qatar University is Dr Huseyin Yalcin`s lab at Biomedical Research Center. This group carries out multiple investigations on cardiovascular diseases aiming to advance cardiac therapies. Such investigations involve clinical collaborations with Hamad Heart Hospital as well as experiments with animals (in vivo) and with cultured cells (in vitro) in the laboratory. In vitro experiments are integral part of these investigations and in these experiments; cells are cultured and are exposed to well-defined conditions seen in health and disease. This way, factors influencing cardiac diseases can be explored and more importantly, therapeutic approaches such as novel drug compounds can be tested. For in vitro experiments in general, it is important to conduct these investigations in a way that closely mimics relevant native environment in vivo. Hence, in Dr Yalcin`s investigations, cells are cultured in a dynamic manner using flow perfusion systems to mimic native hemodynamic environment within blood vessels. Throughout the years, in the metabolic research lab, several flow perfusion systems have been purchased and utilized for these investigations. In these systems, different flow pumps were used which included syringe pumps, pneumatic pumps, and peristaltic pumps. While these pumps were useful for some aspects, they were not good in some other aspects. For example, syringe pump could



From the left: Noaman Mazhar, Dr. Hussein Yalsin, Onur Mutlu and Sajid Islam.

displace fluid in a practical manner but is not appropriate for continuous flow applications since amount of fluid flow is limited with the volume of the syringe that is used. Peristaltic pumps can be used for continuous flow applications however, it is difficult to control the flow profile since the flow is generated by a mechanical force delivered to the flexible tube located around the rotor by rollers placed on the motor shaft. Pneumatic pumps are more advanced than syringe and peristaltic pumps and these use air compression to move fluid from a reservoir. These can be used for generating continuous and complex flows over cultured cells. However, these systems are bulky, difficult to operate and are associated with inconsistencies between desired and achieved flow profiles due to compressibility of air.

Dr. Yalcin has a background in mechanical engineering. Overseeing different flow pumps for his recent investigations, he came up with a novel idea of combining different aspects of flow generation principles of existing systems to design a compact, programmable, continuous flow-generating pump, useful for cardiovascular investigations. Following initial design concepts, a team of researchers as introduced above was assembled and a High Impact Grant application was submitted to secure the fund needed for developing the concept to a working prototype. The grant was successful with very positive reviews in the first submission, demonstrating the high potential of the project to impact the field. The invention is named “QU-Vitro” by the team with the project title “A Programmable Physiological Cardiovascular Flow Mimicking Pump for In Vitro Perfusion Experiments.” The project is currently active and researchers have been working actively for developing the working prototype. Details of QU-Vitro cannot be shared in this article to protect the invention. The study is planned to be completed by the end of 2024, and upon its completion, the team hopes QU-Vitro supports cardiovascular research in the nation as well as globally.

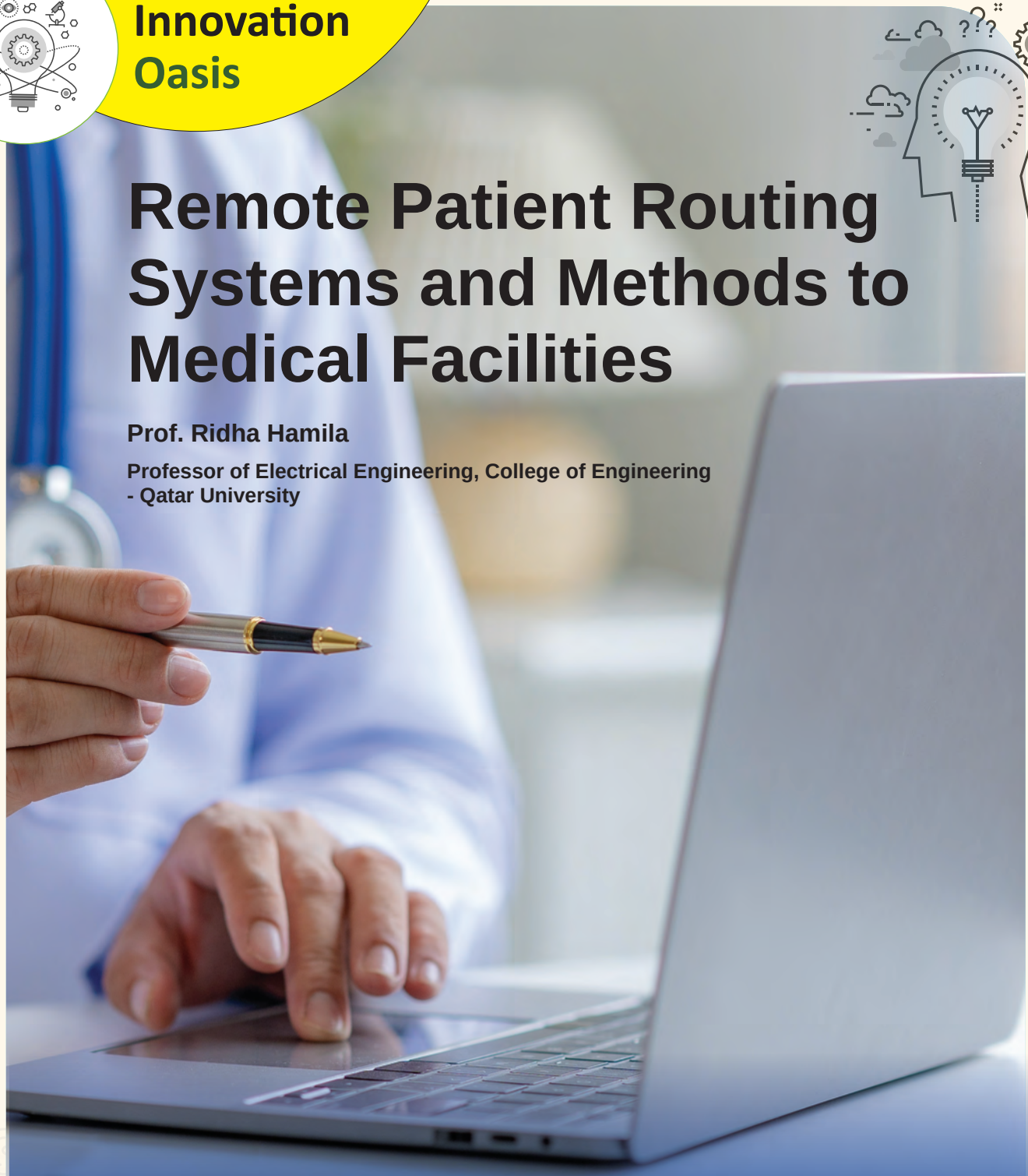
LPI QU BRC Research Associate Professor, Dr. Yalcin said: “Qatar has been producing cutting edge science and inventions in many fields and with this project. We are aiming to develop a novel, compact and practical system useful for cardiovascular research labs around the world.”

Biomedical Research Center Director Prof. Asma Al-Thani said: “BRC is a leading center in the nation conducting multiple important projects in medical and engineering fields. This new invention is a good example of multidisciplinary research combining engineering and medicine to improve human health locally and globally, aligning very well with our mission. This project also supports our efforts to promote Biomedical Engineering in our university.”

Remote Patient Routing Systems and Methods to Medical Facilities

Prof. Ridha Hamila

Professor of Electrical Engineering, College of Engineering - Qatar University



Typically, patient scheduling is either independent across hospitals or dependent on patients' choices (e.g., calling a hospital or multiple ones to book, though the patient may or may not get a clinical bed or visit). These techniques involve human interactions, delay, and, in many scenarios, are not optimal. Further, patient scheduling is sometimes based on the results of the screening and triaging process that takes place once a patient enters the treatment area. This results in long queues that prolong the stay of patients at the medical facility (MF), thus endangering other patients. For example, the COVID-19 outbreak imposed unprecedented pressure on healthcare systems around the world. Accordingly, there is a need for a solution to efficiently manage healthcare facilities for remote patient scheduling.

The present disclosure provides new and innovative systems and methods for the efficient distribution of patients across heterogeneous medical facilities. In an example, a system for remote patient assignment includes a processor in communication with a memory. The processor is configured to receive a scheduling request from a computing device of a patient over a network; receive information from each of a plurality of medical facilities; determine an estimated service time for the patient to be treated at the appropriate medical facility, wherein the estimated service time includes an estimated travel time for the patient to arrive at a respective medical facility, an estimated waiting time for the patient at the respective medical facility, and an estimated consultation time with a medical professional for the patient; select a medical facility of the plurality of medical facilities that minimizes a sum of the determined estimated service time for the patient and a probability that the determined estimated service time for the patient is greater than or equal to a predefined threshold; and assign the patient to the selected medical facility.

The system provides a framework that distributes the patients across the heterogeneous medical facilities so that a weighted sum of the expected service time and service time trail probability for all patients is minimized. The provided system prioritizes patients with severe or critical conditions over others who can tolerate more delay. Based on the model, an optimization problem is formulated as a convex combination of both expected service time and service time tail probability metrics, and an efficient iterative algorithm is used to solve it. The inventors demonstrated that the system provides a performance improvement (up to 50%) as compared to other algorithms and typical solutions.

Devised System Model Architecture:

The novel unified framework for differentiated services in smart healthcare systems consists of (Figure 1):

1) The control unit is responsible for maintaining the states of the medical facilities e.g., the state of the current number of patients, occupancy state, availability state, etc.
2) These states are continuously updated based on assignment decisions.
3) The algorithm assigns patients to medical facilities to satisfy their needs while considering the different capabilities of each MF.
4) The arrival rate of requests and the service rates are estimated based on a window-based method.
5) Travel time from the patient's location to the MF is obtained through the estimated time of arrival (ETA) model.
6) The communication between different blocks is shown in the following schematic:

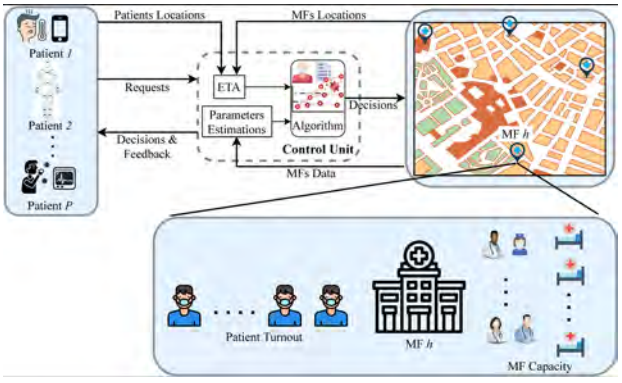


Figure 1. Devised System Architecture for Remote Patient Assignment in Medical Facilities.

Prof. Ridha Hamila

The present disclosure provides new and innovative systems and methods for the efficient distribution of patients across heterogeneous medical facilities. For example, a system for remote patient assignment includes a processor in communication with a memory. The processor is configured to receive a scheduling request from a computing device of a patient over a network and to receive information from each of a plurality of MFs to:

1) Determine an estimated service time for the patient to be treated at each of the plurality of MFs, wherein the estimated service time includes an estimated travel time for the patient to arrive at a respective MF, an estimated waiting time, and an estimated consultation time with a medical professional.
2) Select a medical facility that minimizes the sum of the determined estimated service time for the patient and the probability that the determined estimated service time is greater than or equal to a predefined threshold.
3) Assign the patient to the selected medical facility.

Inventor Business Card

Dr. Mustafa Oguz Afacan

Associate Professor of Economics, College of Business and Economics - Qatar University

جامعة قطر
QATAR UNIVERSITY

Dr. Mustafa Afacan, how would you like to introduce yourself to the magazine readers?

I can easily say that I am a passionate learner. I love learning new things, and that's why I constantly read articles from different fields. I also enjoy hunting for new ideas to blend my expertise in economic theory with other disciplines. Besides this, I like reading novels, playing console games and watching sports.

Tell us about your patents registered at Qatar University.

With my team, Prof. Ahmed Khalifa, Professor of Economics at the College of Business and Economics, a team of students from the College of Engineering at Qatar University and I, provided three patents applications. The main idea of our work is answering a simple question in Economics: How can we use the economic resources efficiently with fairness and transparency? For example the referee selection algorithm is how can we allocate a scare resource. Then, together, with QU students, we built our technology platforms to simplify the selection process based on our mathematical and technology solution. For the first patent application, the proposed algorithm will decrease the disputes in the games and the interruptions among the audiences in general as we have taken their preferences into consideration in selecting the assigned referee in their match. The same algorithm has implications in allocating the resources efficiently in different economic sectors as well.

What do you mean by algorithm? Can it serve fields other than sports?

The origin of the term is based on the Khawārizmī in our region and the origin of computer science in general. The algorithms provide a systematic approach to problem-solving, enabling efficient and reliable solutions. Suppose that we have a problem in allocating students among different majors at Qatar University, depending on their preferences, skills, grades and capacity constraints. Backed with a well-justified economic theory, we can build an algorithm for this allocation problem to solve it in an optimal way. Another example of our algorithms is in the agriculture sector "crop allocation among the farms based on their preferences and the annual market demand" and a third patent application was submitted recently about "market design for agriculture products." Similarly, we pioneered a very important algorithm in carbon permits allocation through our research projects. Our approach is holistic, as we start from the economic theory, then we design our own algorithm, then building a new Qatari technology.

If you could create an invention that would impact sustainable economic development, what would it be?

Each algorithm that our team at Qatar University provides will impact sustainable economic development in each economic sector in Qatar and beyond. We are in the process of generating elaborate ideas in the coming 36 months and how they all solve sustainability issues in our society.

What advice do you have for students at Qatar University who have a passion for research and innovation?

Please think about what is the first order consequences of your decision (short term) and the second order consequences (long term). The pain of the hard work now is the first order consequences, where the future fruits and your impact in the society is the second order consequences of your decision. Think about your sustainability at the personal level, family level, business level and country level.

First PhD Student Enrolled in QU-RCSI Dual PhD Program Probes Interplay between Environmental Factors and Gut Microbiome in Colorectal Cancer

Menatallah Rayan, PhD Student enrolled in QU-RCSI Dual PhD Program

QU Supervisor: **Prof. Hesham Korashy**, Professor of Pharmaceutical Sciences, College of Pharmacy - Qatar University

RCSI Supervisor: **Prof. Jochen Prehn,** Professor of Physiology and Medical Physics, Royal College of Surgeons in Ireland

Prof. Hesham Korashy

Menatallah Rayan

Prof. Jochen Prehn

In 2022, Qatar University Health Cluster (QU Health) signed an agreement with the Royal College of Surgeons in Ireland (RCSI) to establish a dual PhD degree program. This offers a golden opportunity for collaboration between two prestigious universities, both of which are global leaders in health education and research.

As an outcome of this agreement, Menatallah Rayan is the first student to pursue her PhD under the dual PhD program with the supervision of Professor Hesham Korashy from the College of Pharmacy at Qatar University and Professor Jochen Prehn from the Department of Physiology and Medical Physics at RCSI. Menatallah obtained her BSc in Pharmacy from Qatar University in 2021. She completed her MSc degree in Pharmacy at Qatar University in 2023 under the supervision of Professor Abdelbary Elhissi, Department Head of Pharmaceutical Sciences. Her commitment to academic excellence was demonstrated through earning the Order of Excellence and Research Distinguish Award during her BSc and MSc degrees, respectively. Menatallah is committed to pursuing a career in academics and has a passion for high-quality scientific research. Her current research work is focused on investigating the interplay between Environmental Factors and the Gut Microbiome in Colorectal Cancer (CRC) (Figure 1).

CRC is the second leading cause of cancer-related deaths worldwide. Unfortunately, most CRC cases are diagnosed at advanced stages when treatment options are limited, leading to very low survival rates. The World Health Organization reported that 19% of cancer deaths are linked to environmental factors, including processed foods, sedentary lifestyle, smoking, alcohol consumption and obesity, with up to 33% of deaths related to occupational carcinogen exposure. More recently, the microbiome, a complex ecosystem of bacteria, protists, viruses and fungi, that inhabit the human body, have been found to have a significant impact on human health and diseases such as cardiovascular diseases, neurological disorders, psychological disorders, autoimmune diseases and cancer. Interestingly, around 20% of the worldwide tumor incidence is estimated to be triggered or modulated by microbes and their byproducts.

Interestingly, there seems to be a complex interplay between exposure to environmental toxins, particularly halogenated aromatic hydrocarbons (HAHs) and polycyclic aromatic hydrocarbons (PAHs), and the gut microbiome composition.

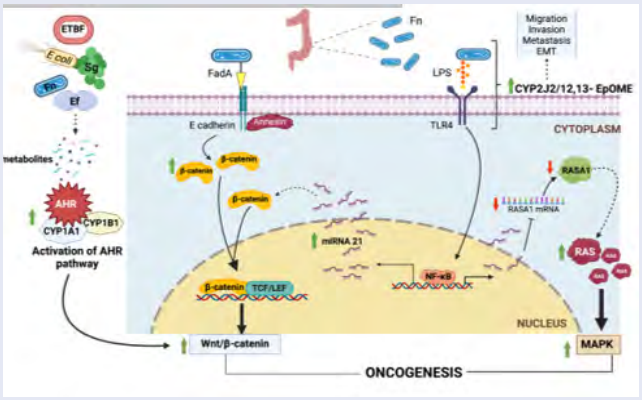


Figure 1. Mechanisms through which the gut microbiome contributes to oncogenesis.

Humans can be exposed to these toxins through food, air, water, cigarette smoke and automobile exhausts. In addition to their established connection to cancer, PAHs induce a shift in the gut microbiome metabolic pathways, favoring a proinflammatory microenvironment. Since it is well documented that PAHs and HAHs exert their toxicity and carcinogenicity through the activation of the Aryl Hydrocarbon Receptor (AhR), the role of AhR in microbiome-mediated carcinogenesis remains unlocked and requires thorough investigation.

The laboratory supervised by Prof. Hesham Korashy at Qatar University specializes in environmental toxicology and molecular oncology, with a particular focus on studying the role of AhR and its downstream targets Cytochrome P450 1A1 (CYP1A1) and 1B1 (CYP1B1) in mediating the toxicity of environmental pollutants and their impact on various diseases such as cancer, diabetes and cardiovascular diseases. Professor Korashy's research group is a pioneer in this area and well recognized worldwide, as his work on this subject has been granted several major funds and has been published in prestigious high-impact journals. At RCSI, Professor Jochen Prehn is considered an international authority on single-cell analysis and has established a NanoString GeoMx platform for spatial transcriptomic profiling and a CellDIVE Multiplexing platform, the first of its kind in Europe. Professor Prehn's group is interested in identifying prognostic and predictive biomarkers in oncology and establishing stratification tools, which can be used to predict chemotherapy responsive patients. Hence, this research work aims to improve cancer health outcomes and treatment success rate through deepening the understanding of cancer and elucidating novel therapeutic and chemo-preventive targets.

The Concept of Essential Security Interests in Modern International Trade Law: A Comparative Study

Study Earns Thesis Award for the Academic Year 2022/2023

Jassim Salih AlKuwari

PhD in Law, College of Law - Qatar University

Research Question, Goals and the Research Problem

The Essential Security Interests exception in international trade law first appeared in the General Agreement on Tariffs and Trade 1947 (GATT 1947). Following the creation of the World Trade Organization (WTO), it carried over into the General Agreement on Tariffs and Trade 1994 (GATT 1994) as well as the General Agreement on Trade in Services 1995 (GATS) and the Agreement on Trade-Related Aspects of Intellectual Property Rights 1995 (TRIPS). It can be invoked by any WTO Member State whenever it considers that a particular measure is necessary for the protection of its Essential Security Interests. The Essential Security Interests concept operates as a justification for trade restrictions that would otherwise violate WTO rules. This is based on the notion that certain forms of trading conduct are intrinsically political, and that States can in such cases exercise discretion without external interference or control.

The entrenchment of the ESI exception under treaty law raises concerns about the adaptability and appropriateness of the exception due to its codified nature. Likewise, while there has been significant academic discussion surrounding the ESI exception, there has been little discussion focusing on how concepts such as new threats to national security, including terrorism and cyber-security, have affected the adequacy of the ESI exception. This is particularly concerning as 'wholly different dimensions of national security' have developed since the ESI exception has been introduced. Similarly, there has been ongoing contention in the academic sphere regarding the definition and scope of the ESI exception, which demonstrates the need for additional research on this topic.

The research question of this dissertation is to determine whether the definition, meaning and scope of the ESI exception needs modernisation in light of the contemporary concept of national security, and the particular challenges surrounding it. In order to answer this research question, there were multiple research goals, which had to be fulfilled:

- The first objective was to determine the extent to which the definitions of the ESI exception, found under the World Trade Organisation (WTO), Consolidated Version of the Treaty of the Functioning of the European Union 2008 (TFEU 2008) and other international bilateral agreements are consistent with one another.
- Compare and distinguish between the ESI exception terms in the aforementioned legal materials.
- Examine cases where the invocations of the ESI exception have been challenged. This helped to emphasise the real issues that States faced when it came to invocations of the ESI exception.
- Determine whether the ESI exception is self-judging or whether it is a limited measure that States must prove the necessity of via a set of specific conditions, which need to be met.
- Determine whether the definition of the ESI exception is outdated in the light of new security threats such a cyber-security and terrorism.
- Determine whether creating a modern definition of the ESI exception would effectively redefine the limitations and scope of the exception in the contemporary international community.

The Theoretical and Conceptual Framework on which the Research is Based

This dissertation combines a theoretical analysis of key international law doctrines such as the State sovereignty doctrine and how the ESI exception was intended to be used. This was then contrasted with the conceptual framework of this dissertation which applied various case studies and analysed the real-world interpretations of the ESI exception by various bodies. This balanced the analysis between what international law concepts are meant to entrench and establish, with how they are implemented in practice. This was done to determine how to better improve the ESI exception's definition, scope and framework, so that the exception aligns with what it was intended to be as well as how it can fit the modern-day needs of States.

Jassim Salih AlKuwari

Research Methodology and Procedures

The research methodology that was utilised for this dissertation was qualitative in nature. This is because the open-ended nature of the research question means that the analysis of qualitative interpretations of the ESI exception was more appropriate than employing a quantitative approach. For example, the primary sources consisted of a variety of legal documents such as the GATT 1947, the GATT 1994, the GATS 1995 and the TRIPS 1995, which helped to create a broad understanding of the position of the ESI exception in international trade law. Likewise, several case studies were analysed to ensure that the practical implementation of the ESI exception was consistent with how it was interpreted by looking at legal documents. As the research question was concerned with the position of the ESI exception in light of modern-day challenges, the main focus of this dissertation was on these primary sources.

This dissertation approached the issues at stake in a comparative manner. This helped to tie the dissertation together by allowing concepts, times and the circumstances of the implementation of the ESI to be drawn together, so that conclusions about these elements could be made. Finally, it is important to note that secondary sources, such as textbooks and academic journals were also utilised throughout the dissertation. This ensured that the dissertations' arguments and considerations were balanced and that its conclusions were well reasoned and supported.

Results and Recommendations

The analysis of the ESI concept demonstrated that it was not only an integral part of international trade law but that it was also closely linked to the notion of protecting State sovereignty, which has been described as one of the 'pillars' of modern international law and explains why the ESI exception is integrated in various legal instruments. This is because the ESI exception allows States to protect their own national security interests regardless of the obligations that they are bound by under international treaty law. However, some scholars have demonstrated an awareness that the State sovereignty doctrine may not be as strong as it once was.

The current definition of the ESI exception is broad and while this could allow it to cover a variety of scenarios, its purpose as an emergency measure to protect the essential security interests of States means that the ambiguity surrounding its scope may prevent some States from utilising it effectively. Likewise, it allows other States to use it inappropriately due to the lack of clear boundaries in its implementation.

The issue with ambiguity is also echoed in the jurisprudence of the International Court of Justice (ICJ), which seems to keep the ambiguity to allow it to maintain the flexibility to address a variety of instances where the ESI exception is invoked. However, the European Court of Justice (ECJ) has a stricter approach to the ESI exception.

There are also similar arguments about conflating flexibility with enforcing the consistency and emergency status of the ESI exception when it comes to analysing the self-judging elements of the exception. On the one hand, self-judging elements allow a quicker reaction and allow States to determine their own ESIs. On the other, it risks the exception being taken advantage of by States and a lack of consistency in its utilisation. This was demonstrated in Sweden – Import Restriction on Certain Footwear, where the respondent attempted to place import restrictions on certain types of shoes. However, the importance of a State's individual circumstances is also echoed in the approach of the WTO, which prioritises notions of fairness and non-discrimination, which supports the idea of balancing self-judging and non-self-judging elements.

From these discussions, it is clear that there are two key areas which need more focus on analysis: i) further monitoring of emerging challenges to national security and the erosion of the State sovereignty doctrine and ii) developing specific methods of improving the framework surrounding the ESI exception. The ESI exception is clearly used in restricted scenarios at the moment and it must be enabled to endure its practicality despite a multitude of new drawbacks.

The Scientific and Applied Value of the Research Results in the Field of Specialisation

- This dissertation contributed to existing academic literature by focusing on the modern-day challenges, resulting from the concept of national security, and by analysing the scope of the exception in a broader capacity.
- The dissertation also offered an overview of various interpretations of the exception to draw ideas on how the ESI exception could be improved in the future.
- This study highlighted that the ESI concept is not only primarily related to international trade law, but that it has also been integrated into a variety of legal instruments, which demonstrated that the ESI concept was an important element in international trade law.
- This research clarified that there are notable arguments that the state sovereignty doctrine has been weakening over time. The main arguments for this are frequently related to the progress made in relation to individual human rights in international law, nevertheless, the impact of globalisation is also something to keep in mind. This is because these changes in the international legal regime will have had a knock-on effect on other areas of international law, such as international trade law.

The overarching conclusion of this dissertation is that modernisation is needed in order to effectively meet the challenges that now surround the concept of national security.

The thesis was presented by Jassim AlKuwari, a doctoral candidate in law and an advanced researcher with several publications to his name, in addition to his outstanding practical experience as the Director of Legal Affairs at a global company and being a member of the legal team for the State of Qatar. His study was awarded the Thesis Award for the academic year 2022/2023.

Arab Values in the Context of the Qatari Culture

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Values are of great significance in the lives of individuals and society. They maintain the survival of society, identify types of interaction among its members, and guide their behavior. Therefore, it is crucial to have a framework of values adopted by individuals that represents a scale for evaluating the correctness of their actions. Generally, the system of values is based on major pillars which are: Culture, Religion, Customs, and Traditions. If we take a look at previous literature and theoretical frameworks, we will find out that various disciplines and sciences, such as psychological and social sciences, have paid great attention to the issue of the nature of values. That issue has been discussed and many definitions of it have been formulated. Schwartz (1992) defines these values as transitional goals of varying importance, serving as guidelines in the lives of an individual or a group. In the State of Qatar, the issue of values receives great attention. Qatar National Vision 2030 indicates that it is important to preserve customs and traditions. Moreover, the Vision includes the principle of safeguarding ethical and religious values and traditions.

In line with this importance, we are here developing a scale for Arab values and verifying its validity and reliability. Our motivation is to build a scale to measure values in the Arabic language. Despite the importance of the concept of values in our daily lives, there are only a few scales, such as the Asian, Latino, and American Scales, and there is no Arab Scale to measure values.

Value Theory

For many years, researchers have focused on finding universal values that are supposed to be common between all cultures. For example, Schwartz's Theory basically mentions that ten common values direct our behavior according to the actual underlying motivation of each of them and explains their sources. Schwartz arranged the ten values in a circular structure portraying congruent and opposing values in four dimensions. Congruent values are values that are adjacent and positively related, such as achievement and power.

Conflicting values are values that have an increasing distance between them or are opposing and are unfavorably related. These opposing values lead to cognitive dissonance and certain anxiety within the individual, such as tradition and hedonism. These values are driven by motivational forces and influence the personality and actions of the individual. For example, the value of power is primarily driven by dependence on power and the acquisition of wealth, and this value will cause us to act in a socially specific way.

Literature Review

To adopt the correct approach to building the Scale, we searched for studies that developed a scale for values, and we found three studies. First, Kim et al.'s (1999) Asian study aimed to describe the development of the Asian Values Scale. The results indicated that the Asian Values Scale had adequate internal reliability, and provided evidence of the convergent and divergent validity of the Scale and its six-factor structure: Conformity with Norms, Family Recognition, Emotional Self-Control, Collectivism, Humility, and Filial Piety. Second, Kim et al.'s (2009) Latino study followed the approach of the Asian study and found evidence of the reliability and validity of the Scale, and a four-factor structure: Cultural Pride, Sympathy, Family, and Spirituality. Third, Yao et al.'s (2017) American study aimed to develop and validate standard benchmarks that distinguish three types of culture: Dignity, Face, and Honor. This study contained two sub-studies: developing and testing a measurement model for perceived cultural criteria of dignity, face, and honor, as well as testing the predictive validity of the measurement model that was developed, which established the content validity of the measurement model and the convergent and discriminative structure validation.

Research Objective

The research aimed at building a scale that measures Arab values within the Qatari Environment and verifying its validity and reliability through two stages: in the First stage, which is related to the preliminary study, a questionnaire of social representations was distributed to a sample of 130 Qatari citizens. The questionnaire included writing the first seven words that come to the citizens' minds when they hear the word values and then arranging them according to their importance, in addition to evaluating the feelings reflected by these values ranging in intensity from very negative to very positive, passing by neutral. Later, we extracted 13 values that were the most frequent, based on which items were developed for each value by formulating new items that reflect these values.

In the Second stage, which is related to the Scale's validity and reliability, a questionnaire consisting of three scales was designed: the Arab Values Scale, which was developed in the First stage, the Asian Values Scale, and the Latino Values Scale in order to search for correlations between factors. Then the questionnaire was distributed to a different sample consisting of 186 residents and citizens in Qatar.

Outcomes of the Study and their Interpretation

The research outcomes using factor analysis indicate that the items of the Scale are distributed within six factors, including 37 items. Items from these factors achieved high consistency. The six factors were classified in the order of highest consistency, and they are: Ethical Principles with the surroundings (for example: I have clear ethical guidelines that I bear in mind and follow at all times), Customs and Traditions (for example: I think that customs and traditions are not an obstacle to development), Socially Congruent Values (for example: I think that a person should intervene when a wrong situation takes place in front of him), Bravery (for example: I usually remain silent when I cannot confront the person who wronged me), Honesty (falsifying the truth may be necessary for some situations to consider the feelings of others), and Religiosity (for example: when I fail in doing something I strive for, I attribute that to not fulfilling one of the religious duties).

The outcomes indicated that there are correlations between the factors of the Arab Values Scale and factors of both the Asian and Latino Values Scales except for the factor of bravery that did not show any correlation. The factor of customs and traditions indicated the highest correlations with the factors of both the Asian and Latino values Scales. These correlations are considered a good indicator of the quality of the Scale.

The research concluded a set of factors that constitute an Arab Values Scale in the Qatari environment. The Arab Values scale is distinguished by containing factors that were not included in the other scales, such as bravery and honesty, which indicates their importance as concepts connected to the Arab culture. We think that there is more work to be done in order to constitute the final form of the Scale, as well as apply it to other Arab societies to search for similarities or differences in the Arab values between different Arab societies.

Hydrogel Agriculture to Support Food Security in Qatar

Prof. Alaa AlHawari
Department Head of Civil and Architectural Engineering, College of Engineering - Qatar University

From the left: Prof. Alaa AlHawari, Department Head of Civil and Architectural Engineering, Muhammad Telhami, PhD student in the Department of Civil and Architectural Engineering.

It is undeniable that water is among the most important resources around the world, especially in arid and hyper-arid countries. The substantial population growth together with the increasing climate change challenges are key contributors to the dwindling of freshwater resources while concurrently placing additional pressure on agricultural production. It is expected that the worldwide population will reach approximately 10 billion by 2050, which mandates the expansion of agricultural production by 50% and a water withdrawal increase of 15%. In addition, the extent of the agriculture sector is not limited to food supply, but it is also a critical source of livelihood for many developing countries. The prosperity of agriculture is strongly associated with access to fresh water, as 70% of the total water in the world is consumed for agricultural-related purposes. Therefore, to cope with climate change and mitigate water scarcity problems, focus must be directed towards developing innovative technologies that can reduce water usage without compromising the quality and magnitude of agricultural production. Numerous technologies and agronomic practices have been adapted and applied to boost the water productivity of crops. However, the most promising techniques in achieving increased water-use efficiency in agricultural applications are those that promote the soil's ability to retain water. One of these successful methods in promoting agricultural sustainability is the employment of hydrogels that are capable of absorbing water manifold their weight, retaining nutrients, and preventing soil erosion.

This project is aimed at introducing hydrogel agriculture for greenhouse farming in Qatar for the first time. In general, compost soil is rich in nutrients required for the growth of plants such as nitrogen, phosphorus and potassium. However, compost soil used in greenhouses has low retention of water. If compost soil is to be used for agriculture in an arid climate such as Qatar, the water retention of such soils should be enhanced to maintain a low food cost. Laboratory and field experiments have demonstrated that hydrogel is a smart technique that could provide a water reservoir in soil that can be tapped into by plants in hot climate areas. Hydrogel helps to grow more food while using less water by mixing with the soil to capture the irrigation water near the plant; this will help the plants to grow more steadily over time. This project suggests a novel hydrogel material, which is made of up to 99% weight of water and environmentally biodegradable, nontoxic and inexpensive materials. The hydrogel material was pilot tested at actual greenhouses in AGRICO farm, a renowned farming facility in Qatar. AGRICO is a key investigator in this project, which offered the planting area with the required energy and water supply and personnel for the current research project.

The implementation of hydrogel agriculture is based on sandwiching a thin hydrogel layer (i.e., 3-5 mm thick according to the optimized conditions from the experimental investigation) inside the compost bags used in AGRICO farm as demonstrated in Figure 1. The presence of this layer assists in reducing water losses by increasing the water retention capacity of the grow bag. The growth of plants, water and nutrients retention, and crop production for hydrogel-containing samples and control samples were closely monitored throughout the plantation process for comparison process. Controlling irrigation water was among the most important aspects of this project. Three irrigation patterns were tested, namely, "high" (100% of the normal water supply), "medium" (67% of the normal water supply) and "low" (33% of the normal water supply). The hydrogel technology was tested in plastic and net greenhouses, and it was found to be suitable for both situations. Tomato, cucumber and eggplants were planted using hydrogel, and each plantation took approximately 5 months, 3 months and 6 months, respectively. The water and nutrients retention inside the grow bags were prominently promoted in hydrogel-containing samples compared to the control samples (i.e., containing no gel). In addition, as shown in Figure 2, under the optimal conditions,

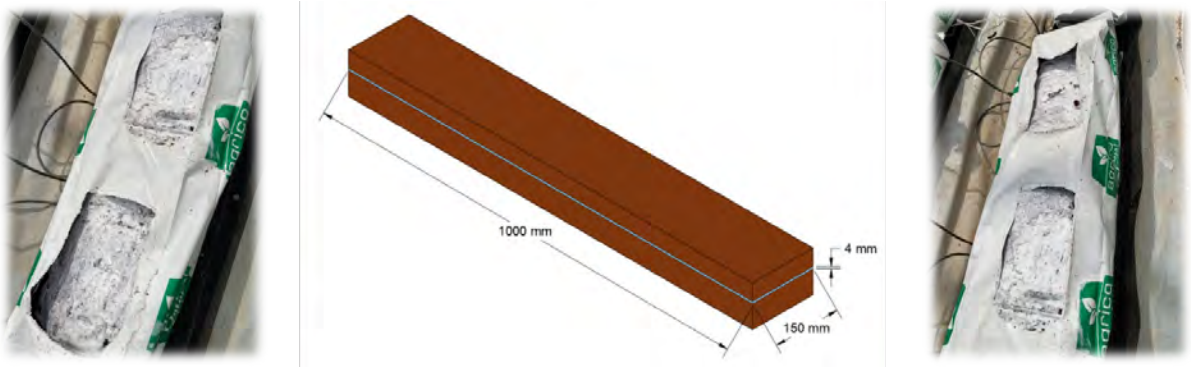


Figure 1. The dimensions of the AGRICO compost bags and pictures of the hydrogel sandwiching inside the compost bags.

the mitigation of water losses exhibited by hydrogel-containing samples resulted in a significantly higher production magnitude for the compost bags containing hydrogel as compared to the control samples at all irrigation patterns. The results obtained from this project support the industrial applicability of such a technology in enhancing agricultural production while consuming less amounts of water. Post-experimental visual investigations proved that the presence of hydrogel inside the grow bag preserves water inside the grow bags without interfering with the growth of roots. Recycling experiments of the previously used hydrogel-containing grow bags are currently under progress, and preliminary results are highly promising in terms of the hydrogel's effectiveness for reuse in multiple plantation cycles.

In conclusion, the employment of hydrogel at a pilot scale greenhouse was investigated for the first time in the present study. The deployment of hydrogels in agriculture represents a promising and innovative approach for the reduction of water losses through percolation or evaporation. Saving water addresses a critical worldwide challenge concerning water scarcity. The results obtained from this study suggest that hydrogel agriculture is a sustainable and smart technique to preserve irrigation water, and this was evident from the ability of the hydrogel-containing grow bags to retain more water compared to control samples. Consequently, these water savings were reflected in the production of cucumber and tomato pieces. As research and technology continue to advance, integrating hydrogels into mainstream agricultural practices has the potential to contribute significantly to global food security while promoting resource conservation.

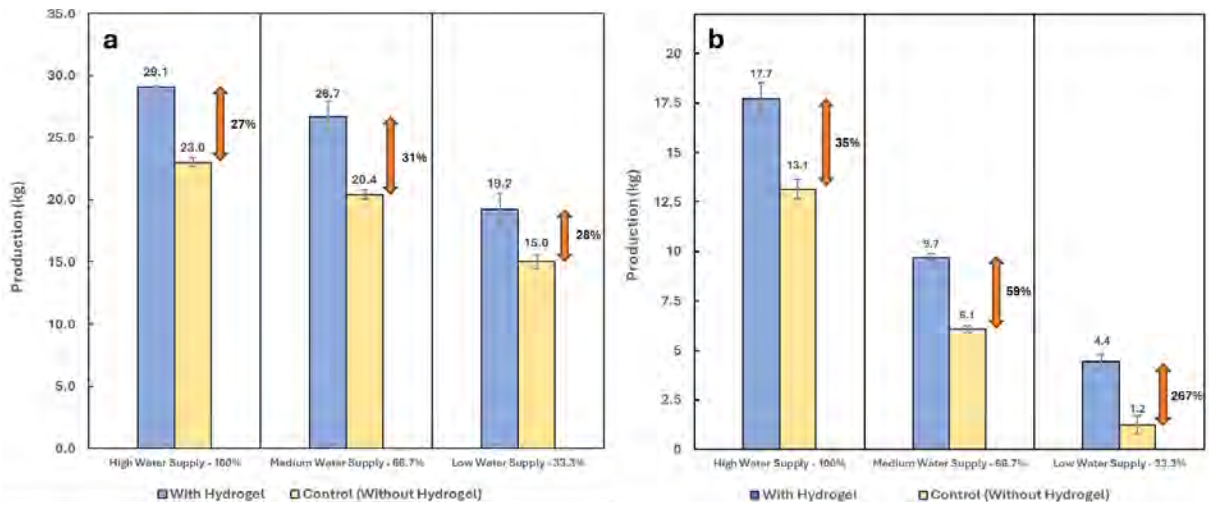


Figure 2. The crop production results for a) cucumber and b) tomato.

Using Natural Materials to Remove Heavy and Rare Metal Contamination:

A Case Study for Treatment of Wastewater Resulting from Chemical Laboratories

Dr. Noora Al-Qahtani
Acting Head of the Central Laboratories Unit (CLU) - Qatar University

Research Team
Researchers from the Central Laboratories Unit (CLU), with postgraduate and undergraduate students specializing in Chemistry and Earth Sciences from the College of Arts and Sciences, those majoring in Chemical Engineering from the College of Engineering at Qatar University, and students of Omar bin Abdul Aziz Secondary School for Boys.

Dr. Noora Al-Qahtani, Acting Head of the Central Laboratories Unit, and students participating in the project.

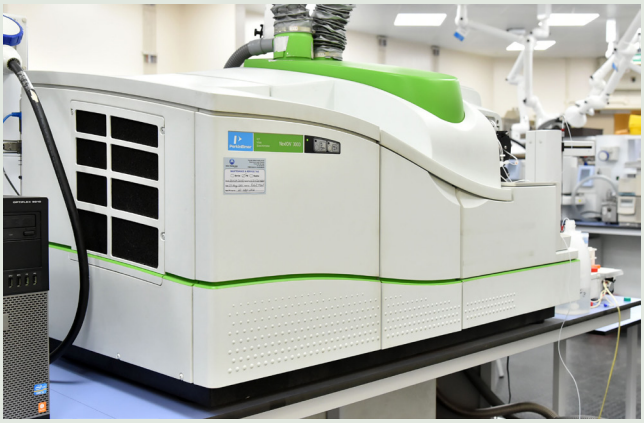
Introduction

The extraordinary development in the field of chemical analysis equipment in laboratories has led to the existence of some pollutants that may leak in one way or another into the environment, causing environmental pollution. Furthermore, the volume of actual liquid and solid waste generated by chemical laboratories is small compared to other technologies and industries. Still, the main problem lies in releasing heavy metals into drinking water and human food resources. The problem of the accumulation of heavy and rare elements is considered a dangerous environmental problem, as its accumulation reaches some kinds of fish and vegetables, which are a significant source of food for humans.

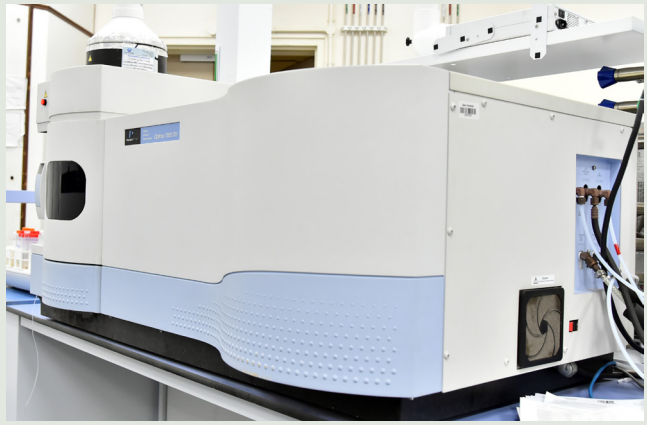
One of the most pressing environmental challenges in all industrial and university sectors is the treatment and disposal of wastewater resulting from analytical activities, such as those in atomic spectroscopy laboratories. This is a prime example of the issues faced by chemical laboratories. The task at hand is to develop effective techniques to separate heavy, trace and environmentally polluting elements in a safe and acceptable manner. This is a top priority for scientists and occupational safety and health departments, aiming to prevent the release of these elements into the environment through sewage networks.

The migration of heavy and rare metals through the terrestrial environment depends on the disposal method, the disposal sites' hydrological characteristics,and the interactions of contaminant elements with environmental materials. Atomic spectroscopy laboratories include various types of devices and equipment used to analyze heavy and rare metals. The primary devices include inductively coupled plasma mass spectrometry (ICP/MS), inductively coupled plasma–optical emission spectrometry (ICP/OES), microwave digestion systems (MDS) and laser ablation systems (LAS). Large quantities of liquid waste that contain heavy and rare elements and other environmental pollutants are generated during various analysis processes depending on the nature of the analyzed samples.

The use of natural, cheap and sustainable absorbents in the field of the treatment of heavy metals is one of the most important methods that help in the safe disposal of these wastes. One of these absorbents is humic substances or what is known as organic materials that naturally exist in agricultural soil and riverbeds. They are natural polymeric materials that include different types of functional groups such as hydroxyl group OH and carboxyl group COOH in a compound organic structure. Humic substances are divided into three categories according to their solubility: humic acid, fulvic acid and humins. They are classified as powerful compounding agents for a wide range of heavy and rare metals, as they exist within their complex organic composition correlated with many elements of the periodic table. Humus substances are considered among the materials that are easy to obtain and represent a major shift in the field of the treatment of heavy and rare elements, especially with their development and adding some nanomaterials to them or thermally treating them in various ways. Natural clay materials and their products are among the common and cheap natural adsorbents that are widely used in treating environmental pollution which are being tested in the treatment processes during this study. Humus substances, natural clays and pottery are good absorbers and exchangers



PerkinElmer NexIon 300 D ICP/MS



PerkinElmer Optima 7300 DV ICP-OES

for treating heavy and rare metal contamination and effluents in laboratories.

The current study, which is being conducted at CLU under the Research and Graduate Studies Sector at Qatar University in cooperation with the Omar bin Abdul Aziz Secondary School for Boys of the Ministry of Education and Higher Education, aimed to study the possibility of removing pollution from solutions of heavy and rare elements using humic acid and natural clay. The study also aimed to train pre-university students on various scientific research methods during the period of conducting the survey and integrating them into the scientific research system at QU. The research plan for this study included the following main points:

- Separation, purification and classification of humic acid extracted from agricultural manure.
- Preparing humic acid complexes with metals for many heavy metal ions from wastewater in the Atomic Spectrometry Laboratory in the Central Laboratories Unit, which were found to contain many chemical pollutants of the environment upon analysis.
- Studying humic acid-mineral compounds using accurate laboratory wastewater solutions.
- Studying the compounds of elements with natural clay materials through accurate laboratory wastewater solutions.
- A comparative study between the absorption of humic acid and natural clay for heavy and rare metals.
- Attempting to reach a preliminary design for a filter that contains humic acid and natural clay materials that would be applicable in the various development phases.

The research hypothesis was represented by the possibility of using humic and clay materials to treat heavy and rare metal contamination since these materials have compound properties with heavy metals, which many other studies have referred to. The objectives of this study were to use natural organic polymers such as humic acid and natural clay to study the feasibility of these materials for removing heavy metals from wastewater in chemical laboratories.

Through a carefully designed research program, the research team from CLU, along with a large group of students from the Chemistry and Earth Sciences major in the College of Arts and Sciences and Chemical Engineering major in the College of Engineering at QU; collected samples of wastewater from various atomic spectroscopy analysis laboratories and measured its physical and chemical properties using the techniques and methods of equipment available at Qatar University. Then comes the practical application phase, which treats the wastewater taken directly from the liquid waste containers of the atomic spectrometer analysis devices and reaches the best factors necessary to raise the efficiency of the absorption and treatment process by reaching standard conditions for the removal process. The research team is studying the effect of changing the weights of natural absorbents, the impact of increasing the time for pollutants to be exposed to absorbents, the effect of temperature change, the impact of change in the power of Hydrogen (pH) and other factors. The elements that are studied to search for the best conditions for their removal include arsenic, cadmium, cobalt, chromium, copper, manganese, nickel, lead, zinc, molybdenum, silver, barium and beryllium, which exist in the contents of the atomic spectrometer wastewater.

Scientific article: It is pending publication in MAPI on Materials Proceedings. The study will also be presented at the 2024 10th International Conference on Advanced Engineering and Technology (10th ICAET), which will be held in Incheon, Incheon National University, Korea, from May 17 to 19, 2024.

Qatari Family's Structure and Functions: **Balance between Tradition and Modernity**

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Like other Arab societies, the Qatari society faces the impacts of transformations and major events that are taking place in the world such as globalization and pandemics, in addition to the difficult choices imposed on the Arab world by the soft foreign policies and interference of Non-Governmental Organizations that deal with sensitive issues such as family, women, education, religion and others. Amid these various events and transformations, the Qatari family system faces a diversity of thought trends and deals with pressures that are practiced against its members and can be classified into two types: traditions, which are constituted by the Arab traditions and Islamic Religion, and modern trends constituted due to globalization and unprecedented openness to universal values, particularly western values of the capitalistic, liberal materialistic nature.

Dr. Asma Malkawi with researchers at the Ibn Khaldon Center for Humanities & Social Studies.

This paper presents the conclusion of a study conducted by the research team at the Ibn Khaldon Center for Humanities and Social Sciences at Qatar University, Dr. Asma Malkawi, Research Assistant Professor and Research Assistants: Sara Al Sallabi, Noura Al Hajeri and Afrah Al Otiabi. The study discussed the structure and functions of the Qatari family and its attempt to achieve a balance between tradition and modernity.

The paper attempts to answer a general question about the intellectual model represented by the Qatari family at present, is it a traditional or a modern model? Among this, it deals with a set of subquestions that unveil that model including: how do the Qataris look at the structure and basic elements of the Qatari family? What is the function of the Qatari family? What are the roles of its members? And what are the behaviors and traditions of the Qataris inside their families?

This study falls within the significant research efforts in the field of Sociology of the Arab Family and contributes to following up on and monitoring the state of the Arab family at this time and the thought trends that influence it. Furthermore, it will have a role in enlightening the Arab organizations that work in the field of family regarding the transformations that reached the family, which is considered the basis of the social structure of any society and assisting them in developing the necessary plans to preserve and support it.

Transformations in Structure of the Qatari Family: Historical Overview of Previous Studies.

In 1982, one of the most important and oldest field studies in Qatari society was conducted by Juhayina Al Issa, who was interested in studying the type of family structure and family roles from the mothers' point of view. She found that there were political, social and cultural factors that contributed to transformations in the Qatari family. Still, the discovery of oil accelerated their occurrence, due to the resulting processes of cultural and civilizational communication. The study found that the contemporary family at that time was oriented towards a nuclear independent family (non-extended), however, it remained a patriarchal family, as the father is the one who is primarily responsible for and provides for his family. These families also wanted their male children to complete their education by 100%, while about half of the families preferred for their girls not to complete their education.

In 1993, a study conducted by Amina Al Kazem, which is considered an important addition to tracing social and cultural change in Qatari society, concluded that education and work contributed to spreading new values and thoughts. When girls were able to complete their education and enter the field of work, several values and concepts in the family aspects changed, such as, choosing their life partner, productive life planning and economic independence; which was reflected in the lifestyle in food and clothes. Openness in foreign societies, government work and monthly salary have affected the Qatari person's stability and individual's tendency towards consumption. The study also pointed out that oil played a role in uncovering the class structure of society and spreading individual values.

Then after that, the accepted tradition concerning the responsibilities of men and women in the family did not change. In 2017, Fatima Al-Kubaisi's study pointed out that housework is still one of the basic responsibilities of women in the family. While for half of the study sample, spending on the family remained primarily the responsibility of men, the first signs of partnership between spouses in spending on the family appeared in the other half of the sample of families in the study.

This study series indicated that these transformations are not new to the Qatari family but began in the era of discovering oil and the subsequent economic and cultural transformations. The current study comes within the context of monitoring transformations witnessed by the Qatari family at this specific time and whether it adopts a traditional or modern intellectual model.

Study Approach and Data Analysis.

The study used the quanititatve approach (questionnaire) to collect data through closed questions about a set of issues distributed on the axes: Family Structure, Function and Family Members' Behaviors which are considered a practical expression of people's traditional and modern understanding and perceptions of the institution of family. The questionnaire used the Five-Point Likert Scale. Data was subject to Descriptive Statistical Analysis using the SPSS Program. The questionnaire was distributed to an available sample of (240) Qatari citizens who were reached via email and appropriate social media platforms such as "WhatsApp."

Study Outcomes.

The study concluded that issues of the Qatari family include three different intellectual phases.

First: Issues where the Qatari family maintained basic behaviors related to religious and cultural traditions such as encouraging its members to perform prayers and wear national costumes permanently. In addition, many Qatari families still preserve the habit of having a meal together daily. Also, women's roles focus on raising children and fathers are still the decision-makers in the family (Table 1).

Second: Issues standing between traditionalism and modernity are passing through a transitional stage, such as family shape, which is stepping towards the nuclear family, women's participation in providing the family's financial needs and speaking in languages other than Arabic among family members (Table 2).

Third: Issues that started to have a modern nature, such as accepting getting married from outside the tribe, realizing that it is important for fathers to take part in raising children and luxurious living (Table 3).

Interestingly, the study found a difference between the opinions of males and females on the idea that (marriage and starting a family are important goals in life). Considering the intersection data between this statement and gender, it appeared that the percentage of males who agreed exceeded the percentage of females with this statement. This may be because of the spread of feminist ideas among girls.

In conclusion, the research recommends directing the efforts of Arab societies to maintain the family as a central and important entity in society and designing programs that ensure supporting the Arab family according to intellectual trends that are not entirely separated from heritage and good traditions, in addition to benefitting from the modernity of the rest of the nations. This will only be done by the ongoing criticism of the new waves of modernity and by activating the tools of hard work and innovation. Without doing that, we will be subject to external vagaries and directives. In more detail, the study recommends the following:

- Encouraging the youth to get married and start a family that still forms a basic axis for the rest of the social styles in our Arab societies and has a fundamental position in the individuals' consciousness.
- Ensuring the pedagogical and educational functions of the family and enhancing its pivot position in the social structure and its major role in consolidating values among young people.
- Developing teaching curricula for school and university students concerned with strengthening the family's value in the consciousness of individuals and communities, and promoting the ethics of family communication.
- Focusing on studying perceptions of Arab societies of the family and repeating this study every five years to monitor transformations that are taking place.
- Enhancing the role of the Religious Institution in building and preserving the family through various programs.
- Paying attention to the danger of replacing the Arabic language with foreign languages in the Qatari family and Arab families in general, as well as the necessity of maintaining communications between generations.

Table (1): Behaviors of the Qataris inside their Families.

	Statement	Always	Often	Sometimes	Rarely	Never	Arithmetic Average	Standard Deviation
1	My family members daily have at least one meal together at one table	35	32.1	22.1	10.8	0.0	2.09	1.000
2	Domestic workers in my family are responsible for raising children	1.7	5.8	19.6	26.3	46.7	1.90	1.019
3	My family members speak a language other than Arabic	10.0	4.2	21.7	29.6	34.6	2.25	1.253
4	My family encourages its members to perform prayers	83.8	11.3	3.3	1.3	0.0	1.22	0.560
5	My family encourages its members to wear the national/traditional costume	77.5	16.7	3.3	2.1	4.0	1.31	0.677

Table (2): Percentages of the Sample's Answers about the Axis of Social Structure.

	Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Arithmetic Average	Standard Deviation
1	Marriage outside the tribe/ family is an accepted idea	36.7	45.8	13.8	2.5	1.3	1.86	0.836
2	A stable family is only a family in which the husband and wife are Qataris	7.1	6.3	17.9	48.3	20.4	2.31	1.085
3	Living in a small/ nuclear family is better than living in a large/ extended family	6.7	18.8	35.8	28.7	10.0	2.83	1.058
4	Grandchildren should be named after their grandparents	7.5	15.8	40.0	27.5	9.2	2.85	1.040
5	Luxurious living spoiled family relationships	25.0	34.2	23.3	14.2	2.9	2.36	1.094

Table (3): Perceptions of the Qataris Regarding Family Functions and Roles of its Members.

	Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Arithmetic Average	Standard Deviation
1	Working women should participate in fulfilling the financial needs of their families	10.0	40.4	29.6	13.8	6.3	1.039	2.66
2	Mothers/ wives are primarily responsible for family budget management	8.9	21.3	26.0	34.5	9.4	1.129	3.14
3	Raising children should be a joint responsibility between fathers and mothers	77.9	19.1	2.6	0.4	0	0.544	1.26
4	Fathers/ husbands have the last words in the family	25.8	41.7	20.4	10.4	1.7	0.996	2.20
5	The roles of male children are different from those of female children in the family	34.6	47.9	12.1	4.6	0.8	0.846	1.89

The full version of the study is accepted for publication in Dirasat Journals at the University of Jordan.

Developing a Comprehensive Approach to Interconnection between Food, Water and Ecosystem to Enhance Sustainability of Food and Water Security in Qatar

Dr. Ammar Abulibdeh
Associate Professor of Geography and GIS, College of Arts and Sciences - Qatar University

The sustainability of water and food security is one of the critical challenges that faces arid and semi-arid regions. These regions cover 25.8% of the earth's land area where more than 400 million people live, leaving them more vulnerable to poverty and nutritional deficiency. Most of the countries in arid regions mainly depend on food imports because of the scarce natural resources, low agricultural productivity and disproportionate population growth. The COVID-19 pandemic has uncovered the vulnerability of food security in arid and semi-arid regions due to disruptions of international food supplies. Therefore, most Arab countries in the arid region have begun to pay more attention to improving local agricultural production by exploring new strategies. These challenges are arduous due to limited arable land and scarcity of water resources in most arid and semi-arid countries, which are worsened by global climate change. According to the Intergovernmental Panel on Climate Change (IPCC), the average global surface temperature has risen by +0.6°C since the late 19th century, which may convert some semi-arid ecosystems into arid ecosystems and arid ecosystems into extremely dry ecosystems in the future. However, adequate water resources are needed to improve growing crops, which is a serious problem in many arid regions.

In this regard, a research team under the leadership of Dr. Ammar Abulibdeh, Associate Professor in Geography at the College of Arts and Sciences, Qatar University (QU), is conducting a study aimed at improving the local ecosystem to enhance the sustainability of water and food security in Qatar, in addition to integrated modeling assessment of interconnection between ecosystem, water and food. Improving ecosystems by combating desertification and enhancing the biodiversity of local plants may be a perfect strategy to promote food security and water sustainability since desertification is one of the main factors that influence natural grazing and green water which leads to more pressure on the environment and the agricultural sector. Fodder production is also witnessing a continuous increase in the Gulf Cooperation Council (GCC) countries, especially in Qatar, as it is the main source of livestock nutrition. Therefore, sustainable natural grazing is a vital ecosystem service that can improve food and water security by reducing water consumption for growing green fodder because increasing livestock and increasing demand for meat have made fodder a major agricultural crop in most Arab countries. Such a strategy could reduce pressure on intensive fodder production in agricultural areas, make more farmland available for growing other plants and reduce water consumption because fodder production requires a large amount of water compared to local pastures.

Dr. Ammar Abulibdeh

The researchers believe that another advantage of revegetating grazing land is its ability to enhance water sustainability. Previous studies have clearly shown that the main features of arid ecosystems are limited precipitation events, high temperatures and variations in seasonal precipitation events. Therefore, the development of natural pastures for grazing is not always stable as it varies with the seasons depending on precipitation fluctuation (intensity and frequency), with a low probability of receiving optimal precipitation to support maximum vegetation growth. Therefore, supplemental irrigation is necessary for the process of restoring natural vegetation in pastures. However, it is important to take into consideration that using supplemental irrigation to improve native plant growth will continue to reduce total water consumption because native plants require much less water compared to planted fodder. Importantly, the amount of water saved through revegetation is connected to plant type, total coverage and plant productivity in an arid ecosystem, which is strongly influenced by climatic elements, including temperature and precipitation. Consequently, it is important to determine the optimal months for watering local plants.

Under these conditions and challenges, the research team aims to develop a holistic model to assess the possibility of improving native plants appropriate for grazing as a service for the ecosystem to enhance water sustainability and food security. This goal will be achieved by considering the water, food and ecosystem (FWEco) nexus. In addition to, focusing on climate change to provide sustainable strategies to promote food and water security. The model takes into account the interconnections between water, pastures, livestock and fodder production. This can be achieved through developing a clear ecological description of Qatar's ecosystems and indigenous plants which is accomplished by developing a comprehensive quantitative characterization of the natural ecosystem and the impact of climate change on these systems, through field experiments and spatial analysis using Geographic Information Systems and remote sensing techniques. The proposed strategy will not only support food, water security and livestock but will also improve biodiversity in Qatar. Developing such a detailed correlation model will shed more light on the food and water sustainability implications of desert ecosystem restoration. Six stages will be implemented to achieve the goal of this research.

Phase 1: Understanding the relationship between plant cover/growth (vegetation) and climate changes.

This phase will be accomplished by integrating metrological data and remote sensing over the past 30 years to understand precipitation patterns and water needs of local desert plants. This work will be carried out in the natural reserves in Qatar to exclude human influence on the growth and distribution of natural plants and implement the Normalized Difference Vegetation Index (NDVI) to determine the dynamic changes in desert vegetation.

Phase 2: Probability and return period of optimal precipitation events.

After determining optimal precipitation conditions for local desert plants, the probability of receiving optimal precipitation periods in the future will be determined. Modeling will be performed to estimate the probability of obtaining optimal precipitation events for vegetation growth.

Phase 3: Analyzing changes in droughts during the past fifty years.

In this phase, the severity of monthly drought for the past 40 years (from 1983 to 2022) will be classified to determine whether variation in droughts is a natural phenomenon or linked to changes in precipitation and temperatures. This is carried out by applying the Standardized Precipitation Index (SPI) from 1983 to 2022 to identify and evaluate extreme phenomena and their relationship to desert vegetation.

Phase 4: Identifying the impact of climate change on the soil humidity and native vegetation growth.

In this phase, a water balance model will be developed to determine the availability of soil humidity throughout the year. This experiment will be carried out in the same natural reserves as the study to avoid any human influence. Furthermore, to complete this task, field experiments and spatial analysis will be integrated using drones with a multi-spectral camera. Drone data will be collected twice a month for one year, soil humidity will also be measured at the same site to examine changes in it in different months of the year and different land types, including areas covered with annual plants, perennial plants, and bare soil.

Phase 5: Selecting appropriate habitats in Qatar for different native plant communities.

This phase aims to identify appropriate habitats for local perennial plants in the State of Qatar by combining remote sensing techniques and Geographic Information Systems and analyzing native plant communities based on the following variables: climate and ecoclimate, soil type and altitude.

Phase 6: Developing a comprehensive approach for "the interconnection between Food, Water and Ecosystem (FWEco)."

This phase aims to providing sustainable future practices and priorities for the State of Qatar.

The results of the previous phases will provide researchers with a clear ecological description of the natural ecosystems in Qatar, enable them to use the results of these phases as input for the natural ecosystem in the model and study three scenarios to determine the effectiveness of using optimal pasture sites to improve water sustainability and food security by using 10%, 20% and 30% of Qatar's land as controlled natural grazing pastures. The FWEco model will focus on addressing two fundamental questions in the arid ecosystem. The first question is will natural grazing controlled through revegetation be able to substitute some of the fodder production to meet the need for meat in Qatar? If so, how likely is it that an arid ecosystem can be sustained by natural precipitation? The second question, is using supplementary irrigation to accelerate the growth of native plants and increase the coverage and productivity of natural pastures sustainable for water resources in Qatar?

Funding:

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Journal of Educational Sciences

Scientific Platform for the Dissemination of Authentic Scientific Research in Educational Fields

Prof. Hissa Sadiq
Professor of Educational Sciences and Editor-in-Chief of the Journal of Educational Sciences, College of Education - Qatar University

The Journal of Educational Sciences is a refereed and periodical scientific journal published by the College of Education, Qatar University. The journal is published by Qatar University Press with three issues per year and contains authentic theoretical and applied educational research in all fields of knowledge related to educational affairs in both Arabic and English languages. It was first published by Qatar University College of Education in 2002.

The journal has taken another major step in achieving its vision to be a distinguished scientific platform and a reliable source for disseminating the authentic educational knowledge sought by educators across fields through clear publishing rules and policies that are commensurate with the international standards, quality and speed of arbitration, expanding publishing areas to include the contemporary issues and educational approaches and working to upgrade the journal's classification in international indexing databases. Therefore, the journal has recently seen a significant increase in the number of researchers hoping to be published in it, which resulted in the decision to increase the number of the journal's issues, as of 2023, to three issues in the months of April, August and December instead of two issues per year. The journal aims to achieve the following objectives:

1. Enrich educational knowledge by providing a scientific platform for the dissemination of authentic scientific research in educational fields.
2. Share researchers' successful educational experiences in countries with diverse educational and cultural systems.
3. Strengthen the network of communication between researchers in various countries and form research teams.
4. Mobilize distinguished researchers to address contemporary educational problems and issues and deal with them according to the latest theories and scientific methods.
5. Develop researchers' publishing skills by providing information and guidance that help them write distinguished research papers.
6. Support educational decision makers in making rational educational decisions based on the results of scholarly educational research.

According to the ARCIF report (Arab Citation and Impact Factor for Arab Scientific Journals), one of the initiatives of the (Knowledge) Database for Scientific Production and Content, the journal has succeeded in achieving the criteria for the accreditation of ARCIF factors, which are compliant with international standards, and the Impact Factor achieved 0.381 for 2023. The journal is also proud to develop a list of more than 200 arbitrators from the best researchers active in scientific research, who belong to many prominent Arab universities, helping to improve the quality of published research. The journal's work is based on an editorial board of members belonging to the Faculty of Education at Qatar University as well as the Faculties of Education in the Arab World. Its advisory board also includes a group of distinguished names in the field of scientific research from Arab and international universities. During the past year 2023, the journal received 142 research articles, 89 of which were accepted, as the rate of acceptance of research was 63% and the rate of rejection was 37%.

For more information on the publishing policy, browse the journal through the following link: https://journals.qu.edu.qa/index.php/jes

For email, reach us at: jes@qu.edu.qa

Innovative Solar Panel Station with Autonomous Dry-cleaning Technology

Prof. Mohammad Refa'at Irshidat
Director of Center for Advanced Materials (CAM) - Qatar University

In a significant stride towards sustainable energy practices, Center for Advanced Materials (CAM) at Qatar University (QU) has successfully developed and implemented an innovative Solar Panel Station with autonomous dry-cleaning technology. This cutting-edge project, a testament to QU's commitment to research and innovation, is poised to be a cornerstone in renewable energy harvesting within the campus premises.

The project tackles a major challenge hindering solar energy efficiency in Qatar such as, dust accumulation. To combat this, a project led by Prof. Mohammad Irshidat and research staff members Dr. Zubair Ahmad, Section Head of Module Development and Publication at Qatar University Young Scientists Center (QUYSC) and Dr. Kishor Sadasivuni, Research Assistant Professor from CAM successfully installed autonomous dry-cleaning systems for solar panels. The one ingenious technology uses a miniaturized wind turbine to run the self-sustainable dry-cleaning system while the second one utilizes motorized brushes that automatically detect and remove dust, ensuring optimal performance.

The initiative began with a comprehensive study utilizing wind turbine-based portable solar panel cleaning systems. Over a period of 30 days, various electrical parameters were measured to assess the performance of these panels. Real-time experiments at the Al-Duhail area confirmed a 5-8% efficiency improvement for solar panels equipped with the self-cleaning setup compared to those without any cleaning measures. Furthermore, the motor-based prototype developed in this project consumes extremely low power due to the use of lightweight components. This gives it an edge over other machines in the market.

The self-sustainable solar cleaning prototype features a wind turbine, gears assembly and a dry brush for efficient auto-cleaning of solar panels. Renewable wind energy is utilized to rotate the wind turbine attached to the top of the solar panel. The rotational motion of the wind turbine is converted into the linear motion of the cleaning brush via a gear and chain assembly. The gears were 3D printed using the fused deposition additive manufacturing method. The 3D printing gives control over the pitch of the groves in gear for precise rotation and reduces the weight of the attachment. The incorporation of 3D printed parts makes the design more susceptible to incorporate modifications and changes relatively based on the specific requirements of the end user (Figure 1).

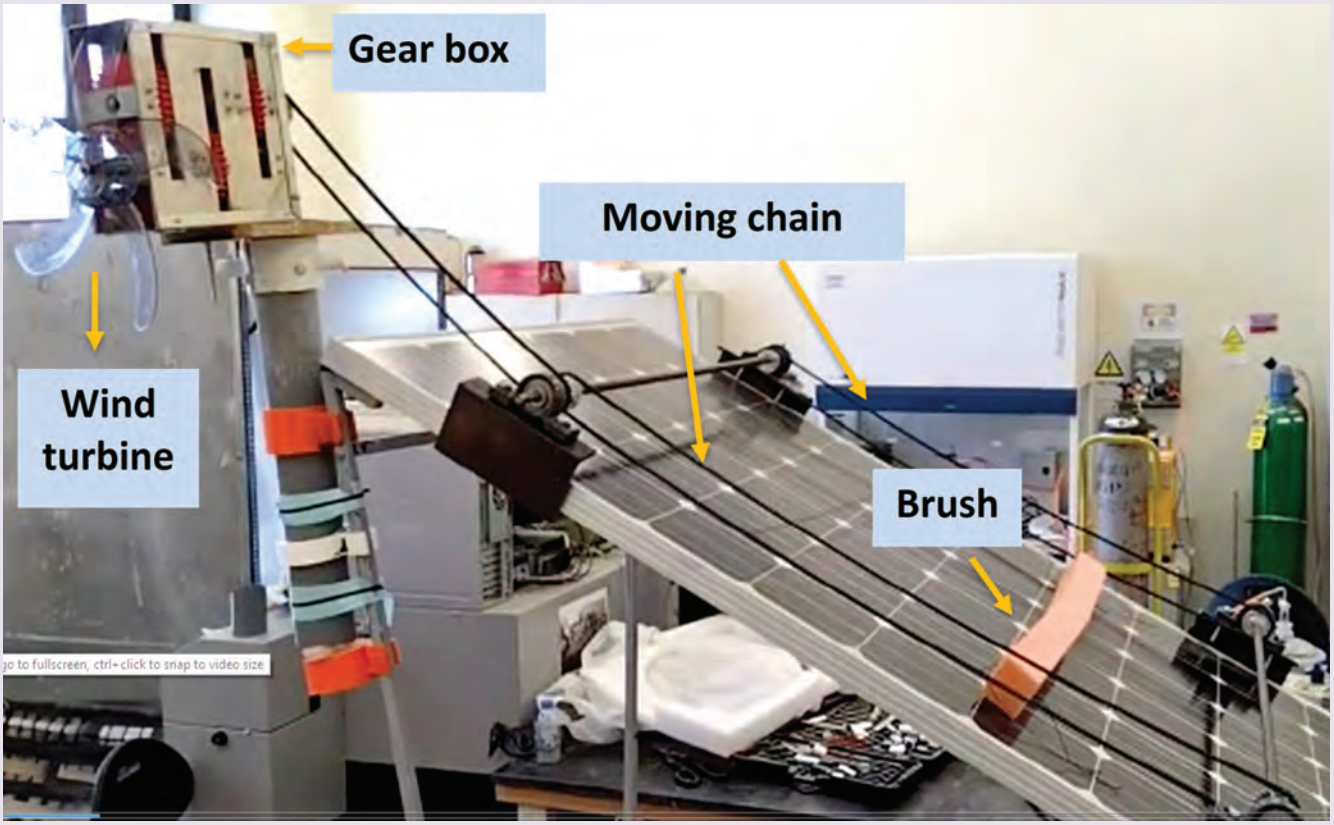

Figure 1. Wind turbine-based sustainable dry-cleaning system for solar panels developed by CAM.

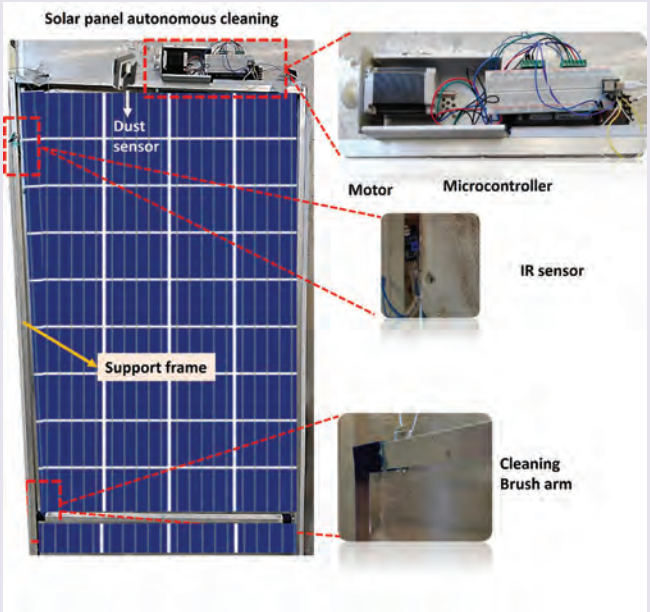

Figure 2. Dust sensing-based autonomous dry-cleaning system for solar panels developed by CAM.

The motor-based automated solar panel cleaning system operates based on input from the integrated dust detection sensor. Upon detecting dust accumulation on the solar panel, the cleaning process is activated and persists until the dust sensor feedback drops below the predefined threshold. Additionally, the cleaning apparatus is outfitted with sensors to restrict the movement of the cleaning brush within the confines of the solar panel frame. The designed cleaning system has extremely low power consumption (due to the lightweight components used), giving it an edge over other machines. The cleaning methodology eliminates any type and mass of dust (Figure 2).

The developed prototypes can easily be installed on new solar panels or retrofitted with older ones. It is designed to work well for both flat and tilted solar panels, ensuring that nearly all angles are cleaned. The fully autonomous dry-cleaning system for solar panels is equally attractive and applicable for small, large and unattended installations in remote and dry areas where water is scarce. The developed prototypes are self-sufficient and work automatically. The dry-cleaning technology is non-abrasive, ensuring cleaning efficiency without affecting the solar panel glass surface. The system has been designed primarily to be simple, robust, lightweight, precise and credible. These remarkable features showcase the potential of the developed technology in optimizing solar panel performance. Moreover, this achievement by CAM paves the way for QU to harness renewable energy on a wider scale.

This project aligns with QU's strategic objective to enhance R&D impact and supports research and innovation in fields that are in line with national research priorities. It responds to the current and future socio-economic needs of Qatar, fostering research activities in the University and developing capacity in cutting-edge research areas related to photovoltaic technology. As QU continues to develop its ability to yield its renewable energy source throughout the campus premises, the Solar Panel Station stands as a testament to the institution's commitment to a sustainable and promising future.

From the left: Dr. Zubair Ahmad, Section Head of Module Development and Publication at the Qatar University Young Scientists Center, Prof. Mohammad Irshidat, Director of the Center for Advanced Materials, and Dr. Kishor Sadasivuni, Assistant Research Professor at the center.

Evaluation of Electric Vehicles (EVs) Integration Impact on Electric Power Distribution Network

Prof. Atif Iqbal, Professor of Electrical Engineering,
Sheetal Deshmukh, PhD Candidate Department of Electrical Engineering,
College of Engineering - Qatar University

Sheetal Deshmukh

Prof. Atif Iqbal

I. Introduction

The major challenges in adopting EVs in Gulf countries are the high purchase cost of EVs, lack of infrastructure for EV charging and battery performance affected due to the arid climate in Gulf countries including Qatar, to add, the lack of public awareness and policy for EV users. Moreover, it will harm the existing grid, due to excessive loading and poor power quality such as reduced power factor, increased harmonic distortion and voltage and frequency imbalance problems.

II. Challenges-Solutions of Optimal EV Charger Placement

EV chargers need to be installed at various locations to facilitate easy charging. However, there is a big question, where to place the EV chargers? The EV charger placement has issues shown in Figure 1 that need to be resolved.

1. The random placement of EV chargers affects grid assets (voltage profile, transformer) that need to be addressed.
2. Investors and stakeholders are not ready for investment. However, this will give a great opportunity for banks to provide loans for the purchase of EV cars and finance companies that support the development of EV infrastructure.
3. Lack of infrastructure availability leads to a lower EV adoption rate nationwide.
4. EV purchases are lower due to a lack of policies and schemes for the citizens.
5. Need to develop policies that are economical for EV users and convenient.
6. Uncontrolled climate change occurs when EVs are charged by coal; gas-based plants need to be charged from renewable sources.
7. The power demand curve has high demand in the early morning and evening time which affects the grid if EVs are charged during those times. Therefore, the schemes must be developed per EV user charging time preference.
8. It may affect the nation's GDP target growth.

Solutions for EV Charger Placement:

Implementation of demand response management, smart, controlled charging, time-of-use charging schemes, feeding power to the grid from renewable sources and battery storage devices and operating vehicles in V2G mode during peak periods and high demand are some of the solutions. Proper resource planning and maintaining a balance between energy demand and supply will improve the stability of the utility.

III. Evaluation of EVs Impact on Qatar's Distribution Network

Recently vast studies have been done on the impact assessment of EVs on the utility in the United Kingdom (UK), Malaysia, Hungary, Ireland, Canada and Australia countries. However, the above-mentioned impact assessment does not apply to Qatar due to different geographic conditions. These countries have extreme winter seasons while the state of Qatar has extreme summer. For the summer season in

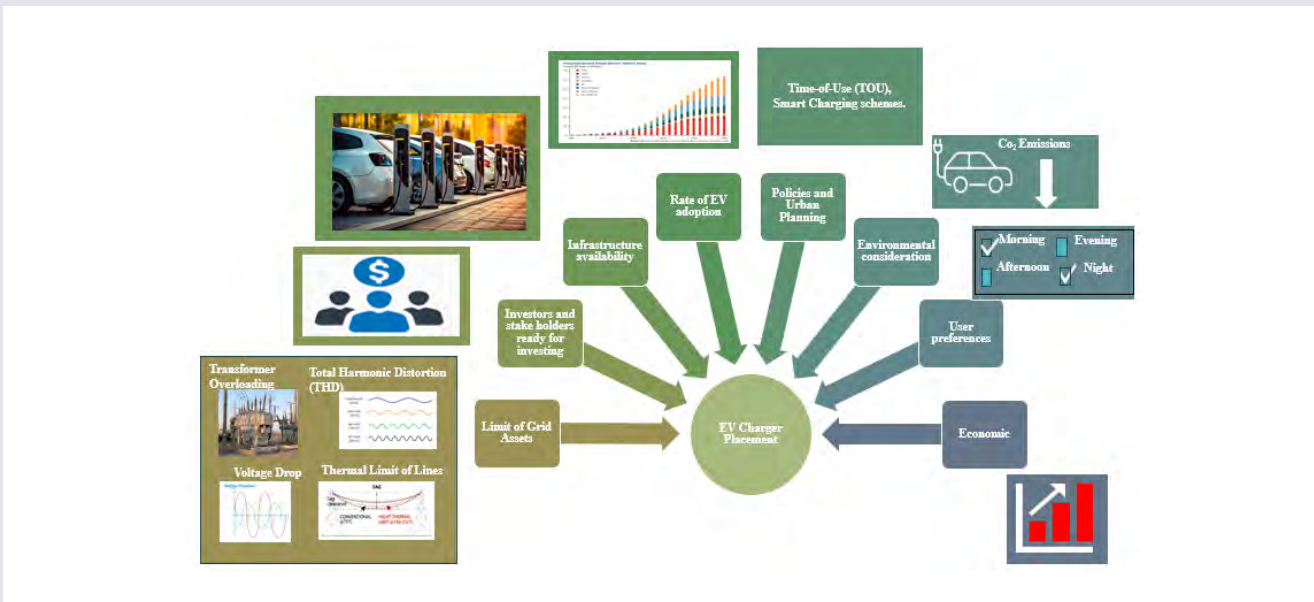

Figure 1. Challenges with EV Charger Placement.

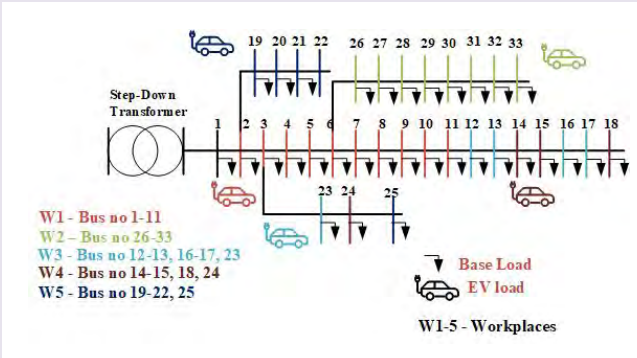

Figure 2. IEEE 33-bus power distribution Network under study.

Qatar, power demand increases from morning 6 am to evening 8 pm and reduces from 8 pm onwards. This is due to extreme summer and air conditioner loads are ON. Moreover, the energy consumption of EVs may be affected by ambient temperatures based on seasons.

To evaluate the impact of electric vehicles on Qatar's grid, it is necessary to consider the summer and winter seasons or urban and rural load curves. The next step is to follow the EV Charger guidelines provided by Kahramaa.

The EVs impact assessment can be classified into three categories i) environmental impact, ii) economic impact and iii) impact on the power network. The impact of power networks is further categorized as positive and negative. The negative impact has three categories i) grid stability, ii) power quality and iii) overloading of distribution components.

This article focuses on the evaluation of EV impact assessment on the grid for private vehicles. As in Qatar, 85% of private vehicles and the remaining 15 % are public transport aligning with the target of Green Car initiative targets.

The EV's negative impact assessment is carried out and monitoring of the power quality parameter (voltage fluctuations). The studies can be carried out to observe the impact on other power quality issues such as frequency stability, however, the current study is limited to investigating only voltage parameters.

IV. Main Findings

The network under study uses an IEEE-33 bus system. This power distribution network is subdivided into various workplace names such as W1, W2, W3, W4, and W5 as shown in Figure 2. These workplaces have different charger ratings and plug-in times. The below result in Figure 3 are for only one workplace W3 represents voltage profiles for the workplace (W3_Bus (number)) W3_Bus_12, W3_Bus_13 and W3_Bus_16, W3_Bus_17, W3_Bus_23. A major voltage drop occurs in the early morning (5 am onwards) below 0.95p.u (Bus -12, 13, 16 and 17).

For EV penetration of 30%, the observations are listed below:

1. The results show that unmanaged charging strategies have a significant amount of voltage drop in all workplaces.
2. The unmanaged charging strategies lead to a drop in voltage below 0.95p.u in some workplaces and an overload of distribution lines. However, this issue can be solved by integrating renewable sources (PV, wind) in each workplace. Furthermore, each workplace needs to implement some unique strategies during peak duration to avoid grid congestion and maintain system stability.

V. Conclusion

To replace fossil fuels-based cars with 100% E-transportation it is necessary to do the following:

- Public awareness of the use of EVs.
- Developing government subsidies policies on (i) EV purchase (ii) EV charger installation and installation of solar plants at villas, complexes and workplaces.
- Discounts on the insurance and registration fees of EVs.
- Implementation of controlled charging and smart strategies, availability of public EV chargers for approximately every 20 km in range.

VI. Acknowledgement

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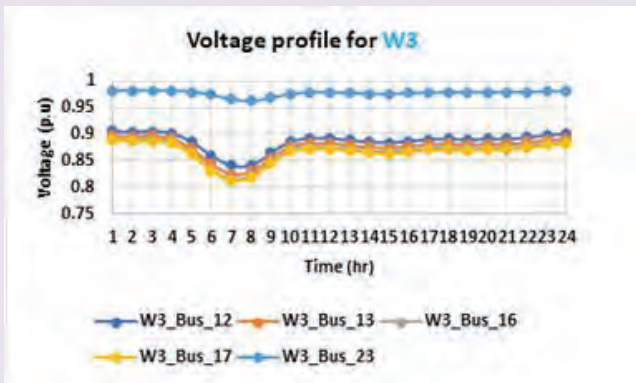

Figure 3. Voltage profile for Workplace (W3).

“The Ant that Killed the Lion”

Dr. Maher Abu-Munshar

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“The ant that killed the lion” is one of the sayings that became known and widespread in the late 12th and early 13th centuries CE. It refers to a significant incident whose hero was King Richard I - the Lionheart - King of England (d. 1199 CE), and it implies a lesson for every king, sultan, ruler, and every person who holds power and position in every land at anytime. But before starting to discuss in detail the reason for unleashing this saying, it is necessary to give a historical introduction of the events of that period to have a clearer and more comprehensive picture. This study was based on the analytical historical research method to understand the event’s preliminaries, course, and outcomes, as well as the reason for which this phrase was said and became known. The liberation of Jerusalem on October 2, 1187 CE, by Sultan Salah al-Din al-Ayyubi was a resounding event and a major shock to both the Crusaders in East and Western Europe alike. The Crusaders succeeded in exploiting the weakness and disintegration of Muslims in maintaining the occupation and control of Jerusalem for decades since 1099 CE. Thus, they did not expect that after all these years, Muslims would be able to liberate it and rescue the Al-Aqsa Mosque from the hold of the Latin Europeans.

During their travel and upon their arrival in Europe, the bishops, monks, and other crusaders exaggerated in portraying the extent of the tragedy and disaster that happened to them due to their defeat in the Battle of Hattin on the 4th of July 1187 CE, and the subsequent fall of Jerusalem and many crusader cities and strongholds. On the 20th of October, 1187 CE, Pope Urban III died as soon as he received the news coming from the East, and obviously, his heart could not bear the dreadful shock and the deep tragedy. Europe did not wait long to form and prepare a new crusade, especially after the new Pope - Gregory VIII took office on the 22nd of October, 1187 CE, which historians know as the Third Crusade (1189-1192 CE). Because the papacy wanted to ensure that this crusade would be strong and would regain control over Jerusalem and all that was liberated by Muslims, three of the strongest monarchs of Europe were selected to lead this crusade: Richard I (Lionheart), King of England; Philip Augustus, King of France; and Frederick Barbarossa, King of Germany. In addition, a tax of 10% named “Salah al-Din’s tithes” was imposed on everyone without exception to finance the crusade and create a feeling of hatred and the need for revenge against Salah al-Din and the Muslims.

Frederick Barbarossa drowned in the River Calycandnus (Saleph), which is a small river in Cilicia, on the 10th of June 1190 CE, while he was marching towards the Levant. As a result, his army lost control, his soldiers dispersed, and most of the German troops returned to their homeland. Furthermore, a conflict arose between King Philip Augustus and King Richard; therefore, King Philip decided, shortly after he had arrived in Akka, Palestine, to return to France. King Richard remained alone to lead the Third Crusade. The research we have conducted proved that history books that wrote about the crusades, despite their authors' origins and persuasions, focused separately on that king. They talked about him separately and intensively when they discussed the events of the Third Crusade (1189-1192 CE). This king led the crusade strongly, and he also led the arduous and long peace negotiations with Sultan Salah al-Din al-Ayyubi, which ended with the signing of the al-Ramla Peace Treaty on the 2nd of September 1192 CE.

History books have portrayed King Richard I with peculiar attributes. He was an intelligent, young king, but he was stubborn, with a sharp and nervous temperament. A strong, brave and audacious man, however, he was imprudent. All of these features were embodied in his negative and positive relationships with the leaders and soldiers who participated with him in the Third Crusade, which resulted in major disagreements among them. Many of these leaders defected, deserted this crusade, and returned to Europe, as King Philip Augustus did. These contradictory attributes also appeared in King Richard's relationship with Salah al-Din al-Ayyubi in particular and Muslims in general. For example, this king arrived in Palestine on June 8, 1191 CE, firmly convinced that the region, including Jerusalem, was the unencumbered property of the Christians, and that Muslims were only occupiers and invaders of those countries. He was ready to make peace with the Muslims only if they would leave Palestine and Jerusalem and return to the countries from which they came. One month after this king had arrived in Akka, he did not hesitate to kill approximately three thousand Muslim captives in a way that no rational person could conceive after his occupation of the city on July 12, 1191 CE. Soon, he conquered Salah al-Din's army at the Battle of Arsuf on September 7, 1191 CE; however, he finally realized that seizing Jerusalem from Salah al-Din by force would not work because Salah al-Din was not a weak leader and his army should not be underestimated. Therefore, Richard preferred to negotiate as mentioned above, and then he went back to Europe without seizing Jerusalem.

King Richard was a first-class warrior, but he was imprudent. He often underestimated the capabilities

Dr. Maher Abu-Munshar

of his enemies and belittled them. Like many of those who have power nowadays, he only sees greatness in himself and power in his army. However, a little boy who was eleven years old broke the vigor of this king and caused his death. Historians disagreed about the name of this little boy whether it was Pierre Basile or Bertrand de Gordon. Historical narratives mention that King Richard, who was fond of killing and bloodshed, was hit in the shoulder by an arrow during his siege of Chalus Chabrol Castle in France on March 25, 1199 CE, but he underestimated the wound caused by the arrow, for it was shot by a child. But the king did not know that the arrow was shot by the hand of a grieving boy whose heart was full of deep sorrow and hatred for his father's killer (i.e., King Richard). Despite the weakness of the child's arms, the arrow was as 'strong as a missile.' The king belittled his wound and thought that it was going to heal soon, but the wound deteriorated rapidly and turned into what is called gangrene. It caused severe pain that the king could not bear, despite his well-known strength and might. The King died soon, at the age of 41 years on the 6th of April 1199 CE after they had brought the little child who shot him with the arrow to him and he knew his story (revenging his father's murder).

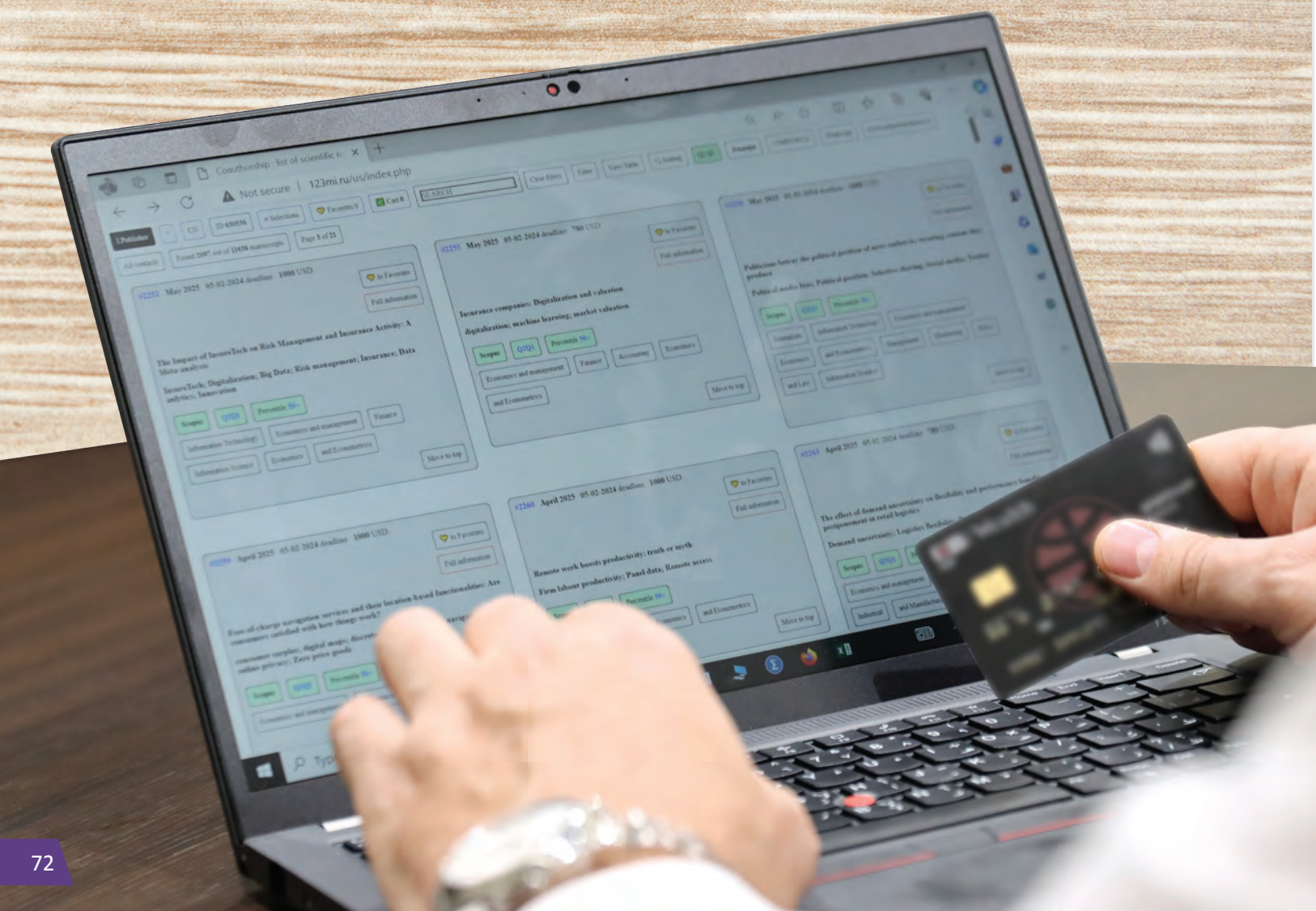
The king's death was a blow to Europe. How could a mere boy (the ant) slay the King known as the Lionheart for his bravery? How could a defiant knight, feared by many, meet his end at the hands of a child? Yet, it serves as a lesson, teaching us that the will and determination of a child to seek revenge can outweigh the might of armies and the vast power and authority of a king like Richard. And all the crowds could not prevent a little child from delivering his arrow and breaking the spear of the King of England; he is the ant that killed the lion.

Buying Authorship in Scientific Research:

Unmasking an Egregious Violation of Research Integrity

Prof. Ahmed M. Megreya

Professor of Psychology and Associate Dean for Research & Graduate Studies, College of Education - Qatar University



Authorship stands at the core of the scholarly endeavor. In addition to its primary mission of disseminating scientific knowledge, authorship confers privileges, rights and accountability. However, the integrity of equitable authorship has recently encountered a significant threat, which is the so-called phenomenon of "paper mill," "authorship for sale" or "authorship commerce." Researchers engage in this ethical misconduct by paying money to acquire authorship credit in a scientific paper without contributing to the research process. This phenomenon initially emerged twenty years ago in the field of biomedical sciences. An early article entitled "China's Publication Bazaar," published by the highly prestigious journal "Science" in 2013, unmasked how some "language editing" agencies in China sell academic authorships in highly prestigious biomedical journals. Not only do these agencies prepare and submit papers on behalf of the researchers, but also they may fabricate and falsify experimental data. This phenomenon is now fast growing and extending to several other disciplines. In this opinion essay, I will briefly describe this phenomenon. Then, I will briefly discuss the motives for buying academic authorship, the hallmarks of fake research, and the need for practical procedures for detecting this research fraud.

In a large number of online black markets or so-called paper mills, academic authorship is offered as a "commodity for sale," and customers are able to buy authorships on any scientific papers that meet their interests and/or budgets. These websites provide several options for different research titles. For each research, they provide specific information on the expected publication outlets and quality parameters (e.g., Scopus indexing and journal impact factor), in addition to the exact date of publication, the number of co-authors, and the cost of each authorship place. The price tags range from a few hundred to several thousand US Dollars, depending on various factors including the quality of the journal, the number of co-authors and the place of authorship. Known paper mills, which have been described in several "Nature" and "Science" articles, are found in specific non-native English-speaking countries including China, Russia and Iran. Importantly, many of these paper mills deceitfully claim that they provide author services in the form of language editing, but in fact covertly sell authorship. Another form of selling academic authorship is what can be called "personal papermills," in which a researcher collects money from a number of "guest" authors in order to pay part of it to a "ghost" author, who may or may not be included on the authorship list. Therefore, these well-known paper mills could be just the tip of the iceberg.

These unethical research practices are now under investigation by many research integrity sleuths and different nonprofit ethics entities, such as the Committee on Publication Ethics (COPE) and the Retraction Watch Blog. For example, Jennifer Byrne, a medical scholar at the University of Sydney, Australia, is one of the pioneers who unmasked the paper mill phenomenon, where she was able to identify hundreds of fake research publications produced by paper mills in the field of genetics and bio-medical sciences. Consistently, Anna Abalkina, an international economics researcher at Freie Universität Berlin, Germany, investigated a total of 1009 advertisements of co-authorships for sale in a famous paper mill in Russia from 2019 to mid 2022. She identified at least 434 papers that were linked to those advertisements, subsequently published not only in so-called "predatory" journals but also in reputable journals, issued by well-established publishers in several disciplines including economics, law, education, linguistics, medicine, engineering and agriculture. More recently, Anna Abalkina and Dorothy Bishop, a professor in the Department of Experimental Psychology in the University of Oxford, UK, identified six researches produced by a paper mill that were published in a reputable journal in the field of psychology.

The scale of the paper mill trade is rapidly expanding, as recently concluded by a 2023 "Nature" article entitled "Multimillion-dollar trade in paper authorships alarms publishers." For example, a report by the Committee on Publication Ethics (COPE) and the International Association of Scientific, Technical and Medical Publishers (STM) about paper mills (June 2022) analyzed over 53,000 papers from six well-established publishers. These analyses showed the average percentage of affected articles in each journal published or submitted from 2019 to 2021 was 14%, and the overall of "the percentage of suspect papers being submitted to journals ranges from 2-46%." A 2023 "Nature" article entitled "How big is science's fake-paper problem?" estimated that hundreds of thousands of fake research is lurking in the international scientific journals.

Research integrity sleuths have identified four main factors, which might motivate researchers to buy academic authorship:

Prof. Ahmed M. Megreya

- First, the fulfillment of unrealistic academic promotion criteria that might compel some applicants to unethically publish in highly prestigious international journals.
- Second, the enhancement of researchers' CVs for winning an award, hunting for a competitive job, applying for tenure or receiving research funds may be another driving force towards this unethical research practice.
- Third, paying publication fees, which reach few thousands of US dollars in many medical and open-access journals can become a motive for engaging in the paper mill phenomenon. Some researchers who do not have research funds tend to sell co-authorship positions to authors who do not have any research contributions, but can pay publication fees.
- Finally, the monetary publication rewards that many universities provide for publications in high-quality international journals might sometimes be misused to pay for purchased publications or gaining money. Another extreme demonstration of the misuse of publication rewards is the deliberate inclusion of two different affiliations in the authorship lists for getting rewards twice; one from each institution.

Alarm should be sounded when a researcher unrealistically publishes prolific quantities of articles, which in some cases amount to an article every few weeks. Examining such publications often leads to discovering a multitude of disconnected topics, highly incoherent groups of co-authors, and a mismatch between the specializations of the co-authors and the topic of the research. Abalkina and Bishop have also identified some "red flags" which diagnose fake research produced by paper mills. These include the following: direct links with paper mill advertisements, unusual patterns of collaboration, fake or non-institutional email addresses, special issues of journals or edited books with little oversight of editors, anomalies in the peer-review process, with unfeasibly short article processing times, inappropriate citations, plagiarized and falsified content of articles such as AI-generated papers and common templates. In addition, the paper mill report by COPE and STM (June 2022) discussed some indicators of fake papers, such as flaws in experimental data, research designs and statistical analyses. However, the report also acknowledged the difficulty to detect cases, in which the same group of authors buy together the same articles, within the same research topics, from different paper mills, increasing the credibility that this research group conducted the papers collaboratively. Roland Seifert, the Director of the Institute of Pharmacology, Hannover Medical School, Germany, added a new feature: changes to the authorship list during revision cycles with the same journal or across different journals that previously rejected the research.

Based on such hallmarks, research integrity sleuths proposed practical and detailed procedures that editors, journal staff and peer reviewers should take to detect fake papers produced by paper mills. Indeed, publication outlets might play, intentionally or unintentionally, a key role in this process. Therefore, publishers are now performing several procedures including investigations, retracting fake publications, revising their review processes, and making investments in technologies that could identify these manipulations; as reported by a 2022 "Science" article entitled "How a site peddles author slots in reputable publishers' journals." On another note, academic institutions must adequately raise awareness against the buying of academic authorship. Therefore, the present article is a call to attention *and* a call to action. These calls are equally urgent and relevant to universities and research centers in Middle Eastern countries, as some researchers in some universities have been found to be among the leading purchasers of fake research produced by paper mills, as indicated by Abalkina's investigation. Universities, publishers, and nonprofit research ethics committees should unite to provide practical solutions for this egregious violation of research integrity.

A Scientific Reading of the Book “Measuring Country Image”

Taleb Al- Adbah

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In light of the accelerating pace of time and global communications evolution, strategic communication has become not only effective and crucial at the local community level but also at the global level. When the image of a state surpasses geographic boundaries and establishes itself in the minds of the international audience, comprising diverse races and cultures, and this image continues positively into the future, can this be termed as strategic communication? Or is it international strategic communication? Does measuring this image constitute a practice of international public relations?

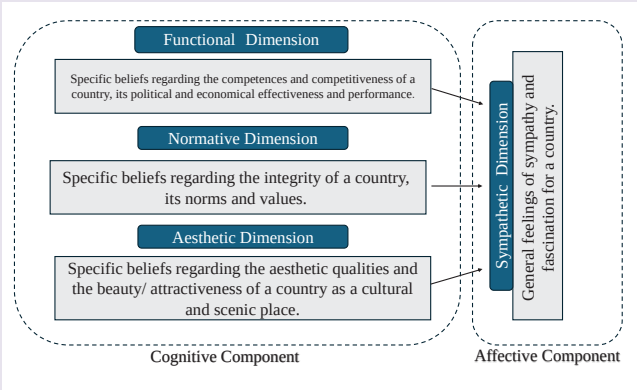


Figure 1. Buhmann's 4D Model in the Country Image.
Original source: (Buhmann, 2016)

Expanding the scope of public relations from local to international application has become imperative today, especially in a country like Qatar and the region, which has been hosting major global events for a decade. If public relations is practiced for the benefit of a state and not an organization, it is crucial to first identify and measure the image of this state in the eyes of the international community, as a diagnostic stage for selecting the appropriate remedy. The theoretical framework for the four dimensions in the state image consists of cognitive and affective components (Figure 1). The cognitive component includes three dimensions:

1. The functional dimension, which measures the competitiveness and progress of the state domestically and internationally.
2. Ihe normative dimension, which focuses on the general values, norms and laws of the state.
3. The aesthetic dimension, which measures the attractiveness of tourist, cultural, natural places, heritage and culture.

All these lead to the affective component, which involves an emotional aspect concerning the general feeling and sincere sentiments about the state.

This framework assumes that the first three dimensions lead to the affective dimension, and to measure its effectiveness fully, there must be an independent factor for this framework, which is intention and behavior. In this case, the affective dimension becomes a mediator that controls the relationship between the first three dimensions and the affective dimension in one way or another.

Buhmann (2016) suggests that we can use this theoretical framework in quantitative research in two independent cases. Firstly, by using the Structural Equation Modeling (SEM) to calculate all forms of relationships between variables on all aspects, which helps in finding a clear result for the overall concept. Secondly, by using the framework in a comparative study between two states, peoples, organizations or international events to reflect the variations in all dimensions in the numerical comparisons that show the differences in the opinions of the parties involved.

This framework represents a significant step towards the development of international public relations, especially in the Middle East region and Qatar specifically, which has used all its international events as a soft power to enhance its state reputation and image globally. As researchers, we must examine the behaviors of the international audience towards the state to find effective communication strategies that continuously strengthen the relationship between the international community and the state. Achieving this goal means the success of these events and the success of the state, contributing to the realization of the Qatar 2030 Vision.

We, as researchers, also need to translate these conceptual frameworks and simplify them to make them easy to apply for professionals, practitioners and public relations managers. It is no secret that the field of communication is a comprehensive one, drawing from various disciplines such as psychology, sociology, other humanities and management. Communication science encompasses the practice of public relations, which bridges the gap between the academic and professional spheres. An academic public relations researcher cannot rely solely on their concepts and predictions without drawing on their previous experience in the field of public relations. On the other hand, professional practitioners of public relations, such as managers, supervisors and employees, can develop future action plans in persuasion and news without relying on academic experts. Therefore, as a doctoral student in the field and a former public relations practitioner for nine years, I see the four-dimensional framework for measuring the state image as a mediator between practitioners and academics to measure the impression of the general target audience and to create scientific numbers that researchers rely on to create a database that enables them to understand the phenomena surrounding the international public and the state image.

I have translated the conceptual framework and presented it in both languages as a visual framework to facilitate explaining the relationship between the four dimensions and their components.

For more about the book "Measuring Country Image", you can visit Springer's e-books at the link:

https://doi.org/10.1007/978-3-658-15407-3.

Story of a Knowledge Platform:

Qatar Transportation and Traffic Safety Center

College of Engineering - Qatar University

The State of Qatar has been striving to improve the traffic safety culture of road users and developing policies and mechanisms to prevent road crashes or mitigate their damages. Qatar University (QU) has been helping to fulfill the State's needs regarding safety on roads and create a risk-free traffic environment. To get acquainted with QU's role in this policy, we are meeting the Director of Qatar Transportation and Traffic Safety Center (QTTSC), Dr. Shimaa Al-Quradaghi to inform us of the Center's role in traffic safety.

The team of the Qatar Transportation and Traffic Safety Center.

In the beginning, Dr. Shimaa, when was the Qatar Transportation and Traffic Safety Center established? And what is its mission?

The Qatar Transportation and Traffic Safety Center was established in 2012, and it is one of three research centers at the QU College of Engineering. The center's mission is to advance innovation and scholarship through research, development, education and engagement of QU and the society in general, in order to support road safety and transportation activities in Qatar.

Furthermore, the center contributes to fulfilling its goals represented in conducting research and multidisciplinary services for the interest of the Qatari society in particular and regional and international societies in general.

We would like to get acquainted with the center, its research laboratories, and the responsibility of each of them.

There are three main research laboratories in the center, including the Road User Simulator Lab. It contains an advanced driving simulator, which is used to study drivers' behaviors to develop engineering solutions by modifying the road design, ground marks, and traffic signals, in addition to smart traffic control systems and others, which aim to improve the efficiency of traffic flow and safety.

The second lab is the Crash Test Lab, the first of its kind in the region, where vehicle components such as safety belts, airbags and child seats are tested by using accredited standardized regulation tests to reduce injuries during road crashes.

The third lab is the Virtual Reality Lab, which aims to study the behaviors of the most at-risk road users, such as pedestrians, bicycle users, and electric scooter users, to improve the road environment and control and operate traffic.

During this academic year, 2024-2025, the center will establish the motorcycle simulator lab and the electric scooter VR based simulators lab that aim to expand the conducted behavioral studies to different road users.

The center also has strong sustainability assessment and analytics capabilities in form of human capital and established databases, tools and approaches. These cutting-edge approaches have been applied to assess the emerging e-mobility technologies and global supply chain analysis of Qatar's strategic sectors such as Oil and Gas, and Food sectors.

How does the Qatar Transportation and Traffic Safety Center at the university contribute to supporting the State's policy in creating a safe traffic environment?

The National Traffic Safety Committee prepared the first National Traffic Safety Strategy, which aims to reduce the death rate in the State of Qatar. QTTSC, as a representative of Qatar University, is considered one of the key contributors to the development and implementation of the National Traffic Safety Strategy (2013-2022) in the State. It was entrusted with thirty national action plans, which were successfully implemented. Moreover, the center cooperates with the relevant government authorities to exchange knowledge and experiences and develop policies and programs that enhance traffic safety.

Virtual Reality Lab.

Would you tell us about the most prominent current research program at the center?

The center is conducting several research projects on different topics several covering aspects such as traffic safety, transportation planning, sustainable transportation and logistics. Many research studies discussed the engineering design aspects and traffic control on roads such as safer pedestrian and cycling facilities and innovative treatments, motorcycle paths, bus stops and efficient traffic signal settings. These studies aim to develop innovative and sustainable solutions based on scientific foundations that help improve road performance. There are also many projects on flexible strategies in transportation planning and best practices in developing flexible means of transportation, sustainable transport as well as in supply chain in several sectors, such as LNG and agricultural products.

Is there cooperation between the center and the General Directorate of Traffic in the State? Is there any international cooperation?

Since the establishment of the center, many research studies have been conducted in cooperation with the General Directorate of Traffic. It has recently conducted an in-depth joint study on safety of food delivery motorcycle riders by analyzing road crashes and collecting questionnaires from motorcycle riders and car drivers. The results have been summarized in an official technical report that will be published nationally. The center also conducted an awareness

campaign in cooperation with the General Directorate of Traffic via social media through videos specifically designed to educate the audience during the 2022 World Cup on safe driving behaviors and compliance with traffic laws and regulations designed to ensure smooth and safe traffic of vehicles and pedestrians.

Furthermore, there are many cooperation's at the international level with many reputable universities through joint research projects, as well as with the International Road Federation and The World Conference on Transport Research Society through the training program.

What services does the center provide for social participation? Who do these services target?

The Qatar Transportation and Traffic Safety Center provides a set of services for social participation targeting many groups. These services include:

Driving Simulator Lab.

- Awareness campaigns: Organization of continuous awareness programs to enhance awareness of traffic safety issues and the importance of safe driving. Based on the State's concern about traffic safety and recognition of the youth's role and enablement, the center in cooperation with the Ministry of Education and Higher Education, launched the Traffic Safety Ambassadors Program for secondary schools. The Traffic Safety Ambassadors Program is one of the action plans of the National Traffic Safety Strategy 2013-2022 in the State of Qatar. The program is concerned with raising students' awareness of the importance of traffic safety by teaching the participating students communication and leadership, and management skills so that the role of the students is not only limited to receiving information but also contributing to spreading it among their generation. Since the program was launched in 2015, more than 100 governmental and private secondary schools for boys and girls have participated, and the number of traffic safety ambassadors at schools has reached 700.
- Educational programs: Providing educational programs directed to students to enhance knowledge of human behavior and traffic safety. The "Traffic Safety and Human Behavior" course, which targets university students and covers various aspects of traffic safety, was developed intending to spread awareness of the importance of traffic safety and its relationship to human behavior. This course was offered for the first time during the fall of 2023. It is a part of the core knowledge and skills package in the Qatar University's core curriculum program for Qatar University students. This course is expected to play a major role in enhancing road safety among young people in the State of Qatar.
- Training courses: These courses aim to enhance traffic safety awareness and develop the skills and knowledge of participants in this field. The center organizes training courses in cooperation with the International Road Federation and the World Conference for Transport Research Society. More than 21 training courses were conducted, and more than 470 engineers and experts were trained in the fields of road safety, traffic engineering, road crash, carbon footprint accounting and management investigation. These courses aspire to cause radical and tangible changes in the reality of traffic safety in Qatar and develop a traffic safety culture among road users.
- As for conferences, the center organized the International Traffic Safety Conference in cooperation with the National Traffic Safety Committee and all relevant authorities in the country and international partners. The center also organized the Global Conference on Resilience in Mobility and Logistics under the Third World Congress of Engineering and Technology, organized by the College of Engineering at Qatar University. This conference aims to provide a platform that includes a diverse community of industry experts, researchers, and experienced influential decision-makers. It also aims to explore, discuss, and address the main challenges and available opportunities related to resilience in the fields of mobility and logistics.

Crash Test Lab.

Interview with a Researcher:

Dr. Seeta Ali Al-Athba

Associate Professor of Literature & Modern Criticism and Associate Dean for Languages, Communication & Translation, College of Arts and Sciences - Qatar University

Qatar University (QU) is renowned for its numerous female researchers and leaders who have attained remarkable success. In this edition, we are honored to introduce one of the Qatari talents who has excelled academically and administratively, particularly in the fields of criticism and modern literature, as she also made various research contributions. Let us now introduce to you Dr. Seeta Al-Athba, Associate Professor of Literature and Modern Criticism, and the Associate Dean for Languages, Communication and Translation at QU's College of Arts and Sciences.

Dr. Seeta Al-Athba, how do you introduce yourself to the readers of the magazine?

To introduce myself, the first thing that comes to my mind is that "I am a member of QU family. As a bachelor's student, I honed my intellectual, critical, and research awareness within its walls. Under the guidance of QU professors and inside its old library, I embarked on my inaugural research, engaging in discussions and analyses. I collaborated with colleagues from the Department of Arabic Language within the College of Arts and Sciences (formerly known as the College of Arts). Subsequently, I assumed a faculty position and progressed through the academic ranks, culminating in my recent appointment as an Associate Professor.

I completed my MA and PhD with good grades from the University of Jordan. Additionally, the President of the University of Jordan, who commended my PhD thesis, recommended its publication for being a distinguished work.

In addition, I am passionate about training. I have participated in numerous workshops spanning a wide array of skills and sciences. Furthermore, I am certified as a trainer by esteemed international organizations. I have also conducted numerous workshops across different regions of the State.

Another aspect, that is deeply embedded within my heart and mind, is that I am a researcher dedicated to refining my research methodologies. I contribute as a member of multiple research teams. Recently, our team secured an integrative research grant with the Qatari Literature Team, where I proudly serve as the lead researcher of a project titled "Social Transformations in the Qatari Narrative."

Lastly, I am concerned to constantly volunteer to serve the university and the community whenever my participation is needed.

Why did you pursue studies in criticism and modern literature?

My primary motivation for specializing in literature and modern criticism stems from passion. I believe that understanding the world is inherently intertwined with understanding the human being and his vision. However, I have observed a challenge within modern Arab criticism, where it tends to assimilate into Western methodologies, potentially eliminating the specificity of Arab thought. Thus, my decision to pursue this specialization was an attempt to consolidate a different critical perspective.

In addition, I am interested in modern literature and its changing views that interact with reality, prompting me to scrutinize the phenomena, causes, transformations, and expressions it encapsulates. Criticism represents a quest to comprehend the human being and his vision of the universe.

Your career has been characterized by many scholarly research projects and publications, could you please illuminate us on some of them?

Each research holds its distinct objective specificity and intellectual value. Consequently, selecting the most prominent among them is difficult, as they all carry significant importance and value. However, my book titled "The Impacts of Technology on Novel from Paper to Computing," initially conceived as my MA thesis and subsequently published in its first edition, represents a pivotal milestone in my career, given the novelty, seriousness and scarcity of the topic. It opened up new research and critical perspectives different from the conventional norm.

My extended research, "The Prison Novel between the "French Papillon" by Henri Charriere and "They Listen to Her Feeling" by Ayman al-Atoum (from a comparative narrative perspective)" stands out as one of the research projects that significantly influenced my research trajectory. Delving into the challenging track of prison literature and navigating between two distinct literary works, I endeavored to uncover patterns of difference and similarity.

What leadership skills are necessary for administrative researchers?

In general, a researcher must exhibit objectivity to avoid scientific bias and possess a profound understanding of diverse research methods and methodologies. Additionally, it is crucial to possess an analytical mindset capable of drawing conclusions and fostering innovation.

For the administrative researcher, particularly the person responsible for overseeing a research team, he/she must possess a diverse skill set; this includes supervision, monitoring, follow-up, organization, motivation, acknowledgment of collective efforts, and tolerance for different opinions. This is in addition to listening skills, objectivity, and scientific integrity in conveying and documenting information. It is imperative not to approach research with preconceived intellectual biases or predetermined outcomes but rather to rely on the conclusions drawn from the research upon its completion.

We have observed your active involvement in both the university and community service. Based on your experience, how does community participation generally contribute to the development of society?

Undoubtedly, the role of a university professor transcends the confines of the academic institution, extending towards actively engaging in societal service. This bridge between theoretical knowledge and practical reality is crucial for a deeper understanding of social issues, which can only be attained through close interaction with them. Such engagement fosters genuine and objective communication between the academic institution and individuals. It is imperative that the academic role aligns with its societal impact to effectively contribute to the pursuit of knowledge, prosperity, and development. Indeed, universities play a significant role in enriching society through experiences and awareness shared by their professors.

Our experience in the Arabic Language Department with the "Future Book" Competition, in collaboration with Qatar Charity, serves as a tangible example of bridging connections across various schools. This initiative aimed to create a narrative platform that integrates the expertise of professors with the creativity of students.

Having discussed and supervised numerous graduation projects for QU students, what advice would you offer them?

I advise them to strive with genuine commitment and dedication, as it achieves sustainable research awareness. Reading, following up, and staying updated with new developments contribute to nurturing a passionate research mindset, as continuous reading fosters an ongoing intellectual movement. Engaging in conferences and seminars further enriches a mature personality at the intellectual and human levels. Striving for balance between these two levels ensures a positive academic presence in society.

I also advise them to avoid relying solely on traditional or familiar topics, which may provide a safe and easy foundation. Instead, I urge them to embrace diversity that contributes to the cultural, critical, and societal discourse.

Success entails confronting numerous challenges. As a researcher and administrator, what challenges have you encountered?

Every genuine research presents its own set of challenges, stemming from the aspiration to deliver in-depth different research adhering to the rigorous criteria of scientific research. During my master's and doctoral studies, for instance, I encountered a notable challenge, which is the scarcity of studies pertaining to digital literature and digital criticism in the Arab world. Nevertheless, I managed to surmount this obstacle through investigation, tracking, and extensive reading on the subject matter. By analyzing digital literary works and observing the manifestations of digital criticism in Arab literature, as well as creating websites and social media platforms dedicated to this field, thankfully, I could develop a digital critical perspective, which is encapsulated in my two works.

At the administrative level, the primary challenge lies in organization, particularly due to the multitude of meetings and agendas that need to be achieved. However, I do my best to overcome these challenges through meticulous organization, planning, communication, openness to diverse opinions, transparency, and objectivity. These factors play pivotal roles in overcoming administrative difficulties and challenges.

Tell us about your significant future plans.

Hence, one of my future plans is to persist in completing my ongoing research, whether within my research team or independently. Additionally, I aim to develop myself through development programs and learn new information that serves me in education and research.

In conclusion, I extend my gratitude to you for this meeting and commend your efforts in highlighting the world of research and researchers at Qatar University.

Researcher Business Card

Dr. Michail Nomikos

Associate Professor of Biochemistry, College of Medicine – Qatar University

جامعة قطر
QATAR UNIVERSITY

Dr. Michail, introduce yourself to the university community and magazine readers.

I am an Associate Professor of Medical Biochemistry and Research Coordinator in the College of Medicine at Qatar University (QU). I joined the newly founded College of Medicine at QU in 2016. I have authored/co-authored over 60 research papers and book chapters in prestigious scientific journals, and received significant research funding for various projects. I have presented my work at numerous international conferences. Apart from my dedication to research excellence, I have a strong passion for teaching and helping students to succeed.

What are your most important research projects and achievements in the medical field?

I have a number of ongoing research projects. However, my main research interest focuses on the important role of calcium in health and disease. Calcium signaling plays a fundamental role during the early steps of mammalian fertilization and embryogenesis. Moreover, calcium is the main regulator of the contraction and relaxation of cardiac cells, facilitating the heart's pumping function. Dysregulation of calcium handling in the cardiac cells can lead to arrhythmias, cardiac hypertrophy, heart failure and ischemic heart disease. Our lab uses multidisciplinary approaches to identify the molecular mechanisms that lead to various diseases in order to enable novel therapeutic interventions.

Tell us about the prominent honors and awards you have received in your academic career.

In 2013, I was awarded the prestigious 'Fertility and Sterility Investigator Achievement Award' by the American Society for Reproductive Medicine (ASRM). In addition, I received the international "Outstanding Paper Award 2017" of the Asian Journal of Andrology (AJA), the official journal of The Asian Society of Andrology. It is also worth noting that I was previously nominated for a Cardiff University Excellence Award in the category "Rising Star."

What distinguishes the College of Medicine at Qatar University to be the first choice to attract distinguished students and academicians?

The College of Medicine has indeed become the first choice for distinguished students and academicians through a combination of factors that foster excellence and innovation. With a dynamic and innovative curriculum that integrates the latest advancements in medical science, technology and education methodologies, cutting-edge research opportunities, state-of-the-art facilities and robust interdisciplinary collaborations attract those seeking to push the boundaries of medical knowledge and practice.

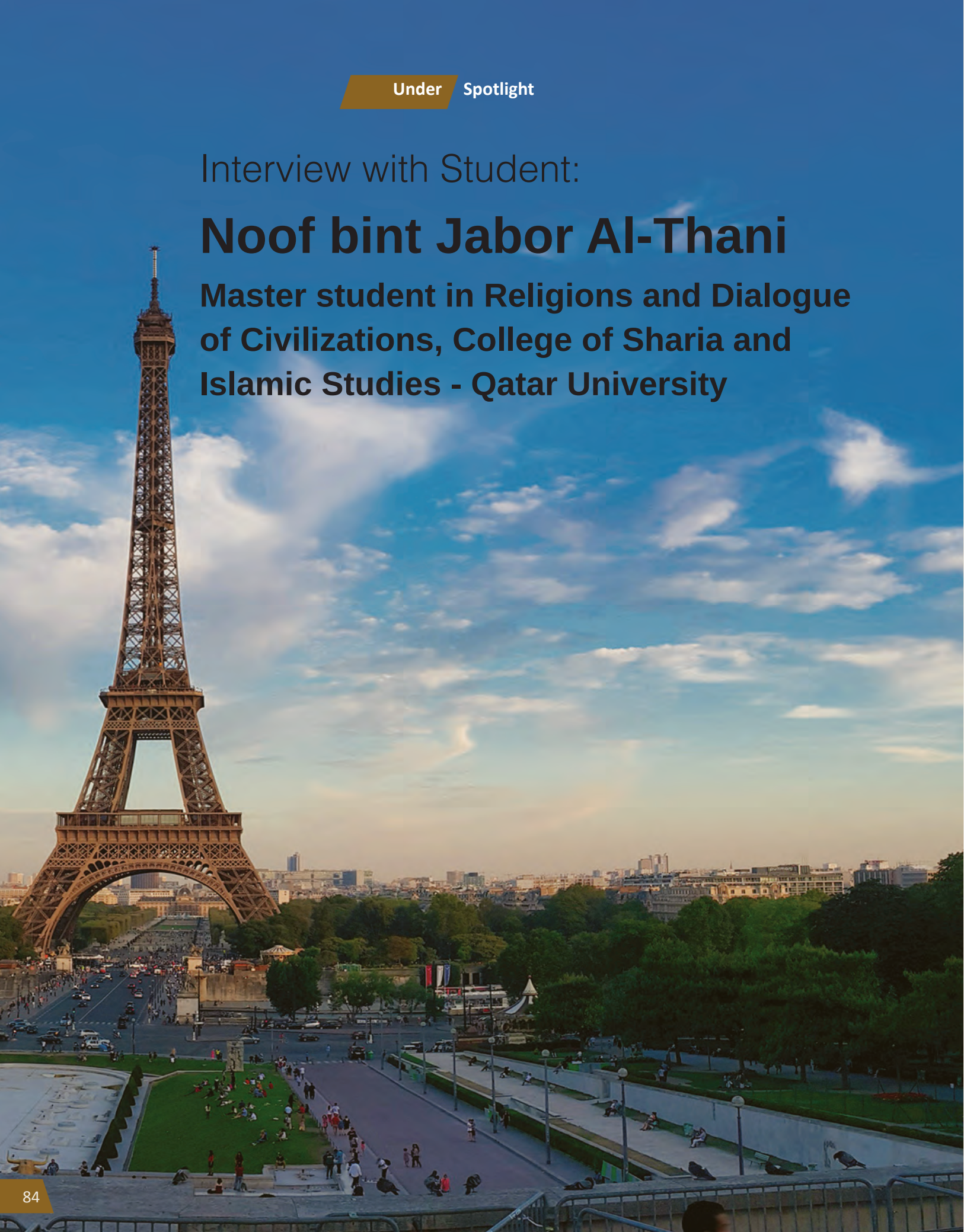
What is your message to Qatar University students to enable them to achieve research and professional excellence?

QU students should aim to build a strong foundation of knowledge and skills, develop critical thinking and problem-solving abilities. Despite the inevitable challenges, maintaining resilience and perseverance will propel our students toward their aspirations to achieve research and professional excellence. Our students should believe in themselves, have trust in their abilities and never lose sight of their purpose.

Interview with Student:

Noof bint Jabor Al-Thani

Master student in Religions and Dialogue of Civilizations, College of Sharia and Islamic Studies - Qatar University



"The discourse of the French extreme-right constitutes a real challenge to those engaged in the thought of inter-civilizational dialogue. This challenge is evident in the racist practice towards the Islamic presence and Muslims in Europe. It has embodied many forms and incidents of these practices that depart from the spirit of humanity whose slogans Western countries raise, including the French Republic. This is what prompts us as Muslims to offer a set of perceptions about the possibilities of inter-civilizational dialogue and its mechanisms to overcome the crisis of the rupture of relations between European societies and Muslims."

These sentences were quoted from the summary of one of the researches by Noof bint Jabor Al-Thani. In our interview, we are pleased to shed light on her research studies and academic endeavors.

In the beginning, Noof, how would you like to introduce yourself to the readers of the magazine?

I am Noof bint Jabor Al-Thani, a graduate student. I graduated with a bachelors degree in 'Fundamentals of Religion and Islamic Studies' at Qatar University (QU) in 2019, and applied for the master's program in 'Religions and Dialogue of Civilizations' at the College of Sharia and Islamic Studies at QU. I concluded my study with supplementary research titled: "The Extreme Right in France and its Impact on French-Islamic Relations." This research formed the basis of my master's degree, completed in 2023. Furthermore, I authored an article in the Journal of Islamic Sciences and Civilization – Algeria, titled "The Crisis of Extreme Right-Wing Racism and the Possibilities of Islamic Civilizational Dialogue: An Analytical Study of the French Extreme Right Model." I also submitted another article titled: "The Problem of Citizenship and Muslims' Social Rights in France," accepted for publication in the Jordan Journal of Islamic Studies – Al al-Bayt University – Jordan, expected soon.

What motivated you to join the program of Religions and Dialogue of Civilizations at the College of Sharia and Islamic Studies?

Considering that Qatar is a distinguished civilizational pillar attracting various cultures, with the previously held 2022 World Cup and the promotion of Islamic civilization and Qatari culture and my exposure to diverse cultures while travelling, by joining this program I aimed to expand Islamic world and Qatari cultural influence. My travels acquainted me with various cultures, religions, customs and traditions, motivating me to explore them further. The master's program in "Religions and Dialogue of Civilizations" at the College of Sharia and Islamic Studies provided fertile ground for this. In 2019, after joining, my focus shifted from religious studies to Western and civilizational studies, observing the clash between civilizations and calls for dialogue or alliance. This led to research culminating in a master's thesis and two peer-reviewed articles.

From your peer-reviewed article "The Crisis of Extreme Right-Wing Racism and the Possibilities of Islamic Civilizational Dialogue … ," could you introduce us to the concept of Extreme Right-Wing Racism? What does it specifically mean? And what is the role of Inter-civilizational Dialogue in encountering it?

Today, the extreme right in France is close to controlling parliament, indicating its imminent dominance over legislation. Research on extreme right-wing racism reveals varied interpretations among scholars, with a common theme being the evolution of racism from biological to ethnic factors, including traditions, language, history and religion. Racial discrimination, defined as bias based on gender, color, race, language and religion, aims to strip individuals of their human and political rights, hindering their participation in politics, economics and culture.

In the second part, as proponents of Islamic Dialogue, we must clarify Islamic concepts and tolerance. Proposed measures include fostering dialogue with confrontational ideologies (like the French extreme right), countering Islamophobia in Europe, and highlighting Islam's humanitarian aspects and fair treatment of non-Muslims. Rejecting religious extremism within Islam can help address contemporary global crises.

Why did you proceed to study the French extreme right specifically and what approach did you adopt in your study? What challenges did you face?

Recent events in the French political arena, notably in 2020, underscored a rise in racist

attitudes towards Islamic presence and Muslims in Europe, conflicting with Western humanitarian values, including those of the French Republic. As a Muslim researcher, this prompted me to explore avenues for inter-civilizational dialogue and mechanisms to address ruptured relations between European societies and Muslims.

My study spanned politics and academia, drawing on diverse sources: scholarly works in Arabic, English and French, as well as French newspaper reports and online platforms.

The study utilized four scientific approaches:

- Historical Approach: Analyzing the historical and political trajectory of the extreme right.
- Critical Analytical Approach: Unveiling the intellectual foundations of the French extreme right.
- Descriptive Approach: Highlighting challenges faced by French Muslims in political and social integration.
- Inductive Approach: Examining specific conflicts between the French extreme right and Muslim communities, such as attempts to ban the hijab, school expulsions, mockery of Islamic rituals, and insults.

Despite its academic merit, the thesis faced challenges. Conducting fieldwork in France was hindered by the COVID-19 pandemic, quarantine measures and travel restrictions. Additionally, translating French materials required multiple attempts. Furthermore, my expertise in inter-civilizational dialogue, not purely political studies, required vigilance to maintain focus on civilizational studies.

What is your evaluation of the availability of references, particularly those concerned with the inter-civilizational dialogue in the QU Library?

Researchers are aware of the development witnessed by QU Library, as it is truly rich in research resources, in addition to its various services and facilitating access to information. Furthermore, there are diverse and novel sources, as well as multiple specializations, such as the specialty of inter-civilizational dialogue, in which I noticed abundance and novelty, as books related to the specialization directly served the purpose of research and contributed to its completion. QU Library is rich in books and articles serving students and researchers, and what is striking is the staff service and digital services provided by the library.

Through our review of your CV, your research and the honors you received, would you shed light on the most notable ones here? What do you aspire to achieve in the future?

I do not claim to have made a lot of achievements, but one honor that I have received, which I am particularly proud of, is my nomination among the distinguished research students honored by the wife of His Highness the Emir, Sheikha Jawaher bint Suhaim Al Thani, at the graduation ceremony of the class of 2023, and obtaining the gold medal from Qatar University. I also won the Award for the best research in Humanities and Social Sciences and came in third place at the Qatar University Annual Research Forum and Exhibition in 2023. This honor prompted me to bear the responsibility of continuing in the field of research and submitting many papers to a number of peer-reviewed journals. As you know, a journey of a thousand miles begins with a single step. I am at the beginning of my research journey after receiving my academic degree and like any emerging researcher, I look forward to completing my research and scientific career and obtaining a doctoral degree in the future. Of course, research skills and knowledge will develop through continuous reading and writing.

Based on your rich experience, what is your advice to QU students?

Regardless of your achievements, always strive for improvement. Therefore, first, I advise students to invest their valuable time in the university and seize the priceless opportunity to be there, focusing on acquiring research tools through the courses offered and benefiting from specialized professors. They should not limit themselves to their field of specialization but remain open to other disciplines. Additionally, they should read and explore new topics, always aspire to excellence and distinction, search for distinguished scientific publications and enjoy their time as university students. Most importantly, they should act with the awareness that Allah Almighty watches over them and must always put their trust in Him with every step they take towards learning.

Student Business Card

Sohaila Wessam Gaber

Bachelor of Physics, College of Arts and Sciences - Qatar University

جامعة قطر
QATAR UNIVERSITY

As a physics student, how do you present yourself to the academic community and magazine readers?

I introduce myself as someone passionate about mysteries and understanding the secrets of the universe through grasping natural and philosophical sciences.

Physics is specialized in natural phenomena, forces and influential motion. What drives your choice for this major?

The motivation behind my choice of physics stems from its comprehensive description of the world. It utilizes mathematics to generate concepts applicable from the smallest cell or atom in the universe to the largest celestial body.

Does physics relate to other fundamental sciences? And is it influenced by them?

Yes, it is closely related to other fundamental sciences such as mathematics, chemistry and computer science. For example, in medicine and radiation therapy, doctors use X-rays to treat cancerous tumors. In the field of quantum physics, computers rely on concepts such as superposition and quantum encryption, with numerous examples in all domains.

What do you think requires further research in physics branches and do you have published research or scientific contributions?

Physics branches require further research, such as nuclear physics, materials physics and astrophysics, all of which are crucial for the country's development in medical and engineering facilities, power plants and oil industries. My scientific contribution is in "Limiting Groundwater Consumption and the Impact of Increased Consumption on the Environment in the Future." I am still looking forward to participating in research that benefits my specialization in nuclear physics.

As a physics student, do you have any advice for Qatar University students based on your experience?

I advise Qatar University students to allocate their time to the practical part of learning, such as training in laboratories and participating in research with professors. The university provides rich resources of research and references that should be intensively utilized to develop their skills, enabling them to seize opportunities upon graduation.

Tell us about your ambitions and future goals.

My ambition in the future is to contribute to the development of science and technology in the country's facilities and work on research that helps us understand the origin of the universe.

What are the most significant benefits of physics in daily life?

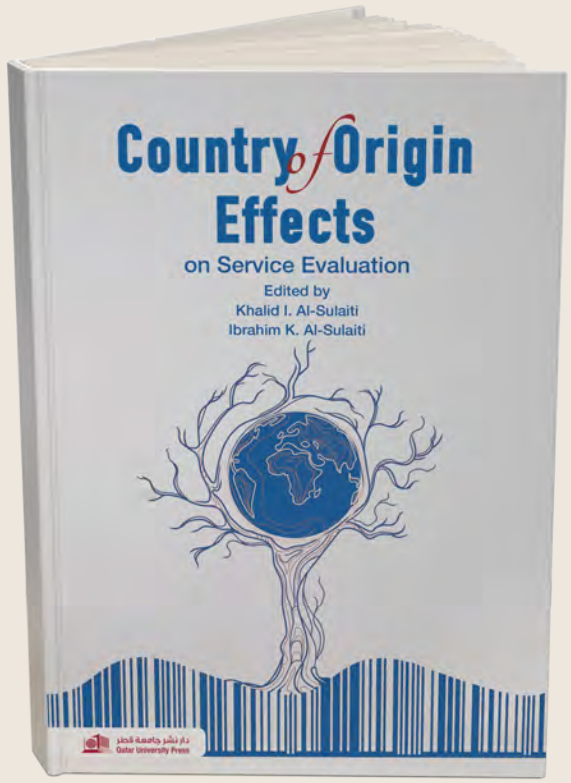
Physics explains natural phenomena and their applications in areas such as electrical energy, vehicle motion, communications, the principles of phone and radio devices, radiation and medical treatment and more. It forms the basis of our observed progress and construction, contributing to improving our quality of life and societal advancement.

Interview with an Author:

Prof. Khalid Ibrahim Al-Sulaiti, Professor of Marketing and Director General of the District at the Cultural Village Foundation – Katara, about editing the book “Country of Origin Effects on Service Evaluation” recently published by Qatar University Press

Prof. Khalid Ibrahim Al-Sulaiti (on the left) during the launch of his book at the Qatar University Book Fair.

"Consumers often associate certain countries with specific attributes, expertise and quality standards in the service industry, such as tourism and leisure sectors. These preconceived notions can significantly influence consumers' evaluation of innovative services. When consumers evaluate innovative services, their perception of the country-of-origin influence on service evaluations is critical, as it plays an important role in forming initial judgments about service outcomes. When service is associated with a country known for excellence in the tourism and leisure industry, consumers are likely to have positive perceptions and high expectations about service quality." This is stated in the introduction of the book titled "Country of Origin Effects on Service Evaluation." In order to delve into the book, we are interviewing its editor Prof. Khalid Ibrahim Al-Sulaiti, Professor of Marketing, Director General of the District at the Cultural Village Foundation – Katara.



Firstly, Prof. Khalid Al-Sulaiti, how would you introduce yourself to Qatar University's community and the magazine readers?

Introducing myself to the university's community and the magazine readers entails presenting my credentials, research interests and the significance of the proposed research. As an academic with expertise in international marketing, I bring a wealth of experience and knowledge to the community. My research aims to contribute to the body of knowledge in the field, particularly focusing on consumer marketing, with potential implications for both academia and industry.

What is the idea and starting point for writing this book?

The idea for this research on international marketing stemmed from a recognition of the evolving global marketplace and the increasing importance of understanding consumer behavior across borders. The starting point was the identification of gaps or areas for further exploration within existing literature, coupled with a desire to contribute novel insights to the field.

Since you have introduced the book, what do you expect it to add to international marketing?

This research is expected to add significant value to the field of international marketing. By addressing substantial gaps or limitations, the research aims to enhance our understanding of country of origin effects on service evaluation, thereby informing both theory and practice in the field.

Since Turkey is a model in knowing the effects of the country of origin, what was the reason for choosing Pakistan as a model?

While Turkey may serve as a suitable model for understanding the effects of country of origin in certain contexts, the decision to focus on Pakistan was motivated by unique market characteristics, consumer behaviors or strategic importance. By studying Pakistan specifically, the research aims to provide insights that are directly relevant to the local context, thus enhancing the applicability and practicality of the findings.

Can the research results within the book be generalized to the Arab consumer? Or does the Arab environment require a dedicated study?

While the research findings may have implications beyond the specific context of Pakistan, it is important to acknowledge the cultural and contextual nuances that may influence consumer behavior in Asian countries. Therefore, while some generalizability may exist, it is advisable to conduct further studies to ascertain the applicability of the findings to other Asian markets.

Dr. Khalid Al-Sulaiti and Mr. Ibrahim Al-Sulaiti, with Mr. Abdulaziz Al-Buhashim Al-Sayed (in the center), owner of the Heritage Library, in a commemorative photo.

What is the impact of the brand, the quality of service and the influence of the country of origin on consumer perceptions in our Arab countries and Qatar, and from your point of view, is this a healthy phenomenon?

The impact of brand, service quality and country of origin on consumer perceptions is a complex phenomenon that warrants careful consideration. While these factors undoubtedly influence consumer behavior, it is essential to ensure that such influences are transparent and ethical. From a broader perspective, fostering consumer trust and promoting informed decision-making should be the ultimate goal, thus contributing to a healthier marketplace environment.

Do you think that there are industrial, construction, electronic and other products that are unfairly affected by the influence of the country of origin and the perception of consumers?

Certain products may indeed be unfairly affected by perceptions related to their country of origin. This underscores the importance of addressing biases and promoting fair and equitable treatment within the marketplace. Regulatory frameworks, consumer education initiatives and industry self-regulation can all play a role in mitigating such biases and ensuring a level playing field for all products and services, regardless of their origin.

Based on your scientific and practical experience, what do you advise students specializing in marketing to do? Are they directed to a specific path in research?

Marketing students should be encouraged to pursue research paths that align with their interests and aspirations, while also addressing relevant gaps or challenges within the field. Exposure to both theoretical frameworks and practical applications is essential, as is a commitment to ethical and socially responsible marketing practices. Ultimately, students should be empowered to contribute meaningfully to the advancement of marketing knowledge and practice through rigorous research and thoughtful analysis.

What do you think about the academic and societal role of Qatar University Press after your cooperation with it in publishing your book?

The university plays a crucial role in advancing knowledge, fostering critical thinking and promoting societal progress. Through our collaboration in publishing this research, the university reaffirms its commitment to academic excellence and scholarly inquiry. Moreover, by disseminating research findings to a broader audience, the university contributes to informed decision-making and policy formulation, thus fulfilling its broader societal mandate of knowledge dissemination and societal impact.

Qatar University Participates in Horticultural Doha Expo 2023, Organizing Distinguished Scientific Seminars

The Research and Graduate Studies Sector at Qatar University (QU) organized a series of scientific seminars at the Horticultural Expo 2023 Doha, titled Sustainability in Research and Innovation: Water and Food Security, which were presented by researchers from various disciplines.

These seminars were distinguished by their variety of themes and deep content. They discussed the latest innovations and technologies in the fields of horticulture and agriculture, including sustainable agriculture, the use of modern technologies in water security and food production. In addition to, the challenges facing the horticulture sector in the modern era. These discussions captured the attendees' attention and influenced the path of development and innovation in this vital field.

In the first session, the Environmental Science Center (ESC) highlighted the evolution of plant tissue culture into a pivotal biotechnological tool in horticultural sciences, as it provides a set of techniques and methodologies, including precise propagation of horticultural plants, the elimination of plant diseases, preservation of germplasm, production of secondary compounds used in pharmaceuticals and cosmetics and the genetic enhancement of various horticultural plants; including fruits, vegetables, ornamental plants and medicinal and aromatic plants.

In the second session, which was titled "Water Solutions for Sustainable Agriculture in Qatar," Prof. Mohammad Irshidat, Director of Center for Advanced Materials (CAM), emphasized the significance of the research initiatives undertaken at the center as crucial pillars in bolstering sustainable water solutions for agriculture, which aligns with Qatar National Vision 2030. Prof. Syed Zaidi, UNESCO Chair for Water Technology at the Centre, also highlighted the importance of the connection between water and food in promoting cooperation for sustainable agricultural practices in Qatar, saying: "We focused on key strategies for water management and sustainable agriculture, emphasizing the role of circular economy principles in these Processes."

The third session was organized by the Agricultural Research Station (ARS), under the title of "Innovative Plant Ingredients: to Enhance Nutritional Value, Food Security, and Protect Local Plants", which was characterized by presenting important topics about the evolution of dietary patterns, environmental challenges and growing concerns about food security. Moreover, to exploring new paths that enrich human nutrition and contribute to sustaining agricultural practices that preserve plant diversity in Qatar and emphasis on the importance of a multidisciplinary approach to confront water scarcity and enhance agricultural sustainability, as Qatar University presented its strategic initiatives in these areas.

On this occasion, Prof. Mariam Al-Maadeed, Vice President for Research and Graduate Studies, said, "We appreciate the efforts of the research centers participating in these seminars and we emphasize the importance of continuing cooperation and exchanging experiences to enhance our capabilities in addressing future agricultural challenges and achieving sustainable development goals in this vital sector." She added, "We invite all specialists in the field of agriculture and horticulture to benefit from the outcomes and recommendations of these seminars and contribute to their real-world application to achieve a better agricultural and environmental future."

It is noteworthy that a large number of researchers, specialists and concerned parties in the fields of agriculture and horticulture attended these seminars. They exchanged expertise and knowledge and discussed enriching thoughts that contributed to developing the sector and promoting the position and leading role of the State of Qatar in these fields at the regional and international levels.

Part of the seminars in which Qatar University participated in the Doha Expo 2023.

QU Organizes 6th Youth Research Forum: "Innovation for Community Development" **in Collaboration with Qatari National Committee for Education, Culture and Science**

A group photo of the forum winners with Prof. Mariam Al-Maadeed, Vice President for Research and Graduate Studies.

The Sixth Youth Research Forum 2024, organized by the Qatar University Young Scientists Center (YSC) in collaboration with the Qatari National Commission for Education, Culture, and Science, marks a significant milestone in the journey towards harnessing innovation for the betterment of developing societies.

The forum, themed "Innovation for Community Development," brought together a diverse group of undergraduate and graduate students from across Qatar, GCC countries, and international universities. The forum succeeded in attracting and encouraging students with disabilities from various countries to participate.

The forum also succeeded in involving young researchers, both male and female, from different backgrounds. About 430 papers and research posters were submitted to the forum, with 324 accepted from more than 22 countries worldwide, including Qatar, Oman, Kuwait, Saudi Arabia, UAE, Iran, Iraq, Syria, Jordan, Palestine, Egypt, Libya, Tunisia, Algeria, Morocco, Sudan, Somalia, Malaysia, France, Switzerland, Turkey, and Russia, among others.

In the research poster category, Nada Al Toubi from Oman's University of Technology and Applied Sciences took first place. Following closely behind was Nadaa Al Harbi from King Abdulaziz University in Saudi Arabia, earning second place. Lama Al Zahrani from Jeddah University's College of Science secured third place.

In the research category, Faiya Al Ismaili from King Abdullah University of Science and Technology in Saudi Arabia took first place. Ahmed El Sawy and Majdi El Dahna, both from Egypt's Kafr El Sheikh University, shared second place. Sherine and Rawnak Al Balushi from Sultan Qaboos University jointly secured third place. Participants from various countries were also acknowledged for their valuable contributions. Special appreciation was extended to the organizing and judging committees.

In her speech at the closing ceremony, Prof. Mariam Al-Maadeed, QU's Vice President for Research and Graduate Studies, stated, "This forum is based on a triad of important missions: research, youth, and innovation, which are the solid foundations for advancement and development. Since its inception six years ago, this forum has witnessed significant growth and continues to move forward towards achieving its ambitious goals, becoming an attractive platform for youth from Qatar and around the world."

Prof. Mariam Al-Maadeed highlighted Qatar University's significant role in societal advancement and development, noting key initiatives such as aligning research with societal needs, developing programs to meet evolving requirements, and fostering diverse community partnerships. The annual forum underscores the university's commitment to innovation, exploration, and the pivotal role of youth in community development. It also reflects the university's dedication to upholding principles, preserving national identity, and promoting Arab and Islamic culture and values amidst global technological and cultural advancements.

A snapshot from the award ceremony celebrating the committee-judges at the 6th Youth Research Forum 2024.

She also congratulated the winners and thanked the forum's organizing committees from Qatar University, Qatar University's Young Scientists Center, and the Qatari National Commission for Education, Culture, and Science for their efforts. She also expressed gratitude to partners such as the Ministry of Education and Higher Education and Qatar Petrochemical Company (QAPCO).

The forum also featured presentations on critical thinking, social innovation in education, and the integration of innovative practices into humanities research. It sheds light on the crucial role of legal frameworks in fostering innovation and its subsequent impact on societal development. Researchers provided insightful analyses of the challenges and opportunities presented by the integration of artificial intelligence into society, preventive measures for intellectual property law, and the fundamental role of patent systems in supporting societal growth.

Additionally, the forum covered topics such as digital innovations for achieving Sustainable Development Goals (SDGs), telemedicine and mobile health apps for healthcare delivery, and sustainable infrastructure development. Discussions also explored the potential of scientific research in transforming energy, transportation, and water management systems to support the growth of developing communities.

QU Celebrates International Women's Day under the Theme

"Transition toward Innovation Economy: The Role of Women Entrepreneurs in STEM"

A part of the panel discussion during the celebration of the International Day of Women and Girls in Science 2024.

In celebration of the International Day of Women and Girls in Science 2024, Qatar University (QU), in partnership with the UNESCO Office for the Gulf States and Yemen and Sasol-Qatar, organized an event featuring a panel discussion by prominent women scientists, entrepreneurs as well as other stakeholders.

The event highlighted the crucial role of female entrepreneurs in driving innovation and shaping the future of the global economy in STEM fields. By sharing their experiences and achievements, they aimed to inspire the next generation of women in science.

The panel discussion titled "Transition Toward Innovation Economy: The Role of Women Entrepreneurs in STEM" discussed breaking barriers in STEM entrepreneurship, navigating the innovation landscape from global to national and regional trends, and building an enabling ecosystem.

Prof. Mariam Al-Ali Al-Maadeed, Vice President for Research and Graduate Studies said in her opening speech, "Qatar University celebrates the International Day of Women and Girls in Science every year. This celebration is an opportunity to showcase the inspiring achievements of women and girls and to enhance their participation in national and regional development, keeping pace with the rapid global transformation towards a knowledge-based economy focused on research and innovation." She added, "Qatar University has integrated a culture of research and innovation into its strategic plans and in the practices of its students and researchers. The university has accomplished numerous activities, initiatives, and theoretical and practical programs fostering cooperation, exchanging expertise, and contributing to transforming modern technology and scientific innovations into sustainable, executable projects."

Sheikha Aisha bint Mubarak Al-Thani, Head of UNESCO Department, Qatar National Commission for Education, Culture and Science, Ministry of Education and Higher Education, said, "Women play a crucial role in society, side by side with men and female participation in scientific fields is vital to achieving our collective goals, including the 2030 Agenda for Sustainable Development."

She highlighted the global efforts to engage women and girls in science, recognizing their potential in mathematics, engineering and scientific education and employment. She also emphasized Qatar's significant efforts to enhance the position of Qatari women in science and scientific research, including allocating awards for outstanding research projects by female students and organizing and hosting numerous leading international and local conferences to promote scientific culture among girls, in line with achieving the Qatar National Vision 2030.

Senior Manager at Sasol-Qatar, Dr. Pat Skhonde said, "Initiatives led by the industrial sector, such as Sasol's STEM-focused initiatives, are crucial in encouraging more women and girls to pursue roles in these fields. However, the industry alone will not be able to address the gender gap and this can only be achieved through collaboration and coordination among all stakeholders. Industry, academia, governments and communities must continue to work together to ensure that women and girls have access to STEM education and opportunities, paving the way for future careers."

A Journey into the World of Electron Microscopy and Its Associated Technology for Various Applications in the World of Science

The Central Laboratories Unit (CLU) in cooperation with Thermo Fisher Scientific, a global leader in science and technology, organized a workshop titled “Visionary Insights: Electron Microscopy from Laboratory Testing to Analysis in the Era of the Modern Technological Revolution”, which was conducted by a group of the world’s most prominent experts in electron microscopy on Thursday 25 April 2024.

The workshop came within the framework of QU’s efforts to foster education, scientific research and development in the Qatari and regional community and provide opportunities to explore cutting-edge technologies and innovations in the field of science. The workshop focused on the role of modern technologies in electron microscopy and how these technologies can contribute to extending the boundaries of scientific research and its applications in multiple fields of science and technology.

Many participants from academics, researchers, students and stakeholders from government, private and industrial agencies, discussed and reviewed the latest developments in electron microscopy and its applications in science and technology. It served as a fruitful opportunity to exchange experiences and knowledge among the participants and expand the horizons of scientific research and technological innovation. The workshop featured specialized presentations highlighting the various techniques and applications provided by electron microscopy in fields such as materials science, bioscience, medicine and manufacturing.

In her speech about the workshop, Dr. Noora Al-Qahtani, Acting Section Head of Central Laboratories Unit, indicated that the purpose of this event is to highlight electron microscopy’s capabilities and applications in biological, medical and materials science. As well as enhancing the interaction and knowledge exchange between researchers and stakeholders. Dr. Noora emphasized that the workshop objectives: “This inspiring initiative aims to foster cooperation and joint efforts to meet needs, solve problems and confront challenges within the framework of our striving to achieve sustainable development goals and implement the National Vision 2030.”

Dr. Daniel Phifer is Senior Manager - Product Specialist at Thermo Fisher Scientific in Eindhoven, the Netherlands.

Dr. Omar Sweid, Manager of the Middle East and Africa at Thermo Fisher Scientific, explained the importance of the workshop as a pivotal step towards enhancing academic-industrial collaboration. He also described it as a fantastic opportunity to explore the applications of modern technology in electron microscopes and their potential impact on the future of science. He points out that this workshop will contribute to enhancing knowledge and developing the scientific skills of the participants by directing them on an in-depth journey into the world of electron microscopy and showcasing its innovative applications in various fields, such as materials and life sciences.

Regarding future cooperation, Dr. Noora Al-Qahtani seeks to establish a partnership between the Central Laboratories Unit and Thermo Fisher Scientific aimed at developing an integrated center for electron microscopes. This cooperation is believed to strengthen the ability to provide services and support in this field more comprehensively and professionally. It will offer opportunities to build strong business partnerships that benefit science and industry in the region.

One of the presentations during the workshop.

Qatar University Holds the International Conference on **“Economic, Social and Cultural Transformation for Sustainable Development”**

The Social and Economic Survey Research Institute (SESRI) organized an international conference titled "The Economic, Social and Cultural Transformation for Sustainable Development" on 24 - 25 April 2024.

The conference proceedings were attended by distinguished scholars, researchers and decision-makers, led by H.E. Dr. Abdallah Al-Dardari, UN Assistant Secretary-General and Director of the Regional United Nations Development Program (UNDP) and Prof. Mariam Al-Ali Al-Maadeed, Vice President for Research and Graduate Studies at Qatar University.

By holding this international conference, SESRI aimed to discuss the challenges and opportunities for achieving sustainable development goals in the Middle East and North Africa, by gathering a group of experts, researchers, policymakers, industry leaders and stakeholders. In addition, to promoting knowledge exchange, showcase best practices and create implementable visions within the frameworks of economical, social and cultural policies in the Middle East and North Africa. The conference's main objectives can be summarized into three main themes: formulating policies for sustainable development goals, enhancing international cooperation and engaging youth and communities as active participants in sustainable development initiatives.

The conference commenced with a welcoming speech by Prof. Mariam Al-Ali Al-Maadeed, in which she said: "We are here today to exchange ideas, experiences and expertise, and to explore ways to enhance sustainable development in Qatar and the entire world. We aim to learn about the best practices to achieve the goals of the National Vision in the fields of economy, environment, culture, education, technology and others. In addition, we will collaborate to define the role of universities, education technology, sustainable economy, and cultural transformation in development, and to adopt plans and strategies that enable us to promote progress and development in our societies and countries." Dr. Mariam also added: "This conference comes at a timely moment, as we have witnessed in recent years a rise in challenges and crises that require more cooperation and mobilization of the efforts of various parties to address them."

Prof. Kaltham Al-Ghanim, Director of Social and Economic Survey Research Institute at Qatar University, reiterated the importance of this gathering, which focuses on discussing the economical, social and cultural transformations required to achieve sustainable development goals that aim to eradicate poverty, protect the environment and enhance the quality of life for people worldwide. International efforts have varied in achieving these goals according to the different countries' inequal capabilities and circumstances.

In his speech, H.E. Dr. Abdallah Al-Dardari, UN Assistant Secretary-General and Director of the Regional United Nations Development Program (UNDP), commended the role of the conference, and emphasized the importance of improving productivity as a cornerstone for sustainable development. He highlighted that productivity in the Arab region has been continuously declining since the 1980s, despite significant increases in government and private spending in recent decades.

He also mentioned that the remaining effects of the COVID-19 pandemic, noting that while most regions of the world began to recover, the Arab Region is still facing many challenges. He added, "There is an unexpected and negative relationship between government expenditure and productivity in the region, which calls for a re-evaluation of the type and method of government expenditure."

From the left: Representative of Joaan bin Jassim Academy for Defense Studies, Prof. Mariam Al-Maadeed, Vice President for Research and Graduate Studies at Qatar University and H.E. Dr. Abdallah Al-Dardari, Assistant Secretary-General of the United Nations and Regional Director for the United Nations Development Program (UNDP).

Part of the attendance of the International Conference on Economic, Social and Cultural Transformation for Sustainable Development.

On the other hand, Dr. Al-Dardari indicated that the gross domestic product of the Arab countries constitutes less than 4% of the global GDP, which he considers inadequate considering the resources and capabilities possessed by the countries of the region. He also touched upon the higher education and leadership opportunities for women in universities, such as Qatar University, and stressed the importance of fostering the role of women in the economic sector, which can contribute significantly to the domestic product.

At the end of his speech, Dr. Al-Dardari called for the need for academic and research bodies to cooperate in building advanced databases that leverage artificial intelligence and economic modeling, with the aim to provide policymakers with accurate data that help in formulating more effective policies to achieve sustainable development in the region.

On the first day of the conference, sessions were held to discuss the theme "Education for Sustainable Development," in which Prof. Dzulkifli bin Abdul Razak, the 14th president of the International Association of Universities, Dr. Asmaa Alfadala, Assistant Professor at the College of Public Policy at Hamad Bin Khalifa University and Director of Research and Content Development at Qatar Foundation, and Mr. Stephen Hall, Partner and Leader of Education Sector in the Middle East – McKinsey & Company, have participated. On the first day, there were also sessions on "Urbanization, Smart Cities and Sustainable Development," in which Professor Andrew Garnder, Professor of Social and Cultural Anthropology and Specialist in the Gulf States and the Arabian Peninsula from the University of Puget Sound in Washington State, and Dr. Ahmed Badran, Head of the Department of Public Policy and International Affairs in the College of Arts and Sciences at Qatar University, and Professor Tan Yigitcanlar, Professor of Urban Studies and Planning from the School of Architecture and Built Environment at the Queensland University of Technology in Brisbane – Australia, have participated.

The first sessions of the second day of the conference delved into the topic of "Sustainable Economy and Globalization," in which Mohamed Al-Mukhtar Mohamed Al-Hassan, Director of Economic Prosperity Group at the United Nations Economic and Social Commission for Western Asia (ESCWA), Dr. Marcello Contestabile, Chief Economist at Qatar Environment and Energy Research Institute (QEERI), and Dr. Nader Kabbani, Director of Research and Director of Governance and Development Programs at Middle East Council for Global Affairs, took part in.

The theme of the final session of the conference program was "Cultural Transformation from the Perspective of Development," which was discussed by Dr. Djamel Boussaa, Associate Professor in the Department of Architecture and Urban Planning at College of Engineering at Qatar University, Dr. Khalaf Marhoon Al-Abri, Associate Professor in College of Education at Sultan Qaboos University in Oman, and Mr. Rasul Samadov, Head of the Culture Department at UNESCO Regional Office for the Gulf States and Yemen – Doha.

Mainly, the conference sought to transform dialogue into tangible steps and contribute to positive change for sustainable development in the Middle East and North Africa. It concluded with several recommendations aimed at supporting the achievement of sustainable development goals while enhancing integration between various academic institutions and experts, as well as policymakers, companies and youth.

It is noteworthy that a report on the conference's outcomes will be digitally published and shared widely via the Institute's website, Qatar University and social media platforms, to serve as a guideline for individuals and institutions in their programs and initiatives, and also constitute an important reference for academic research on the conference's main themes.

QU Book Fair Second Edition Draws Participation from Over 40 Entities, Globally

Part of the Bāqūn "Here We Remain": Al Zubarah seminar at the 2024 Qatar University Book Fair.

The Qatar University Book Fair's second edition, organized by Qatar University Press and the Qatari Ministry of Culture in partnership with the Qatari Publishers and Distributors Forum, commenced on 28 January 2024. The event took place at Qatar University's new Student Affairs building on campus and lasted for six days.

The exhibition was inaugurated by Prof. Mariam Al-Maadeed, Vice President for Research and Graduate Studies, Qatar University, Prof. Eiman Mustafawi, Vice President for Student Affairs, Qatar University, and Prof. Fatma Al-Sowaidi, Director of QU Press. The event witnessed the participation of representatives from the Ministry of Culture, various universities, research institutes, publishing houses, and book industry enthusiasts. From the Ministry of Culture, Mr. Jassem Al-Buainain, the representative of the Qatari Publishers and Distributors Forum, also participated in the event.

The launch witnessed the participation of 34 different entities from publishing houses, research centers and universities in Qatar. Among them were notable institutions like the Qatar National Archives, the Ministry of Awqaf and the Sheikh Hamad Award for Translation and International Understanding. Additionally, there were 8 external contributors from universities, research centers and publishing houses in Arab countries such as Morocco, UAE, Saudi Arabia, Kuwait and Oman.

Prof. Fatma Al-Sowaidi, Director of QU Press, expressed the importance of the fair in aligning with the university's vision and goals. This joint effort between the Ministry of Culture and Qatar University, aims to support education and promote culture within the community through various means. Qatar University Press seeks to attract intellectuals and writers while providing opportunities for students to access books across all educational and academic fields, in addition to translating books to understand diverse perspectives and share our experiences with others.

There were several notable new releases from Qatar University Press unveiled during the event, including "The Qatari Political System: An Analytical Study in the Light of Political Systems" by Sheikh Abdulrahman Hamad Qassim Ali Al-Thani, "Put Your Feet in the Mud" by Prof. Muhammad Ali Mustafa, and "Human Duties or Rights... Which Comes First?" by Dr. Muslim Al Wahibi. Additionally, in English, "Country of Origin Effects on Service Evaluation," edited by Dr. Khaled Al-Sulaiti and Mr. Ibrahim Al-Sulaiti. The exhibition also witnessed the launch of several translated books by the Press, including "The Foreign Policy of Smaller Gulf States: Size, Power, and Stability of Regimes in the Middle East," translated into Arabic by Mr. Mirdef Alqashouti. This reflects the Press's commitment to academic publishing across various scientific fields.

This cultural event, aligned with the vision of the Ministry of Culture and QU, aims to preserve the intellectual and cultural heritage of Qatari authors, enrich the field of knowledge, and provide a conducive environment for over 26,000 QU students to access books and benefit from Qatar's diverse culture.

The Academic Network for Development Dialogue (ANDD) Hosts its Fourth Annual Conference and Second Paper Series Perfection Workshop

A group photo of the participants in the Academic Network for Development Dialogue (ANDD).

The Academic Network for Development Dialogue (ANDD) hosted its Fourth Annual Conference at Hamad Bin Khalifa University's (HBKU) College of Public Policy (CPP), in collaboration with Qatar University (QU), Al-Quds University (AQU) and the United Nations Economic and Social Commission for Western Asia (UN-ESCWA). Held on May 15, 2024, at HBKU's Minaretein building, the conference attracted academics and practitioners for robust discourse concerning the United Nations' Sustainable Development Goals (SDGs).

With the theme "Sustainable Development Goals Unpacked: Ethics, Policies, and Culture," the conference paid particular attention to the ethical, policy, and cultural dimensions of the SDGs as well as fostering knowledge exchange, dialogue, and capacity building among participants. Proceedings commenced with opening remarks by Dr. Michael Benedik, Provost, HBKU, and Dr. Elham Kateeb, Associate Professor of Dental Public Health, Al-Quds University, followed by a keynote speech by His Excellency Sheikh Mohammed Ahmed Jassim Al Thani, Former Minister of Economy and Trade, State of Qatar.

This year's ANDD Conference also included a series of panel discussions on the interplay between ethics, policy, culture and the SDGs. Each session featured moderators and panelists collaborative partners, including Al-Quds University, Qatar University, and the UN House, as well as academic institutions from across the Gulf region. The conference concluded with a ceremony for the presentation of student competition awards and certificates, moderated by Dr. Leslie A. Pal, Founding Dean, CPP.

In her closing remarks, Prof. Mariam Al-Maadeed, Vice President for Research and Graduate Studies at Qatar University and ANDD's first chair and founding member expressed her pride in the ANDD's impactful achievements contributing to sustainable development across the region. She highlighted the release of the First Edition of the ANDD Paper Series published by QU Press and the ANDD Online Master Class Course on Research Fundamentals, which witnessed the registration of more than 2300 participants.

The conference was preceded by a two-day interactive workshop on 13-14 May, designed to discuss the 12 shortlisted papers for the second edition of the ANDD Research Paper Series on Promoting Human Well-being and Strengthening Capabilities to Accelerate Sustainable Development in the Arab Region: lessons learned & good practices.

The Paper Series initiative launched by the Academic Network for Development Dialogue (ANDD) originally seeks to bring together students, researchers, and early-career UN staff, under the guidance of experts in the field, to discuss various aspects of this topic.

One of the main objectives of the perfection workshop is to assist the authors of the shortlisted papers to participate in a series of discussions of their papers with experts, in terms of their ideas and solutions.

Graduate Learning Support (GLS)

Research and Graduate Studies Sector - Qatar University

Introduction

Graduate Learning Support (GLS) in the Office of Graduate Studies was established in 2018 with two primary goals: 1) to support the development of academic writing and research skills at the graduate level and 2) to foster a strong sense of graduate community at Qatar University. The following pathways have been utilized to support the development of graduate students' writing and research skills:

- One-to-one consultations with students (in-person, online, phone)
- Weekly webinars
- Workshops and seminars
- Faculty Lecture Requests
- QU Grad Student Blackboard Community with webinar library
- Weekly office hours (walk-in and online)

To build a strong sense of graduate community, GLS has initiated several local, national and international student events centered on academic writing and research at the graduate level including tad (thesis and dissertation) Bootcamp, tadTalks®, QU-3MT (three-minute thesis) Competition and the National 3MT Competition. These signature graduate student events provide important platforms for graduate students to engage with others out of the silos of their colleges while simultaneously immersing them in a culture of academic writing and research beyond the classroom.

tadTalks®

Research Matters FOUNDED BY QATAR UNIVERSITY

Meeting with the Assistant Dean of Graduate Learning Support

Dr. Mary Newsome

> "The overall approach of the office is to be a resource for students, to hear them out when they are stressed and struggling, to be active listeners and readers in order to identify the specific challenges to address"

Dr. Mary, introduce yourself to us.

I am currently the Assistant Dean for Graduate Learning Support in the Office of Graduate Studies and a Research Assistant Professor in Ibn Khaldon Center. I have a somewhat eclectic academic background with bachelors in English Literature, masters in Applied Linguistics, and a PhD in Education. I have enjoyed a relatively long career at QU holding several positions over the years, which has greatly enriched my perspective on serving the university and its students. My favorite thing about the GLS office and the work we do is helping students develop confidence in both their critical thinking and their academic/ scientific writing.

How would you describe the role that the Graduate Learning Support Office plays for graduate students?

GLS plays a very important role for graduate students in that we are working to bridge the skills gap between what graduate students are able to do and what they are expected to do at the masters and doctoral levels. Most graduate students have received little to no explicit academic writing instruction at the graduate level. Furthermore, the writing instruction received at the undergraduate level is typically provided early in matriculation and focuses on the fundamentals of academic writing. However, writing at the graduate level is characterized by several unique aspects that distinguish it from undergraduate or general writing including depth and complexity, critical engagement, rigor and precision, independence and autonomy. In addition, graduate writers must learn to write for a specialized audience and have the additional responsibility of contributing to knowledge through original research. While it is often assumed that graduate students have acquired these skills prior to matriculation, a significant body of literature suggests otherwise. Developing these skills can be both challenging and time consuming, which further adds to the demands placed on graduate students. In fact, global estimates suggest that nearly half of graduate students fail to complete their program and many cite anxiety around thesis writing as a primary cause. GLS works to combat these challenges by providing a flexible approach to supporting students and by working to build a strong sense of graduate community where students can exchange experiences and ideas and support each other.

What is your definition of scientific writing?

Scientific writing is a technical form of writing used to communicate scientific information primarily to an academic or scientific audience.

It generally follows a structured format and is characterized by its clarity, precision, objectivity and adherence to conventions established within the scientific community. Scientific writing typically employs specialized terminology relevant to the field of study and references the work of others through specific citation styles like APA, MLA, IEEE and includes a bibliography or reference list.

Can you give us a simple overview of each employee in the office?

The GLS team is currently comprised of three very dedicated Senior Writing Specialists: Mrs. Mounia Zidani was the first to join the team in 2019, but she has been at Qatar University since 2014 as a Senior Academic Advisor. She is fluent in three languages (French, Arabic and English) and has a master's degree in Educational Leadership as well as a master's in Education, Training and Social Intervention. She is currently earning a PhD in Education at the University of Lorraine in France where her research interest is in the student experience.

Mrs. Randa Sheik was the second to join the GLS team in early 2020. Mrs. Randa earned her master's degree in Marketing from QU's College of Business and was head of the Honors Club and a member of the QU Debate Team. Since the start of her Bachelor's degree, she has been judging and coaching debates, as well as teaching public speaking skills. Prior to joining GLS, Mrs. Randa completed her fellowship from Teach for Qatar and taught English in local government schools.

Mrs. Jumana Amiry joined GLS in 2021. She holds a bachelor's degree in Arabic Literature from Damascus University and a master's in Education from Shawnee State University in the USA. Mrs. Jumana has taught Arabic as a Foreign Language for many years and has served as a culture competency trainer (Middle East) at Ohio University. She also volunteers her time to support women refugees from Syria and volunteers with Qatar Charity. She also delivers workshops regarding academic writing and research to Qatar National Library and to other institutions.

How is the relationship between graduate students and the office staff?

The GLS team has an excellent relationship with graduate students. The team fosters sincerity with a genuine commitment to helping students develop their skills, and we know students recognize and value that because of the heartfelt feedback we receive from them on a regular basis. I think the overall approach of the office is to be a resource for students, to hear them out when they are stressed and struggling, to be active listeners and readers in order to identify the specific challenges to address, deliver support in flexible ways, direct students to helpful resources not just in our office but across campus as well and to follow up with students to ensure they are progressing. I think the team is very good at cultivating relationships of trust and support with students as they understand that we are investing in them and asking them to invest in themselves. The best evidence of the team's relationship with students is when students continue to pass by the office even after graduation, just to visit or when we see them out at an event or in the community and they go out of their way to let us know how much the support we gave mattered to them.

From the left: Jumana Amiry, Mounia Zidani, Randa Sheik and Dr. Mary Newsome.

The Grad Lab

> “With the availability of the new Grad Lab, students have access to 22 desktops equipped with nearly 25 software programs including Latex, R, Python, ChemDraw, AutoCAD, STATA, SPSS, Visio and many others”

The newly opened Grad Lab is located at the GLS office in the Old College of Education Building (B04), Room 114. It was established to ease graduate students’ access to a variety of software programs commonly needed for thesis and dissertation research. Over the years, graduate students have expressed concerns about accessing some software that is either expensive or only available freely through the university if required for a particular class. With the availability of the new Grad Lab, students have access to 22 desktops equipped with nearly 25 software programs including Latex, R, Python, ChemDraw, AutoCAD, STATA, SPSS, Visio and many others. The lab is unique because it is exclusive to graduate students, it is housed in a central location for all graduate students, and students can securely access the lab using their university ID at their convenience. The lab also attracts graduate students to discover other pathways of support available through GLS.

Using Artificial Intelligence Tools in Scientific Writing

> “Artificial intelligence has become a significant revolution in the world of scientific and academic research”

The use of AI tools in scientific writing is a trending topic these days for good reason. AI tools can significantly enhance efficiency and accuracy as well as our creativity. These powerful tools can help us sort through vast amounts of academic literature, for example, to find relevant papers, identify trends and even generate summaries of complex texts to enhance our comprehension of difficult concepts. Similarly, AI data analysis tools are making the analysis of complex datasets faster and more accurate than ever before, which may help researchers uncover more reliable patterns, correlations and insights. Likewise, there are plenty of AI tools available to help scientific writers enhance the overall readability of their texts. Not to mention that language translation tools are giving researchers access to scientific work in a variety of languages, which exposes them to new findings and perspectives they would not otherwise have access to. Researchers can even use AI tools to help make informed decisions about where to submit their research manuscripts for publication. While these capabilities allow researchers to focus more of their attention on novel insights and advancing knowledge in their field, such tools should be used ethically and transparently. Along these same lines, it is important to point out that good scientific writing is essentially a reflection of good critical thinking; therefore, it is important to instill in young writers the value of developing the discipline and skills needed to become a good thinker and writer to ensure such crucial abilities do not fall prey to atrophy because of an overreliance on new tools and technologies.

The Awards Supervised by the Office and an Overview of the Latest Winning Researches

The GLS office supervises the administration of several graduate awards including the Thesis Awards, Dissertation Awards, Graduate Research Awards and the 3MT Competition Awards. The Thesis Awards and the Dissertation Awards are awarded per college and are open to graduate students who have a completed thesis or dissertation manuscript approved by the Main Supervisor prior to the deadline to apply. The AY2023-24 deadline to apply is May 2, 2024. Students who have graduated in Fall 2023 are also eligible to apply this cycle. Award recipients will receive a trophy and certificate at the Qatar University Annual Research Forum and Exhibition.

From the left: Dr. Nasser Alnuaimi, Associate Vice President for Research and Graduate Studies, the Qatari innovator Mr. Muhammad Al-Qasabi, Member of the Information Security Team at Qatar Energy and Head of the Robotics and Artificial Intelligence Department at the Qatar Science Club, Dr. Mary Newsome, Assistant Dean for Graduate Student Support, Dr. Ahmad Al-Own, Dean of Graduate Studies.

The Graduate Research Awards acknowledge excellence in graduate research and scholarly activity. There are two categories of this award: (1) The Graduate Research Award for Humanities and Social Sciences and (2) The Graduate Research Award for Sciences and Engineering. The award is open to graduate students who have published two research papers or published one research paper with evidence of acceptance for the second research paper. All publications must be in no less than Q2 journals or its equivalent and the applicant must be the primary author. The Graduate Awards Committee selects the top three applicants in each category who will receive a trophy and certificate at the Qatar University Annual Research Forum and Exhibition along with the following monetary prizes: First place (QR10,000), Second place (QR7,000) and Third place (QR5,000).

The 3MT (three-minute thesis) competition is a live competition in which graduate students have three minutes to present the significance of their research in front of a panel of judges and a general audience. Any graduate student working on a thesis/dissertation who has obtained the results of their research and is expected to graduate in the current semester is eligible to participate (it is not necessary to have the full written manuscript). The 3MT competition has the following levels: college-level, university and national. The top three competitors at each stage are eligible to advance to the national competition where they have the chance to compete against finalists from other universities in Qatar. National 3MT winners will receive a trophy and certificate at the Qatar University Annual Research Forum and Exhibition along with the following monetary prizes: First place (QR15,000), Second place (QR10,000) and Third place (QR7,000). University-level winners will also be recognized with a certificate and trophy at the Qatar University Annual Research Forum and Exhibition.

The Thesis Award

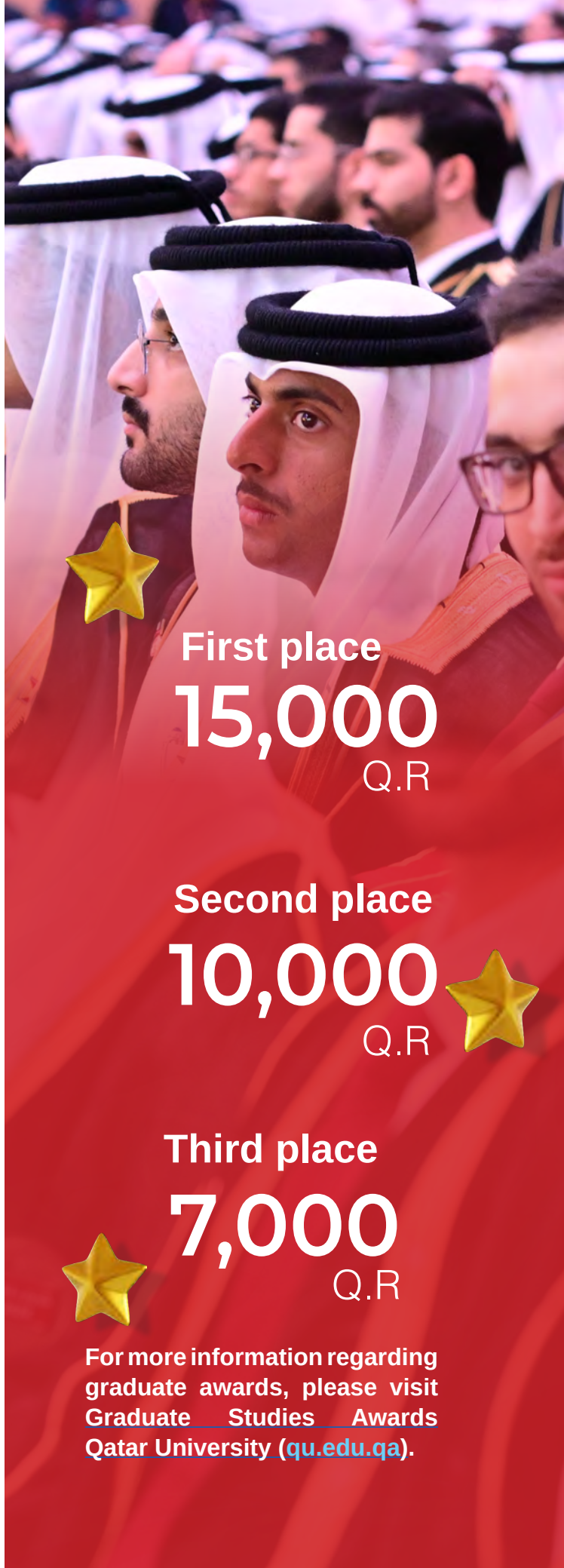
The Dissertation Award

Award (Sciences and Engineering) Graduate Research

Award (Humanities and Social Sciences) Graduate Research

QU 3MT Competition

National 3MT Competition



First place
15,000
Q.R

Second place
10,000
Q.R

Third place
7,000
Q.R

For more information regarding graduate awards, please visit Graduate Studies Awards Qatar University (qu.edu.qa).

The Thesis Award

Sumaya Ibrahim Abiib
Masters in Genetic Counselling,
College of Health Sciences

Abdulrahman Abdulla Al-Sada
Masters of Law in Private Law,
College of Law

Nancy Hussam Addeen Zaghloul
Masters of Science in Pharmacy,
College of Pharmacy

Abeer Jawdat Hafeth Abdel Hafeth
Master of Arts in Arabic Literature and Language,
College of Arts and Sciences (Arts)

Sarra Dimassi
Masters of Science in Environmental Sciences,
College of Arts and Sciences (Sciences)

Ali Al-Kuwari
Masters of Accounting,
College of Business and Economics

Zainab Rehmat Ullah
Master of Religions and Dialogue of Civilizations,
College of Sharia and Islamic Studies

Abdelrahman Mohamed Ali
Master of Science in Mechanical Engineering,
College of Engineering

The Dissertation Award

Jassim Al-Kuwari
PhD in Law,
College of Law

Shilpa Kuttikrishnan
PhD in Pharmaceutical Sciences,
College of Pharmacy

Toka S Mohamed
PhD in Business Administration,
College of Business and Economics

Khalid Abdulla Al Own
PhD in Fiqh and Usul Al-Fiqh,
College of Sharia and Islamic Studies

Abdelrahman Abushanab
PhD in Civil Engineering,
College of Engineering

Saif Badran
PhD in Medical Sciences,
College of Medicine

Graduate Research Award (Sciences and Engineering)

First Place:
Abdelrahman Abushanab
PhD in Civil Engineering,
College of Engineering

Second Place:
Nadin Nagy Younes
PhD in Biomedical Sciences,
College of Health Sciences

Third Place:
Muhammad Hafizh
Master of Science in Mechanical Engineering,
College of Engineering

Graduate Research Award (Humanities and Social Sciences)

First Place:
Toka S Mohamed
PhD in Business Administration,
College of Business and Economics

Second Place:
Sara Al-Naimi
PhD in Gulf Studies,
College of Arts and Sciences

Third Place:
Noof Al-Thani
Master of Religions and Dialogue of Civilizations,
College of Sharia

QU 3MT Competition

First Place:
Queenie Fernandes
PhD in Medical Sciences,
College of Medicine

Second Place:
Fatima Mohammed Qafoud
PhD in Biomedical Sciences,
College of Health Sciences

Third Place:
Thomas Bonnie James
PhD in Gulf Studies,
College of Arts and Sciences

National 3MT Competition

First Place and People's Choice Award Winner:
Fatima Mohammed Qafoud
PhD in Biomedical Sciences
College of Health Sciences,
Qatar University

Second Place:
Soukayna Ait Hammou
Masters in Media and Cultural Studies,
Doha Institute for Graduate Studies

Third Place:
Asma Anwar Elashi
PhD in Genomics and Precision Medicine
College of Health and Life Sciences,
Hamad Bin Khalifa University