

Qatar University Research Magazine

Issue 18, December 2022

Joint PhD with the Royal
College of Surgeons in
Ireland

Standardizing the Wechsler
Intelligence Scale for
Children in Qatari Society

Special Coverage: Research
Training Program at Qatar
University

Annual Research Forum & Exhibition 2022
Engaging Nations through Sports



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Distinguished Readers of Qatar University (QU) Research Magazine,

At the outset, I would like to express my contentment with the attention and praise that QU Research Magazine has received from eminent research institutions inside and outside the State of Qatar, which reflects QU's sustained progress towards research and academic excellence.

We work at the Qatar University to enable our students to achieve scientific and academic merit, and to develop research skills that are a priority for national research needs. We are proud of their achievements in several international competitions and forums. We congratulate the winning research teams from QU in the 2nd edition of the Gulf Petrochemicals and Chemicals Association (GPCA) Innovation Competition, and in the 9th cycle of the Graduate Scholarship Research Award (GSRA), which is part of the Qatar National Research Fund (QNRF) grants with 10 in number. This evidently reflects their research capabilities and readiness to pursue postgraduate studies.

This QU Research Magazine's issue documents numerous achievements in the areas of cooperation between our University and local, regional and international universities; among them is a program added to the postgraduate studies, in association with the Royal College of Surgeons in Ireland, and a patent licensing contract with the Brazilian company "The Blue Reef". This is in addition to the joint research projects between QU and the ExxonMobil Research Qatar (EMRQ), and research innovations that received new patents granted to QU.

QU colleges and research centers share with us their most prominent research achievements, including; the 2022 Best Abstract Award from the Annual Conference of the American Association of Pharmaceutical Scientists (AAPS) in Boston, USA, in addition to research issues focusing on education and well-being, along with the topic of the Sustainability of Marriage.

In this issue, we also learn about the Science of Human Geography, and the book of Geopolitics of Sports. The magazine also gives special coverage to the Research Training Program implemented by QU.

The cover of the issue embodies our interest in "Research, Innovation and Sustainability: Engaging Nations through Sports," which was the theme of the QU Annual Research Forum and Exhibition 2022. The latter was truly a forum for students, researchers, academics, partners and stakeholders; during which outputs of research and activities at QU were discussed that focused, especially on sustainability issues related to the post-World Cup period, and its role in improving the health and well-being of society.

Our focus also covers the second edition of the 2022 National Three Minute Thesis (3MT) Competition for graduate students in Qatar, and a special episode in the Third Season of 'Research Wednesday Series' featuring, Sir. Fraser Stoddart, Noble Prize laureate, Professor of Chemistry in Northwestern University in the United States.

I invite you to browse our new issue of QU Research Magazine and 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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The Research and Graduate Studies Office acknowledges the contributions made in support of publishing this issue. Editorial contributions are also welcomed on the following email: vprgs.eco@qu.edu.qa

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Qatar University and Royal College of Surgeons in Ireland: Dual PhD Agreement



The introductory meeting of the Joint Doctoral Agreement by Prof. Asmaa Al-Thani, Vice President for Medical and Health Sciences, with the visiting delegation from the Royal College of Surgeons in Ireland, representatives from the medical and health sciences sector and the Office of Graduate Studies at Qatar University.



Prof. Mariam Al-Maadeed, Vice President for Research and Graduate Studies, during the signing of a Joint Doctoral Agreement with Prof. Fergal O'Brien, Vice President of the Royal College of Surgeons in Ireland.

QU is branded as a leading educational institution with an advanced global and academic ranking, as well as in providing qualitative education in line with international standards. Such education system opens up several areas of cooperation between QU and local, regional and global universities. Organized by QU Health, the University has added a new graduate program by signing a Dual Agreement with the Royal College of Surgeons in Ireland (RCSI). RCSI is the world's leading institution in the field of education, training and scientific research, which has been ranked among the 250 leading universities, globally. Such an agreement reflects the recent successes of QU in terms of education, research and continuous development of the global ranking and the high quality of graduate studies.

Coinciding with the events of the QU's Annual Research Forum and Exhibition 2022, the agreement was signed on the 3rd of October 2022 in the presence of Prof. Asmaa Al-Thani, Vice President for Medical and Health Sciences, Prof. Mariam Al-Maadeed, Vice President for Research and Graduate Studies, Prof. Fergal O'Brien, Deputy Vice Chancellor of RCSI and Director of Research and Innovation, Dr. Mohamed Elrayess, Director of Basic Research at QU Health, Prof. Darran O'Connor Head of RCSI School of Postgraduate Studies, and directors and deans of QU Health colleges.

The agreement aims to initiate a dual PhD program between the two universities, which will include PhD candidates from both sides as part of their close academic and research cooperation. One of the most significant benefits of cooperation with the

RCSI is that both parties focus on the development of research and education that facilitates scientific discovery. The agreement provides an opportunity to integrate the best international expertise into graduate programs in medicine and health. It also includes the exchange of PhD students from both sides, as candidates are expected to spend half of their PhD period on each university campus, which is an opportunity to expand their horizon and practical experience with the best research groups in both universities.

Prof. Fergal O'Brien, Chancellor of RCSI, stated: "RCSI is very excited at the opportunity to develop this dual PhD program with Qatar University. Both universities have consistent interests in a number of areas, so by working together and ensuring strong mobility between the two universities, this agreement will provide exceptional training for talented early career researchers in health care focused research programs." Moreover, PhD students enrolled in this program will receive full scholarships from both universities, which will be offered in a highly competitive manner.

QU Health colleges are considered amongst the largest academic health clusters in the region. It includes five colleges under one umbrella: College of Health Sciences, College of Pharmacy, College of Medicine, College of Dental Medicine and College of Nursing. The sector prepares competent graduates who supply health practitioners that meet the health needs of the population in Qatar and are able to shape the future of healthcare in the country. The sector looks forward to implementing further fruitful exchange programs that provide exceptional opportunities for students, researchers and faculty members.

Innovative Technology to Conserve Marine Resources from Qatar University to the Coasts of Brazil





From left: Mr. Sidney Cantu, the CEO of the Blue Reef Company, Prof. Mariam Al-Maadeed, Vice President for Research and Graduate Studies, and Prof. Hamad Al-Kuwari, Director of the Environmental Sciences Center, during the agreement signing ceremony.

To enhance international cooperation between Qatar University and international foreign institutions, Qatar University signed on October 4, 2022, a patent licence contract with the Brazilian company Blue Reef as a part of the activities in the Qatar University Annual Research Forum and Exhibition 2022. Prof. Mariam Al Madeed, Vice President for Research and Graduate Studies, on the behalf of Dr. Hassan Al Derham, President of Qatar University; while Blue Reef was represented by Mr. Sidney Cantu, the CEO of the Blue Reef Company. Prof. Mariam Al-Maadeed stated, “The Environmental Science Center (ESC), led by Professor Hamad Al-Kuwari, Director of ESC, is at the forefront of this journey towards the design and validation of such technologies. The ESC research team, led by Dr. Bruno Welter Giraldes, Research Assistant Professor, has been intensely working to increase the Technology Readiness Level of a new technology related to conservation and restoration of marine resources. This innovative technology, a subsea asset will substantially support restoration of coral reefs and the associated reef biodiversity.”

She added, “By signing ceremony with the Blue Reef company the licensing of the Mushroom Forest Artificial Reef, is a solution associated with “Made in Qatar for the World”, through which we are disclosing a technology designed, developed, patented, and validated here within our research facilities at Qatar University. This technology, which is at the commercialization stage, will be exported to Brazil, hence supporting the restoration of marine resources.”

From the same point of view Prof. Hamad Al-Kuwari said, “During the last few years, the ESC made significant strides in developing new technologies for the restoration of the coral reef ecosystem in the Arabian Gulf. In collaboration with our national stakeholders, we developed technologies that will be beneficial worldwide.”

Dr. Al-Kuwari also said, “The first commercialization of this research is being implemented in Brazil through a licensing agreement. This is another manifestation of the commitment of the ESC to be part of the international effort for the restoration of the coral reef ecosystem and the UN Decade on Ecosystem Restoration.”

Mr. Sidney Cantu, also gave his inputs. He stated that “Brazil has one of the largest highly productive coastal areas on earth and houses the largest freshwater resources globally. Searching for technologies, we have cooperated with the Environmental Science Center at Qatar University. After several negotiations, we agreed to use the Mushroom reefs concept, as a validated technology, selected by our consultants, for supporting our services.”

Talking about the joint effort, Mr. Sidney added that “Indeed, now in partnership with the Federal tourism Authority of Brazil we are planning to use this Qatari technology, among others, for creating coral reef farms and underwater parks for tourism and fishing parks for recreational fishing activities, consequently increasing the touristic boating activity in Brazil. Therefore, we are proud to celebrate this commercialization agreement in the Qatar University Annual Research Forum and Exhibition 2022 and we thank the Brazilian embassy of Qatar for their support.”

The ceremony was attended by a group of University professors and researchers, and Mr. Diogo Gugisch, Brazilian Diplomat, on the behalf of His Excellency the Ambassador of the Federative Republic of Brazil in the State of Qatar, Mr. Luiz Alberto Figueiredo Machado. The attendees praised the efforts of Qatar University for recently entering strongly into the knowledge economy. It is worth mentioning that the marine life restoration tests have proven the remarkable effectiveness of this modern technology compared to others in the market, which makes this modern method and this local Qatari product quite competitive in global markets in the near future.

Qatar University Students Win International GPCA Awards



Qatar University seeks to develop scientific research-based education and provide its students with skills, experiences and competencies that enable them to compete with their peers, setting them apart from other students in many local and international forums and competitions. Correspondingly, research teams from Qatar University won the second round of the GPCA innovation award competition held in Dubai on 28th September 2022. GPCA, which was established in 2006, aims to improve the chemical and petrochemical production sector in the Arabian Gulf region.

Furthermore, GPCA is committed to providing an ideal platform for all stakeholders in the region through its six active committees that work mainly in the sub-sectors of the industry such as plastic, fertilizers and other supporting sectors such as; supply chains, international trade, research and innovation, and responsible care. In this regard, it also organizes six annual conferences at the regional level and publishes numerous reports, specialized studies, and periodic newsletters as well. Qatar Petrochemical Company (QAPCO), which is a founding member of GPCA and a strong believer in the importance of industry-academia collaboration, played a leading role to promote the innovation competition and encourage students from Qatar academic institutions to participate in this prestigious award.

Sixty-seven papers from Universities in the Arabian Gulf countries were submitted to the competition. Eleven among them were accepted, three of which were from Qatar University. QU won the first place in the postgraduate category for the research “A Novel Hybrid Energy Harvester for Sustainable Remote Sensing Pipeline Applications,” presented by the student Mohamed Hafiz, from the Department of Mechanical and Industrial Engineering, under the supervision of Prof. Asan Gani, Professor of Mechanical Engineering at the College of Engineering.

Student Sehrish Habib also won second place under the same category for the research “Smart Single Layer Polyolefin Coatings for Corrosion Protection of Steel Parts (S2Coat).” Sehrish is a PhD student in Materials Science and Engineering and an Assistant Researcher at the Center of Advanced Materials (CAM). Her research was conducted under the supervision of both Prof. Elsadig Mahdi, Head of the Department of Mechanical and Industrial Engineering at the College of Engineering, and Dr. Abdul Shakoor, Research Assistant Professor from the Center of Advanced Materials.

As for the undergraduate category, Qatar University won the third place for the research “Leidenfrost Effect Drops as a Reactor for Direct Methanol Fuel Cell catalyst,” presented by the student Amna Aljumaily, from the Department of Computer Science and Engineering, and Qatar University Young Scientists Center (QUYSC). Dr. Peter Kasak, Manager of Technical at the Center of Advanced Materials, and the Qatar University Young Scientists Center team supervised her.



First place: Student Mohamed Hafiz.



Second place: Student Sehrish Habib.



Third place: Student Amna Aljumaily.

Qatar University Students: Continuous Achievements

QU Students Won Ten Scholarships in the 9th Cycle of GSRA



Comprising of a community of intellectuals and scholars, Qatar University's (QU) vision is to be recognized as a distinctive institution in education and research. Therefore, QU is adamant on providing a suitable environment for its students, undergraduate and graduate, that aids in their scholarly excellence. In addition, it provides the students with well-equipped facilities for their research, in different research priorities and pillars such as, Energy and Environment, Health and Biomedical Sciences, Information and Communications Technologies, and Social Sciences and Humanities.

QU encourages its students to apply for different research grant programs locally and internationally and provides them with over 20 types of grants. One of the research grants is the Graduate Sponsorship Research Award (GSRA). GSRA is part of the Qatar National Research Fund (QNRF). It has launched its 9th cycle, which aims to encourage graduate students to boost their knowledge, skills, and experience to become future leaders and researchers. In the 9th cycle of GSRA, scholarships were awarded based on the following evaluation criteria:

- Candidates' profiles with a focus on the quality of academic achievements and prior research exposure and experience.

- Importance of the proposed research topic to Qatar, its alignment with national priorities, and impact on training and capacity building.
- Quality of research enablers including the calibre of the educational ecosystem and graduate program in addition to the profile of mentors.

Qatar University is proud to announce that 10 grants were awarded to its students in the 9th cycle awards (GSRA). This demonstrates, superior training and preparations of QU students to pursue graduate studies. QU nurtures an exciting research culture for its students throughout their undergraduate and graduate studies to prepare them to become skilled and forward-thinking scientists. Within the efforts to enhance the research skills of the undergraduate students, QU Research Office awards annually over 240 student grants, including 350 students to support student research projects.

Furthermore, QU students attain massive advantage of funding opportunities from QNRF, Undergraduate Research Experience Program (UREP) grants to develop their research, soft and technical, skills which contribute to preparing them for the successful completion of their graduate studies. Significantly, QU programs embed mandatory and elective research courses that further contribute to the preparation of these students to enrol in prestigious graduate programs and win competitive graduate scholarships such as GSRA. QU students benefit from the support and mentorship of highly qualified faculty members with established track records in research excellence as demonstrated by the most.

Overall, the stimulating learning environment provided by QU to its students is inspiring the next generation of scientists and preparing them for successful careers in research and innovation that ultimately contribute to the national vision of 2030. The achievement of QU students in GSRA9 is a dedication of the continuous efforts of QU in fostering a culture of scientific research among its students throughout their studies.

Joint Research Projects between Qatar University and ExxonMobil Research Center Qatar (EMRQ)



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In its research priorities, Qatar University pays special attention to the energy and environment pillar as it is one of the basis of the foundation of the knowledge-based economy in the State of Qatar, which would contribute to providing more sustainable and environmentally friendly solutions to achieve the Qatar National Vision 2030 and the Second National Development Strategy of the State of Qatar (2018-2022). In this case, Qatar University maintains effective partnerships with local and international stakeholders to support scientific research. An appropriate example of these partnerships is the ongoing cooperation between Qatar University and ExxonMobil Research Qatar (EMRQ).

The Department of Biological and Environmental Sciences at the College of Arts and Sciences is collaborating with the EMRQ team on several research projects; most notably, a project led by Prof. Mohammad Al-Ghouti, Professor of Environmental Sciences, based on the use of iron-magnetic and nanoparticles organic frameworks (MOFs) for treating hydrocarbons from petroleum industry effluents. This project aims to fill several knowledge gaps in the literature in the field of water and wastewater treatment. It aims to develop a low-cost treatment technique that can efficiently and simultaneously remove hydrocarbons, and enhance the adsorption functionality of nanoparticles by introducing biosurfactants to their surface. This will fill the gap in the potential limitations for nanoparticles related to their mobility that causes rapid particle aggregation and a decrease in their adsorption efficiency. The concept of resource recovery by treating wastewater is in line with Qatar's vision 2030, which considers promoting a sustainable environment through investment in advanced technologies.

Furthermore, QU's Center for Sustainable Development is also actively collaborating with EMRQ on advanced biological technologies for treatment and recycling of industrial wastewater. The project, led by Dr. Hareb Al Jabri, Associate Director for Technology Commercialization in the President's Office, and Assistant Professor in Environmental Sciences, is centered around the application of native microalgae to remove contaminants, whilst simultaneously capturing CO₂ and producing algae biomass. This biomass can then be valorized for a range of different applications, including low-carbon fuel. As such, the research work can help support Qatar's water security, reduce carbon emissions, and promote economic diversification. Furthermore,

both projects offer interesting new tools that will help achieve a clean and sustainable marine environment.

In an effort to continue this productive collaboration, EMRQ/QU co-organized a workshop on "Applications of Biochars for Wastewater Treatment: From Synthesis, Modification, and Applications to Current Trends" at Qatar University's Research Complex, which witnessed a good attendance from many researchers in the University. Prof. Mohamed Gamal El-Din, from the University of Alberta, Canada, who is a worldwide renowned scientist in this field and a collaborator with the EMRQ, delivered the workshop. One of the outcomes of the workshop was the exchange of visits to the work sites of the participating parties, where a research team from the Center for Advanced Materials (CAM) visited the EMRQ in an extensive meeting to exchange ideas and discuss waste management and reuse of industrial bio sludge/solid waste in the State of Qatar. Biochar from biomass and solid waste has received worldwide interest in the past decade because it encompasses high priority research areas, including bioenergy production, global warming mitigation and sustainable agriculture.

The following are key collaboration ideas discussed:

1. Collaborate in identifying and reviewing the sustainable and cost effective technologies that are fit for the purpose of industrial wastewater treatment in Qatar.
2. Develop a "steering committee" in Qatar for the network of water professionals from academia, government and industry, for industrial wastewater management, treatment and reuse.
3. Develop the scope of research areas for collaboration that focus on technical and innovative solutions for the sustainable management of water in the oil and gas industry.
4. Develop a strong collaboration in the area of Biochar produced from the industrial biosludge/ solid waste and its utilization in soil remediation for sustainable agriculture in Qatar.
5. Create student capacity building opportunities and post graduate research projects.

Finally, the CAM/Gas Processing Center (GPC)/EMRQ Team organized follow-up meetings under the supervision of Prof. Gamal El-Din to focus on the specific topics and ideas generated from the workshop and to develop execution plans in the next few months.

NPRP-C Project:

Promoting Sustainable Development of K12 STEM Education in Qatar in a Digital Age

Prof. Ahmed Abdulrahman Al-Emadi

Professor of Psychological Sciences, College of Education - Qatar University



Science, Technology, Engineering, and Mathematics (STEM) education and skills are currently more important than ever with the vast growing number of jobs requiring high-level knowledge of STEM subjects. A high quality of STEM education is critical for providing skilled graduates to address the shortfalls of STEM-related jobs, which are essentials for economic growth and development in Qatar. Although Qatar National Vision 2030 emphasizes the importance of progressing towards a knowledge-based economy, Qatar still faces significant shortages in STEM education. For example, the average results of Qatari students in international tests, such as Programme for International Student Assessment (PISA) and Trends in International Mathematics and Science Study (TIMSS), remain below the international benchmark (Figure 1).

The previous studies reported several factors that might attribute to low math and science performance in Qatar such as the K12 students' lack of motivation, interest and engagement in STEM. Therefore, there is an urgent need for more actions and research to enhance K12 STEM teaching and learning in Qatar.

Since January 2021, Prof. Ahmed Al-Emadi has been working with a group of scholars in math/

science pedagogy, psychology and engineering in and out of Qatar University on a multidisciplinary project funded by Qatar National Research Fund (QNRF) through their National Priorities Research Program–Cluster (NPRP-C). This NPRP-C project consists of three sub-projects, which aim to design and implement new conceptual frameworks, technology enhancement, and pedagogy (e.g., Problem and Project-Based Learning), to enhance skills and competences needed for sustainable development of education in Qatar, and to use pedagogical and psychological sciences to evaluate and enhance outcomes of student learning in K12 STEM in Qatar.

In the first Subproject, a large-scale epidemiological study on more than 12000 students from grade 7 to 12 in a wide range of government schools in Qatar reported that 1 in 5 students suffers from a high level of math anxiety, with a higher prevalence of math anxiety in female students. In addition, high-school students in the “Arts” track were found to experience higher levels of math anxiety and science anxiety than those in the “Sciences” track, regardless of the students’ gender. Therefore, suggest that STEM career success requires not only good knowledge of STEM domains but also positive emotions towards math and science.

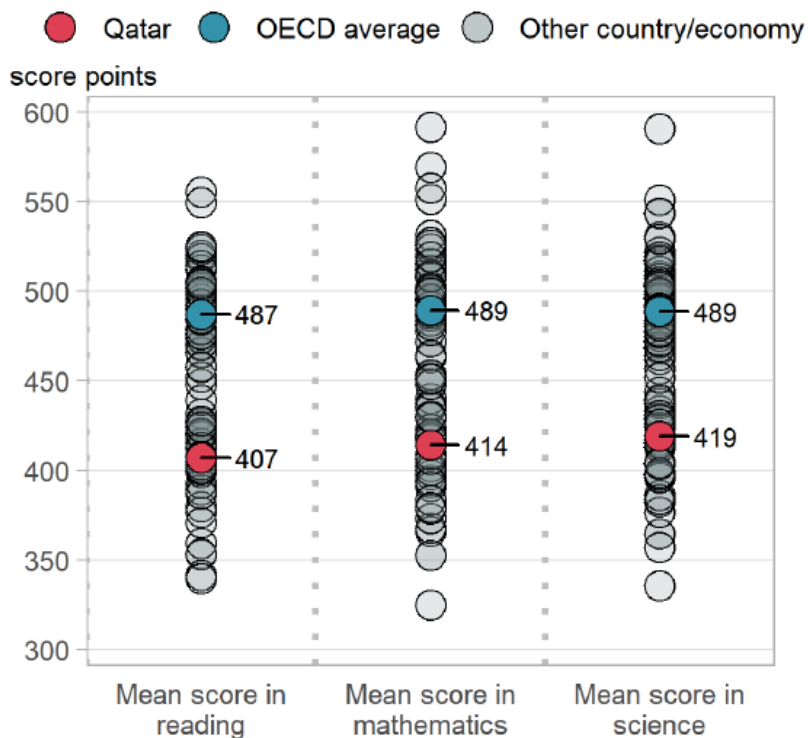


Figure 1. Performance of students in Qatar in PISA -18. (Organization for Economic Co-operation and Development (OECD), 2019).



Other studies, in preparation, aim to investigate the associations between a range of personality, cognitive and affective factors and math anxiety and performance, and examine a computational model for the relationship between math anxiety and math performance.

In the second subproject, the views and practices of a sample of K12 Science and Math teachers about implementing STEM through Technological Pedagogical Content Knowledge Framework (TPACK) in Qatar are investigated. The findings showed that the influence of the contextual and background factors of teachers on their views of the TPACK-PBL in STEM were varied depending mainly on the components of TPACK studied. On the one hand, specialism in education and gender are very significant and influential for teachers' views of TPACK-PBL in STEM. On the other hand, teachers' major specialism and their teaching subjects are significant for views of TPACK-PBL in STEM. Other studies, in preparation, aim to (1) develop and implement a teacher professional development program using PBL pedagogical intervention to support K12 science and Math teachers in Qatar to develop TPACK-STEM and to learn how to implement PBL in their teaching practices; (2) evaluate the outcome of the PBL-based TPD program on teachers' TPACK.

The third subproject, which has been recently started, aims to design, implement and evaluate

a technology-enhanced program utilizing project-based learning for promoting K12 STEM efficacy and career interest. A team of researchers in College of Engineering will develop an interactive and collaborative design to propose solutions on improving STEM teaching. Examples of the technology designs that will be used for the design of the PBL include augmented reality through astronomy apps, design of small-scale cars with electric propeller, a programming language for children (Scratch), an open-source electronics platform based on easy-to-use hardware and software (Arduino), and a flexible program designed for Science Technology Engineering Arts Mathematics (STEAM) students (Creative Technologies in the Classroom).

Among the expected outcomes of this project, a list of recommendations to policy makers in the Ministry of Education of Qatar along will be provided with a list of designed sustainable technology to be applied in K12 STEM education through in hope to improve K12 STEM education.

Acknowledgments

This work was made possible by an NPRP-C project (NPRP12C-0828-190023) from the Qatar National Research Fund (a member of Qatar foundation). The statements made herein are solely the responsibility of the author.

A2LA Grants the Renewal of ISO/IEC 17025-2017 Accreditation to QU Research Centers

Dr. Mohammed Maqbool Ahmed, Section Head of Research Quality, Research Planning and Development Department,

Asmaa Jassim Al-Kuwari, Quality Specialist, Research Planning and Development Department,

Research and Graduate Studies Sector – Qatar University



ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies. ISO/IEC 17025-2017 is one of most popular global standard, useful for organizations that perform testing and calibration and want reliable results. The standard is useful to private labs, universities, research centers, inspection bodies, product certification organizations and other conformity assessment bodies involved with testing and calibration.

ISO/IEC 17025 is more specific in requirements for competence and is based upon technical principles. Labs use ISO/IEC 17025-2017 to implement a Quality Management System (QMS), with the goal of improving their ability to be consistent with producing valid results. It enables laboratories to demonstrate that they operate competently and generate valid results, thereby promoting confidence in their work both nationally and internationally.

Qatar University (QU) research centers and college of engineering are pleased to have renewed their international ISO 17025:2017 accreditation for the 12th year in a row. The accreditation renewal assessment was completed on May 2022, by American Association for Laboratory Accreditations (A2LA). The renewal is a rigorous procedure to re-evaluate the competence

of the laboratory. This accreditation reiterates the consistency of the laboratory and the ability to demonstrate that they generate reliable results. It recognizes Qatar University's efforts in meeting international standards for best practices. QU started years ago to focus on the importance of high quality in the testing labs; thereby a plan was formulated to develop the mechanism of work to obtain international accreditation for its laboratories.

The centers who achieved the renewal of accreditation are Environmental Science Center (ESC), Center for Advanced Materials (CAM), Central Laboratories Unit (CLU), Laboratory Animal Research Center (LARC), Biomedical Research Center (BRC), Gas Processing Center (GPC) and Civil & Architectural Engineering Department (CAE). A2LA renews the accreditation status every two years based on the findings of onsite assessment. During each assessment, the QU research labs have demonstrated that their staff, equipment and procedures are technically competent and the operation of a laboratory quality management system is in full compliance with the requirements spelled out in ISO/IEC-17025:2017.

The testing methods whose accreditation is renewed from 30 June 2022 until 30 June 2024 are listed below.

Environmental Science Center (ESC)

Test Description	Reference Standard
Analysis of Minerals and Trace Metals in Soil and Sea Sediment Using ICP-OES (Ag, Al, As, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Sr, V, Zn).	US EPA 200.7
Determination of Polycyclic Aromatic Hydrocarbons (PAHs) in Soil and Sediment Samples by GC/MS [Naphthalene, Acenaphthylene, Acenaphthylene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo (a) anthracene, Chrysene, Benzo (b) fluoranthene, Benzo(k) fluoranthene, Benzo (a) pyrene, Indeno (1, 2, 3-cd) pyrene, Dibenzo (a, h) anthracene, Benzo (ghi) perylene].	US EPA 8275A
Determination of Diesel Range Organics (DROs) in Soil and Sediment Samples by GC/FID.	US EPA Method 8015
Determination of Total Mercury in Water Samples using the Direct Mercury Analyzer.	US EPA Method 245.1
Determination of Ammonia-Nitrogen using EasyChem Plus Analyzer (Colorimetric, Automated Phenate).	US EPA Method 350.1
Determination of Ammonia-Nitrogen using EasyChem Plus Analyzer (Colorimetric, Automated Phenate).	US EPA Method 350.1

Determination of Nitrate-Nitrogen using EasyChem Plus Analyzer (Colorimetric, Automated Cadmium Reduction).	US EPA 353.2
Determination of Nitrite-Nitrogen using EasyChem Plus Analyzer (Colorimetric, Automated, SAA-NED).	US EPA Method 354.1
Determination of Ortho-Phosphate using EasyChem Plus Analyzer (Colorimetric, Automated Ascorbic Acid).	US EPA Method 365.1
Determination of Silicate using EasyChem Plus Analyzer (Colorimetric, Automated Molybdate).	US EPA Method 370.1
Determination of Total Organic Carbon (TOC) and Total Bound Nitrogen in Water by using Multi N/C 2100S (TOC/TN Analyzer).	US EPA Method 415.1

Center for Advanced Materials (CAM)

Test Description	Reference Standard
Determination of Tensile Properties of Metals & Alloys.	ASTM E8/E8M
Determination of Rockwell Hardness of Metals & Alloys (HRA, HRBW, HRC Scales).	ASTM E 18
Determination of Tensile Properties of Plastics (Tube Type Sample and Poisson's Ratio excluded).	ASTM D638

Central Laboratory Unit (CLU)

Test Description	Reference Standard
Determination of Sodium and Potassium in Water by Ion Chromatography.	ASTM D 6919
Quantitative Analysis by EDS.	ASTM E 1508
Analysis of Minerals and Trace Metals in Water using ICP-MS (Ag, Al, As, Ba, Be, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Se, V, Zn).	US EPA 200.8

Laboratory Animal Research Center (LARC)

Test Description	Reference Standard
Detection of Pathogens in Animal Drinking Water [Total Plate Count (TPC), Coliform, Salmonella, Pseudomonas aeruginosa, and Adenosine Triphosphate (ATP) Detection].	QU/LARC/MBL-Pr/005
Density of petroleum products and amines.	UPS 1231

Detection of Animal Pathogens by ELISA [In Mice: Lymphocytic choriomeningitis (LCM), Theiler's Murine Encephalomyelitis Virus (TMEV), Pneumonia Virus, Sendai Virus, Hepatitis Virus, Parvo Virus, and Mycoplasma Pulmonis]; [In Rats: Parvo Virus, Sendai Virus, Rat Coronavirus /Sialodacryoadenitis (RCV/SDA), Mycoplasma Pulmonis, and Pneumonia Virus in Mice].	QU/LARC/MPL-Pr/001; XpressBio Catalog 91
Microbiological Assessment of Indoor Air Quality.	QU/LARC/MBL-Pr/001

Biomedical Research Center (BRC)

Test Description	Reference Standard
Elisa Detection of Infectious Disease (Brucella) in Animal Blood Samples (Bovine, Ovine, Equine, and Camel).	QU-BRC-SOP-02
Molecular Diagnosis of Infectious Disease (RNA Viruses), [Foot-and-mouth Disease Virus (FMDV), Marek's Disease Virus (MDV), Norovirus, and Hepatitis A].	QU-BRC-SOP-06

Gas Processing Center (GPC)

Test Description	Reference Standard
Analysis of Viscosity of liquid by Stabinger Viscometer.	ASTM D 7042
Analysis of Density of liquids by Digital Density Meter.	ASTM D 4052

Civil & Architectural Engineering Department (CAE)

Test Description	Reference Standard
Penetration of Bituminous Materials.	ASTM D5/D5M
Rolling Thin-Film Oven Test ASTM.	AASHTO T315
Rheological Properties of Asphalt.	AASHTO T315
Viscosity Determination of Asphalt.	ASTMD4402/D4402M
Sieve Analysis of Fine and Coarse Aggregate.	ASTM C136/136M
Relative Density and Absorption of Fine Aggregate	ASTM C128/C128 M
Sand Equivalent Value of Soils and Fine Aggregate.	ASTM D2419
Time of Setting of Hydraulic Cement.	ASTM C191
Flash and Fire Point Test for Bitumen.	ASTM D92
Compressive Strength of Hydraulic Cement Mortars.	ASTM C109/C109M

Qatari Norms for the Wechsler Intelligence Scale for Children (WISC-IV)

Prof. Tarek Bellaj, Professor of Human Social Neuroscience,

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وزارة التربية والتعليم والتعليم العالي
Ministry of Education and Higher Education
دولة قطر • State of Qatar



Psychological tests are objective tools consisting of specific tasks that evaluate psychological or behavioral characteristics. These tasks must be uniform in their content, administrative procedure, scoring system, and result interpretation; which have to be based on the comparison between the responses of the examinee and the responses of a standardization sample of individuals who carried out the same tasks under the same circumstances and rules. This comparison sample should be issued from the same culture and share the same essential demographic characteristics (the normalization sample). Therefore, the absence of local norms deprives the psychological test of its scientific value, even if it possesses other critical psychometric properties such as validity (measuring what it claims to measure), reliability (stability and consistency), and sensitivity (accuracy and ability to discern even slight differences).

Due to the importance of intelligence as a distinctive condition in the life of humans, communities, and populations, the Qatari norms for the Wechsler Intelligence Scale for Children (WISC-IV) were established. This is a historical achievement since it represents the development of the first local norms of a comprehensive intelligence scale in harmony with the Qatari cultural background. So far, the practice of psychological assessment in Qatar has been totally carried out using other Arab countries' norms, such as Kuwaiti, Saudi, Jordanian, and Egyptian. Even though the population of these countries shares so many religious, cultural, and civilizational characteristics with the Qatari population, several previous studies have shown that the use of non-local norms is a primary source of diagnostic errors even if these norms come from bordering countries (Fernandez & Marcopulos, 2008). Indeed, establishing local Qatari norms for the most famous intelligence scale in the world was necessary due to the importance of psychological tests as objective tools for assessing different cognitive abilities to make clinical decisions related to diagnosis, differential diagnosis, selection, and school and professional orientation. A tripolar team, including experts and professionals from Qatar University, the Ministry of Education and Higher Education, and the Behavioral Health Care Center, took place in the project. Participants from Qatar University supervised the scientific part of the project, the Ministry of Education and Higher Education



Prof. Tarek Bellaj

supervised the fieldwork, and the Behavioral Health Care Center managed the logistics and procedural part.

In addition to being the most common scale in the world, the Wechsler Intelligence Scale for Children (WISC-IV) was chosen due to its composite construction. It covers uncomprehensive but large and multiple cognitive processes through its fifteen subtests. It allows the measurement of Verbal Comprehension, Perceptual Reasoning, Working Memory, and Processing Speed indexes of intelligence to enable psychologists to discover each child's intellectual strengths and weaknesses.

The first step in this work was to review the linguistic suitability of the Arabic form approved in the research in accordance with the peculiarities of the usage of linguistic vocabularies and forms in Qatari society. Moreover, the pictures included in the scale were reviewed, and those that did not fit the local sociocultural context were changed after consulting a Judging Committee composed of experts in psychological testing at Qatar University. On the other hand, 15 psychological professionals were selected and trained to unify the scale administration and data acquisition.

Through the second step, the Qatari version of

the scale was subjected to a pre-experimentation on a sample including 80 children, half of whom were girls. This step allowed to have a glimpse of the efficiency of the modifications made and to compute the percentage of success on each item for each subtest to rearrange their order according to the local data. This preliminary work was an occasion to appreciate the preliminary validity and reliability of the scale. As soon as this had been achieved, the team moved to the third step, which represents the fieldwork of the standardization. This was done after defining the sample characteristics and size as well as the inclusion-exclusion criteria. Random samples of boys and girls aged between 6 and 16 were identified from Qatari schools in the seven municipalities (Doha, Al Rayyan, Al Khor, Al Wakrah, Umm Salal, Al Daayn, and Al Shamal). The final standardization sample included 620 Qatari children, of whom 309 were girls between the age group of 6 and 16 years. The standardization data of the Qatari version of the Wechsler Intelligence Scale for Children—4th edition (Q-WISC-4) was collected according to Wechsler's principles regarding the instructions and starting, stopping and rewards points.

After nine months of fieldwork, the team moved to the fourth step that assessed the Qatari version's psychometric properties. For the reliability, the researchers used three methods: 1/ examining the Internal Consistency by calculating Cronbach's Alpha Coefficient (between 0.80 and 0.93), 2/ using the Split-half Method with Spearman-Brown Adjustment (between 0.82 and 0.97), 3/ calculating the Standard Error of Measurement and Confidence Limits (between 0.67 and 1.17). All of them ensured the reliability of the total and composite indexes of the Q-WISC-4.

Concerning the validity, three integrated sources of the construct validity were tested, including 1/ the inter-correlations within the subtests and between the subtests and the composite and total scores (the correlation coefficients within the subtests range between 0.10 and 0.63, which means that they are interconnected but not redundant); 2/ An exploratory factor analysis which proved that the implicit structure of the scale includes four factors that can explain 72.17% of the variance for ages between 6-7 years, 70.36% for ages between 8-10 years, 70.51% for ages between 11-13 years and 73.22% for ages between 14-

16 years. These results are fully consistent with the original theoretical test model of Wechsler; 3/ A confirmative factor analysis using AMOS 20, confirmed the concordance of Wechsler's theoretical model with the obtained data from the Qatari sample in both the χ^2 , the AGFI, the NFI, the TLI, and the RMSEA indexes.

Once the validity and reliability of the Q-WISC-4 were proven, the scaled scores of the primary (10) and supplementary (5) subtests of the thirty-three age groups were calculated at the rate of three age groups of four months for the eleven age stages. From 6 to 16 years and 11 months, the aggregate, raw scores can be converted into scaled scores from 1 to 19 with an average of 10 and a standard deviation of 3. On this ground, the tables converting the raw scores into scaled scores of the thirty-three age groups for the fifteen subtests were prepared based on the Qatari data.

After achieving this work, which took three years, the last step was to announce and present the results in a scientific ceremony in the presence of eminent representatives of Qatar University, the Ministry of Education, and Higher Education, in addition to the Behavior Health Care Center, and representatives of several health and social departments and centers in the State. Then 20 bags containing the manual and all the testing tools were distributed to several facilities and centers concerned with children and teenagers' health and development in the State.

Intelligence is correlated to educational performance, social adaptation, moral development, and professional success. In Qatar, where children and teenagers under 15 years represent more than 20% of the population, it was necessary to select the most efficient scale for children's intelligence, ascertain its cultural suitability, evaluate its psychometric properties, and establish its local norms. Because standardization is connected to time and place, this work was accomplished to enable researchers and trained clinical practitioners to select talented children and contribute to diagnosing most of the disorders that appear in the childhood such as mental deficiency, learning disorders, attention-deficit/hyperactivity disorder. It allows accordingly to conceptualize personalized rehabilitative and educational programs. The obtained norms are not permanent, and new norms should be made out regularly because several population's psychological characteristics change over time.

New Polymers and Drug Delivery Systems:

QU Research wins 2022 PharmSci 360-American Association of Pharmaceutical Scientists (AAPS) Annual Meeting Award

Prof. Husam Younes

Professor of Biopharmaceutics and Pharmaceutical Technology, and Advisor, Vice President for Research and Graduate Studies Office – Qatar University



Dr. Husam Younes, Professor of Biopharmaceutics and Pharmaceutical Technology; Advisor to the Vice President for Research & Graduate Studies (VPRGS)—Qatar University, wins the best abstract award at the PharmSci 360, the American Association of Pharmaceutical Scientists (AAPS) Annual Meeting in Boston, USA (Oct.16-19, 2022).

Professor Younes won the award by scoring in the top 10%, among hundreds of abstract submissions under the category of Senior AAPS members with more than 3 years of experience. The AAPS conference is considered the largest and most prominent scientific gathering for pharmaceutical scientists, participating stakeholders employed in academia, industry, government, and other pharmaceutical science-related research institutes worldwide. The award-winning abstract summarized a research work submitted to the 2022 AAPS conference titled, “Therapeutic Anticancer Efficacy of Intra-Tumoral Controlled Osmotic-Driven Delivery of Bioactive IL-2 Using Novel Visible-Light Photocured Biodegradable Injectable Elastomeric Implants.”

The research results presented the ability of the delivery system based on a new family of biodegradable and biocompatible elastomers to eradicate tumors in 90% of the animals in mouse model tumors. The new implantable and injectable systems could sustain the localized release of bioactive and stable Interleukin-2 (IL-2) required to eradicate cancer by stimulating the natural autocrine and paracrine release of cytokines needed to provoke the immune system in a cancer patient. This work was the outcome of a research collaboration between QU and the University of Bristol in the UK through a National Priority Research Program (NPRP) grant to Prof. Younes.

“It was an honor to be the recipient of such an award and represent QU and our newly founded Nanopharmaceuticals & Tissue Engineering Research Laboratory (TENRL) at the AAPS,” Prof. Younes said. These findings are significant as they demonstrate a successful approach to treating cancer. The new family of visible-light photocured biodegradable elastomers was registered under QU’s name in the published US patent # US 9,422, 396, B2, demonstrating a wide application in drug delivery and tissue engineering applications. Patients with cancer and other immune diseases can benefit from the new polymers, which can be fabricated in various delivery forms such as nanoparticles, tagged nanospheres, implants, 3D scaffolds, and injections that are capable of maintaining the bioactivity and therapeutic efficacy of loaded protein drugs or hormones.

The polymeric systems are considered a feasible clinically translatable cytokines delivery platform for treating cancer and other immune diseases. A wide range of patients would also benefit from a successful approach to utilizing these polymers in cardiac, diabetic, and wound healing tissue engineering applications.



Prof. Husam Younes, during his participation in the annual conference of the American Association of Pharmaceutical Scientists for the year 2022, in Boston, USA.

The polymers were also used to successfully develop a new three-dimensional elastomeric fibrous mesh fabricated by photoreactive electrospinning for cardiac tissue engineering applications. The developed nanofibers retained their rubbery elastic state at all times, which is required to withstand continuous cardiac contraction and relaxation. They also demonstrated superior cell attachment and growth in an aligned structure, offering the necessary anisotropic effect consistent with cardiac tissue engineering applications.

Recently, the polymers were designed to contribute to helping patients suffering from degenerative retinal diseases, such as Proliferative Diabetic Retinopathy (PDR) and Age-Related Macular Degeneration (AMD). More than 40% of diabetic patients in Qatar alone suffer from AMD or PDR. This research was recently funded by NPRP and QU-IRCC grants to Prof. Younes and his collaborating teams from the UK and Jordan to develop and explore the use of those novel polymers in treating PDR.

The research is directed towards utilizing a new retinal cell regeneration technology and a prolonged ocular delivery platform of bioactive anti-vascular endothelial growth factors (anti-VEGF) using those new patented polymers. The developed prototype is currently classified at technology readiness levels 8 and Category A at this stage by QU and QNRF innovation standards. The pharmaceutical industry and the biomedical field, in general, need the advantages offered by these new polymers. The formulation and delivery of protein therapeutics and their use in tissue engineering is one of the industry’s main challenges. The search for the optimum biomaterials that can resolve these challenges is still a hot area of research and in great demand.

Implications of Distinct Metabolic Profiling on Health & Athletics of Elite Female Endurance Athletes Compared to Non-athlete Women: a New Study

Dr. Mohamed Elrayess, Director of Basic Research, Vice President for Medical and Health Sciences Office, Research Associate Professor, Biomedical Research Center - Qatar University

Amneh Tarkhan, Research Assistant, Biomedical Research Center - Qatar University

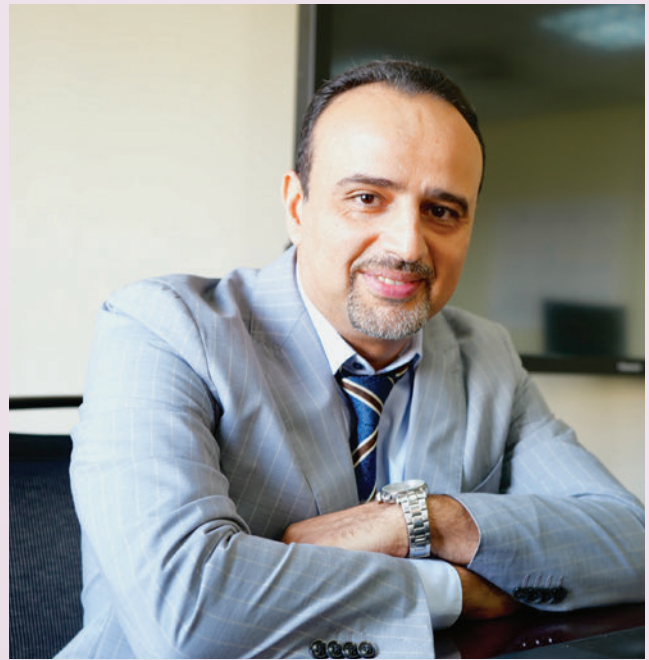


Endurance sports are those which require athletes to remain active for lengthy periods of time, such as marathon running, rowing, and cycling. Females are thought to be better equipped than males to handle endurance sports due to their superior utilization of fatty acids. Despite the significant rise in female sports participation, women continue to be disproportionate and underrepresented in sports science research. There is very little female-specific research, as results from studies on male athletes are often extrapolated to female athletes, with insufficient consideration for the sex differences in muscle mass, body fat percentage, and metabolism, especially in the context of steroid metabolism.

Steroids are biologically active compounds that act as signaling molecules, regulating a plethora of cellular processes in humans. There are two major classes of steroids: the corticosteroids and the sex steroids. As can be inferred from their name, sex steroids are involved in the development of the sex characteristics that are responsible for the differences between men and women. In a sports context, different concentrations of circulating steroid hormones, namely testosterone and estrogen, can significantly impact the athletic performance of female athletes.

Dr. Mohamed Elrayess and research teams from Qatar University's Biomedical Research Center (Ms. Najeha R. Anwardeen & Ms. Amneh H. Tarkhan) and Physical Education Department (Dr. Maha Sellami) as well as the Italian Sports Medicine Federation (Dr. Francesco Donati, Dr. Francesco Botrè, and Dr. Xavier de la Torre) carried out a study to investigate the differences in steroid metabolism between female elite athletes and non-athletes. This study was of particular importance to the field of sports science research as it helped address the dearth of scientific literature on female athletes.

The findings of Dr. Elrayess's study, which were published in *The Journal of Steroid Biochemistry and Molecular Biology*, revealed that there were 15 steroid metabolites that were significantly altered between female endurance athletes and non-athletes. Interestingly, the most significantly impacted steroid metabolites in female endurance athletes belonged to a class of sex steroids called androgens, which regulate the development of male characteristics. Androgens are much scrutinized in the sports landscape, as they can directly enhance sports performance via their effects on behavioral patterns, bone mass, lean body mass, erythropoietin, and visuospatial abilities. In fact, female athletes with high androgen levels are estimated to have a 2-5% greater competitive



Dr. Mohamed Elrayess

benefit compared to those with levels within the normal female range.

Other than differences in sex steroid levels, Dr. Elrayess's study also showed that cortisol was among the top three most significantly altered steroid metabolites between female endurance athletes and non-athletes. Cortisol is the most abundant endogenous corticosteroid in humans, mediating the inflammatory and stress responses as well as immune function and carbohydrate metabolism. Prolonged bouts of exercise result in elevated cortisol levels, which, in turn, maintain blood glucose by stimulating gluconeogenesis. Unlike androgens, the impact of corticosteroids on sports performance is much less agreed upon.

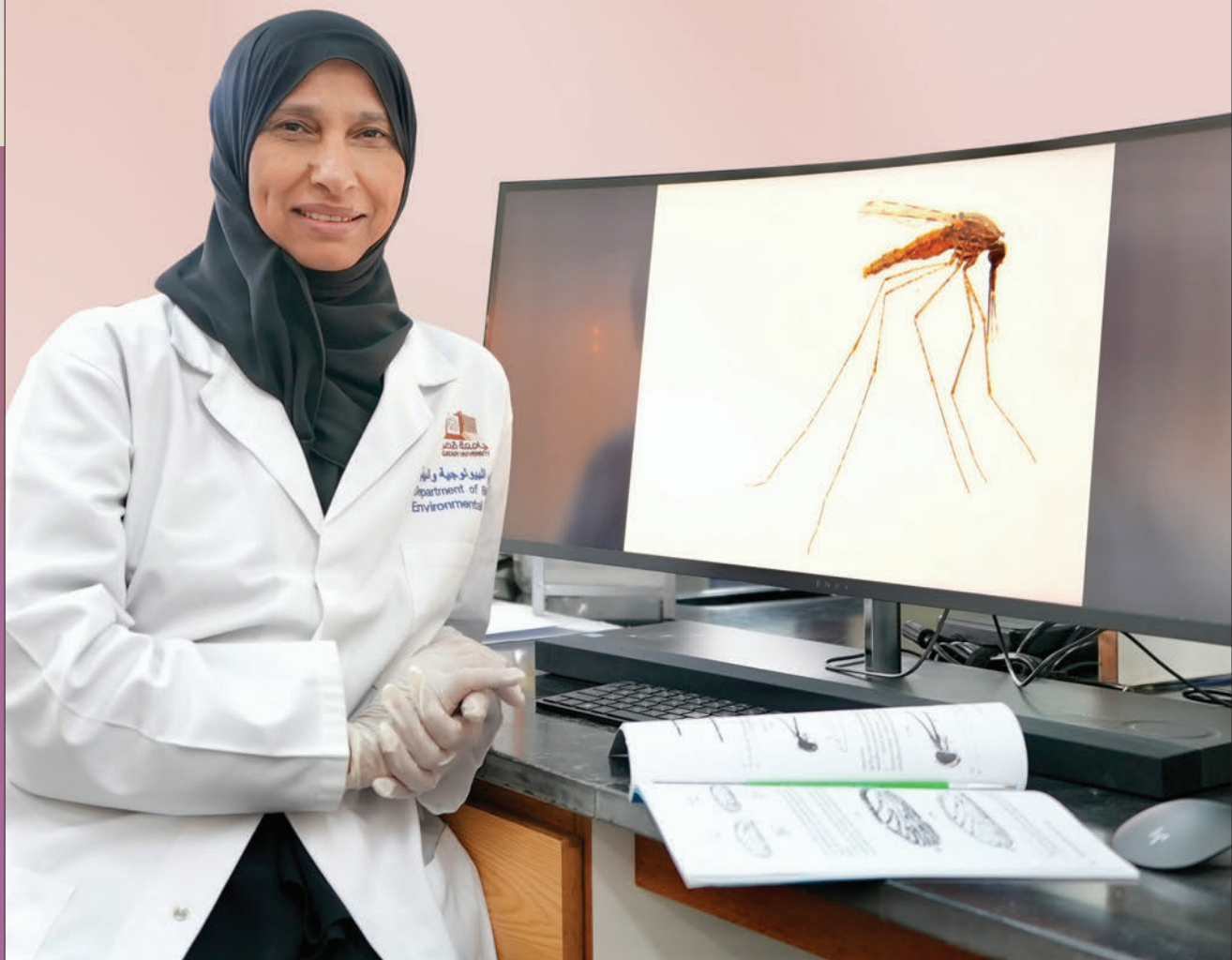
Conclusively, the results of the present study suggest that female endurance athletes have a distinct steroid hormone profile that sets them apart from their non-athletic female counterparts. Moving forward, Dr. Elrayess's team aims to explore if the aforementioned steroid hormone profiles are linked to demographic factors, health, and/or sports performance in elite female athletes.

The novelty of Dr. Elrayess's findings lies in its exploratory identification of a distinct endocrine profile among elite female endurance athletes, with several of the significantly altered metabolites having been previously implicated in female-specific diseases such as polycystic ovary syndrome. This novelty, in turn, highlights the importance of conducting female-specific research, which is especially underrepresented in sports science and research.

The First Research Study Documenting the Characterization of Mosquito Larval Habitats in Qatar

Dr. Fatima Abdulla Al-Khayat

Assistant Professor of Biological Sciences, College of Arts and Sciences-
Qatar University



Mosquito-borne diseases have remained a grave threat to human health and are posing a significant burden on health authorities around the globe.

Mosquitoes have inhabited the globe for more than 100 million years, and they are able to adjust their biology to a wide variety of ecological conditions enabling them to breed in diversified habitats. However, anthropogenic activities including transcontinental mobility and international trade has enabled cross-continental movement of mosquitoes and other economically important insects. These conditions facilitate the dispersal and establishment of exotic mosquito species in other countries. The dispersion of these vectors have resulted in the transmission of several deadly diseases in the populations, and these small insects are the major source of nuisance. Among the vector borne diseases, malaria is the most substantial in Qatar, because the country hires most of its labor forces from malaria endemic countries like Sudan, India, Bangladesh and Pakistan.

Mosquitoes have diverse habitats that allow them to colonize different kinds of environments. In Qatar, they utilize a variety of aquatic habitats such as ponds, streams, ditches, swamps; marshes, temporary and permanent pools, artificial containers for breeding. Despite of the several advancements in vector control methods, the most practical way to reduce a local population is to eliminate their breeding habitats, while the identification of these habitats is crucial to apply vector control approaches, as well as for disease prevention. In order to achieve this, understanding the oviposition preference and ecological data such as larval habitats, species composition, and seasonal abundance, play an important role in the management of mosquitoes. The environmental factors that affect the presence and density of mosquito larvae have been deeply investigated, and it has also been postulated that, neglecting the understanding of larval ecology can hamper the control efforts.

Fourteen stations among the country were investigated and monthly visited: Alkhor, Rawdat Alfaras, Alkaraana, Hazm Almurkhiya, Alwakra, and Nuaija, Doha, Alrayyan, Aldafna, Alkhiesa, Umm Salal, Alshahanya, Industrial area and Mesaieed. These sites were further divided into five areas according to the nature of their landscapes and were grouped as urban, agricultural, livestock farms, industrial area and natural areas.

Mosquito larval samples were collected between 2013 to 2015, using the standard dipping techniques. In each breeding habitat, environmental



Slide showing a type of mosquito larvae.

factors such as dissolved oxygen, salinity, pH and water temperature, water depth and habitat surface area were measured. In addition, presence and absence of predators, shade, turbidity, vegetation and algae was recorded.

A total of 443 aquatic habitats were examined, among these 130 were found positive with *Culex pipiens*, *Culex quinquefasciatus*, *Culex mattingly*, *Ochlerotatus dorsalis*, *Ochlerotatus caspius* and *Anopheles stephensi*. The majority of positive breeding habitats were recorded in urban areas, followed by livestock farms, and least were agriculture. Some of the mosquito larvae co-exist in one habitat, such as *An. stephensi* larvae were positively correlated with *Cx. pipiens*, *Cx. quinquefasciatus*.

Qatar is mainly plane with a dry and hot climate where rainfall remains unpredictable. The breeding habitats of mosquitoes in different areas were mainly formed as a result of human activities and urbanization-related factors (drainage, drinking water pools, flooding sewage pools, fountains, irrigation water pools, artificial containers either metal or plastic containers, rising water table pools, streams, treated sewage swamps and tires). The majority of these habitats were in the urban areas and found positive, followed by livestock and agricultural farms. This study is the first report on the habitat characteristics of mosquito larvae found in Qatar.



Dr. Fatima Al-Khayat while collecting samples from one of the study sites.

Anopheles stephensi was found breeding in a wide range of temporary habitats during the study period. Most of these habitats were stagnant, relatively small and were partially shaded. In urban areas, it was found in drinking water pools, fountains, and drainage, while in livestock farms, this species was found breeding in plastic containers, whereas in agricultural areas, irrigation water pools were found positive. It was seen with habitats without vegetation, and habitats without predators.

Culex quinquefasciatus was the most dominant in most of breeding habitats and it was strongly associated with turbid aquatic water, without vegetation.

Culex mattinglyi is a new record. It was encountered with a small number and it was limited only to the rising water table at urban areas of inland marshes. It preferentially seems to breed in high saline water.

Ochlerotatus larvae were found in urban, industrial and natural areas. Two *Ochlerotatus* species had less diversity in larval habitats, and were encountered for the first time during present survey at three breeding habitats; rising water table pools, drainage and treated sewage swamps.

Ochlerotatus dorsalis larvae were identified for the first time in this study and it was negatively correlated with pH, water temperature, depth, and habitat surface area, whereas salinity water was the

more preferable site for females to lay their eggs. These results demonstrate that environmental factors play a significant role in preference of both anapheline and culicine for oviposition, while their effective management must be developed as the most viable tool to minimize mosquito-borne disease.

Ochlerotatus caspius larvae were encountered only in the urban area close to human inhabitants. The larvae of this species were collected from shallow rising water table pools in the inland marsh with high salinity, and from drainage water with rotting organic materials in the second habitat.

This is the first study to record the breeding habitats of mosquito species larvae and their physicochemical parameters in Qatar. This study will help in operational programs for controlling the mosquito vectors, as it coincides with educating the community and make emphasis on personal protection methods. Therefore, there is need for further investigation with emphasis on biology and ecology of mosquito larvae and adults. In future, more studies are required on the physicochemical parameters of mosquito larvae breeding habitats due to diverse larval habitats and co-existence of mosquito vectors that were incriminated in the transmission of malaria, filariasis, yellow fever and rift valley virus in the country, which expose the citizens to risk of infection.



Innovation Oasis

Interview with an Inventor:

Prof. Samer Fikry Ahmed

Professor of Mechanical Engineering,
College of Engineering - Qatar University

Qatar University has supported innovations and inventions that cover the needs of the State of Qatar in all fields, and mechanical engineering has distinctive innovations and inventions as it is concerned with design and manufacturing and has a prominent role in the development of machines or devices used in various economic sectors in the country, and about some of the inventions contributed by mechanical engineering we meet Prof. Samer Ahmed, who is Professor of Mechanical Engineering at the College of Engineering-Qatar University.

Prof. Samer, how would you present yourself to the University community?

I obtained My PhD degree in Mechanical Engineering from the University of Cambridge in the UK in 2007. I joined Qatar University in 2011. My research interest is in the area of combustion and emissions, alternative fuels and emission reduction technologies. During my research journey so far, I managed to obtain financing through research projects funded from governmental and industrial sectors locally and internationally. This fund has been used to establish a world-class Heat Engines and Combustion Lab at QU. Moreover, I received a number of academic, research and innovation excellence awards from Qatar University, Qatar Science and Technology Park (QSTP), Qatar Development Bank (QDB), British Council, and American Society of Mechanical Engineers (ASME). I have published around 70 papers in top journals and refereed conference proceedings as well as a book chapter in the field. In addition, I have been granted a U.S. patent in 2022 for my invention “A smokeless exhaust tube.” This has recently allowed me to establish a startup company through the SIEED office at QU called “ClearExhaust LLC.”

Tell us about your most important inventions at Qatar University, and which industry do they serve?

Emissions from diesel engines are considered to be a major source of pollution worldwide. Smoke emissions, in particular, can cause very severe diseases such as cancer and asthma. All the existing technologies to reduce smoke depend on different types of exhaust gas filters. These filters can manage reduce the large sized carbon particles from diesel smoke, but not the small ones (called soot). Therefore, I have invented the smokeless exhaust tube (Figure1), which is unique and novel in terms

of creating a water-type filter in the exhaust tube of the vehicle that can catch ALL sizes of the carbon particles of diesel smoke without affecting the engine operation. This invention is capable of eliminating completely (100%) the smoke emissions of diesel engines (Figure 2). In addition, the lab and on-board vehicle testing showed that other important emissions, such as NOx, CO and HC could also be decreased by about 20-25%. This smokeless exhaust tube can be installed easily with any diesel engine vehicle, such as trucks and busses as well as stationary engines, as shown in Figure 3.

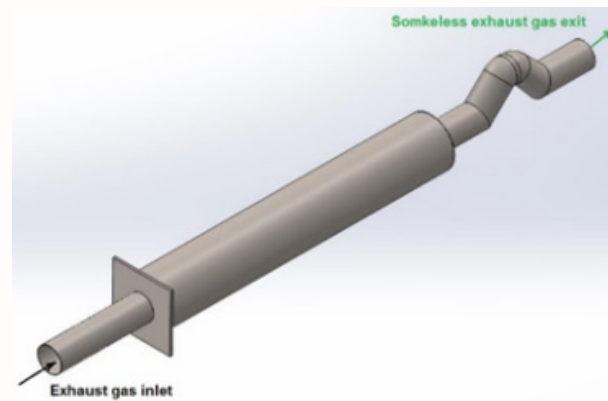


Figure 1. The smokeless exhaust tube.

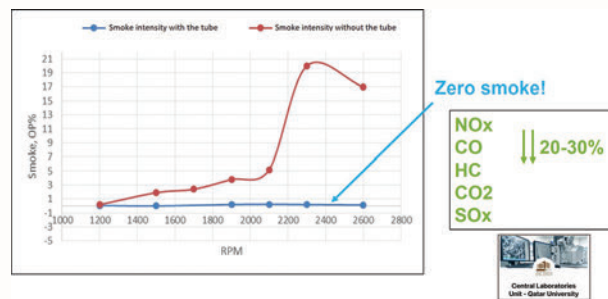
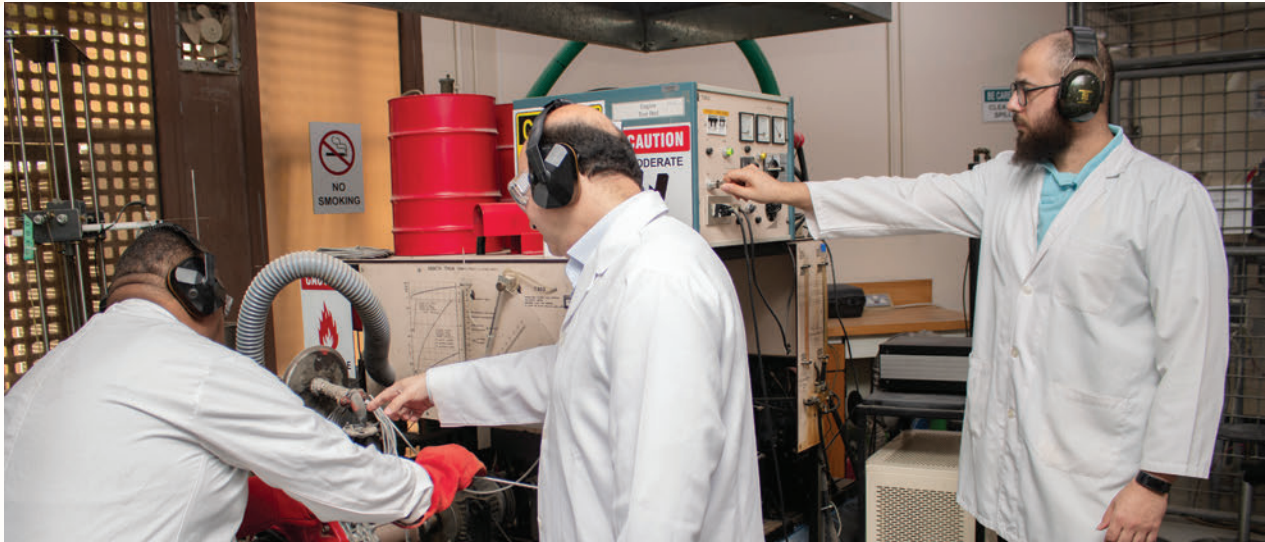


Figure 2. Measurements of the smoke intensity of a diesel engine with and without using the tube.



Figure 3. Installation of the smokeless exhaust tube onboard a truck.



Prof. Samer Ahmed in the middle of his research team.

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

In fact, Qatar University encourages faculty and researchers to do scientific research that leads to innovation. In addition, QU provides all what the researcher needs to invent such as good research grants, state-of-the-art labs as well as help and support to file the inventions generated from this research to obtain patents.

As innovations and inventions grow at QU, Office of Innovation and Intellectual Property and QU Holding Company have been launched. From your point of view, how do you view this support for innovation and marketing?

The Office of Innovation and Intellectual Property and QU Holding Company play a significant role in transforming the research and inventions of the faculty and researchers into real products, which can be commercialized and sold in the market by establishing startup companies. These spin-off companies that are generated from the research at QU will enhance the economy and strongly benefit the community in Qatar. Moreover, QU has joined top universities in the world by moving towards this direction.

From your experience, what are the short cuts researchers and inventors can take to access a patent?

I think the researchers and inventors should always think of the practical importance of their research and inventions in order to obtain a patent and, later on, a useful product that can be sold in the market.

As a highly experienced researcher, what role does the researcher play to motivate and encourage students to develop new innovations and inventions that serve the community?

In my opinion, the faculty should encourage his/her students to be independent and creative in doing research. In addition, the students should be encouraged to try new approaches and methods in doing research under good supervision. This should be practiced through course projects and graduation projects in order for the students to be self-motivated towards developing new inventions.

If you were to create an impactful invention, what would it be?

I am currently developing another invention that will have huge effect in enhancing student learning. Recent educational surveys showed that the average attention of university students during a conventional lecture is about 40% of the lecture time or even less! Therefore, the proposed invention aims to simply attract students and young people to a specific topic in order for them to like it, then enjoy it, and finally understand it. This will be achieved by developing scientific animation video games designed for specific courses.

What is the importance of inventions for the development of communities?

I think inventions are the engines to drive the development of the economy and communities. This aligns with the Qatar National Vision 2030 to establish a knowledge-based economy. The inventions and innovations are the key to achieve this vision!



**Innovation
Oasis**



Development of Modular DC-DC Converters for Fast Chargers of Low-Speed Electric Vehicles

Prof. Ahmed Mohammed Massoud

Associate Dean for Research and Graduate Studies, College of Engineering - Qatar University



To increase the utilization of Low-Speed Electric vehicles (LS-EVs), rapid recharging of the battery pack becomes a necessity. Accordingly, this IP aims to develop low-cost, high-efficiency, and smart power electronics to enable a fast charger solution for LS-EVs. This will allow for significantly reduced charging times, greater vehicle utility and broader adoption of LS-EVs. Since cost and performance are prime design goals, a compact and low-cost fast charger is highly desirable.

The main possible applications of this IP include Low-Speed Electric Vehicles (LS-EVs) Applications, Golf carts, and electric people movers. This IP can be deployed at Qatar University, Hamad International Airport, Katara, etc.

The main contribution of this IP is presenting a high-efficiency and high-power density modular DC-DC converter for fast chargers of LS-EVs. The control of the presented modular Input-Series Output-Parallel (ISOP) DC-DC converter is studied to achieve equal power sharing among the modules considering transient

conditions, parameter mismatch, and reflex charging. Uniform power sharing is achieved through a direct output current sharing control, ensuring stability, unlike the conventional Input-Series Output-Parallel (ISOP) converters. This is because the proposed configuration uses only one driving capacitor at the input side, avoiding the inherent instability problem caused by the output current sharing control. Simulation results are provided to elucidate the concept presented, considering a three-module ISOP DC-DC converter with a rated power of 4.5 kW and an input voltage of 340 V, assuming a single-phase 240 VAC outlet. The proposed ISOP configuration allows a stable direct output current sharing control. In addition, the parallel connection at the output side will allow low power switch utilization and reduce the inductor current's ripple content. This diminishes the size of the output capacitor and improves the battery lifetime. Figures 1a and 1b highlight the developed electric vehicle charger and golf carts, respectively. Figure 2 elucidates the developed converter for low-speed electric vehicles.



Figure 1. (a) Developed electric vehicle charger and.

(b) Golf cart.

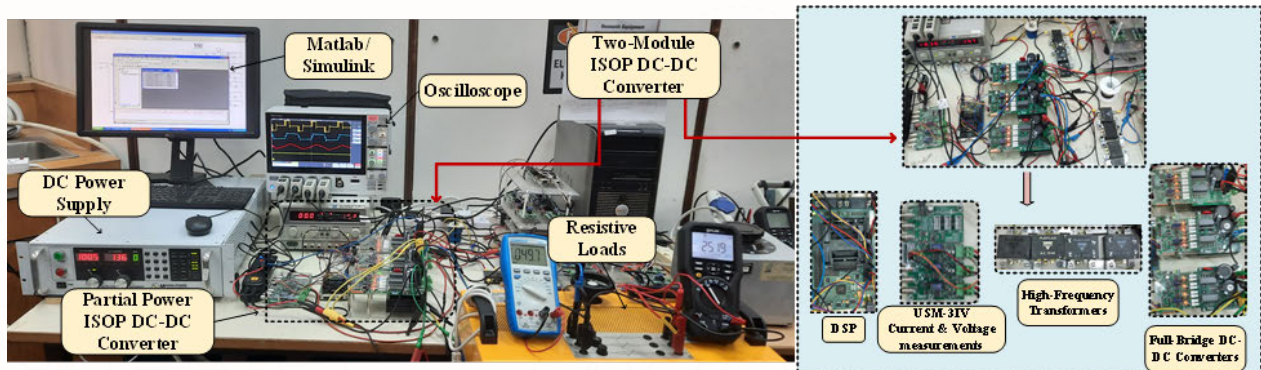
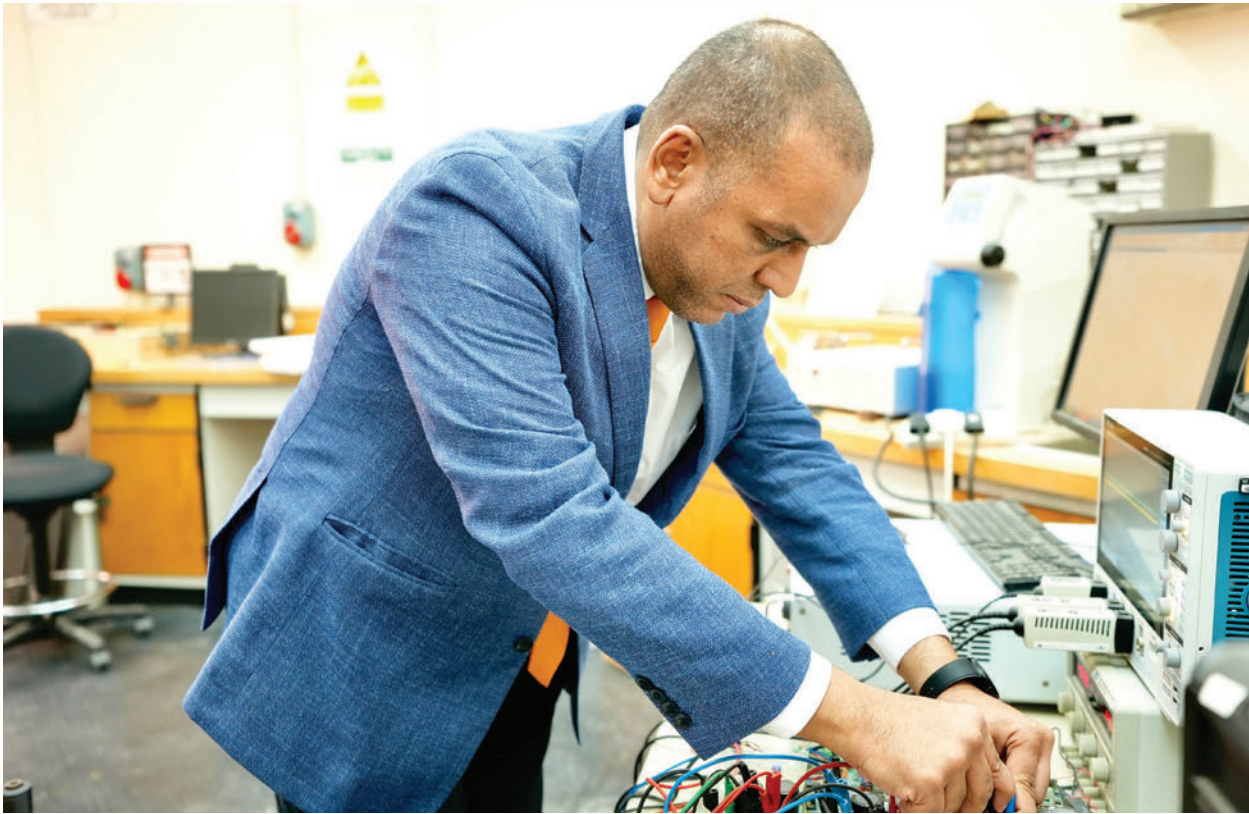


Figure 2. The developed converter for low-speed electric vehicles.



Prof. Ahmed Mohammed Massoud

In this patent, the proposed concept provides a low-cost, high efficiency and high-power density modular DC-DC converter for fast chargers of LS-EVs. The provided modular DC-DC converter offers the following advantages:

- The DC-DC converter is rated at 4.5 kW and connected to a 48 V battery, where the charging process can be done from a single-phase outlet. The proposed configuration is an Input-Series Output-Parallel (ISOP) DC-DC converter, where the control of the proposed converter can be achieved via direct Output Current Sharing (OCS) control that can achieve OCS as well as Input Voltage Sharing (IVS) without the need for IVS control loops. In other words, the control of the proposed configuration can be achieved via OCS, where the instability problem associated with the conventional ISOP converters controlled via direct OCS is avoided. This is due to the fact, that the proposed configuration contains only a single driving capacitor at the input side, unlike the conventional ISOP DC-DC converters.
- The proposed ISOP converter offers additional advantages, which can be highlighted in

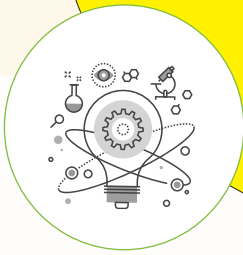
less semiconductor devices since only one converter is used on the input side.

- In addition, the use of modular converters will allow the use of low power rating switches and reduce the current stress per module.
- The parallel connection at the input side will also add small ripple content that will reduce the capacitor size at the output and, therefore, avoid battery degradation.

The proposed concept can be utilized in fast chargers designed for EVs applications where it can provide an output current with small ripple content, which will reduce the output filter capacitor size and improve the battery life, avoiding any significant increase in the battery's temperature.

ACKNOWLEDGMENT

This patent was supported by the National Priorities Research Program (NPRP) through the Qatar National Research Fund under Grant-10-0130-170286. The statements made herein are solely the responsibility of the authors.



Innovation Oasis

Research Craft for Shallow Waters: **QU's Recently-Patented Technology**

Dr. Bruno Welter Giraldes

Research Assistant Professor, Environmental Science Center - Qatar University



Named as “Raft-Sampling-Bench”, the first prototype of this technology was designed, built, and validated by Dr. Bruno Welter Giraldes, during research projects housed in the Environmental Science Centre (ESC) at Qatar University. A research effort that aimed primarily to study the pearl oyster population in different coastal sites around Qatar.

This study was performed in shallow waters (depth <1m), one of the largest marine environments in the Qatar Marine Zone, which spans for several kilometers from shoreline. It is important to highlight that this shallow environment houses the most representative ecosystems and seascapes in Qatar, such as oyster beds, seagrass, and algae bed, but also interact peripherally with seascapes

as mangrove, and coral reefs. These important shallow ecosystems are, however, almost inaccessible for scientists because it is virtually inaccessible for boats, due to the long distance from the shoreline and from deeper marine areas. Hence, creating a major problem for Marine Scientists, considering the sampling requirement in oceanographic studies, where it is necessary to collect seawater, soils, and marine species. Specially because after collecting it is necessary to process and transport this material back to the car, parked several kilometers away in the shoreline.

Therefore, to study these natural resources the scientists in Qatar must carry tens of kilos of samplings for kilometers, walking on shallow water and several times walking on the flooded areas with marine floor covered by sharp rocks. Consequently, based on this logistical problem faced constantly by our ESC scientists, this new craft was designed.

The Raft-Sampling-Bench was designed with some specific features, such as: 1) hardness, to resist the sharp rocky intertidal sites, 2) a good buoyancy, for carrying around 400 kg weight; 3) efficient in transporting samplings in really shallow waters; 4) good balance/stability to transport people and samples; 5) a work bench function to process the samples still on the sampling site; and 6) a light weight craft to facilitate the land transport.



Dr. Bruno, while applying the use of a new technique.

For the hardness, this technological concept uses the hollow wooden method with thin plywood or carbon fibers sheets, or further resistant material accordingly with the required hardness. Creating inner sealed floating cells to produce a hard-shell craft that allow us to have great resistance and light-weight at the same time.

The buoyancy and consequently the final volume of the patented Raft was based on the Archimedes principle applying the concepts of the buoyancy force. In other words, the exact volume was calculated based in the desired loading weight plus the craft weight. In addition, considering the necessity to float in shallow



A research team from the Environmental Sciences Center on a research trip on the new craft.

rocky waters, the craft was designed using the flat-bottom concept, avoiding the traditional “V-bottom” that requires higher depths to float the same weight. A flat bottom with square edges that support directly in the balance and stability of the new craft. The final shape regarding the width and length of the Raft-Sampling-Bench was defined based in the principle of the Lever, with precise measurements to allow scientists to stand (or place equipment) with around 100kg in any corner of this craft without flipping it over.

As a floating diving-platform, the Raft-Sampling-Bench also has a flat top (deck) for allowing an easy access of divers with samplings from water, without the necessity of stairs, like it is required in V-bottom boats. Scientists can collect the sampling and place the material on a tray straight away on the deck, using the same craft’s flat-top as a scientific bench for preliminary processing of biological, geological, and chemical samplings. Even divers can easily slide samplings from water to the scientific bench.

A final dimension that allows the easy transport of this craft on the rear lift of large pickups, significantly facilitating the oceanographic surveys in remote

coastal marine sites in Qatar coastal zones.

The first prototype was technically used during several surveys in different research projects, and since 2018 it was successfully validated by transporting equipment, samplings, and researchers. Reaching the level 7 of the Technology Readiness Level (TRL) and now, it is patented (US2021/0387701A1) under the Qatar University rights and stands ready for the commercialization stage, for finally achieving level 9 on the TRL index. The ESC-QU is now searching for partners to increase the technological maturity of this craft, to improve the industrialization strategies, specially, the motorization and propulsion strategy, the aesthetic embellishment, and the line of production strategy.

It is believed that the industrialization strategy can have two main possible usages, 1) the scientific and technical usage as a working tool, in a heavy-duty concept for accessing shallow environments, and 2) in the tourism–for picnicking, sunbathing or just for swimming with friends and family in private on the shallow marine areas, away from the crowded beaches.

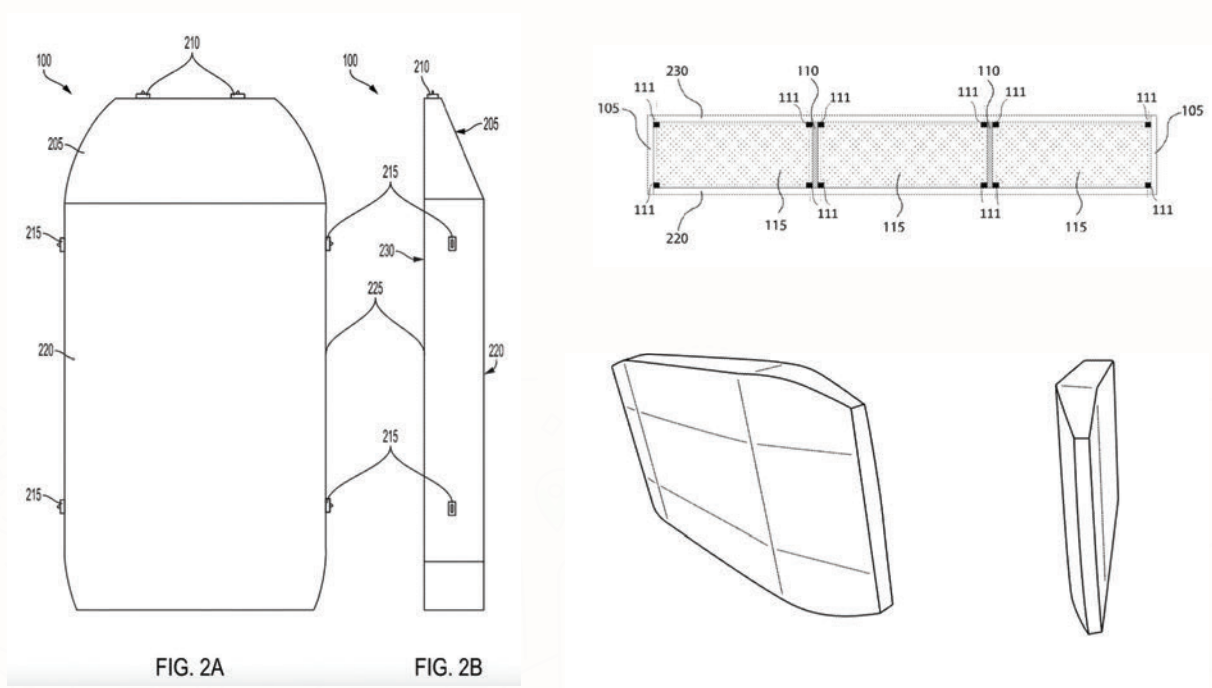


Figure 1. New technology design and features.

Inventor Business Card

Dr. kishor, how would you present yourself to the University community?

I have extensive expertise in synthesis & characterization composite materials for industrial applications. Presently my group is working on different areas including sustainable energy production and storage systems, sensors, piezoelectrics, actuators, dielectrics, 3D-printing and flexible electronics. Visit <http://qufaculty.qu.edu.qa/kishorkumars/> for more information.

What are your most important inventions patented in Qatar University?

“Green Energy Powered-Vapor, Thermal and UV-C Light Assisted Disinfection Technology,” “Continuous Real-Time Hypoglycemia Monitoring with Wearable Sensing Gloves,” “Floating Solar Still Assisted Electrochemical Reduction using Green Energy,” “Method for controlling Potable Robot Arm for Teaching & Playing Purpose using IOT Sensors” and “Smart Robotic Train for Autism Spectrum Disorder Intervention” are a few significant discoveries patented in Qatar University.

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

Qatar University provides a very encouraging and supportive research environment for multidisciplinary research. Presence of special grants for commercialization of innovative ideas is another great opportunity provided by Qatar University.

As your passion is in material science, what are the goals you plan to achieve?

As a material scientist, I anticipate transforming the problem solving strategies to technological innovations. Material science can offer numerous possibilities to existing real-world problems and a systematic creative approach will bring out value added products.

If you were to create an impactful invention toward sustainable environment using advanced materials, what would it be?

Presently we are involved in developing sensors based on artificial intelligence for traffic control and speed monitoring, air quality in high dense cities like Doha



Dr. Kishor Kumar Sadasivuni
Research Assistant Professor,
Center for Advanced Materials
- Qatar University



by robots. Other than this, the research group is working for the upliftment of real time technology, specifically in the domain of high quality sensors, sustainable energy and gas storage materials, and advanced nanotechnology for biomedical field.

Qatar University students are distinguished by their inventions and innovations. How would you define your experience as students' supervisor?

As it says, “young minds are the most creative minds.” As a supervisor, I am equally amazed and proud to meet with students of novel research ideas. I always try to motivate them to explore their own potential for problem solving strategy.

Describe your journey in research and invention

As a researcher, I was fortunate enough to work with prestigious research groups in different parts of the world, which highly influenced me to identify my own research profile.

Master's Thesis Project Aims to Find Safe Alternatives for Cancer Treatment in the 3MT National Competition

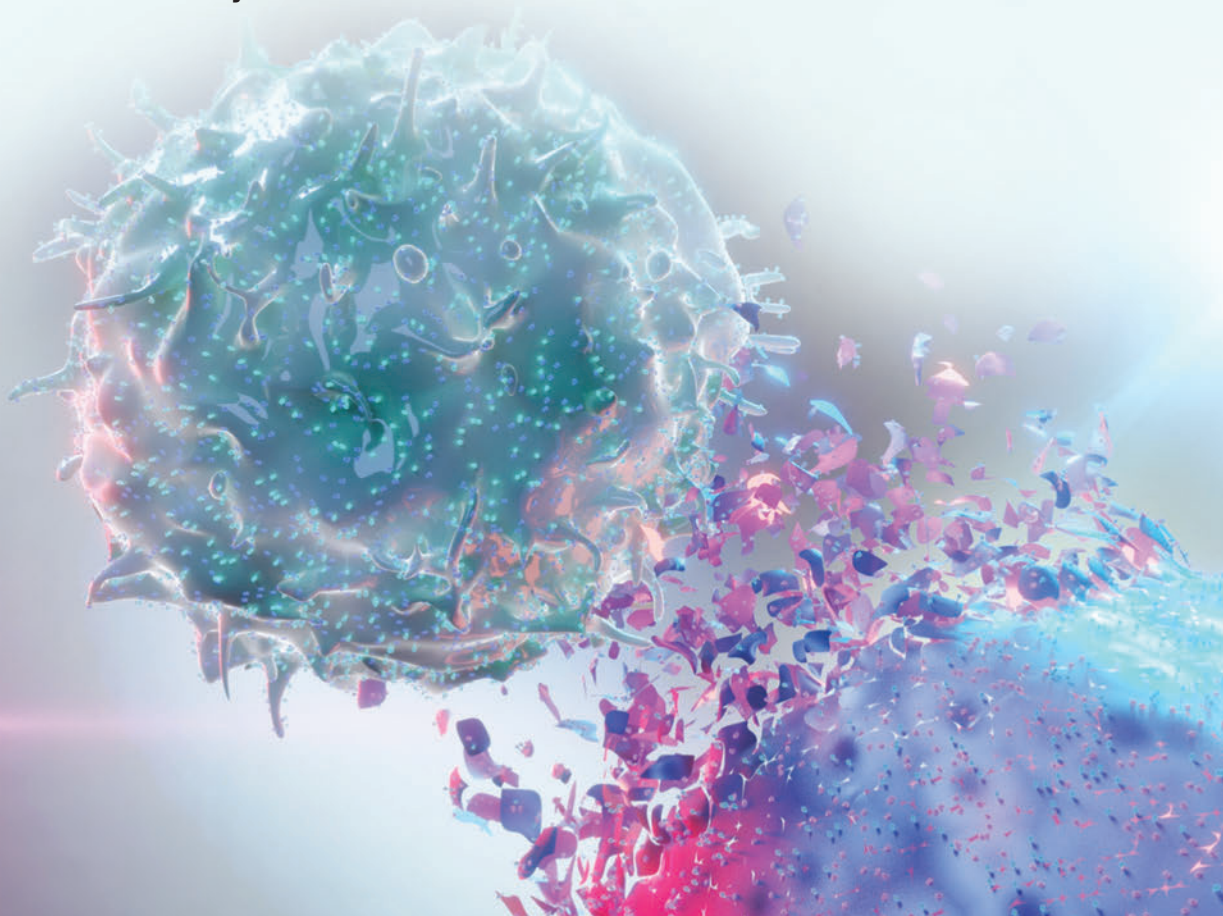
Arij Fouzat Hassan, PhD in Health Sciences, College of Pharmacy,

Supervisor: Prof. Ashraf Khalil, Acting Department Head of Pharmaceutical Sciences, College of Pharmacy,

Co- Supervisor: Prof. Ala-Eddin Al Moustafa, Professor of Basic Medical Sciences, College of Medicine,

Dr. Layla Kamareddine, Assistant Professor of Biomedical Sciences, College of Health Sciences,

Qatar University





From left: Prof. Ashraf Khalil, the project principal supervisor, student Arij Hassan, Prof. Ala-Eddin Al Moustafa, co-supervisor of the project.

Breast cancer is the most prevalent type of cancer worldwide and is a commonly diagnosed malignancy in females comprising approximately one-third of all malignancies in women. In fact, breast cancer accounts for 1 in 8 cancer diagnoses with more than 680,000 deaths annually. One of the most aggressive subtypes of breast cancer is the triple-negative breast cancer (TNBC). TNBC lacks expression of estrogen and progesterone receptors (ER, PR) along with the absence or faint expression of the human epidermal growth factor receptor-2 (HER-2). It is metastatic, and stands as the highest mortality disease form. Further, TNBC accounts for around 12-20% of all breast cancer cases in the world and for 20% in the State of Qatar. So far, a limited number of known molecular targets have significantly reduced available TNBC's treatment options. Current cancer chemotherapeutics are associated with high morbidity and mortality rates, due to toxicity and severe side effects, which include cardiac toxicities, secondary cancers, and peripheral neuropathy; therefore, more selective, and safer

therapies are urgently needed.

Recently, several complementary and alternative medicines (CAMs) in addition to chemotherapy drugs, largely inspired by nature, mainly plant-based phytochemicals are used as a natural source for medical treatments. Therefore, Arij Fouzat Hassan a graduated master's student from the College of Pharmacy worked on a project focusing on natural products. The project was supervised by Prof. Ashraf Khalil, the Acting Head of Pharmaceutical Sciences Department in the College of Pharmacy and co-supervised by Prof. Ala-Eddin Al Moustafa from the College of Medicine and Dr. Layla Kamareddine from the college of health science. The project focused on using natural extract as an anti-cancer resource against TNBC. Therefore, she explored the effect of a medicinal plant on triple negative breast cancer called *Elaeagnus angustifolia* (EA), which has been used for centuries in folklore medicine in different parts of the world, especially in the Middle East region. EA is a rich source of different nutrients such as vitamins,

proteins, calcium, magnesium, potassium, and iron; hence, different parts of *EA*, either fresh or dried are consumed by humans.

Further, *EA* has an importance in treating variety of diseases such as asthma, osteoporosis, and rheumatoid arthritis due to their antioxidant, anti-inflammatory, antimicrobial and anticancer properties. Thus, Arij was successful in evaluating the effect of *EA* aqueous extract biologically on TNBC cell lines and human normal epithelial cells. Interestingly, the *EA* extract significantly inhibited the cell proliferation of TNBC cells and induce morphological alternations. On the other hand, *EA* extract did not affect human normal epithelial cells, which indicates the safety of this medicinal plant and the selectivity against cancer cells. Furthermore, *EA* was potential in inhibiting the invasive characteristics of TNBC cells which are well known as metastatic and aggressive. Additionally, the colony formation was significantly inhibited as well, which gives an idea about the effect of *EA* on tumorigenesis. Accordingly, she confirmed the molecular mechanism underlying the *EA* anticancer effect, which is the induction of apoptosis by P53 and STAT3 pathways. In fact, *EA* anticancer effect was already confirmed on HER2 positive, oral cancers.

Currently, Arij is processing with her research on *EA* by studying its effect on colorectal cancer, which is the core of her master's thesis. Additionally, she is working on novel chemical compounds called chalcones. They were synthesized and inspired by bioactive molecules that exist in natural resources including *EA*. Novel chalcone compounds were synthesized by Prof. Ashraf's research team and they found outstanding effects on breast and colorectal cancers compared to chemotherapies that are currently used in clinics. She was able to confirm the effect of these novel chalcone compounds on different molecular mechanisms such as Akt/mTOR and Wnt/beta-catenin pathways. These pathways are considered key players in different cancers. To sum up, the project aims to discover novel compounds that fulfill important criteria, which are safe, selective, and available for all cancer patients. As a result of her commitment and hard work, Arij graduated with a research distinction and received the

thesis award in finding "natural alternatives to treat colorectal cancer."

As a researcher in drug discovery and cancer pathology fields, Arij believes that the "ultimate goal of scientific research is to serve the humanity and community." Thus, she decided to deliver the message of her research by participating in one of the most important graduate competitions in Qatar University– the 3-minute thesis (3MT). She was able to brilliantly deliver the message simply to all the people and to emphasize on the important role of Qatar University research labs and the efforts of researchers and principal investigators at the University in trying to find safe alternatives to treat one of the most aggressive diseases in the world, which is cancer. She received second place in the University, and the People's Choice Award at the national level for the 3MT competition.

She expresses her deep gratitude to the team of Graduate Learning Support (GLS) at Graduate Studies Office including Dr. Mary Newsome, Ms. Mounia Zidani-Pasioneck, Ms. Randa Sheik and Ms. Jumana Amiry for their unlimited efforts and support since the first day in graduate studies. "They were committed to help at every stage till the last, which is thesis writing through extensive writing workshops," Arij says. In addition, "they were amazingly supportive throughout the 3MT National Competition, starting from training the finalist on different presentations and communication skills till the last minute in preparing the event. Thanks to Mr. David Pearson who was there to give all his experience in public speaking to the finalist." GLS team deserves all the thanks and gratitude for the essential roles they are playing with all graduate students in Qatar University to make their experience remarkable and successful on academic and personal levels," adds Arij.

Last but not the least, Arij sincerely thanks her supervisors from the health cluster in Qatar University for their support and guidance. Further, she thanks the faculty and staff of the College of Pharmacy for their endless support they provided to her as a graduate student. Now, she is a PhD candidate of Health Science in the Qatar University and she aims for more achievements, discoveries, and successful innovations.

Timeframe for Public-Private Partnership (PPP) in Qatari Law



Ali Abdullah Ali Al Jusaiman

PhD student in Law Program, College of
Law - Qatar University

Countries in various parts of the world have devoted considerable attention to the concept of partnership between the public and private sectors, especially after the end of the Second World War. Therefore, most countries have striven to satisfy the general and basic needs of their citizens by expanding basic building projects and providing facility services at a better level. However, such countries have faced many difficulties and challenges hindering the course of development that they aspired to achieve. Hence, many countries, whether developed or developing, have been prompted to frame institutional and legislative systems so as to lay the legal basis that paves the way for dealing with the private sector in the process of development and especially economic development.

Pursuant to the Qatari legislation, it was found out that until 2020, the Public-Private Partnership System has not been regulated by law. The legislator has recently begun to regulate the relationship between the public and private sectors under Law No. (12) of 2020 regulating Public-Private Partnerships. Such legislation has been enacted lately compared to the comparative laws, which are the laws under study, such as Kuwaiti, UAE, Syrian, Egyptian and Moroccan law.

The adoption of Qatari legislation for the PPP system is definitely a safe haven for all parties in financing public utilities infrastructure projects through a long-term partnership. Consequently, many investors and economic actors, will be attracted to fund, establish and operate projects in exchange for a lucrative profit margin, which leads to a decrease in the financial burdens that the State would have borne during the establishment of public assets and until the beginning of the project, thereunder.

As partnership contracts are among the contracts that take a long time to complete, this issue raised a problem for the researcher. The researcher questions the existence of the controls related to the time-frame of PPP contracts, the issue of whether the Qatari legislator explicitly specified the period related to partnership contracts in the law, and are there minimum or upper limits to that period, and whether the legislator himself explicitly addressed regulating the exceptions related to that period. This is in addition to discussing the best method followed in controlling the issue of duration in partnership contracts, by reviewing and analyzing the relevant texts in the comparative laws, and evaluating the best course among the same.

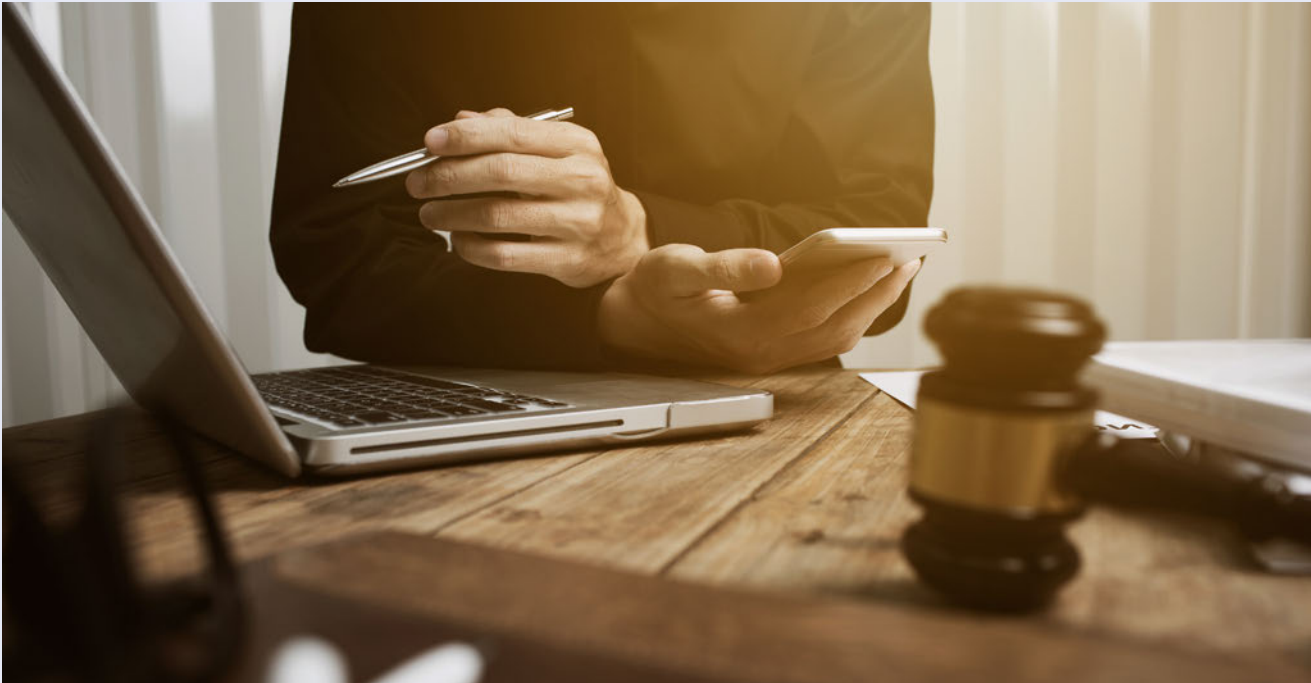
It is noted that the Qatari legislator has explicitly stipulated in Article (18) of the Law on Regulating the Partnership between the Government and Private Sectors during the partnership contract duration. It is worth noting that based on the following statement, the Qatari legislator has only specified the maximum limit for that period rather than determining a minimum limit, "the duration of the partnership contract shall be determined upon an agreement between the two parties, within a period not exceeding thirty years..." the researcher agrees with the Qatari legislator for not determining the minimum duration of the partnership contract in order to give the administrative authority the liberty to conclude partnership contracts, especially when a project does not need a long period. There are also many high-tech companies that have the ability to complete the contract within a short period. Furthermore, the researcher also see that, despite the different perspectives on this matter, the positive aspects of not specifying the minimum duration of the partnership are much more advantageous than explicitly specifying them in the law.

The study concluded with a set of conclusions and recommendations, like:

First: The nature of complex and sophisticated partnership contracts naturally led to the need to specify their time span. The reasons and motives, in particular that prompted the State to create a system of partnership between the public and private sectors had a clear and important role in the keenness of legislation to regulate the duration.

Second: As one of the substantive provisions that shall be included in the contract, the Qatari legislator and other legislators in the comparative laws explicitly, stipulate the necessity of the duration requirement in the partnership contracts concluded between the public and private sectors.

Third: In lieu of legalizing static texts about the duration of the partnership contracts, the Qatari legislator and other legislators in the comparative laws have included some exceptions that may be mentioned within such duration. Unlike the Kuwaiti legislator, which has prohibited exceeding or extending the period prescribed by law for any reason or excuse whatsoever, most legislators agree on the need to meet two main conditions; the first related to the reason for the extension, and the second related to the approval of the competent authority.



Fourth: Except for the Kuwaiti legislator, there are different justifications related to the reason for the extension of partnership contracts in the comparative laws; the lion's share goes to the (public interest). On one hand, the Qatari, Emirati and Egyptian legislators have authorized the execution of partnership contracts for a period exceeding the legally prescribed limit or extending the same in the event of the existence of a reason related to the public interest.

Having demonstrated the aforementioned results statement, the researcher comes to a number of recommendations summarized as follows:

First: Calling upon the Qatari legislator to set a higher limit for the duration of partnership contracts after being extended or concluded initially post the fulfillment of the conditions prescribed by law as an exception, by adding a significant phrase at the end of the legal text "In all cases, the duration of the contract may not exceed forty years."

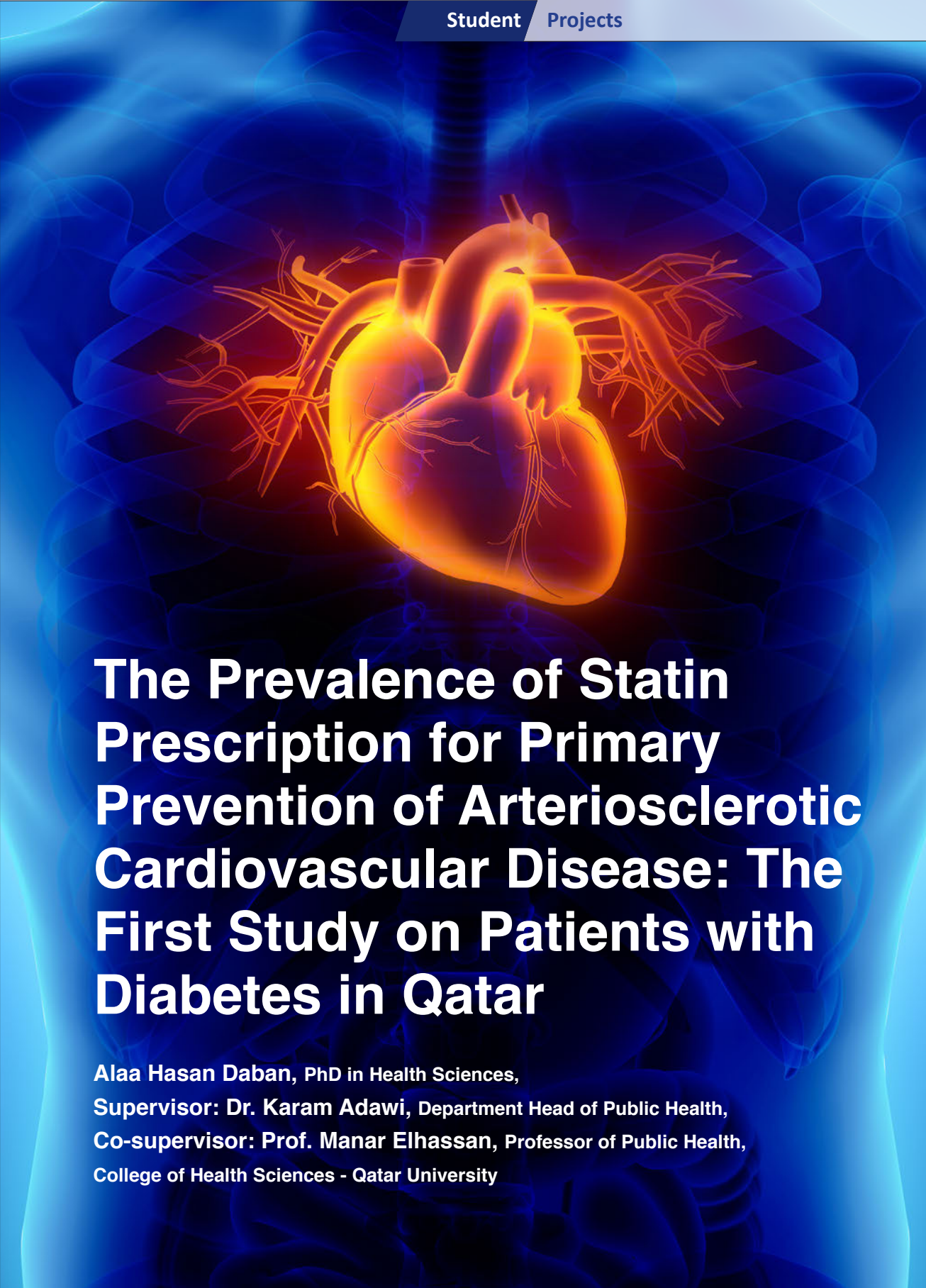
Second: The Qatari legislator shall delete the phrase "public interest" as an exception according to which the period specified by law may be exceeded or extended, as it is vague, ambiguous and indefinite, as well as its meaning and concept may differ as per the circumstances of time and place. Therefore, the researcher believes that a clear and precise condition shall be specified as a reason for the extension of partnership contracts, he suggests replacing it with the following phrase—"Existing contracts

may be extended if the project is not completed for reasons due to emergency circumstances, force majeure or other reasons related to the nature of the concluded contract." In all cases, the extension shall not exceed (40) forty years, as mentioned above.

Third: Upon determining the duration of the contract, the Qatari legislator shall set the criteria that the parties to the partnership contract are liable to. Even if the duration of the partnership contracts is within the period prescribed by law, there shall be clear and specific criteria when determining the same. It is permitted to issue such criteria by virtue of executive regulations of the Law instead of enacting the same therein. Hence, he suggests taking the same criteria stipulated in Article (12).

At the end of the study, the researcher suggests that Article (18) of the Law on Regulating the Partnership between the Government and Private Sectors should be as follows:

"The duration of the partnership contract shall be determined upon an agreement between the two parties, within a period not exceeding thirty years. As an exception, if a project contract is not completed for reasons of emergency, force majeure, or for other reasons due to the nature of the contract, the contract can be entered into for a period exceeding 30 years. An existing contract may also be extended for a period of time, after obtaining the approval of the Prime Minister upon a proposal presented by the respective minister."



The Prevalence of Statin Prescription for Primary Prevention of Arteriosclerotic Cardiovascular Disease: The First Study on Patients with Diabetes in Qatar

Alaa Hasan Daban, PhD in Health Sciences,
Supervisor: Dr. Karam Adawi, Department Head of Public Health,
Co-supervisor: Prof. Manar Elhassan, Professor of Public Health,
College of Health Sciences - Qatar University



From left: Prof. Manar Elhassan, co-supervisor of the project, student Alaa Daban, and Dr. Karam Adawi, project principal supervisor.

Qatar has the most advanced health system in the region and has one of the largest healthcare expenditures in the world as per Organisation for Economic Co-operation and Development. Despite having a leading advanced healthcare system, Qatar is listed globally among the top ten countries for the prevalence of Type 2 Diabetes (T2dm). According to local statistics, cardiovascular diseases (CVDs) are responsible for half of the deaths in adults above 18 years of age and half of the deaths in patients with diabetes.

The primary prevention of CVD (defined as prevention of the disease before its occurrence) requires proper management of risk factors like diabetes, hypertension, and tobacco use. Additionally, treatment with cholesterol lowering medications or statins is considered an effective, safe and relatively simple medical intervention for prevention of cardiovascular diseases, especially in people with diabetes at the age of 40-75 years. Such patients are considered to be one of the “benefit groups” for treatment with statins according to local and American Heart Association recommendations. However, prescription of these drugs for primary prevention of CVDs for patients with T2dm remains low on a global scale, especially in primary care settings where most of the diabetes management and follow up occur. Statin prescription ranges between 18% in Germany to 80% in Malaysia. In Qatar, little is known about the prevalence of statin prescription for primary prevention of CVD among patients with T2dm.

Therefore, a study was conducted to measure the proportion of T2dm patients receiving statins for primary prevention of CVD in primary care settings

in Qatar and to investigate variables associated with statin prescription. The data were collected from electronic medical records of patients with T2dm, in the 40-75 years age group, who were seen or treated for their diabetes in any of the 27 health centers operated by the Primary Healthcare Corporation (PHCC), the largest primary care provider in the country, during the calendar year 2019. Statin prescription was defined as any prescription of statins to eligible T2dm patients during the calendar year 2019. Variables associated with the prevalence of statin prescription were identified from published literature, which allowed us to use many of these variables in our analysis. The study protocol was approved by Institutional Review Boards in PHCC and Qatar University.

Main findings

The study showed that out of 46000 screened records, 35000 files met pre-set eligibility criteria after excluding 10000 patient files for either having CVD or due to having a medical condition that prevented the use of statins. Finally, 24000 files with complete data were analyzed for the purpose of this study. 57% of the sample population were males, 32% of whom were Qatari and the average age of the sample population was 54.8 ± 8.3 years. The prevalence of statin prescription to the sample population was 66%, which is slightly above the global average (Figure 1) and it was higher for older patients and for males compared to females. Furthermore, statin prescription was higher for non-Qataris compared to Qatari people.

In a multivariable model analysis and after controlling for other covariates in the model, statin prescription adjusted odds ratio (aOR) was positively associated

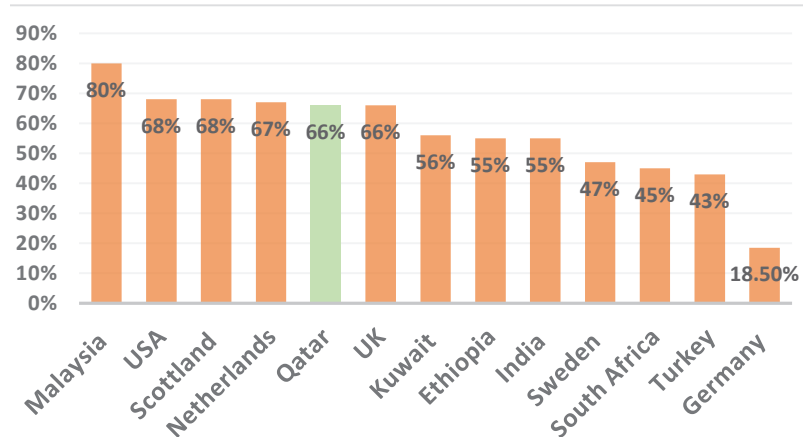


Figure 1. Statin prescription prevalence by country.

with being male, having co-diagnosis of hypertension and being a former or current smoker. All of these factors are known to increase the risk of CVD. Additionally, statin prescription aOR was positively associated with an increase in the number of tablets or injections prescribed to the patient, a higher number of visits/year to PHCC and in patients with co-prescription of non-statin lipid lowering medications. Unexpectedly, an increase in person's body mass index (BMI) or co-prescription of aspirin were associated with a decreased aOR of statin prescription compared to persons with lower BMI or non-aspirin users. The study findings were not altered when we restricted the analysis to males or females only, Qatari or Non-Qatari only or to patients with more than two visits in year 2019.

Significance of the study

This study found a novel association between the number of tablets or injections that patients with T2dm received and the prescription of statins. This finding might reflect a heightened keenness of healthcare professionals to prescribe CVD preventive therapies as the treatment complexity increases. Further, this study has highlighted the gender discrepancy in terms of lower probability of statin prescription for females compared to males, which is similar to the global trend.

This study also showed that offering medications for free is not an important factor in Qatar as the probability of statin prescription was lower in Qataris compared to non-Qatari people despite Qataris getting their medications for free while others must co-pay for the costs. Lastly, with the exception of the increase in BMI or aspirin use, this study showed that other factors associated with probability of statin prescription in Qatar were not significantly different from what has been reported in the literature.

To the best of our knowledge, this study is the first of its kind in Qatar and in the region. The study derives its power from the large sample size and it covered all PHCC clinics with the inclusion of a multitude of variables that have been reported to affect statin prescription. The large sample size of the study in conjunction with the inclusion of all PHCC clinics allowed us to properly control for confounding effects of different variables and enhanced generalizability of our results within the PHCC population.

This research is a primer for further studies into the low rates of statin prescription for the primary prevention of CVD in primary care settings. Our goal is to conduct further research in order to better understand the prevalence of low statin prescription in the general population, specifically among females and Qataris in an effort to assist policy makers in addressing this clinical practice gap. Our goal is to help bring our findings in line with the Qatar Health Strategy 2018-2022 and to reduce CVD burden in the country.

The study was conducted by the Department of Public Health: MPH student Alaa Daban, supervised by Dr. Karam Adawi (main supervisor) and Prof. Manar Elhassan (co-supervisor).

It is worth mentioning that the external examiner, Prof. Judith Gwathmey of Boston University School of Medicine described the study as "one of the best." Prof. Judith is of the view that, "In more than 40 years of reviewing theses at Harvard Medical School and other top universities, this study is among the top five."

The study was presented at the prestigious American College of Cardiology Conference (ACC, 2022) held in Washington, DC, USA. April 2-4. The [abstract](#) was published in the Journal of the American College of Cardiology (impact factor of 27.203).

Education and Wellbeing: **Change towards Comprehensive Education**

Dr. Hessa Al Thani
Dean of the College of Education-
Qatar University



First: Wellbeing Conditions

The important element that is often ignored in the context of higher education is the well-being of our students, faculty, and staff. Here, we want to discuss the term “well-being”, which might be interpreted as peace of mind, prosperity, and luxury. However, this will not be attained without continuous diligence: {And those who strive in Our (cause)—We will certainly guide them to our Paths: For verily Allah is with those who do right.} [Al-Ankaboot: 69]; And our noble Prophet says: “Paradise is surrounded by hardships.”

Well-being requires that we challenge the culture of entitlement that a lot of people adopt towards the state, and the consequent negative attitudes towards the work. Definitely, the applicable work system enhances the tendency of reliance on the government (Kropf, & Ramady 2015). It is very much likely that students’ low motivation may be a result of the rentier culture emanating from reliance on expatriate workforce (Havidt, 2015 & Maktabi, 2016). Thus, efforts must focus on building up the students’ personalities and enhancing the spirit of responsibility, citizenship, motivation, initiative, and perseverance (Corneo, 2011).

Numerous studies have concluded that higher education in the GCC countries needs to adopt a “Positive Teaching and Learning” environment. We need to promote “active learning, case studies, and accommodating students’ diverse learning styles” (Akili, 2004).

Stiglitz (1999) stated, “Creating a successful knowledge-based economy requires an immense change in culture that focuses on active participation, meaningful citizen engagement in economic activities, and active learning. Therefore motivation, aspirations, and entrepreneurship are all part of one’s core spirit and ethos.”

Second: Academic challenges at the pre-university level

“What affects the students’ preparation is the weakness of educational management, preparation and professional development of teachers for the pre-university educational levels” (Said, 2016a, 2016b).

As for the impact of these problems on academic performance, there is a gap between the outcomes of pre-university students and the requirements for admission to Qatar University (Cham & Kenniche, 2012). This gap is summarized in the students’ weak language capabilities, which pose a challenge to students of science majors, especially those students who graduate from state-run schools (Khoury, 2017). A student’s performance depends on several criteria, including those related to the school level, such as the assessments s/he was subjected to, and the content of educational materials compared to the desired skills, including enrollment in the specialization, which is based on grade scores, not on students’ desires.

Therefore, what are the clear criteria for those who are appropriate to join the university and become teachers and role models? What is the method that is used to prepare this generation? There is no doubt that quality precedes over quantity, and that there must be educational leaders who meet the conditions for change.

Third: The role of higher education institutions

To reach well-being, attention must be paid to developing students’ critical thinking, problem-solving, survey, and investigation skills. In addition to giving the necessary importance to student-centered curricula, to empower university graduates and encourage them to work in the private sector, encourage students to have a spirit of competition, apply for the disciplines required to participate in the knowledge-based economy, and enhance the spirit of cooperative work among students.

Our students are overwhelmed with the subjects they need to memorize to “pass” exams. However, we are obligated to educate them, so how can we, with our limited financial and human resources-achieve what we aspire to?

Excessive discussions about the state of education in our country, especially Qatar University, is a healthy phenomenon that needs rationalization. Some think that the problem lies in curricula, some think it is in the teachers and their professional development, and some think it is in the students, or the pedagogy used. All these perceptions may be true, but could they intermingle in creating the problem? Are these elements parts of a society that desire to effect change! But how? And to what extent and where?

Fourth: Appropriate solutions to develop the orientation for the well-being

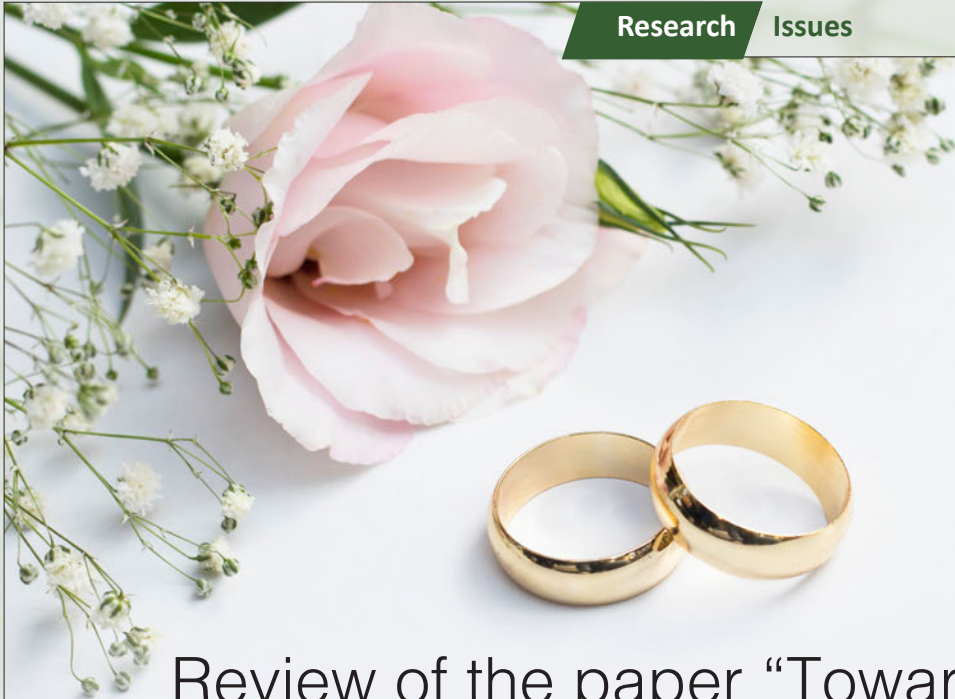
Perhaps the first solution is to link the classroom environment with society and the students’ interests that would lead to higher motivation.

The solution also lies in a systematic comprehensive awareness campaign inside and beyond. The realistic holistic perception is what we need to identify the solutions: the student was a pupil before s/he was a student. S/he was a child, raised in a family and an environment. How do we influence this environment from the beginning until this is how we have the child/student?

This generation who possesses the pillars of development towards the well-being is the one who will bring us out of the bottleneck; so we could reconcile between originality and modernity, between science and work, between the individual and the collectives, between the soul and the body, and between the present and the future.

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Review of the paper “Toward Marriage Sustainability:

Impacts of Delayed Marriages in Qatar”

Dr. Noora Lari

Manager of Policy Department, Social and Economic Survey Research Institute (SESRI) - Qatar University

Introduction

Dr. Noora Lari, manager of the policy department at the Social and Economic Survey Research Institute (SESRI) at Qatar University has published a research paper entitled “Toward Marriage Sustainability: Impacts of Delayed Marriages in Qatar” in the Cogent Social Sciences journal. The paper aims to promote early marriage patterns by describing individual-level factors (education, occupation) and societal-level factors (culture, norms, and traditions) that determine marriage delay. This research paper suggests providing newly married couples awareness programs through education and strategic institutional arrangements, such as grants and allowances. As for family support, this can be accomplished by supplying flexible working hours and childcare support.

Traditional patterns of marriage formation are still prevalent in the Gulf Arab states. However, the region has experienced significant socioeconomic changes due to hydrocarbon revenues, oil production, and economic growth. Unconventional social trends have reshaped family dynamics, marriage formation, and societal behavior including education, employment status, living arrangements, childbearing, and other factors. In Qatar, the average age at the time of first marriage witnessed a remarkable increase from 1990-2017. That is, 8.6% of men and 12.9% of women older than 30 have never been married.

This paper used a qualitative method with semi-structured interviews conducted in 2020 to explore the factors contributing to marriage delay practices among Qataris. It provides a detailed thematic analysis, elucidating the sociocultural factors that determine marriage delays in Qatari society.

Main findings

The main findings of this paper are summarized in the following emerging themes—arranged and consanguineous marriages, wedding marriage costs and expenses, as well as gender equity at the household level:

1. Arranged and consanguineous marriages

Qatari society persists with consanguineous marriages to maintain family wealth, ties, and identity through the tribal structure of extended families. Family involvement in upspring marriages plays a major role in marriage timing. The participants were asked about their marriage arrangements (decision-making process). They attributed the issue of commitment to familial expectations of arranged and consanguineous marriages, with first-degree relatives, leading them to postpone their marriages or stay single longer or not getting married at all. In particular, most of the respondents' involvement in the decision-making process of their marriage was minimal, as their families preferred them to marry someone who came from a similar tribe. The participants also highlighted the impacts of social pressures regarding arranged marriages, which result in heightened numbers of people who delay marriage.

2. The economic burden: Marriage costs and expenses

The financial affordability of marriage (expensive dowries and marriage costs) and difficulties in securing independent households after marriage have influenced the age at first in marriage for men. A high standard of living is associated with a greater average cost of marriage, which mainly contributes as a factor to delayed marriage for grooms because of social pressure from their families, as they need to be ready for the high cost of wedding ceremonies, the expenses of the wedding hall, the bride's needs, and the costs of living arrangements, which have encouraged some Qatari men to delay marriage or search for a non-Qatari bride who will require a lower dowry (mahr)—and less expensive marriage. Most male participants in this study agreed that the high expenses of marriage are linked to more frequent celibacy.

3. Traditional Roles at the household level

Maintaining traditional norms has resulted in more women working while adhering to their household and childcare duties. A substantial number of working mothers have resorted to hiring house helpers, as

husbands are not actively contributing to family obligations. The extraordinary proportion of women's educational attainment and participation in the labor force contributes more to their economic independence and self-sufficiency. Similarly, early marriage inhibits the career development and economic independence of one or both individuals in a marriage. Women who delay marriage may decrease their chances of finding a suitable spouse. Besides financial independence, there are other motives (e.g., self-realization, career advancements, future security, and ambitions) for women to delay marriage.

Towards a national marital policy

Based on the findings of this paper, some policy instruments are suggested to promote early marriage patterns among Qataris, including subsidizing the state-granted Marriage Fund at the country level and redefining roles within the family context:

1. Subsidizing the state-granted Marriage Fund

The Marriage Fund is an effective tool for reducing typical wedding expenses. State intervention is needed to reduce the financial burden of a marriage and a "dowry". The authorities issued legislation to endorse the Marriage Fund policy and provide housing loans. Qataris must attend premarital counseling and an educational program on the obligations of marriage to receive a marriage grant. Yet, there is mixed evidence about the influence of state-granted Marriage Fund solutions on marriage delay.

2. Redefining roles within the family context

Working women actively contribute to familial obligations. Yet, women's work demands and greater familial needs make the work-family balance inadequate. Some women may delay marriage if they feel it would inhibit their career development. The current national policies assert that it is essential to preserve family values while empowering women. Policy proposals could be facilitated through educational tools and curricula, and awareness programs could ameliorate the public's perceptions of work-family balance.

Conclusion

Qatari society has a unique cultural texture that makes analyzing the main reasons of marriage postponement more challenging regarding individual-level factors. Traditional aspects, such as marriage type, wedding expenses, and gender differentials, have affected marriage. In addition, women's education and access to the labor market may also play a role in delaying marriage among women.

To read the full research paper, please use the DOI below or visit the link:

10.1080 / 23311886.2022.2083480

[Full Research Paper](#)

Institutional Collaboration and Knowledge Management to Empower Qatar National Workforce

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Introduction to Institutional Collaboration

Attainment of a knowledge-based economy (KBE) depends on knowledge capital utilization and institutional interactions' productivity and climate. This emphasized on accelerating the speed of learning, since fast learners have become the winners in a KBE as individuals, institutions, and nations. Therefore, institutional development in KBE depends on the ability to learn how collectively institutions can achieve an objective and solve a respective issue. The institutional collaboration in a country or a region is the interaction across institutions in a way that maintains a balanced development of knowledge capital and learning capabilities to expand the knowledge base across institutions. Thus, institutional collaboration process has an impact on accelerating institutional learning in a way that ensures developing capabilities, communications, and dialogue across institutions. This can develop social and knowledge capitals at interorganizational level and lead to institutional development that can maintain the following:

1. Collective learning about a particular problem or common goal and its aspects, such as developing national workforce in Qatar.
2. Collective learning about the required collaboration model and organizing practices to utilize resources and achieve a common goal during the collaboration process.
3. Continuous cycle of collective learning across institutions, which leads to institutional entrepreneurship to develop national workforce in Qatar. Institutional entrepreneurship is defined as “the activities of actors who have an interest in particular institutional arrangements and who leverage resources to create new institutions or to transform the existing ones.”

Dimensions of organized collaboration

Based on theory of practice, collaboration as an action can be organized and developed in three dimensions: (1) understanding, (2) routine and organizing structure, and (3) policy, rules and procedures, (Figure 1).

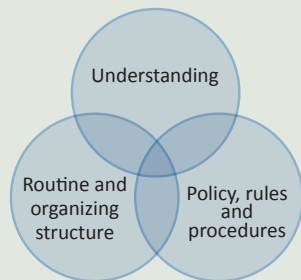


Figure 1. Dimensions of organized institutional cooperation.

1. Understanding the process of institutional collaboration for national workforce development as a particular objective. This means developing clear know-how steps, rules, organizing structure to achieve institutional collaboration for workforce development.
2. Policy development, rules and procedures for maintaining collaboration across institutions for national workforce development.
3. Routine structure that embraces results of institutional collaboration for national workforce development.

Interconnectivity of the three dimensions of (1) understanding, (2) policy development and (3) routine structure (Figure 1), reflects common know-how, belief and desire across institutions.

Main institutions for entrepreneurial role in developing national workforce development

1. University
2. Government
3. Professional bodies
4. Industry/labour market

Institutional Interactions Stages

Three stages of interactional levels among institutional spheres were recognised in the co-evolutionary model of helices for transition to knowledge-based economy’s dynamic interaction:

In the first stage, statist N-tuple helix model, government plays a dominant role in pulling academia and industry. While university is more focused on teaching and academic research, R&D institutions assist in providing technical support to agricultural matters and initiatives of civil society are not recognised for economic development and industry provides the driving force for economic development (Figure 2).

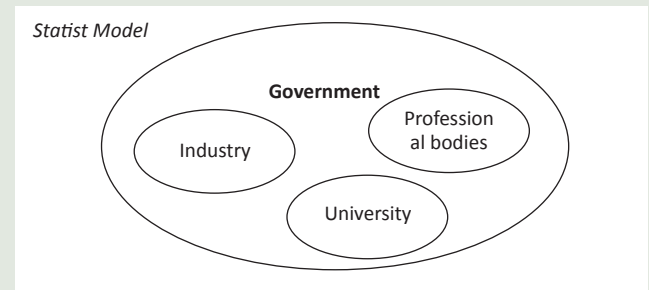


Figure 2. Statist Model.

In the second stage, Laissez-faire triple helix, institutional spheres of government, industry, and university operate independently in the economy, and rarely interact in a subject matter for collective outcomes (Figure 3).

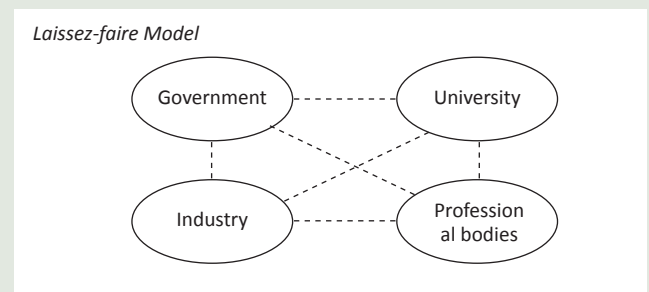


Figure 3. Laissez-faire Model.

In the third stage, Hybrid triple-helix of institutional collaboration, institutions are autonomous and interactive at the same time in a modest form of institutional collaboration between independence and overlapping (Figure 4).

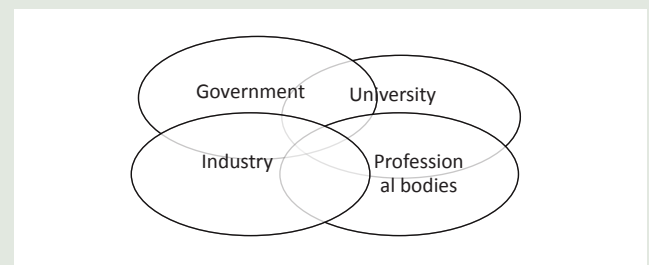


Figure 4. Institutional Development Stages.

An overview of labour market demographics and institutional interaction in Qatar:

- The labour market in Qatar highly depends on expats and imported knowledge, while most Qatari workers, which represent the minority 5% of Qatar labour market, mostly suffer from low skills and competencies.
- 85% of Qatari workers are in the public sector—where the level of skills and competencies required are relatively low.
- 84% of expat workers are in the private sector where the skills and competences are low to moderate i.e. non-skilled workers for constructions are representing most of this category.

Overview of institutional collaboration and development stages from Qatar National Development Strategy (2011-2016)

Institutional collaboration was highly emphasized as a strategic objective in Qatar National Development Strategy since the first cycle (2011-2016). This is to achieve the strategic objective of institutional development and modernization (Figure 5). However, the limited resources and expertise in public sector to manage such institutional transition, and the frequent restructuring events and changes in higher management since 2012 impeded implementing such long-term objectives in public sector.

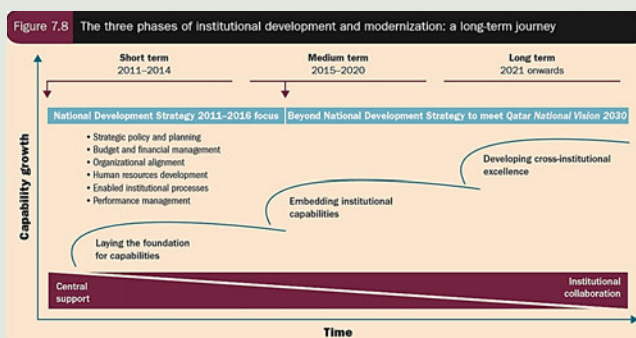


Figure 5. Institutional Development Stages.

Institutional interaction for national workforce development in Qatar

There are a number of collaboration events to enhance institutional knowledge base and develop national workforce in Qatar. The following are some examples for such interaction:

1. Qatar National Development Strategy 2030 emphasized on the development of national workforce in public sector, therefore, many national training centers were established to achieve such an objective e.g. Qatar Leadership Centre.
2. The collaboration between College of Engineering

in Qatar University and Qatar Rail Company to develop a training program for the company's employees.

3. Collaboration between Qatar University and Qatar Energy to support and sponsor the University scientific research labs for energy researches.
4. Qatarization strategy to develop national workforce to increase their potential to fill jobs in Qatar labour market. However, each institution is responsible to develop the plan separately rather than collectively with other institutions. In addition, the plan includes timely and numeric targets which neglects using qualitative tools to ensure knowledge transfer while achieving Qatarization targets.

The current institutional interaction and national workforce development

The current institutional interaction in Qatar to develop national workforce is mostly reflecting the laissez faire model as Figure 3. Institutional spheres of government, industry, and University operate independently in the economy, and rarely interact in a subject matter for collective outcomes.

The common vision of the required model of institutional interaction to develop national workforce is undetermined yet.

It was also found that assigning unspecialized representatives and the frequently changed representatives during the course of interaction reflects a considerable weakness in the current institutional interaction in Qatar.

Recommendations:

- Development of a common vision of the required model of interaction across institutions and the required model of knowledge capital in the targeted labour market in Qatar.
- Formulation of related strategy and policy to ensure achieving the required collaboration model that promotes and maintains collective learning, while expanding knowledge base across institutions.
- Knowledge management and understanding the current knowledge flow and mix in local labour market.
- Development of on-job training programs and career succession plans across institutional spheres to expand the opportunities to acquire skills and competencies from the best practices across institutions.
- Promote collaborative climate to achieve and monitor knowledge transfer across institutions e.g. organizing practice across sectors (private, semi-government, public, and professional bodies).

Religion and Religiosity in Social Studies: **A Critical Study and an Alternative Proposal**

Hossain Mohammed Naimul Hoque

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Introduction

Sociologists and social researchers were interested in studying the phenomenon of religion and religiosity in human societies from different dimensions and perspectives. Some of them studied the phenomenon from the perspective of Social Perceptions, as Serge Moscovici did; others discussed it from the perspective of Collective Representations, as was the case with Emile Durkheim, and some of them researched it from the perspective of Central Core Theory, as was with Jean C. Abric. Their curricula and methods of research have varied, based on different worldviews, holistic visions, and basic premises. In addition to the main research question posed by the issue of religiosity itself, namely, the question of the source, i.e. the source of this religiosity, and thereafter its circle expands and narrows, according to the open or narrow pace of the religion to which it belongs.

This article, which is an abridged version of full paper written by Dr. Badrane Benlahcene, Research Associate Professor, Hossain Naimul Hoque, Research Assistant, Latifa Al-Kaabi, Research Assistant, and Nousaiba Boumaraf, Research Assistant, from Ibn Khaldon Center for Humanities and Social Sciences at Qatar University, attempted to address the previous studies that discussed the issue of religion and religiosity, with a critical and analytical methodology, in terms of concepts, dimensions, and theoretical frameworks, to reach a more comprehensive framework, more precise concepts, and more inclusive dimensions to study this complex issue, through three essential elements.

First: Glance at the Previous Literature

In order to search for concepts related to religion, the theoretical frameworks initiated by researchers, and the basic dimensions that governed its progress, the researchers have studied fifteen (15) peer reviewed articles published in scientific journals. After considering and reflecting on their contents, the researchers decided to divide them into two main groups:

First Group: Studies that began to investigate religion without defining a concept for it, and which later dealt with it after defining its own concepts, such as the distinction between spirituality and religion, and that the latter is more accurate in foundation, because it has a nodal system and the distinction between emotional side of religion and the belief.

Second Group: Studies that emanated from specific theoretical frameworks, such as the Glens Framework, which puts three dimensions for

religion: personal, political, and popular. Wolff's framework sees that attitudes toward religion can be understood through two dimensions; The holistic dimension which describes whether people accept the existence of God or any other transcendent being. In addition, the literal dimension which describes how expressions of religious belief, such as beliefs, images of statues, and rituals, are consistently understood. Finally, the Simmel's Framework which attempts to understand religion from two dimensions; the first: religion as a divine message, and the second dimension: religiosity as a social practice.

Second: A critical Review of the Previous Literature

Previous studies represent an important ground for studying religion as a topic, from different concepts, frameworks, and dimensions. However, most of them neglected one or more aspects in addressing religion, whether in terms of concept, framework, or dimensions, which the researchers have tried to disclose them in the study, as follows:

The concept of religion: A number of studies did not define the theoretical concept of religion, but rather focused on the study of religion in the field. This study also found studies which sought to define religion by informing that there are two aspects of it; the normative aspect and the applied aspect. Some have tried to differentiate between the concept of religion and spirituality. While some used faith and spirituality in one sense. In addition to studies which relied on a social definition of religion, as a social phenomenon that contributes to the build-up of public behavior.

It has been noticed that the studies that dealt with religion without defining its concept, went on addressing scattered issues that lack a common ground due to the absence of identity among its diaspora. Studies that dealt with religion differentiating between religion and spirituality went to different results from studies that did not differentiate between them. It is a logical result, but the problem lies in the theoretical basis that led to this conclusion.

Framework of Religion and its Dimensions: Some studies sought to define a specific framework for religion and its dimensions, including George Simmel's framework, which divided religion as a divine message, and religiosity as a social practice. However, this division entails a problem as he sees religiosity as an innate matter and does not necessarily express religious behavior according to a particular religion. He also believes that religiosity is what constitutes religion, not the other



Hossain Mohammed Naimul Hoque

way around. The same applies to the framework that puts religion in three dimensions; the personal, political, and popular dimension based on the division of Islam into elite Islam (scholars Islam) and the common people Islam. This is not true according to the foundational texts of Islam. This is what made researchers return to Islamic thought to investigate whether there is consensus on this subject, or the previous observations apply to it as well.

Third: Dimensions of Religion from Islamic Perspective

In consideration of the Islamic intellectual heritage, The research team found that all scholars and researchers agree on a theoretical concept of religion, stating, "It is a divine satus that calls upon intellectuals to accept what is with God's Messenger Mohammed (Peace be upon him)," as per the words of Ali bin Muhammad Al-Jurjani.

As for dimensions of religion, scholars and researchers have presented multiple, but integrated, perspectives. The first to present a model for the dimensions of religion is Abu al-Hasan Al-Amiri, who discussed four basic dimensions of religion: belief, rituals, transactions, and judgment. Then, he added other four dimensions as an outcome from them: social, cultural, political, and civilizational dimensions.

Muhammad Abdullah Daraz also addressed the religion matter differentiating from the outset between religion and religiosity. He sees that

religion is a message, while religiosity is how the religious interacts with the message. This differentiation takes us away from what modern social sciences sought to ignore the message, and focus on religiosity, as a social phenomenon. Daraz also believes that the concept of religion cannot exist without recognizing God, and that the idea of submitting to and extradition is what distinguishes religion from others, and that what differentiates between religious and non-religious is: the element of the subject (Allah), metaphysical, spirituality, moral contact with its worshipers, and submission.

From his part, Malek Bennabi sought to focus on several complementary dimensions: spiritual, social, psychological, and ethical.

Given these religious concepts and the multiple dimensions mentioned by Islamic intellectuals, it becomes clear that the prevailing concepts of religion found in social studies and its dimensions are insufficient, and that they do not apply to Islam, as they arose in a cultural and civilized context that often infer the concept of Christian religion. This calls us to seek to adopt a more comprehensive concept of religion, taking into account its different dimensions, so that it can be studied thoroughly. Accordingly, this study proposes six dimensions of religion, the belief, ritual, ethical, spiritual, social (civilizational), and legislative (legal) dimensions.

Research Link:

[Religion and Religiosity in Social Studies](#)

Towards Smart Sustainable Stadiums for a Carbon-Free FIFA World Cup: **Qatar 2022**

SPORTE.3Q Research Team from College of Engineering at Qatar University:

Dr. Fodil Fadli, Associate Professor of Architecture and Urban Design (Lead Principal Investigator),

Prof. Nader Meskin, Professor of Electrical Engineering,

Dr. Ahmad M. Ahmad, Assistant Professor of Architecture and Urban Planning,

Dr. Yassine Himeur, (former) Research Assistant,

Eng. Mariam Elnour, Research Assistant,

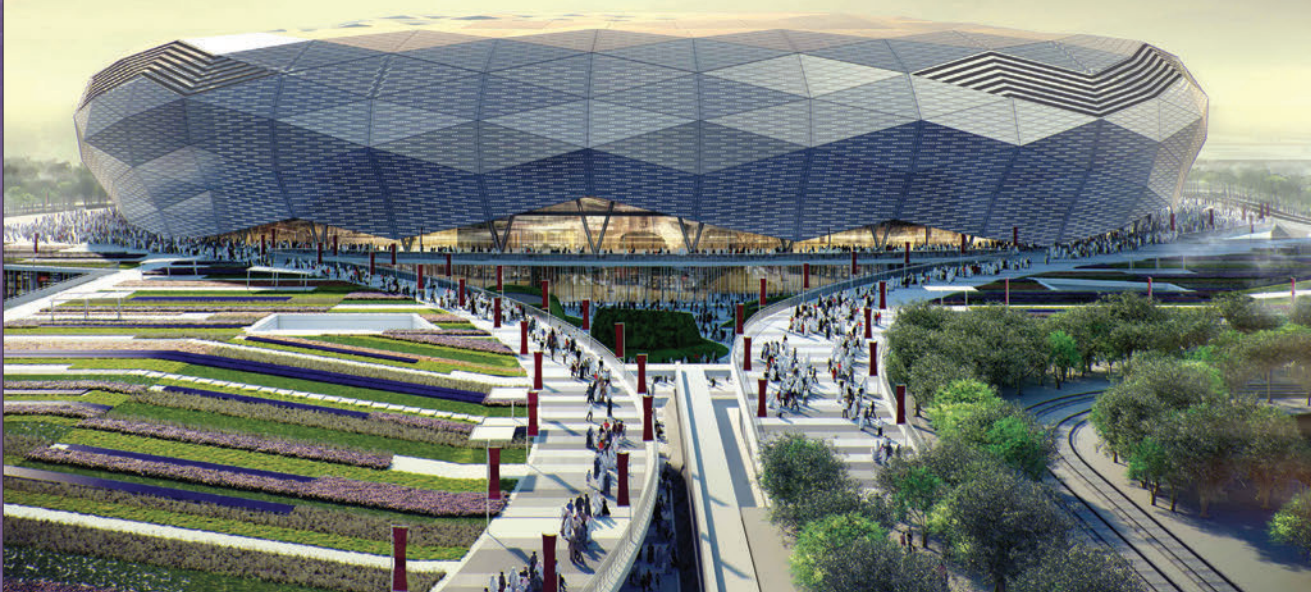
Ar. Hamdi Ahmed Mohammedsherif, Research Assistant.

SPORTE.3Q Research Team from School of Engineering, BRE Trust Centre on Sustainable Engineering–Cardiff University, UK:

Prof. Yacine Rezgui, Professor of Urban Intelligence,

Dr. Ioan Petri, Senior Lecturer of Urban Intelligence,

Eng. Andrei Hodorog, Research Assistant.



In the light of the upcoming 2022 FIFA World Cup as one of the prominent sport events in the world, cost-effective solutions that can reduce energy and water consumption, and the carbon footprint while ensuring environmental protection for the stadiums and sports facilities involved in the tournament are becoming increasingly attractive. A research team from Qatar University led by Dr. Fodil Fadli in collaboration with Cardiff University in the UK aims to develop a smart performance management system, namely SPORTE.3Q solution, to optimize the energy and water use, while enhancing users' comfort and assist in the process of decision making in Qatar 2022 FIFA World Cup stadiums and sports facilities.

SPORTE.3Q targets the endemic energy performance gap in existing and new built facilities, and aims to develop and deploy innovative

intelligent performance management solutions for the tournament's stadiums in Qatar that factor in energy and water use.

The SPORTE.3Q solution will target to reduce energy consumption by 30–80% and water usage by 10–40%, with commensurate CO₂ reductions and cost savings. SPORTE.3Q will also promote a vision that leverages on Qatar's renewable energy potential to increase its revenue by decreasing gradually its reliance on natural resources, which currently amount to 60% of Qatar's national economic income. The generated value is not confined into economic benefits such as energy cost savings, but rather translates into a variety of environmental (reduced GHG emissions), social (improved health, community connections) and contextual (improved comfort) benefits.

The AI-powered SPORTE.3Q solution consists of different modules for metering, optimization, and control that will provide an end-to-end management solution, from water and energy production to end-user demand/consumption management in stadiums and sports facilities. Innovative computational tools and artificial intelligence techniques leveraging simulation, neural and genetic algorithms reasoning is utilized to optimize operation scenarios from the tournament's stadiums, facilities and precincts as demonstrated in Figure 3. SPORTE.3Q innovates by designing, developing and applying AI-powered smart integrated urban systems to manage energy-Water nexus for users' comfort, health and safety in stadiums and sports facilities.

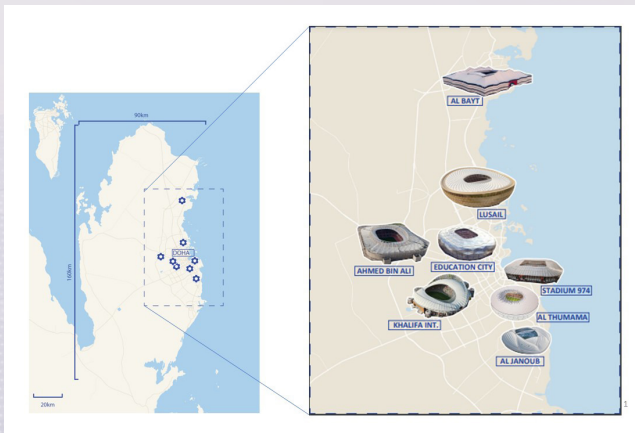


Figure 1. FIFA World Cup 2022™ stadiums' locations.

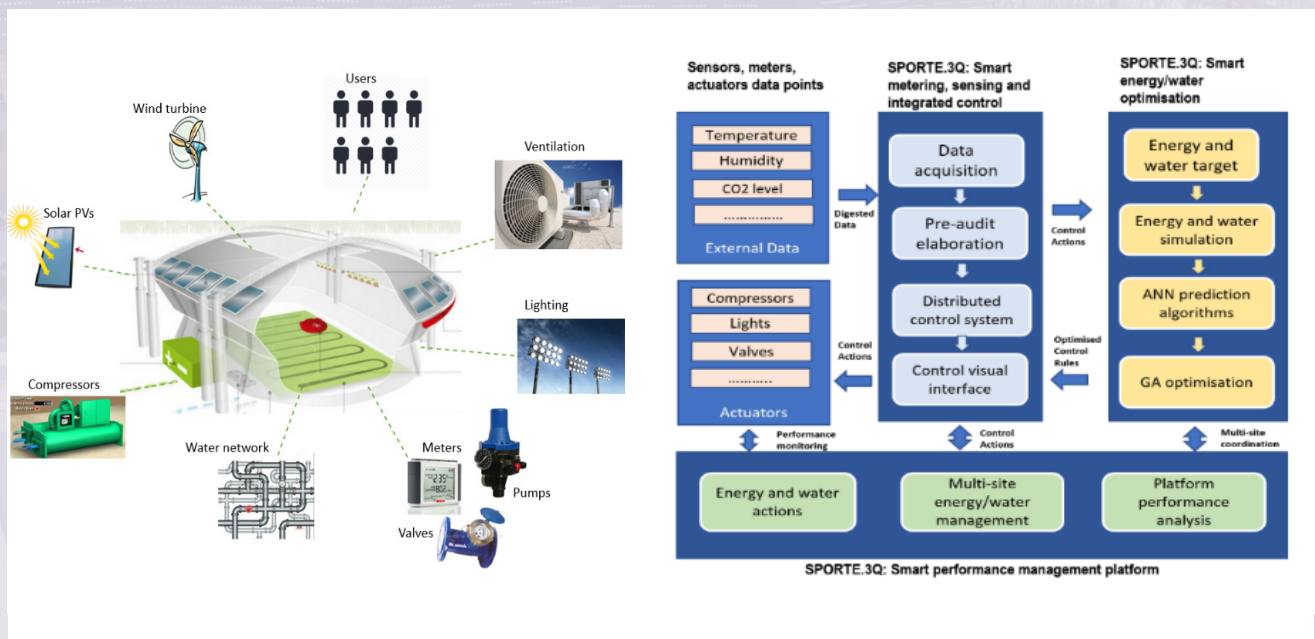
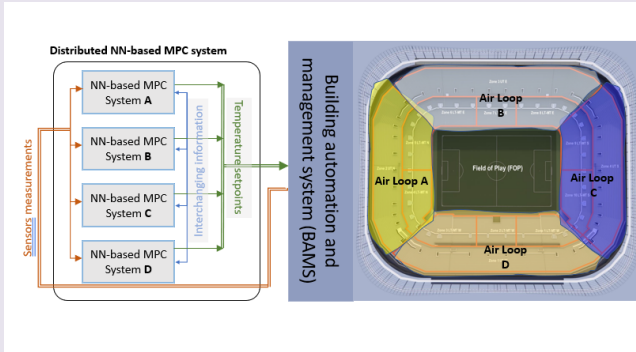


Figure 2. IoT systems, computational tools and AI-based techniques are at the core of SPORTE.3Q project.



(a) AI-powered SPORTE.3Q Platform.



(b) The AI-based developed solution for improved management of FIFA World Cup Stadiums in Qatar.

Figure 3. The framework of the SPORTE.3Q Platform.

The SPORTE.3Q system includes a computational urban sustainability platform (CUSP) that was originally developed by the Cardiff University team. It comprises of three integrated scenarios-models for: (1) Energy-Water Efficiency, (2) Health, Safety, and Wellbeing, and (3) Thermal Comfort as demonstrated in Figure 4. A web interface is developed to provide a handy tool to study and investigate the sustainability of the sports facilities in Qatar. The team aims to implement SPORTE.3Q solution in 2022 FIFA World Cup stadiums and demonstrate the effectiveness of energy and water management in real-operation contexts. SPORTE.3Q solution will represent the next generation of smart performance management solutions for stadiums and sports facilities in Qatar in particular for the FIFA 2022 World-Cup and afterwards, and in the Gulf region and the world in general. Further details on the project can be found over this link: [SPORTE.3Q](https://www.sporte3q.com).

Acknowledgement: This publication was made possible by NPRP grant No. NPRP12S-0222-190128 from the Qatar National Research Fund (a member of Qatar Foundation).

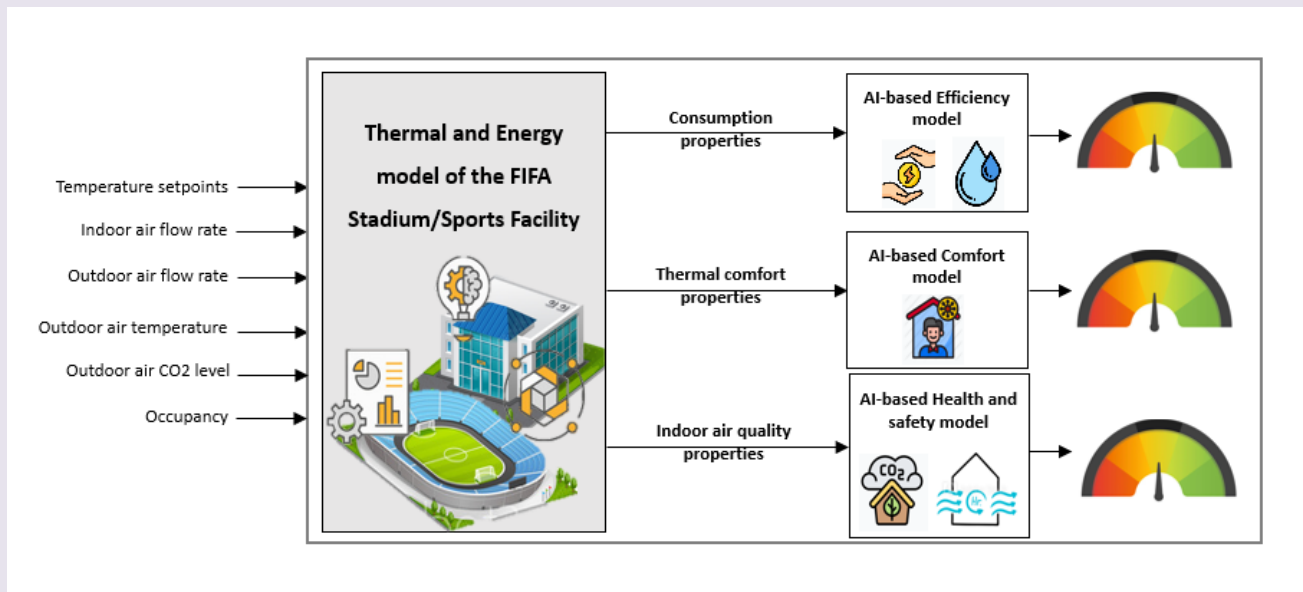
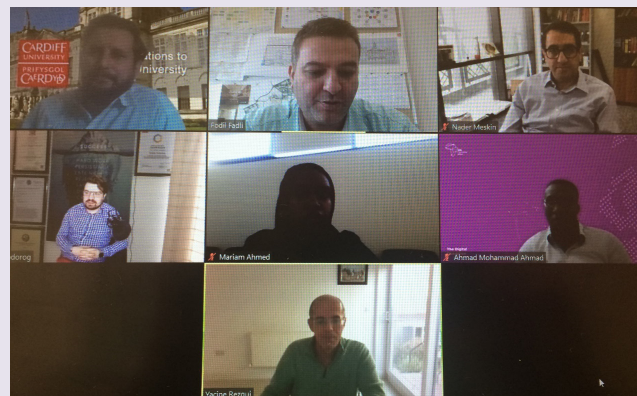


Figure 4. The improved CUSP model with three integrated models for efficiency, comfort, and health & safety.

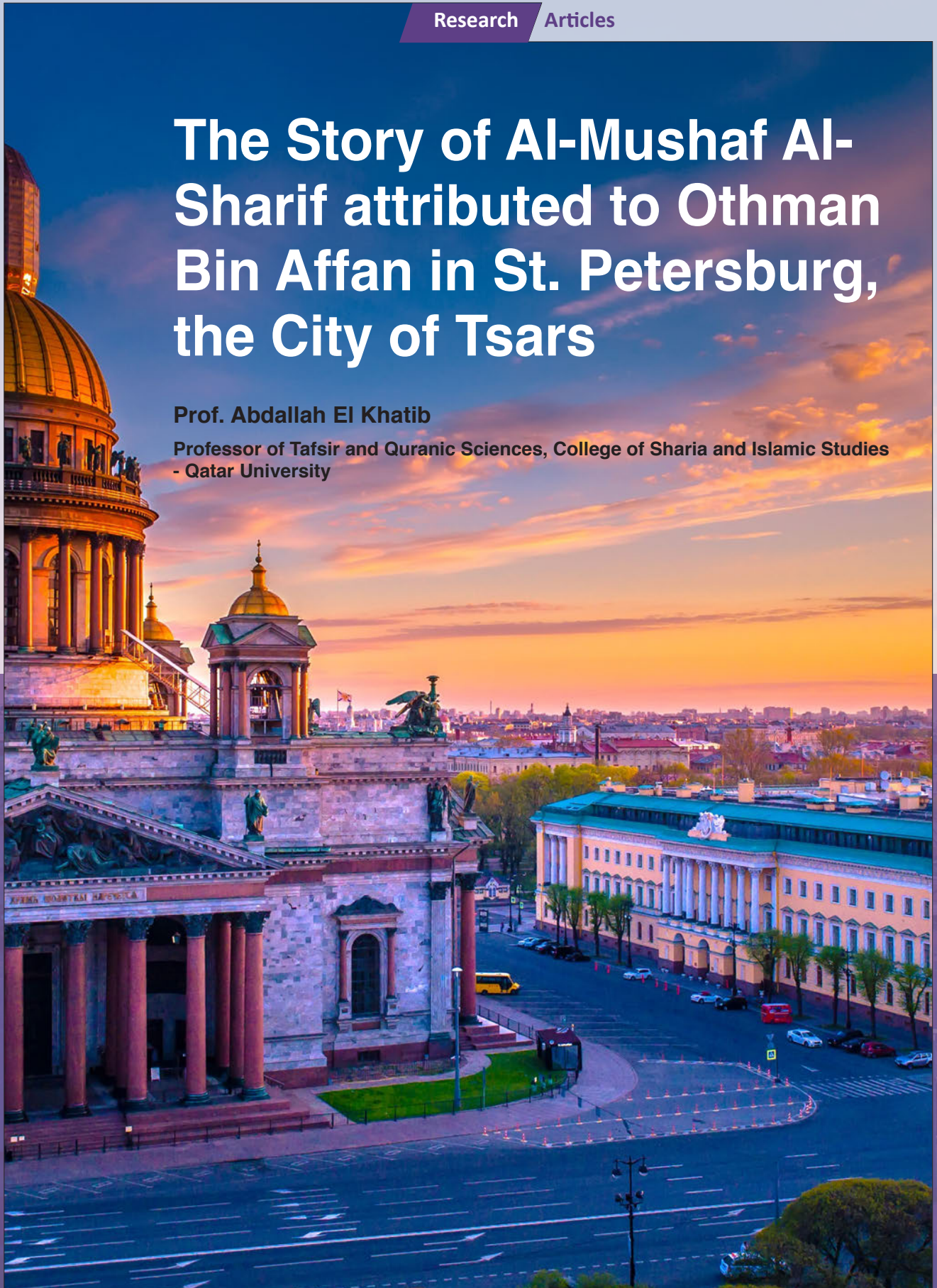


Dr. Fodil Fadli (LPI) during the sites visit (left) and the virtual research team meetings (right).

The Story of Al-Mushaf Al-Sharif attributed to Othman Bin Affan in St. Petersburg, the City of Tsars

Prof. Abdallah El Khatib

**Professor of Tafsir and Quranic Sciences, College of Sharia and Islamic Studies
- Qatar University**





Prof. Abdallah El Khatib while reading a paper from the Qur'an book attributed to Caliph Othman in the Institute of Orientalism Library in St. Petersburg.

The city of St. Petersburg that was established 300 years ago is called the capital of the Tsars. The city was founded by Tsar Peter the Great, to be Russia's gateway to the Western/European world. He built it as per the latest architectural models and brought the most important painters and technicians in the world thereto. So, it became one of the most beautiful cities in the world. Such a city astonishes its visitors with its stunning natural beauty granted to it by God Almighty, and the attractiveness and diversity of its ancient museums, especially the Hermitage Museum that depicts the history of the Tsars, their possessions, drawings, paintings of the world's great painters, and other beautiful things that the city enjoys. Nowadays, millions of Muslims of various races and ethnicities like Tatar, Kyrgyz, Chechen and others live in Russia, including about 1 million Muslims in the city of St. Petersburg.

In the summer of 2022, I visited the libraries of the Russian city of St. Petersburg for the purpose of conducting scientific research on the old Quranic Manuscripts in both the National Library of Russia and the Library of the Institute of Oriental Studies, therein. At the beginning of my trip, my colleague, the Orientalist Prof. Efim Rezvan welcomed me. He is in charge of the Kunstkamera museums in St. Petersburg, an expert on Islamic manuscripts and the first one to publish the Mushaf attributed to Caliph Othman ibn Affan (may God be pleased with him), a copy of manuscript which is placed in the library of the Russian Institute of Oriental Studies in the city; the matter that I intend to tackle later.

It is worth noting that the European libraries are filled with more than one million Arabic-Islamic manuscripts in various sciences. These manuscripts include

treasures from ancient codices that date back to the era of the Companions of the Prophet and their Followers (may God be pleased with them), that is, during the first century Hijri. These ancient codices are found in the libraries of Paris, St. Petersburg, London, Birmingham, Berlin and many others.

The question that arises here is—What is the story of the migration of Islamic manuscripts from Medina, Makkah, Basra, Kufa, the Levant, Yemen, Egypt and Istanbul to the countries of the West? It is a long story that is related to the high scientific level that Muslims during the Abbasid and Ottoman empires had reached in terms of knowledge and civilization. Those scientific capitals were the focus of attention of scholars and learners from all over the world, as is the case with Oxford, Cambridge and Harvard today. In addition, the West obtained from the Arab world and through Andalusia many of the manuscripts when the Muslim civilization was ahead of theirs. Moreover, Arabic manuscripts reached the West as a result of war booties and the Western colonization of Islamic countries, so they were able to obtain copies of our heritage and take them to their countries, as happened in the wars that took place between the Russian Tsarist State and the Ottoman State and Iran.

The Russian National Library in St. Petersburg is one of the largest and most essential libraries in the world, containing forty million books and journals, four hundred thousand manuscripts in various international languages, and a large collection of early printed books. Annually, the library is visited by about four million visitors. It includes an important collection of these codices that the library bought from the French bookseller Joseph Marcel in 1864 who obtained them from Amr bin Al-Aas Masjid in Fustat, Egypt during Napoleon's Egypt Campaign. Marcel worked in Cairo as the head of a printery (from 1798 to 1801). During his work there, he obtained treasures of manuscripts amounting to 3000 sold by his successors to the libraries of Munich, Berlin, Paris and St. Petersburg.

Marcel brought these manuscripts to Paris and a box was found buried thereof, under the floor of the mosque, that is why this group of manuscripts is known as: Codex Parisino-Petropolitanus, the Parisian Petersburg collection, in reference to being divided between these two cities.

The Petersburg-based Marcel collection consists of 2,000 parchments (animal skin sheets) preserved in 130 codices (completed or uncompleted) dating from the 1st to the 7th century A.H./the 7th to 12th centuries A.D., as well as ornate manuscripts of Quran from Iran, and small pocket manuscripts.

Among the most important manuscripts, that I have seen is the manuscript known in Western countries as the "Purple Qur'an" in relation to the color of the paper

on which the Holy Qur'an was written. However, the volume available in this library is less than one-sixth of the entire Qur'an. The largest share of this Qur'an is currently in the National Library in Paris, and it is a total of four volumes. This manuscript was originally written in five volumes prior to the year 807 A.H./1405 A.D., which was the year when it was kept in the mosque known as "Al Muwahidin Mosque" in Tunisia.

The Russian Institute of Oriental Studies, which is located on the banks of the Neva River, has a huge library of about one million copies of books, including treasures of Islamic manuscripts, foremost of which is the Mushaf attributed to the Caliph Othman ibn Affan (may Allah be pleased with him). Although, such an attribution was not actually proven, its writing period dates back to an early time in the history of Islam during the last quarter of the second century Hijri. This Manuscript of Qur'an is one of the oldest versions of the mushafs in the world, such as Leiden and Birmingham Mushafs.

What is the story of this manuscript and how was it brought to St. Petersburg?

In 1936, an old woman entered in the Institute of Oriental Studies bearing some manuscript papers. She met with the academician Krachovsky and offered to sell papers of manuscript of the Holy Qur'an, in return, Krachovsky bought the same from her. Fearing that the authorities would seize the parchemnets of the manuscript, the woman did not disclose her name. The same woman then came back again with other parchemnets and sold them to the Institute. Krachovsky noticed in some parchemnets that there was a signature of Salim Nofel, a Lebanese immigrant, who emigrated from Tripoli to Russia, worked there, taught at the University of St. Petersburg and worked in the diplomatic corps in the city. Krachovsky told the woman that he noticed the signature of Salim Nofel, i.e. I. N., the woman was surprised and did not return again for fear of being exposed. Eighty-one of priceless parchemnets were purchased by the Institute of Oriental Studies.

In 2004, my colleague, the Orientalist, Prof. Efim Rezvan published this manuscript of the Holy Qur'an, but his journey in discovering the manuscript commenced in 1999 and 2001. He asserted that this manuscript of Qur'an in St. Petersburg is a copy, which has its own sequel in both Bukhara and Kata Langar in Uzbekistan, where there is an Arab community that kept copies of this manuscript of the Holy Qur'an before it was confiscated by the Communist government. The sequel of this manuscript is located in the Bukhara Library, the Tashkent Library and the Tashkent Institute for Oriental Studies. The similarity of the St. Petersburg version with the one in Uzbekistan was noted by the French Orientalist Francois Deroche in 1999 and by the Dutch Orientalist J.J. Witkam in



Pages from the Qur'an book attributed to Caliph Othman bin Affan, (may God be pleased with him).

1997. The Qur'an is written on the skins of animals in the beautiful Hijazi script. The visitor is allowed to touch the Manuscript of the Qur'an only under supervision and with the utmost care after wearing gloves.

This invaluable manuscript which is held in Uzbekistan, is expected to be exhibited in the Louvre museum in Paris under the title "Treasures of Uzbekistan's oases at the crossroads of caravans," between 24 November 2022 and 6 March 2023. The French Museum also displays (168) historical cultural assets, including 137 from Uzbek museums and 31 of the world's leading museums, related to the history and culture of Uzbekistan.

The importance of studying this ancient manuscript of Qur'an and other manuscripts found in the libraries of the world is to prove the validity of the Qur'anic text and its consistency throughout history, thereof. Moreover, the study of these manuscripts indicates the extent of the efforts of the Islamic Ummah (nation) and its scholars in preserving the Holy Qur'an and creativity its illumination and writing and preserving the same. In particular, the study of Qur'anic manuscripts has a high scientific value. The colleges of Sharia and Islamic Studies in the Islamic world should pay more attention to this new branch of knowledge. The State of Qatar is very interested in the old manuscripts of Qur'an and the heritage of the Arab and Islamic Ummah, as witnessed by the Museum of Islamic Art, which contains hundreds of these ancient manuscripts.

At the end of this article, I believe that there is a pressing need today to establish an institute specialized in the Holy Qur'an and everything related to it. One of the most important objectives of the Center would be to take note of all the manuscripts of the Holy Qur'an in the world and all the studies published regarding it in the East and West. We hope that Qatar University will be proactive in establishing such an exceptional center that will bring goodness and blessing to the University and to the scholars in the World.

Social Welfare and its Impact on Redefinition of Accounting

Dr. Ahmed Ali Mohammed

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The identification and understanding of the nature of accounting and its value and ethical system has formed a field of knowledge that has a great history and consists of transformation stages that have often formed a reflective mirror of both economic, societal and technological transformations. This field of knowledge also contains extensive research and discussion of the art or science dialectic. It is worth noting that such a dialectic is often centered on the fact whether accounting should be defined starting from the framework of the scientific and cognitive qualification of the accounting community, or whether existing accounting practice should be framed and theoretically refined to reach such a definition.

In this respect, the pursuer of that literature notes many personal efforts of researchers, practitioners and academics at the beginning of the nineteenth century to formulate a definition that can be considered as a landmark for determining such a nature. However, the formulation of the first accepted official definition of accounting came by experts of the American Institute of Certified Public Accountants (AICPA) in 1941:

“Accounting is the art of recording, classifying, and summarizing, in a significant manner and in terms of money, transactions and events which are, in part at least, of a financial character, and interpreting the results thereof.”

The detailed analysis of the content of the above definition clearly indicates the recognition of the fact that accounting is an “art” in which excellence requires having a skill system based on the speed and efficiency of implementing the registration operations, including documentation, classification and summary of business transactions. Then interpreting the results associated with the occurrence of those transactions on what is known as the “financial position” of business companies. A careful analysis of the reasons for defining that nature as art and limiting accounting objectives only to “finance”, specifically within the scope of that time period, provides an objective correspondence with the nature of the prevailing accounting practices. Since recording technology had not yet been invented or discovered.



Dr. Ahmed Ali Mohammed

The intellectual acceptance of this hypothesis did not last long, especially with the advent of the Fifties in the last century, which witnessed a huge technological transformation represented in the discovery of computer technology with its primitive mechanics and its initial use in partially automating accounting registration processes. Such use provided a ground for sowing new trends based on a controversial change in the nature of accounting with a real transformation in the system of its objectives. This controversy forced the scientific committee of the American Accounting Association (AAA) in 1975 to recognize the shift in the nature of accounting and its goals and the intention of adding new social and technological goals in addition to the previously mentioned financial ones:

“Accounting is the process to provide information which is potentially useful for making economic decisions and which, if provided will enhance social welfare.”

According to the above definition, accounting was reclassified as an information field, and the

recognition of such a transformation came as a reaction to the redistribution of functions between technology on the one hand and the accounting community on the other. The expansion of implementing the analysis of accounting figures, the accompanying innovation and renewal in the contents and the effects of that analysis of the figures led to the redrawing of new objectives of accounting, especially related to the achievement of the goal of “social welfare”. This shift, in turn, has led to an accompanying shift in the control function of accounting, specifically the shift from the practice of the control based on documentation to the practice of control based on accountability and responsibility in order to contribute to ensuring the welfare of societies.

The existence of an efficient public accountability system based on accounting practices with great transparency and credibility is complementary to the role of the judiciary and education in achieving the rise of nations, the sustainability of their welfare, the preservation of their achievements and their civilizational path. In this respect, I recall Ibn Khaldoon’s words in his book Muqaddimah: “If the teacher and Judge are corrupted in a nation, then I know that it is a dwindling nation.”

The Nineties of the last century also witnessed a significant expansion in the development and manufacture of specialized software, specifically accounting software, which in turn allowed full automation of all accounting processes. In addition, this provided sufficient justification for the experts of the American Institute of Certified Public Accountants (AICPA) to redefine the new technological nature of accounting as an integrated information system. Some information systems’ literature even goes to describe accounting as a “unique information system”, because it provides a rare technological pairing and linking between the calculation logic and the report logic. This is according to a technological mechanism of great consistency and nationalization, which cannot be found in any other professional and cognitive field:

“Accounting is an information system that identifies records and communicates the economic events of an organization to interested users.”

Finally, the beginnings of the third millennium marked the launch of a new real revolution in the field of communication technologies, specifically with regards to the use of mobile technologies, social networks and messaging applications. This is in addition to the huge expansion in the use of emerging technologies in various business sectors, especially those related to artificial intelligence, robotics, the Internet of things, self-driving vehicles, three-dimensional printing, and quantum computing. The use of all these technologies in their various applications has provided an incentive for specialists in various fields of accounting to re-search for the new nature of accounting in accordance with its new role under these applications.

Despite the fact that no official accounting organization (academic or professional) has yet adopted any new definition of accounting in this regard, this does not prevent us from saying that some business literature has already begun marketing trends to redefine accounting and determine its nature as an “art of information communication.” Due to this unconventional nature of accounting at present and the high level of technological skills required to keep pace with the work of accounting technology incubators and their applications, it is noted that part of the functional responsibilities of the accounting community has been transferred to information technology specialists. This in turn has created a new dialectic “focusing on the technological dimension or extent that the accounting community must possess” and the question that “is it required of the accounting community today to be information technology specialists?”

The set of facts, mentioned above, undoubtedly proves the “changing nature” of accounting and despite the typical nature of such change, the impact of technological changes in recent decades has greatly accelerated the possibility of its occurrence. Therefore, saying of a specific nature of accounting has become unacceptable, and the level of challenges resulting from this change has forced the accounting community to accept greater dynamism, whether in terms of the level of accounting knowledge to possess or the level of skills and responsibilities assigned to them.

LARC Conducts Interdisciplinary Study to uncover Impact of High Sugar Diet in Early Life



Dr. Muralitharan Shanmuga Konar

Section Head of Laboratory Operations, Laboratory Animal Research Center (LARC) - Qatar University



Eating nutritious healthy food is not a punishment but an opportunity and if we understand the value of nutritious food then it becomes enjoyable and satisfying. In the era of digital access, awareness of people towards healthy food increased tremendously and in most of the healthy diets, sugar is either reduced or completely eliminated. Sugar has been linked with many metabolic health disorders such as heart disease, metabolic syndrome, infection and immune disorders. In Qatar, rapid urbanization, affordability and sprawling fast food chains happen to cater high sugar diet encouraging the younger generation to consume more sugar. Lifestyle changes and accessibility to high sugar diet with sedentary lifestyle fuels for several metabolic disorders.



LARC research team is discussing the experimental analysis.

In LARC, an interdisciplinary research team comprised of researchers, graduate and under graduate students embarked on a study by establishing a mouse model to uncover the impact of consumption of high sugar diet in early life and its influence in physiological, biochemical parameters and changing landscape of the gut microbiota. Understanding the mechanism of sugar breakdown inside the body is important to explore the available energy source for microbiota. Microbiota are the group of microorganisms living in the digestive tracts and they maintain a symbiotic relationship with the host. Human body is enriched with millions of bacteria and especially the diversity in the gut microbiota plays a major role in various physiological and immunological mechanisms that lead to signaling events for normal cell function.

Long-term consumption of high concentrations of sugar leads to digestive disorders that influence the function of small intestine, which are related to glucose absorption. However, sugar molecules that are poorly absorbed in the small intestine move to the large intestine where it is fermented by intestinal microflora called "Gut microbiota". Understanding

the structural and functional dynamics of microbiota in the gut environment is more valuable to elucidate their influence in health disorders such as infections, obesity, allergies, inflammatory bowel disease etc.

In LARC at Qatar University, as a member of the LARC team with expertise in molecular science, I directed my research team to focus more on profiling the gut microbiota of laboratory mice, fed with high sugar diet. We employed an array of molecular techniques to delineate the structure of gut microbiota. The study includes control group fed with normal diet and experimental animals fed with high sugar diet.

Caecum and fecal samples of both the experimental and control animals were subjected to both 16S rRNA sequencing and Real Time PCR analysis to profile the gut microbial alterations. We developed an in-house PCR assay to analyze a panel of gut microbiota such as Firmicutes and Bacteroidetes (Figure 1). Diet induced response of species change in the gut microbiota has been observed and again their metabolic output shows dependency on dietary components. The abundance of microbiota populations varies depending on the time of sample collection, the age of the animal, the amount of diet consumed, and the duration of metabolism.

Bacterial metabolism (hormones, endotoxins, and antibiotics) can have an indirect effect on a host's phenotype due to hormonal alterations. We observe in our study that the high sugar diet influences the composition of the gut microbiome and increases the abundance of microbes belonging to the taxonomic group closely associated with the development of obesity. Understanding the gut microbial alterations in the obese animals and their impact on the physiological functions would help us to develop effective therapeutic intervention strategies to treat metabolic disorders.

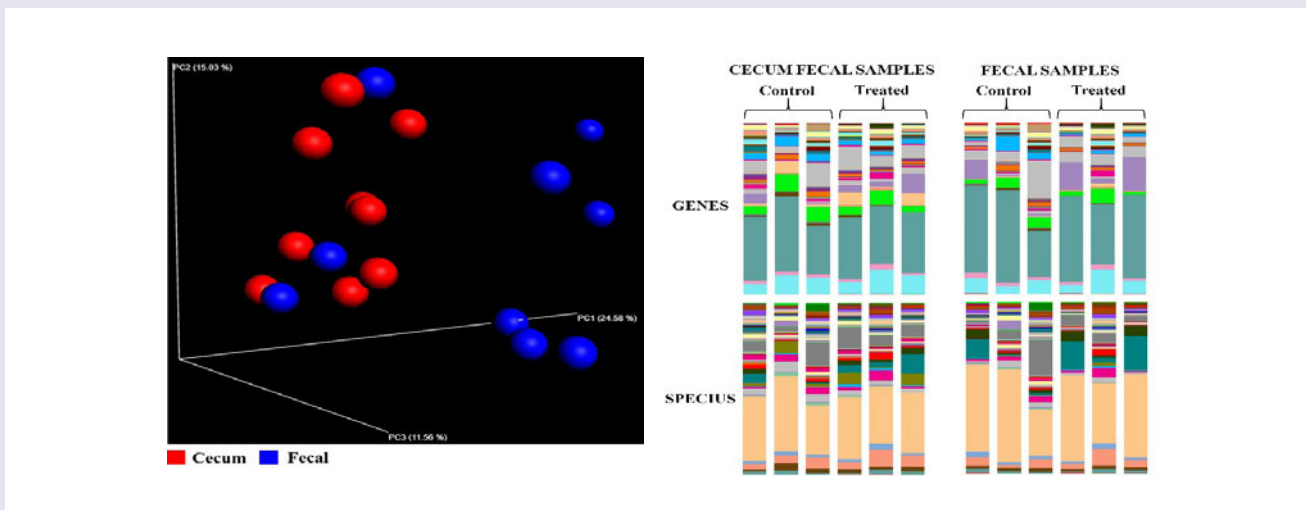


Figure 1. Gut Microbial abundance ratio of treated and control samples determined using Next Generation Sequencing Analysis.



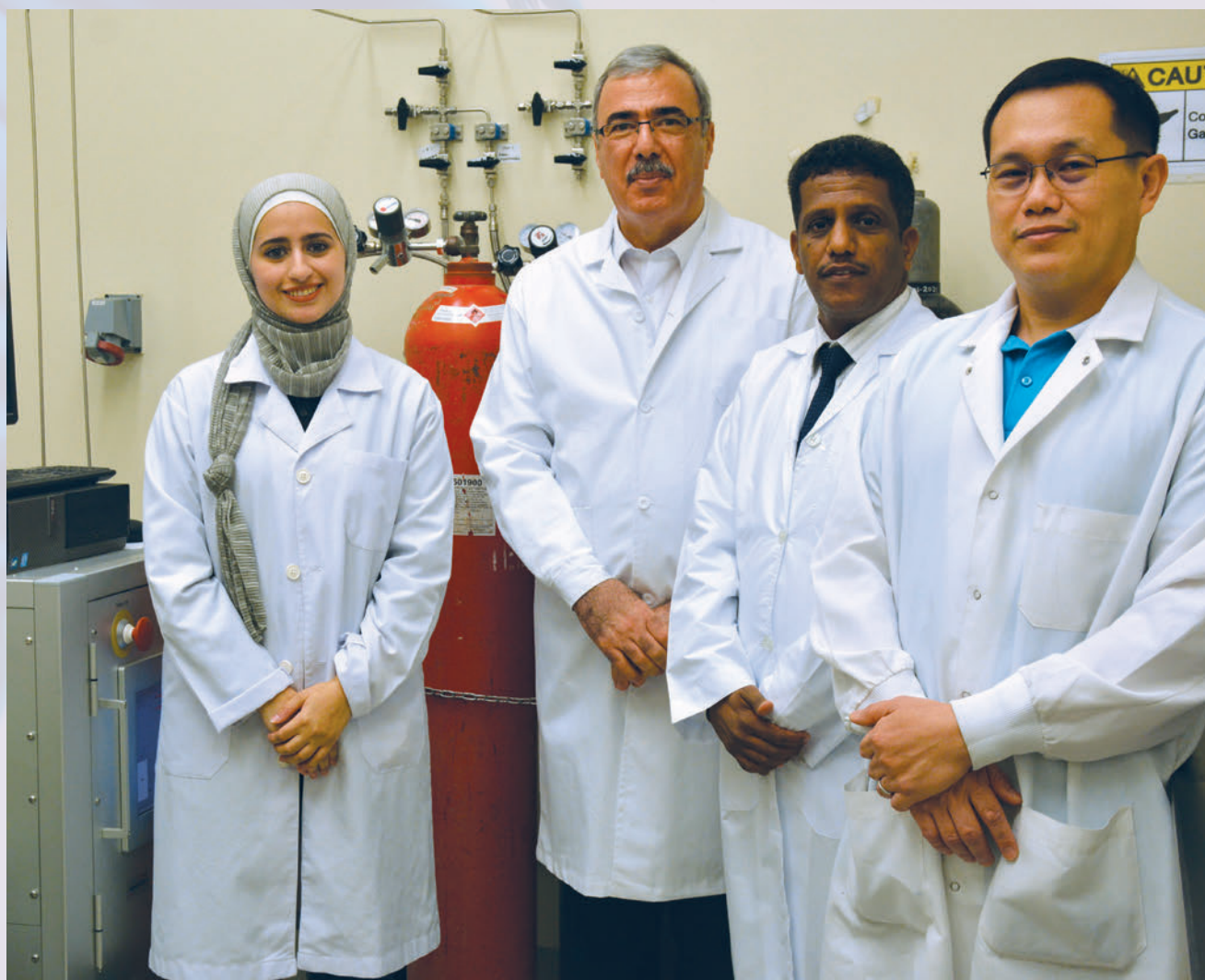
A Study on Chitosan-based Activated Carbon as Efficient and Sustainable Adsorbent for Carbon Dioxide Capture

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Industrialisation and increased consumption of non-renewable energy resources such as oil and natural gas has spiked the global carbon dioxide (CO₂) emissions. With the emerging vital signs of climate change around the globe such as the rising sea levels and the ascending atmospheric temperatures, CO₂ emission reductions is a priority in many countries, the gulf region generally and Qatar specifically. Considering that Qatar has one of the highest carbon footprint per capita, suitable solutions should be put into effect to align with Vision 2030 of Qatar. One of the main pillars of this vision is a green and sustainable environment where protecting the environment is of utmost importance. As industrial applications are the main source of CO₂ emissions, various technologies have been established for the reduction of these emissions through carbon capture, storage and utilization, which possess significant potential in emission reduction. The main issue with these

technologies is the high cost, this is significantly disadvantageous in less-fortunate countries where these technologies are not afforded and could even be financially overbearing for the countries that can afford it. This motivated our team to develop an efficient and sustainable adsorbent for carbon dioxide capture.

Adsorption is considered one of the most effective ways of pollutant removal, whether in liquid or in gas phase, and it has proven its ability to remove a wide variety of pollutants in either of the phases. The prepared AC was sourced from chitosan. Chitosan is a naturally occurring biopolymer derived from chitin, which is the building block of crustaceans' (including crab, shrimp and lobster) exoskeleton. The attractive feature of chitosan is the plenitude of basic amino functional groups which are beneficial for CO₂ (an acidic gas) adsorption/removal.



From left: Tamara Samer Alomar, Prof. Bassim Hameed, Dr. Muneer Baabbad and Dan Jerry Cortes.

Chitosan-based AC was prepared by impregnation of chitosan flakes with KOH (1:0.5 chitosan to KOH (by mass)) for 5 hours. This was followed by the hydrothermal carbonization treatment of the impregnated mixture at 200 °C for 3 hours to produce hydrochar. After washing and drying the produced hydrochar, it was placed in a furnace and was heated to a temperature of 760 °C at heating rate 10°C/min for 90 minutes. The AC was then repeatedly washed with distilled water, then dried and stored. Gravimetric CO₂ adsorption experiments were carried out using DynTHERM SHP magnetic suspension balance manufactured by Rubotherm GmbH (Germany) and using the procedure highlighted according to (Al-Marri et al., 2017).

The prepared adsorbent was characterized using scanning electron microscope (SEM), Fourier-transform infrared spectroscopy (FTIR) and (Brunauer, Emmett and Teller) (BET). The BET surface area was found to be 1200 m²/g, which is considered promising for CO₂ capture and is comparatively higher than commercially available AC. The high surface area is attributed to the use of KOH as activating agent, and the combination of hydrothermal carbonization and thermal activation processes. This process produces porous AC with high surface area, which contributes towards efficient carbon dioxide capture. SEM image (Figure 1) was also obtained displaying well-defined pores on the produced chitosan-based AC. FTIR analysis was also obtained for the prepared adsorbent, with a significant peak at 1661 cm⁻¹, confirming presence of the amine functional group, further contributing towards the enhanced adsorption capacity of the produced AC through the interaction between amine and CO₂ molecules.

Adsorption isotherm studies are important in determining the nature of interactions between adsorbent surface and adsorbate and is a valuable tool in determining maximum adsorption capacity and intensity of adsorption. Isotherm studies (Figure 2) were carried out for the adsorption of CO₂ at variable pressures and a temperature of 25 °C. It is clear from Figure 2, as the pressure of the CO₂ is increased, the uptake of CO₂ by the adsorbent also increases. The adsorption isotherm data were fitted to the Langmuir and Freundlich isotherm models, the results of which reveal that the data fits well with Langmuir isotherm model ($R^2 = 0.9924$). The maximum monolayer adsorption was 10.7 mmol/g.

In comparison with other studies reported in the literature, the adsorption capacity of our adsorbent (10.7 mmol/g) is higher than other adsorbents synthesized from chitosan such as CN6-750-KOH (Li et al., 2022) (3.91 mmol/g) and CHKH1:3 (Kamran & Park, 2020) (8.41 mmol/g). This is attributed to the high surface area of the prepared adsorbent, the presence of nitrogen-containing functional groups due to the use of KOH as activating agent and the combination of hydrothermal carbonization and thermal activation. However, despite the relatively high performance of the prepared adsorbent, further studies are needed to intensify the adsorbent's capacity to capture CO₂ by optimising the operating conditions and the amount of KOH activating agent. Moreover, further kinetic studies are needed to understand the mechanism of CO₂ adsorption.

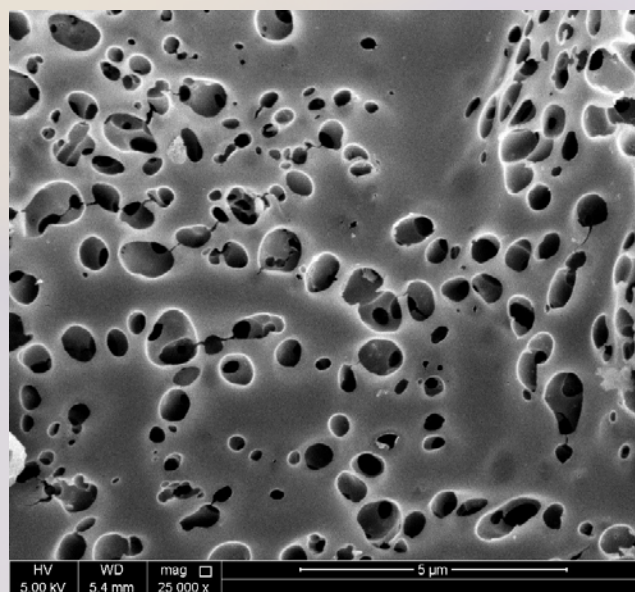


Figure 1. SEM image of the prepared chitosan-based AC at magnifications of 25,000x.

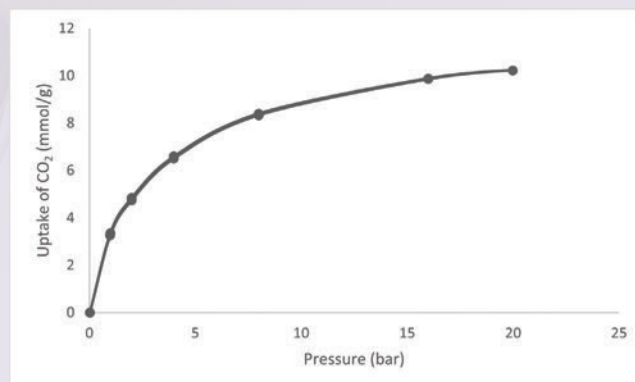


Figure 2. Adsorption isotherm for carbon dioxide adsorption on chitosan-based activated carbon at 25 °C.

Story of a Knowledge Platform:

Educational Research Center College of Education - Qatar University



Dr. Abdellatif Sellami, Director of the ERC



The Educational Research Center (ERC) at the College of Education (CED) aims to engage in educational research for Qatar's sustainable development by providing research-based solutions to the educational challenges in Qatar. The Center focusses on conducting educational research in all fields related to education from K-12 to post-secondary. For a comprehensive overview of the Center and its role in educational decision-making, we met Dr. Abdellatif Sellami, Director of the ERC.



Part of the Center's activities.

Dr. Abdellatif, when was ERC established and what is its mission?

The ERC was established at the CED at the end of 2020 to conduct research on topics related to the system of education in Qatar, examine the challenges facing education in the country, and provide relevant solutions and policy recommendations to decision-makers.

What is Educational Research! What problems does it study and resolve?

Educational research applies experimental methods that seek solutions to the challenges facing the educational system (from k-12 to post-secondary education) in Qatar to achieve the sustainable development goals stated in QNV 2030.

The educational system in Qatar is facing many problems and challenges, and the ERC is engaged in conducting research on different aspects of these issues, offering suggestions and recommendations for addressing these problems. For instance, the ERC is currently conducting studies that aim to understand high school students' aspirations to future post-secondary education and their views and perceptions regarding higher education institutions in Qatar. The ERC is also involved in a study that seeks to identify the reasons that deter Qataris from pursuing studies and careers in the domains of mathematics, technology, engineering and science (STEM). Using quantitative and qualitative research, the aim is to gain a better understanding of the root cause of the problem and thus provide suggestions and solutions for encouraging Qataris' interest and persistence in these fields.

Can we have an overview of the Center's educational research?

In cooperation with the Ministry of Education and Higher Education in Qatar, the Center is currently in the process of implementing a number of important research projects related to educational phenomena that are considered as a major challenge within the Qatari society. These projects include: Qatari students' level of interest in STEM-related fields of study; higher education students' future career aspirations in Qatar; education and well-being at Qatar University; and the factors shaping Qataris' reluctance to join the teaching profession.

What are the areas of cooperation between the ERC and other educational and academic institutions in Qatar? Is the Center involved in any international collaborations?

Currently, the ERC is engaged in a continuous collaboration with the Ministry of Education and Higher Education. Moreover, the ERC is currently working on building similar relationships with other universities and research centers inside and outside the country.

How does the Center support QU students?

The ERC is about to launch a series of activities that aim to support QU students, including different workshops on various topics to do with the different stages involved in undertaking scientific research. The ERC provides data and studies prepared by the center and offers consultations on how to conduct research.

What is the role of the Center in achieving Qatar's National Vision?

ERC unremittingly strives to contribute to the achievement of the goals outlined in the Qatar National Vision. This it seeks to do through implementing educational research that has the potential to improve the country's system of education, enhance the level of the educational outputs that meet labor market demands, promote the educational sector's ability to innovate and work efficiently and effectively, and aid in building national educational capacity.

Does the ERC play a role in educational decisions in Qatar? What is the decision-making mechanism?

The ERC provides decision-makers with reports that include key findings, data, and recommendations that originate from studies conducted by the center. These reports, which are based on scientific evidence, can inform and guide policy making in the design of educational policies.

What is the role of the ERC in bringing change, innovation, and improvement in Qatar's educational system?

Due to its recent establishment, the ERC is still developing. Nonetheless, it aspires to have a positive impact in improving education in the country.

What are the ERC's future plans?

The ERC tries to expand its horizons by covering a wide range of research areas that are a priority to the country, continuing securing funding for large scale research projects, and expanding internal and external collaborations.

Interview with a Researcher:

Prof. Nedham Abdul Kareem Al-Shafai,

Professor of Geography, Geography Program,

Department of Humanities,

College of Arts and Sciences – Qatar University



Prof. Nedham Al-Shafai, tell us about yourself and your area of specialty.

I studied at Qatar University back in 1978 to specialize in a new field- Geography and Urban Planning. I graduated with a high GPA in 1982 (sixth batch). Then I enrolled directly through a government scholarship program to a University in America to obtain MA degree in 1985. I joined the University of Wales in Swansea, United Kingdom, to obtain PhD in Industrial Geography with a thesis entitled "Private Sector Industries in the State of Qatar." In 1989, upon my return from the scholarship, I joined the academic work in Geography Department to teach various courses and conduct research in my field of specialization at the same time. I also served the University and society by contributing to support the desired development process.

During my journey, I became a Professor of Geography, took the chair twice of the Scientific Department, was appointed as a parallel education coordinator, and received the secretariat of the Centre for Documentation and Humanitarian Studies. In addition, I chaired several research committees at different levels and membership, and I was one of the three commissioned by the Secretariat General of the Gulf Cooperation Council to establish the Gulf Geographical Society to be announced in 2001. I also became the Secretary of Publishing and Research, and was the Director of the first issues of its scientific journal.

What is Human Geography, and what motivated you to specialize in geography?

Human Geography is a branch of geography and one of the oldest Greek-based sciences. However, it has undergone a significant change in its intellectual research methods and interests, as well as in its specific tools of maps, aerial photographs, remote sensing, geographic information systems, and statistical packages that helped the geographical researcher reach his/her goals. One of the research objectives is to address the spatial problems of the geographical phenomena that they have defined and classified, especially humanity, and make them achieve a better life for humans by posing research problems that begin with the question of how it should be. Like how do we make the city near-perfect, where do we locate our factories and where we should run our trains, how do we preserve the environment around us? Therefore, geography has become, since the twentieth century, linked to planning and sustainable development, especially in the architecture of the Earth, as I prefer to call it as a science.

What are your most important research achievements in geography?

My research career started from the first year I joined the University with the first scientific seminar at the College of Humanities and Social Sciences titled "Characteristics of the Private Sector Industries in Qatar and Obstacles to Success." I presented the paper in the first scientific conference on behalf of the University at the UAE University. After that, I published a paper titled "Natural Increase and its Role in Addressing Population Dysfunction in the State of Qatar" in the Journal of Gulf and Arabian Peninsula Studies at Kuwait University. My research activity continued and I was able to publish about 30 research papers related to Qatar and the Gulf Countries in their geographical issues in various scientific publishing sources at Qatar University and other universities and specialized scientific societies. Recently, I published two papers: "The Reality and Prospects of Tourism Development in Qatar and "The Population Growth in the State of Qatar in 50 Years."

I published five books. The first book was about the "Industrial Development in Qatar and the Gulf in 1995." The last book was about "The Geography of the State of Qatar: Principles and Challenges" and "Tours, Looks and Whispers about the Development in Qatar and the Gulf."

I have attended local, regional and international scientific conferences, with research papers presented in various areas of my specialization in Human Geography. I will present a paper in the annual conference of the Society of American Geographers next April on the geographical dimensions of Qatar's first legislative elections.

Among my major achievements was the joint research work with my colleagues from the University (Dr. Mustafa Aqil, Ali Al-Kubaisi, Darwish Al-Emadi and Hassan Al-Ansari). We worked as a team to revise the Gulf Guide in its fourteen volumes, commissioned by the Amiri Diwan to prepare it for its third edition during the reign of HH the Father Amir Sheikh Hamad bin Khalifa, which has been accomplished.

How does geography serve the local and global community? (complished by Dr. Hassan Al-Ansari),'

As I mentioned earlier, geography is a science concerned with natural and human phenomena surrounding human life. Our inquiries have evolved in tracking these phenomena, from recognizing their characteristics and their variation from one land to another, and tracing their various negative

or positive, direct or indirect, and simple or complex relationships that they established. All these accumulations led the science of geography to adopt ideas through the theories produced by scientists in their attempt to link quantity with quality, and the various natural conditions with human beings, so that human life in its different environments becomes adaptive. In as much as the religious sciences seek to create a reassuring human psyche, and the science of medicine is concerned with protecting the human body, geography is looking at making its surroundings and spatial space smooth, with few productive, kinetic, and even social and political challenges.

As a researcher who possesses a variety of academic experience, how does a researcher and student achieve research excellence?

Let us start with the student as one day I was as such. We must help students as long as they are on their journey studying advanced courses. First, we should expose them to the basics of general research and then to the specialized research. At this stage of research, they will be assigned to work on some small individual or group research. The follow-up should be through guiding them step by step, and during the office hours.

The University's current efforts are highly valued as they focus on making students possess the research potential, vitality and passion for their skills in this regard. I believe that higher-ranking and experienced professors have to support their colleagues and participate to produce distinctive research. As such, research experiences accumulate and become endemic. Personally, I learned from my professors and worked on educating my students. I applied this approach, and this is clear in supervising my students and junior colleagues exposing them to the research process without delay.

Tell us about your role in research, literature-review, and academic supervision.

Throughout my long career, I have reviewed dozens of publications and research in the field, and collaborated with universities, scientific centers, publishing houses, appreciation and encouragement awards entities, editorial and promotional entities, whether in Qatar or elsewhere. The latest review was for applicants' literature presented to State award in Kuwait, Qatar University Press, and the Arab Center for Research and Policy Studies.

What are the main research challenges you have experienced?

As geography, researchers what hinders our

research work the most is the official data that we heavily need to establish research work before proceeding to the next steps of survey and other fieldwork. Other challenges relate to lecturing and teaching and absence of specialized research centers. Also social connections cause delay and disruption of research and not completing it on time. Add to that, the limitations of publishing entities and tools.

What is the role of Humanities in general and Human Geography in particular in achieving Qatar University Vision and QNV 2030?

We, the humanities scholars, have worked to support Qatar University vision. We abided by our vision that aims at building the human being and the Qatari society, developing learning outcomes and their scientific excellence. We were the initiators of developing our study plans and curricula, linking them to market requirements and strengthening them with relevant techniques to achieve the vision as in geography. Qatar Vision 2030 focuses on the elements of human geography in the development of human beings of their citizens and residents, the development of its productive and knowledge economy, sustainability, as well as the environment with all its components, including urbanism.

Our extensive research and literature tackled and addressed all of these issues. We are the people of geography and we believe in our role. For example, I was the national expert at the Permanent Population Committee in preparing the first national population policy in 2009, and humanities specialists have played this role at the university and community levels.

What are your research projects for the academic year 2022/2023?

I am working on two books: "Qatar: Land and Humans," which talks about a number of places and creative Qataris. The second book is about "Qatar's Future with a Geographical Vision." It analyzes Qatar's historical, natural, geographical, human, economic and political capabilities, which make its future bright, if exploited in a proper way. The real development of states is based on exploitation of their natural, human and value components.

I am currently working on completing my research projects such as: "Industrial zones in Qatar and their Developmental Role," "Qatari Citizens," and "The Evolution of the Geography of the Liquefied Gas Industry in the State of Qatar."

Researcher Business Card

Dr. Sophia, could you introduce yourself, and tell us about your specialized work at Qatar University?

I am a Research Associate Professor at the Environmental Science Center (ESC) at Qatar University. I am a scholar in the field of Environmental & Water Resources Engineering with about 60 publications in international peer-reviewed journals and conferences.

I have held leading positions in international professional organizations, including the International Solid Waste Association (Rotterdam, The Netherlands) and the Air and Waste Management Association (AWMA, Pittsburgh, USA). I served as senior expert and team leader for many international organizations including United State Environmental Protection Agency (USEPA), European Union (EU), United States Agency for International Development (USAID), United Nations Development Programme (UNDP), German Society for International Cooperation (GIZ) and Democracy Reporting International (DRI) among others.

What are your most notable research achievements that have been added to the field of Environmental and Water Resources Engineering?

I have developed novel technical designs and operational strategies to improve the recovery of clean energy, nutrients and water from solid and liquid wastes using the anaerobic digestion method. In addition, I studied the impact of climatic changes on water-related issues in urban areas including, increase in water consumption, deterioration in water quality, decrease in availability of water resources and implications on public health.

How does this major serve the environment in Qatar?

Qatar is one of the poorest countries in terms of water availability; yet, it has one of the highest water consumption rates in the world. In order to keep a sustainable balance of water supply and demand, we should look into non-conventional engineering ways to increase Qatar's water supply, restore the quality of the little water resources available in the country and, equally important, attempt to reduce the demand for water.

What are the means of cooperation between researchers and students in this field?

Environmental and water resources engineering is a multidisciplinary field to which students from all majors can contribute. Engineering and science students can excel in technical aspects; but also students from health, law, business, humanities, etc. can equally



Dr. Sophia Ghanimeh
Research Associate Professor,
Environmental Science Center -
Qatar University



excel by addressing environmental and water resources problems/solutions from different angles—that are by no means less valuable than technical aspects.

Tell us about your significant research goals for the academic year 2022-2023.

I am pursuing three research pathways. First, I will be addressing environmental and water resources issues that are of social and economic value for Qatar including, but not limited to contamination of the seawater with pollutants of emerging concern, and the threats imposed on the "Rawdat" of Qatar and the sustainable way forward. Secondly, I will be analyzing the water consumption in Qatar with the purpose of developing a model that can help policy makers limit the demand for water. Last, but not least, I will be looking at educational and social means to prepare the next generations in Qatar to accept food products irrigated with treated wastewater. This would alleviate the pressure created by agriculture on the natural water resources of the country.

Interview with Graduate Student:

Abdulmoeen Mohamed Altelfah,

PhD in Jurisprudence and its Foundations, College
of Sharia and Islamic Studies - Qatar University



The College of Sharia and Islamic Studies at Qatar University awarded the first doctorate degree in jurisprudence and its foundations to student, Abdulmoeen Mohamed Altelfah, for his thesis titled “The Shari’a Policy in Reforming the System of Governance and Contemporary Effects. Ibn Taymiyyah, Ibn al-Subki and Ibn Khaldoun as a Model, A Comparative Study.”

In this issue, we interview Abdulmoeen Mohamed Altelfah, to talk about his academic achievement and educational career.

Student Abdulmoeen, how would you present yourself to QU community?

I am Abdulmoeen Mohamed Altelfah, a researcher in the jurisprudence of Shari’a policy. I enrolled at Qatar University (QU) in 2013 for a Master’s degree in jurisprudence and its foundations. I discussed my thesis in 2015 titled: “Sheikh Ibn Uthaymeen’s Jurisprudential Choices: A Study in Method and Foundations.” Then I joined the doctoral program at the University in 2018, and defended my dissertation in 2022, titled: “The Shari’a Policy in Reforming the System of Governance and Contemporary Effects. Ibn Taymiyyah, Ibn al-Subki and Ibn Khaldoun as a Model: A Comparative Study.”

What motivated you to choose Jurisprudence and its Foundation?

Jurisprudence is the most important discipline in a Muslim’s life. A Muslim must know the provisions of halal and haram in his/her life, and the foundations are the tools that lead to achieving those provisions based on controls and prohibitive boundaries.

What does this academic achievement mean to you after obtaining the first PhD degree from the College of Shari’a?

First and foremost, I thank Allah for blessing me with the completion of this thesis, as Allah says: “SAY: “In Allah (God)’s bounty and mercy, therein let them rejoice...” (The Qur’an, Surah Yunus, Verse-58). There is no doubt that I feel proud to have obtained the first doctorate degree awarded by the College of Sharia at Qatar University.

Your dissertation included the Shari’a policy in reforming the system of governance and contemporary effects as a comparative study. Tell us about the most important results you came up with in your dissertation.

My dissertation is to study the reformist perspectives presented by these scholars to reform Al-Mamalik State’s ruling system. I have taken the most prominent institutions of the ruling system. It is a message that stands on the corruption that justified the presentation of these reformist perceptions. Therefore, one of the first findings was the corruption of important aspects of Al-Mamalik State’s ruling institutions, particularly Judicial and Al-Hesba Institutions, as well as showing that those jurists were not isolated from addressing



A photo during the doctoral dissertation discussion.

their problems with the ruling system. Among the results: was the development of a number of jurisprudence rules related to Shari’a policy, upon the request of Prof. Saleh Alzink, who was one of the discussants of the dissertation.

To what extent have you benefited from the academic guidance and supervision of your dissertation?

In fact, a PhD student differs from a Master’s student in terms of their academic knowledge and maturity; therefore, their need for guidance is lesser. The greatest work of my PhD dissertation was self-effort, yet I benefited greatly from my supervisor, Prof. Dr. Ahmed Raissouni. He opened up all channels of communication for me to ask and evaluate my thesis. We had several meetings and constant communications. I have also benefited from the advice and guidance of Prof. Ayman Saleh, the coordinator of the doctoral program at the College of Sharia. God bless them with all the best.

Students and researchers encounter some obstacles in research. What advice do you offer to QU students in this regard?

Firstly, I advise my fellow students not to involve themselves in choosing a title for their research or dissertation motivated by passion and enthusiasm. And once they start writing, they will be surprised that the title they chose is futile. Rather, they’d better consult the experienced professors and choose the appropriate title for their research and as such, they will save time and effort. After choosing a title, students must read intensively on the topic of the title to understand its dimensions. This stage requires patience and involves a long time. Then, the student begins to write and show his output to his supervisor. This is the easiest way to overcome research obstacles. I think that the most prominent reason that renders students face obstacles when writing research is the desire to write and complete the research in the shortest time before the idea of the research matures in their mind through reading and inquiry.

Finally, what did your PhD add to you on the professional level?

I think the most important benefit that I gained is the development of my research skills in Shari’a policy.

Graduate Student Business Card:

How do you introduce yourself to the University community?

I am Mahnoor, Master's student in Urban Planning and Design. I have completed my Bachelor's degree in Architecture from QU. As I wrapped up my Master's degree this year, I am eager to push the frontiers of knowledge through participating in research. I enjoy doing research, because it is truly exciting to be part of an adventure where my contribution matters and has the potential to change the face of the future. Despite being a mother of two kids, the seeds of ambition deeply rooted within me do not stop me from being career-oriented.

What motivated you to choose MSc in Urban Planning and Design program?

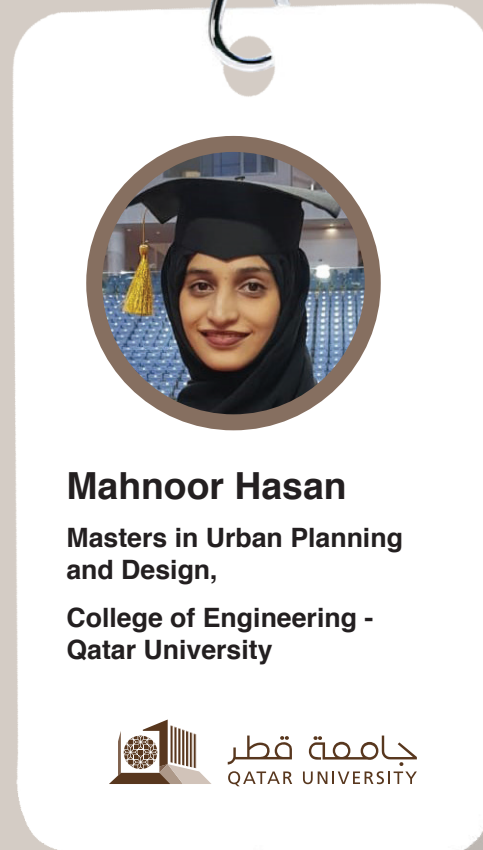
'Urban Planning and Design' is an in-demand field that promises a wide scope of employment. Post degree completion as a master's graduate in urban planning is highly likely to place you in great jobs with many career choices. As a lover of design, this major becomes a part of my personality and mirrors my passion.

What is the focus of your thesis in this field?

The focus of my thesis is the mobility aspect of a smart city. The thesis reviews frameworks for smart mobility assessment followed by assessing Msheireb Downtown Doha (MDD) using urban planning related indicators. It also explores urban design guidelines for the adoption of autonomous vehicles followed by implementing them in the existing urban design of Msheireb Downtown Doha (MDD).

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

My genuine advice to all students is to grab every research opportunity that comes their way from



the start of their academic journey to enhance their literary growth. One might be new and hesitant to this field at the start and might stress on focusing on academics rather than research, but at a long run, research not only boosts success in your career opportunities, but also encourages you to solve problems that crop up in life.

Mahnoor tell us about your ambitions, and what is next?

My passion for design compels me to take a step further ahead by expanding my knowledge either through pursuing a PhD Degree in Architecture or conducting researches that open up mindsets into imagining the future.

Interview with an Author:

Dr. Ahmad Haji Safar

This interview is about the translation of the book Geopolitics of Sport recently issued by Qatar University Press.





Dr. Ahmad Haji Safar

“Sports is not just physical activities. It is feelings, sentiments and has geopolitical aspects as well. At the international level, sports is considered a fundamental element in the prosperity of countries and the actors that are jostling in the international theatre. It is the exceptional weapon of soft power.” These were anthologies from the summary of the book “Geopolitics of Sport,” translated from French into Arabic, which is one of the latest publications of Qatar University Press. We will fathom the truth of this book in an interesting interview with its translator, Dr. Ahmad Haji Safar, Associate Professor of Linguistics and Arabic Language at the Department of Arabic Language–College of Arts and Sciences at Qatar University.

In the beginning, how would you make yourself known to the Qatar University Community, Dr. Ahmad?

I am Ahmad Haji Safar, a scholar who is always seeking more knowledge, and a researcher of Linguistics, Terminology, Semiotics and Translation. I always find myself in class among my students and in my office among the books. I probe the language and its secrets trying to find out an answer to the everlasting questions: What is language? How does it work? What is the connection between language and thought?

It was stated in the introduction of the book that “sports has geopolitical characteristics”. Please tell us about the theme of the book and what is the reason behind choosing this book to translate?

My translation of this book is a funny adventure made by destiny. I was invited to a lecture on “geopolitics and national strategies under globalization,” which was given by Boniface in the (HEC) Mesheireb. After the lecture, we engaged in a conversation. When I asked him if he would agree on translating it into Arabic, he was so excited and happy that I was motivated to adopt the project.

The neutralism of the author of the book and his reputation in the world of scientific research and political and strategic studies were the main factors that attracted and motivated me to translate the book. He scientifically discussed the pragmatism of Qatar’s policy and diplomacy and how Qatar uses soft power, particularly sports and invests in it. He presented the statistics and facts of the correct choices adopted by Qatar, which put it firmly in an important position on the international chessboard as an essential actor and indispensable partner even though that was a reason for the hate and envy of some tendentious parties.

The first chapter of the book is about sports as a new tool of soft power, how can that be?

In our world where political maps and polarization have changed, new powers have appeared and others have ceased to exist, countries are trying to establish their foothold in the geo-political map of the world.

Soft power is one of the new tools used by some countries that believe in the necessity of international peace and understanding, more than its belief in the clash of civilizations and the language of weapons. It is represented in many shapes and forms including sports.

From the point of view of the author, “Sports has become the main attracting source of power for many reasons including: deep structural changes of the balances of the geopolitical powers, globalization and the strong, amazing growth of public opinion, the new limits of the legality and lawfulness that restrict the use of power, the necessity of gaining popularity and establishing a wave of sympathy to move more freely in the sphere of the geopolitics.”⁽¹⁾

Sports which represents the spirit of fair competition, provides enjoyment and unifies people from far and wide on the principles of sharing, became an effective and direct way to reach the audience who now have a more significant place in the consideration of international decision-makers.

How is sports connected to globalization on one hand and to national identity on the other hand?

The positive definition of globalization is to be open to others while preserving the national identity and heritage characteristics. It is the literal application of the saying of Allah Almighty: (O mankind! We have created you from a male and a female, and made you into nations and tribes that you may know one another) {Al-Hujurat- verse 13}. Nowadays, sports have taken shape of international activities. Pascal

1 Sentences between speech marks are quoted from Pascal Boniface’s words.

Boniface sets a funny example of globalization represented in the Arab country Qatar, which bought “a French football team whose logo is the Eiffel Tower and entered into a contract with an Italian trainer who is able to direct a Swedish star of Balkan origin. In addition, Qatar brings an English star from the USA in order to invade the Asian markets.” For some people, this investment may seem useless, but for strategy engineers and policymakers it is considered a wise investment that has a greater yield than that of imposing oneself by force of arms or by military invasion.

In 1896 when the first Olympic Games were held in Athens, 285 athletes and amateurs (all males) from 13 countries took part and competed in only 9 sports. Today, each country sends an official delegation consisting of a number of male and female athletes who compete in games whose number is increasing day after day and are watched by more than one billion viewers.

Could you please tell us about “Qatar’s Sports diplomacy?”

This chapter explains the pillars of “Qatari Sports Diplomacy” in a documented, scientific manner, so I invite all the readers to read it carefully and consciously. Qatar has various investments in sports diplomacy including financial investment, media investment, geopolitical investment, developing sports nationally and sponsorship of many sports competitions or facilities.” This sports diplomacy has its own dimensions and goals and it is the outcome of careful planning. According to Pascal, “the Qataris have a long-term vision with regards to their national interests and the permanence of their investments.”

Qatari sports diplomacy is connected to the cultural, urban and diplomatic advancement that Qatar is witnessing. This sports diplomacy was able to make Qatar an essential international player in settling conflicts and crises in addition to spreading peace and calling for international cooperation in order to build a fairer civilization.

In your opinion what are the reasons behind the attacks against Qatar over hosting the FIFA World Cup 2022?

These systemized attacks were expected by specialists in politics and geopolitics from the first moment when Qatar won the bid to organize the FIFA World Cup, moreover, when Qatar established its credibility not only on its nomination but also on its acknowledged experience in the field of organizing major sports events. However, the western world is still thinking with the mentality of the arrogant strong man. The western world does not want to be

convinced that the countries which were colonized could build their glory far away from it.

One of the most important reasons behind the attacks against Qatar is that western countries “have lost the monopolization of power.” This geopolitical development extends also to international sports competitions. Many negative reactions to choosing Qatar from a large segment of the western elite are to a great extent due to the difficulty of truly understanding the results of globalization.

Islamophobia is another reason for this campaign against Qatar, and any other Arabic or Islamic country that adheres to its own principles and respects its heritage and foundations would have faced the same.

Based on your research and academic experience, what is your advice to the rising generation of Qatar University’s students?

I have always called for developing a translation policy for the country, since the country that leads translation makes the right culture for its citizens. Therefore, I advise my students to pay a lot of attention towards translation, and that a group of them should establish a cultural project in which they translate all that is new and useful from other languages, but translating the Qatari intellectual, artistic, literary and scientific production into other languages is more important. If others remain victims of the malicious and paid media, we cannot ask them to respect us. Translating the excellent Qatari works for the western and eastern readers to judge by themselves is one of the students’ assignments.

As your book was published by Qatar University Press, what do you think of the academic and social role of Press?

My appraisal of Qatar University Press is without a doubt more than positive, I convey friendly and sincere feelings for Qatar University Press and its personnel as well. Clear vision and strategy are the most remarkable features of the Press. They are evident in the quality of books published by them, the pursuit to enter into fruitful partnerships and its rapid growth. Qatar University Press has published books and encyclopedias that are considered essential enrichment of knowledge for students.

Due to the seminars held by Qatar University Press, its participation in book fairs and the quality of the books published by it, both in their form and content, I think that it is worthily qualified to occupy an important position in the market of publishing and distributing books at the Arab and international level.

QU Organizes Annual Research Forum & Exhibition 2022 under the Theme **“Research, Innovation, and Sustainability: Engaging Nations through Sports”**



Qatar University (QU) hosted its QU Annual Research Forum and Exhibition 2022, at the Research Complex, on Monday and Tuesday 3-4 October 2022, under the Gold Sponsorship of ExxonMobil Qatar, with the attendance of pioneer researchers, academics, and students. The forum witnessed the presence of H.E. Dr. Hassan bin Rashid Al-Derham, QU President, H.E. Mr. Salah bin Ghanim Al-Ali, Minister of Sports and Youth, Prof. Mariam Al-Maadeed, Vice President for Research and Graduate Studies, Sheikh Dr. Mohammed Al-Thani, Director of Public Health Department at the Ministry of Public Health, Omar Al Ansari, Secretary-General, Qatar Research, Development and Innovation (QRDI) and Mr. Jagir Baxi, Vice President of ExxonMobil Qatar and Qatar Ventures Manager. In addition, to the attendance of representatives from the industrial sector and the health sector. Also participating were QU students and attendees from the National Service Academy, as well as high school students sponsored by the Qatar University Young Scientists Center (QUYSC). Over 400 dignitaries and students attended this event, indicating its significance.



QU President, Minister of Sports and Youth, and State Dignitaries attending the activities of the QU's Annual Research Forum and Exhibition.

During this year's forum, the topic was "Research, Innovation, and Sustainability: Engaging Nations through Sports." Highlighting that Qatar will host the FIFA World Cup by the end of this year, which makes the year 2022 a particularly inspiring one for the State of Qatar. Research and innovation advances are important aspects of the Forum this year, alongside sustainability issues related to the post World Cup period and optimizing the health and wellbeing of the community.

The Forum commenced with the opening ceremony of the Research Exhibition by H.E. Sheikh Salah bin Ghanim Al-Ali, Minister of Sports and Youth, and dignitaries from Qatar and the University. The exhibition aimed to highlight QU's research innovations and projects and demonstrate the mechanism of QU to address community challenges through research, including a new special section related to FIFA, displaying prominent inventions, innovations, and projects in relation to the World Cup 2022. Approximately 250 posters were presented under various fields, including science and engineering, information technology and communications, medical and health sciences, and humanities and social sciences.

H.E. Dr. Hassan Al-Derham, QU President, emphasized the importance of organizing this forum on schedule and role of Qatar University in continuing its successful path to implementing its strategic plan and meeting national priorities, achieving major milestones that made it one of the most important regional and international universities. He also mentioned that the University has incorporated sports into its programs, courses, and institutions; and has supported research and projects, made available all the requirements, and constructed the best facilities and infrastructure. It also developed cooperation with relevant organizations, contributing to local and international sports activities. QU is still striving for more, and is

optimistic about the establishment of the QU Sports Association.

In the opening ceremony of the Forum, Prof. Mariam Al-Maadeed, Vice President for Research and Graduate Studies at QU, presented an overview of the research and graduate studies activities that brought together research achievements of QU colleges and research centers, praising the progress of scientific research at the University.

Awards were distributed for Research Excellence, QU Innovation Award, Research Poster Awards and Visualization Challenge Awards during the first day's program. There were three panel discussions revolving around the theme of the forum. The first panel discussion titled "Research & Innovation for Sports and beyond" witnessed the participation of representatives from the Ministry of Public Health, Supreme Committee for Delivery & Legacy, and Colleges of Business and Economics and Engineering in Qatar University. "Sustainability Strategy: Models from Industry and Sports", the second panel discussion was held with four guests from the Ministry of Environment and Climate Change, Anti-Doping Lab Qatar, ExxonMobil Qatar, and College of Education in Qatar University. As for the third and last panel discussion of day one, "Legacy in Sustainability and Energy" included the participation of representatives from National Committee for the Prohibition of Weapons, QAFCO, College of Education (QU) and College of Health Sciences (QU).

In the midst of the second and third panel discussion the signing of the joint PhD program agreement between Qatar University and the Royal College of Surgeons of Ireland (RCSI). This agreement aims to activate the dual doctoral program between the two universities. By providing exceptional training for talented early career researchers in healthcare-focused research programs and give them the



His Excellency Mr. Salah bin Ghanim Al-Ali, Minister of Sports and Youth, during the opening of the Research Exhibition on the sideline of the Research Forum.

chance to widen their horizons and experience research by some of the best research groups on both sides.

On the second day of the Forum, Dr. Nasser Al-Nuaimi, Assistant Vice President for Research and Graduate Studies began with a welcoming speech for the attendees. Following the speech, a signing ceremony was held for an industrial application agreement between Qatar University and the Brazilian Company “Blue Reef”. The signing encompassed the licensing of the Mushroom Forest Artificial Reef, a Qatari solution, which is a technology designed, developed, patented and validated within the research facilities at Qatar University. This patent owned by Qatar University and registered in at the Environmental Sciences Center will be used for restoring the marine resources on the coasts of Brazil, for reviving marine life on those beaches.

The second day also included three informative sessions. The first session held by QU Press, addressed several topics, including sports law, the geopolitics of sports, the role of the Ministry of Culture in shaping the image of the State during the preparation for the World Cup, the constitutional identity of the State of Qatar and its implications for hosting FIFA World Cup 2022. The second session held by the Gold Sponsor ExxonMobil Qatar, titled “Application of Nanoparticles and



Part of the Research Exhibition on the sideline of the Forum.

Algae Technology in Industrial Wastewater Treatment and Reuse.” It illustrated the activities provided, training and transfer of knowledge from the community to academia and vice versa. These seminars addressed focused research areas and enhanced Qatar University students’ knowledge and awareness about these strategic topics. The third and final session was an IOS accreditation session, in which a panel discussion was held and certificates for obtaining the renewal of international accreditation for laboratories were handed out to the Research Centers and College of Engineering. The second day of the Forum ended by the distribution of the Graduate Awards.

The QU’s Annual Research Forum and Exhibition 2022 concludes by stating the close relationship between academic endeavors and sport, are no longer viewed as entertainment but rather as an industry for research and innovation. With a lasting impact that cuts across boundaries, creates opportunities for advancement and collaboration, and benefits both the present and the future for both our generation and those to follow. The President and General Manager for ExxonMobil Qatar, Dominic Genetti, aforementioned, his thanks to QU for hosting the forum, which combines experience and research in addressing some pressing issues related to environmental management and sustainability.



One of the discussion sessions of the Forum.

Podcast with Sir Fraser Stoddart Nobel Prize Laureate and Professor Mariam Al Maadeed

The Research Wednesday Series is a series of biweekly episodes focusing on progressive research and innovation. The Engagement and Communication office at Vice President for Research and Graduate Studies Office in Qatar University (QU) organizes these episodes that highlight published scientific research, human and social research, inventions and innovations, local and global issues. It also includes discussion on research achievements, student's research and activities at QU, and the outcome of various research grants. The episodes are broadcasted on three platforms varying in WebEx research seminars, Instagram live interviews and various research discussions on the Qatar University Research Podcast.

The first episode of Season 3 featured the Noble Prize laureate, Sir Fraser Stoddart, Professor of Chemistry in Northwestern University, and Prof. Mariam Al Maadeed, the Vice President of Research and Graduate Studies and Professor of Materials Science and Nanotechnology at Qatar University. The topic of this episode was Nanotechnology, which is the manipulation of matter on a near-atomic scale to produce new structures, materials, and devices.

Both guests shed light on the meaning of Nanotechnology, how and when it started in the Gulf region and more specifically in Qatar University, and how Nanotechnology is interesting. On that note, Prof. Mariam Al Maadeed said, "Nanotechnology is the core of the industry's fourth generation; this includes smart manufacturing and internet of things (IOT), as well as many more things. Thinking creatively is especially important and that's what we see in our students."

This episode highlights the journey of Sir Fraser Stoddart and Professor Mariam Al Maadeed in their passion towards science and how they achieved their accomplishments. The episode also encourages our young scientists to pursue their passion in materials science, be it in physics,



Research podcast episode with Sir Fraser Stoddart, Nobel Prize winner, and Professor Mariam Al-Maadeed, Vice President for Research and Graduate Studies, moderated by Mr. Chaker Ayadi.

chemistry, biology, or engineering. Sir Fraser Stoddart mentioned that, "one of the important types of motivation for scientists are the grants they receive for their research." He also pointed out that, "by giving the undergraduate students a part in the research work, the students will be prepared for further research in their Graduate studies." To that Prof. Mariam Al Maadeed, added that, "in Qatar University the undergraduate and graduate students are offered several types of grants to assist them with their research."

It is worth mentioning that graduate students in QU have a wide selection of grants, locally and internationally. One of the prominent is the International Research Collaboration Co-Fund (IRCC).

Concluding the podcast Sir Fraser Stoddart stated, "I have met more than 400 students in Qatar and witnessed the enthusiasm and passion these young people showed for science. It is inspiring, exceptional and convey minds that will have a great impact in the future. In fact, I would go as far as to say it exceeds what I normally would expect to see in North America or in Europe."

To listen to the podcasts episode "Nano Research and Its Future Prospect" please click on the link below:

<https://soundcloud.com/qu-research>

QU Hosts Second Edition of the National 3MT Competition 2022 with participation of Higher Education Institutes



الوطنية

NATIONAL

3MT
THREE
MINUTE
THESIS
FOUNDED BY THE UNIVERSITY OF QUEENSLAND



A remembrance photo of the 3MT National Competition winning students, with Prof. Mariam Al-Maadeed, Vice President for Research and Graduate Studies, and Mr. Todd Creeger, President of ConocoPhillips, and the competition organizers.

Qatar University organized the National Three-Minute Thesis (3MT) Competition 2022, which is an academic competition that challenges Masters and PhD students to present their research within three minutes to a non-specialist audience.

This competition highlights the discoveries made by graduate students and motivates them to educate the public about the significance of their research. The event presents a distinctive opportunity to recognize Qatar's graduate students and promote various options for graduate studies in Qatar.

Qatar University has successfully conducted this event annually over the past 8 years at university level. For the second consecutive year, QU took the competition to a national level. The following higher education institutes based in Qatar offering thesis-based graduate programs participated: Qatar University, Doha Institute for Graduate Studies, Hamad Bin Khalifa University, Al Rayyan International University College, Texas A&M University at Qatar, Oryx Universal College with Liverpool John Moores University, and Qatar Finance and Business Academy–North Umbria University.

Qatar University is always content to work alongside educational institutions to accomplish one goal, which is to achieve the Qatar National Vision 2030. Dr. Hassan bin Rashid Al-Derham, President of Qatar University confirmed that–“Through the creation of scientific facilities and the growth of graduate programs, Qatar University has worked to build a solid infrastructure and increase the scope of its research. In the University, the culture of scientific inquiry has permeated deeply, and Qatar University is fast catching with this trend. This competition is intended to explore and draw eminent students from Research and Graduate Studies, to recognize their potential, and to enhance their inductive skills as QU partners in Qatar.

To work for developing solutions to the problems we face here in Qatar.” Concluding, Dr. Hassan thanked all the organizers of this competition in the Research and Graduate Studies sector, as well as the official sponsor of this competition, ConocoPhillips, Qatar. He also expressed his gratitude to all of the judges and to everyone who participated in the organization and success of the event in Qatar.

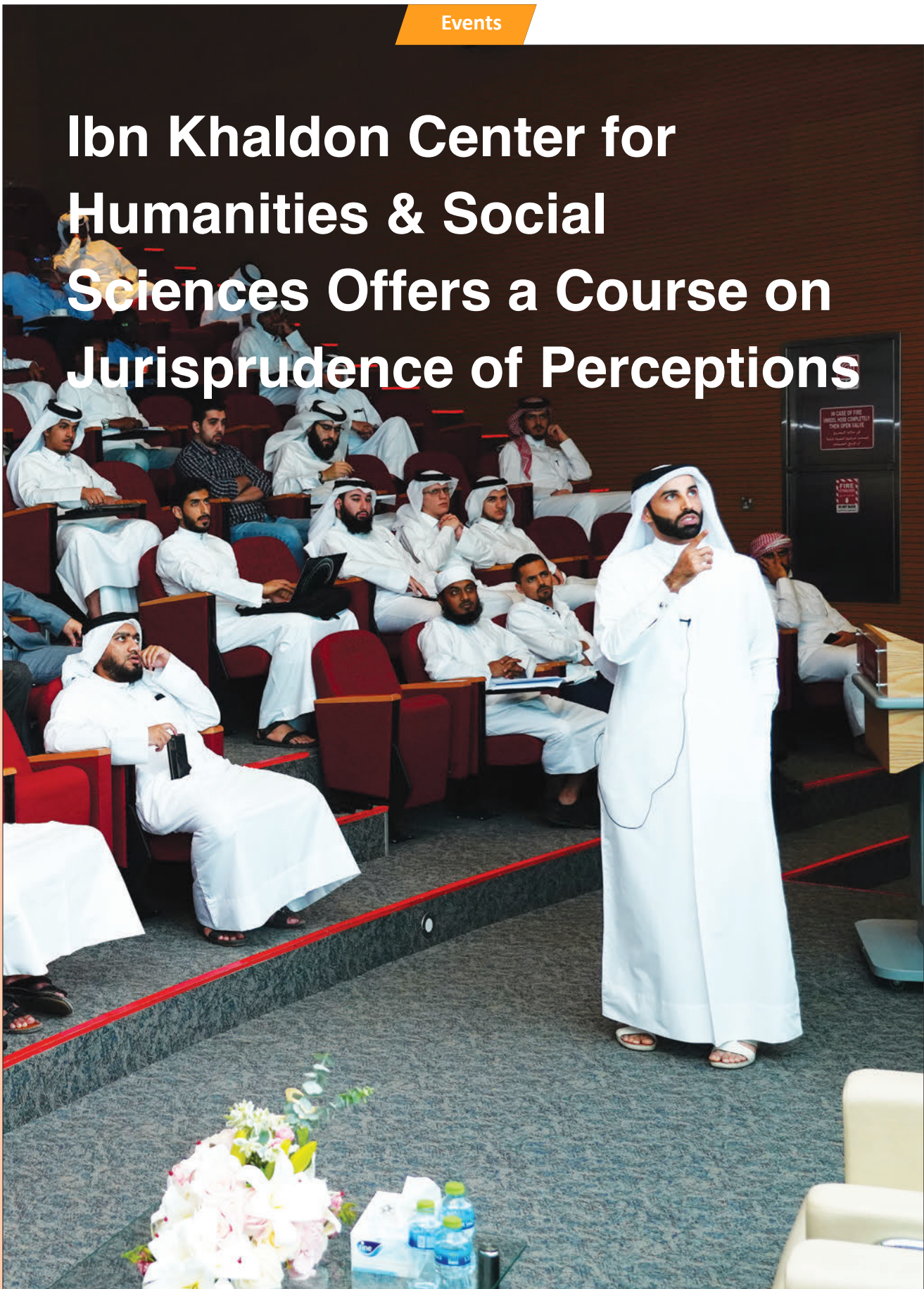
Mr. Todd Creeger, President of ConocoPhillips Qatar, added, “ConocoPhillips Qatar is a proud partner of the University and the 3MT initiative. This competition is distinct, since it brings together students from different postgraduate universities in Qatar to share their findings within the academic community. It is at events like these that we witness the fruit of Qatar's support for higher education and the hard work of staff and faculty at institutes like Qatar University.”

The judges panel for this year's national competition consisted of Dr. Abdullatif Al Khal, Deputy Chief Medical Officer and Director of the Department of Medical Education at Hamad Medical Corporation (HMC), Dr. Samer Adham, Managing Director of the ConocoPhillips Global Water Sustainability Center, Ebtessam Al-Mannai, Executive Director of Finance at Qatar Investment Authority, and Hanan Al-Emadi, Program Presenter at Qatar TV.

Zurwa Khan from Texas A&M University at Qatar took the first place, while second place went to Jack Altwal of Texas A&M University at Qatar. Third place was awarded to Arwa Aldaalis from Hamad Bin Khalifa University, and the People's Choice Award was presented to Arij Fouzat Hassan from Qatar University.

The 3MT competition was originally established by the University of Queensland in 2008. Qatar University previously organized its own version of the competition since 2015, before launching the National 3MT Competition in 2021.

Ibn Khaldon Center for Humanities & Social Sciences Offers a Course on Jurisprudence of Perceptions



Dr. Nayef bin Nahar, Director of Ibn Khaldun Center for Humanities and Social Sciences, held on September, 25, 2022 a course entitled “Jurisprudence of Perceptions”, where he discussed the issue of perceptions being the overall convictions that generate beliefs and practices. The activity addressed many topics including the making of human perceptions and their impact on belief and conduct, how awareness is made, corrected and falsified, the relation between perceptions and the terminology on one hand, and with the awareness on the other, and the Qur’anic method in shaping and correcting perceptions.

Dr. Nayef began his speech by explaining the importance of perceptions as the source of beliefs and practices. He said, “these perceptions are the roots of the outcomes of belief and behavior, which make them the gateway to human change. The importance of such perceptions has increased for being the basis on which values are built. Therefore, each value has a certain concept behind it, and understanding a certain value system requires understanding the concepts on which it is built. Thus, the correction of values is carried out only by correcting perceptions.” Then Dr. Nayef moved from the importance of perception to its source, as the person acquires perceptions from multiple sources, such as family, friends, assemblies, authority, social media, language, contact with other cultures, and so on.

Whatever the source of perceptions, the relationship between them and the terms is a close one as the term is the mirror of perception. In addition, these terms either reveal perceptions, or make them, and based on that, Dr. Nayef distinguishes between the revealing terms and making terms. The first is useful in knowing the perceptions as they are in society, while the second is useful in replacing the perceptions that should be in the society. If the revealing terms are an appropriate tool for understanding society and identifying the origin of the imbalance in belief and behavior, then the concept of making terms is the best tool to correct the problematic areas and fix them.

Dr. Nayef pointed out an important observation that the concept of making terms, just as it can be used to correct consciousness, it may be used to falsify consciousness as well. From this point, the conversation branched out about the relationship between the term and consciousness, which is an interrelated relationship, as the term contributes to building human consciousness, whereas consciousness contributes to the creation of the terms it uses. Awareness in its simplest form is attention. Attention to perception may be associated with attention to its correctness or corruption, and attention may be limited to perception without paying attention to its correctness or corruption; the first is true consciousness while the second is false. Nevertheless, if there is a lack of attention towards

perception and towards its correctness or corruption, then it is unconsciousness.

From intellectual theorizing to practical framing, Dr. Nayef devoted a part of his talk to the dominance of the modernist perception on various social, political, economic and religious fields; showing the distance between it and the rational perception, which Islam calls for in the same fields. The most prominent example he cited of the dominant modernist perceptions in the field of politics is that politics is based on findings. The criterion of the validity of a political act according to the modernist conception is the outcome regardless of how it is reached, which contradicts the rational perception that rejects the rupture of morality even in the field of politics, since politics according to the rational perception is based on doing justice.

Dr. Nayef also talked extensively about the Qur’an’s method in shaping the perceptions. He cited examples from the Quranic discourse in which correcting perception was an input to commissioning, such as commissioning of spending. Spending came with the correct perception of man’s relationship with money, because money is not the property of man, but it is the property of Allah, and man is only an heir therein, which makes commissioning consistent with the perception in the words of the Almighty; {and spend of that which He made you heirs therein} surah Al-Hadid Verse 7 (57:7 Quran). The shaping of perceptions in the Qur’an includes all areas of interest to the man in his wellbeing and the wellbeing of society. Dr. Nayef has detailed Quranic discourse interest in correcting the doctrinal, social, political, and even historical perceptions. In addition, the coverage of Quranic perceptions extends to correcting perceptions about the method of verifying ideas. The criterion of the validity of an idea is not measured by the number or the status of those who hold it, or on the length of its life span, but as cited in the Quranic discourse and that is the ultimate proof only.



Dr. Nayef Nahar H A Al-Shamari, Director of the Ibn Khaldun Center for Humanities and Social Sciences.

Gulf Studies Center hosts 7th Annual Conference titled:

“The FIFA 2022 World Cup in Qatar: Looking into Global Local Perspectives”



Opening speech of His Excellency Dr. Hassan bin Rashid Al Derham, President of Qatar University.

On 19-20 September 2022, the Gulf Studies Center hosted its 7th annual conference at the auditorium of the Research Complex at Qatar University. The international conference offered a much-needed opportunity to debate the multifaceted impact of the 2022 FIFA World Cup on Qatar, the Gulf region, the Middle East, and the globe. The conference welcomed 28 experts from 15 countries specialized in politics, sociology, and economics, among others. The key subjects of the conference included the following:

- History of Qatar’s Decision to Host FIFA World Cup 2022: Motivations and Expectations.
- Multifaceted Domestic Challenges of Hosting the FIFA World Cup 2022: Infrastructural, Socio-cultural, and Political Dimensions.
- The geopolitics and power dynamics around the FIFA 2022 World Cup: Regional and Global Dimensions.
- Globalization vs Localization: FIFA World Cup 2022 social, economic and cultural impact on the MENA region and beyond.

On Day 1, the conference commenced with the opening remarks of Dr. Hassan Rashid Al-Derham, President of Qatar University, and Prof. Mahjoob Zweiri, Director of the Gulf Studies Center, followed by the keynote speech by Dr. Simon Rofe of the University of Leeds with the title of “Sports Diplomacy and the FIFA Men’s World Cup Qatar 2022.

The first panel focused on “The Geopolitics and Power Dynamics around the FIFA 2022 World Cup: Regional and Global Dimensions.” Dr. James Dorsey discussed the steps Qatar could take in the post-World Cup period. Dr. Ghoncheh Tazmini spoke about the impact of the 2022 FIFA World Cup on Iran, underlining that the World Cup in Qatar has been a catalyst for change in the world of Iranian society, and a possible opportunity for cultural exchange & diplomacy. Thomas Bonnie James & Sarah Al-Nuaimi, Gulf Studies Program Ph.D. candidates, examined the utilization of sports diplomacy as a tool by Qatar to carve a distinctive identity in the GCC region, touching upon the importance of such events in reinforcing national identity.

The second panel looked at the “Multifaceted Domestic Challenges of Hosting the FIFA World Cup 2022: Infrastructural, Socio-cultural, Political, and Media Dimensions.” Dr. Thomas Ross Griffin talked about an interesting aspect of the Qatar-Football nexus with a presentation titled “Qatar in Paris: Paris St-Germain, Cosmopolitanism, and National Identity Performance Post-2022.”

On Day 2, Prof. Richard Giulianotti, UNESCO Chair in Sport, Physical Activity and Education



Prof. Mahjoob Zweiri, Director of the Gulf Studies Center.

for Development, delivered his keynote speech, where he explored where Qatar 2022 sits concerning key transnational processes: globalization, glocalization and cosmopolitanism. Prof. Youcef Bouandel and Thomas Bonnie James then spoke on the human rights dimension of the FIFA 2022 World Cup, exploring whether it can be a “catalyst for change.” They touched upon the impact of Qatar’s soft power and image rebranding for the World Cup. Dr. Magdalena Karolak assessed the framing of FIFA World Cup 2022 by the English press in the UAE, arguing that the coverage focused on “Go to Qatar” and the benefits that could be obtained from this event.

The Gulf Studies Center and the conference significantly contributed to adding multifaceted scholarly knowledge to the ongoing debates on the FIFA World Cup Qatar 2022 that are often limited to the technical, organizational, and sports diplomacy domains.

A book, that will be covering all topics and issues presented by the speakers, will be published by a renowned international publisher that will be announced in due course.

Qatar University Organizes Workshop under the Academic Network for Development Dialogue (ANDD)



A remembrance photo of the participants from the member universities in the Academic Network for Development Dialogue in the workshop organized by Qatar University in cooperation with ESCWA.

For the first time since the year 2020 the activities of the Academic Network for Development Dialogue (ANDD) was held physically in Qatar University (QU) over a two-day hybrid workshop in partnership with the United Nations Economic and Social Commission for Western Asia (ESCWA) in the Research Complex (H10) on the 5th and 6th of September 2022. The workshop witnessed the physical participation of representative from different countries such as Lebanon, Palestine, Algeria, Egypt, Holland, and Qatar.

The “Paper Series Perfection and Scientific Writing Workshop” was organized to encourage structured dialogue over the current challenges in the Arab region, in which selected writers of the research papers participated to present their ideas and proposed solutions to achieve sustainability in the region.

The paper series initiative launched by the Academic Network for Development Dialogue (ANDD) originally seeks to bring together students, researchers, and UN staff, under the guidance of experts in the field, to discuss different aspects of this topic.

The workshop started with an opening speech by Prof. Mariam Al-Maadeed, the Vice President for Research and Graduate Studies at QU in which she stated that, “this program seeks to enhance cooperation between the UN and the academic community, in the universities that are members of the ANDD, which aims to support students and young researchers to produce influential research that contributes to the socioeconomic and sustainable development of the region. The workshop also gives younger generation the opportunity to improve the quality of their research, develop their knowledge, research methods, and

build their professional identity, in addition to building their self-confidence, enhance their ability to make decisions, and being prepared for development dialogue.”

This was followed by opening remarks from Mr. Stian Holen, Chief of Strategy, Planning, Accountability, Results, and Knowledge Section saying, “this series of papers that we are discussing aims to capture the thoughts of the young generation on what they see as similar in the Arab region and how these similarities can drive forward sustainable development. We have seen a great deal of interest. There were 62 initial submissions, not only from the Arab region but also beyond. We need mechanisms that systematically allow for academic work to feed into the various development processes to change policy that in turn will change lives for the better.”

The Qatar University Press team also presented a session by the title “Reviewer: Master Class in Publishing.” This workshop included different topics such as writing for journals, finding the appropriate journal, preparing an article for submission, peer-review process, and revisions and resubmits. Other sessions on “Ethical Considerations”, “Thinking Policy Impact,” and “Citations Management” followed, presented by experts who are members of the ANDD. Subsequently, nine different research papers were discussed and reviewed by different experts that were attending the workshop physically and virtually from QU, ESCWA and other ANDD members.

By the end of the workshops, a wrap-up session, including discussions and lessons learnt was conducted to review all that was discussed in the past two days.

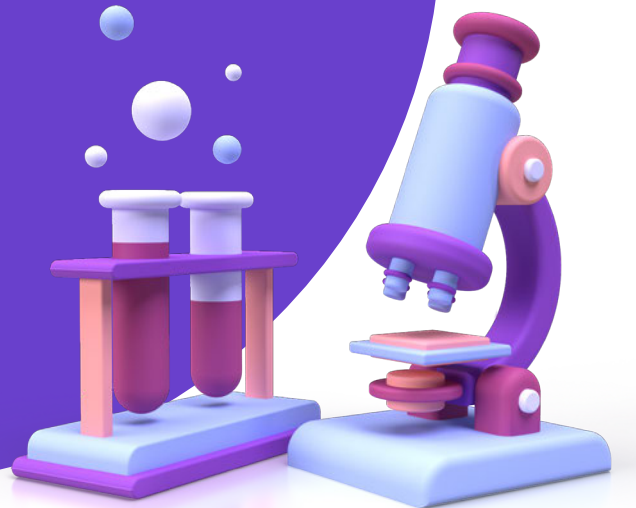
Special coverage

Multi-Track Summer Research Internship 2022 Program Held at Qatar University

Prof. Noora Jabor Al-Thani, Director of Qatar University Young Scientists Center (QUYSC),

Dr. Zubair Ahmad, Section Head of Module Development and Publication, Qatar University Young Scientists Center - Qatar University

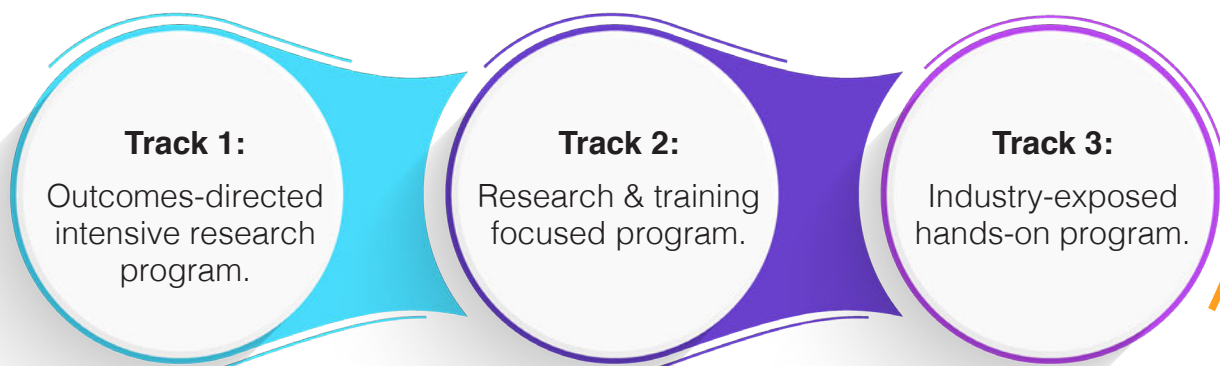
At Qatar University, the program for research internships has been practiced from 2019. This program aims to support students in the development of their scientific, technological, and communication abilities in addition to research-oriented professional expertise, acting as a pipeline to deliver valuable talent into the scientific, technical, and research domains.



The fourth cycle of the program for research internships was offered this year by the Qatar University Young Scientists Center (QUYSC). With its excellent reputation for mentoring students, QUYSC provided a novel idea for fostering competency development and job preparation through various research tracks. Two of Qatar's prominent industry pioneers, Qatar Petrochemical Company (QAPCO) and ExxonMobil Qatar, also participated in the research internship program this year.

This year about 274 students participated in the program signing up for 24 diverse research projects. Eight research centers served as the hosts of these projects, namely: Environmental Science Center (ESC), Centre for Advanced Materials (CAM), Laboratory Animal Research Centre (LARC), Central Laboratories Unit (CLU), Biomedical Research Centre (BRC), Qatar University Young Scientists Centre (QUYSC), Center for Sustainable Development (CSD), and Social and Economic Survey Research Institute (SESRI). In addition, the program was successfully completed by four QU colleges, including the College of Dental Medicine, the College of Engineering, the College of Arts & Science, and the College of Education. Furthermore, QAPCO and ExxonMobil Qatar's participation provided the students with extensive industrial exposure and cutting-edge training.

The four-week internship program, which ran from May 29 to June 23, 2022, was conducted in three tracks:



The outcomes-directed intense research track and the industry-exposed hands-on program track were the two main highlights of this year's summer internship program. While the latter provided national undergraduate students an exclusive opportunity to be mentored by prominent companies, the former was designed to provide a thorough understanding of research methodology and generate tangible outcomes. The outcomes-directed research track was inspired and developed in concordance with the Fifth Youth Research Forum 2023 in its theme of "Higher Education Institutions and their Role in Achieving Sustainable Development Goals," aligned with the United Nations Sustainability Development Goal (UN-SDG) 4–Quality Education. Implemented to ensure excellence in training and skill development, the initiative welcomed academic



Center for Sustainable Development (CSD).

members eager to involve students in outcomes-directed research with focused Technology Readiness Levels (TRL) and Societal Readiness Levels (SRL) to host Science, Technology, Engineering, and Mathematics (STEM) integrated transdisciplinary projects. In addition, all the projects are aligned with the UN-SDGs, including affordable & clean energy, good health & well-being, industry, innovation & infrastructure, clean water & sanitation, responsible consumption & production, and sustainable cities & communities. The projects were also in line with the research pillars of Qatar University–Energy and Environment, Health and Biomedical Sciences, Information and Communication Technology, and Social Sciences and Humanities.

To fulfill the outcomes of track 1, students completed a required research methodology course, followed by firsthand research projects and follow-up sessions. The research methodology course consisted of several lecture sessions followed by hands-on experience. These sessions include:



Environmental Science Center (ESC).

“

“The program organizes projects that offer contemporary, valuable and significant contributions to the sustainable development of the nation thereby encouraging students to pursue diverse opportunities to balance their academic coursework, in parallel articulate and reflect their knowledge, skills & attitudes to employers and graduate schools alike.”

Prof. Noora Al-Thani,
Director of QUYS



Method of identifying research problems and framing research questions.

1

2

Conducting a systematic literature review using Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA).

Data collection techniques and instruments used in research.

3

4

Data analysis methods and data conversion techniques.

Introduction to data analysis software for statistical analyses.

5

6

Introduction to data analysis software for meta-analyses.

Keys to writing a scientific research article.

7

8

Preparing and presenting scientific research posters.

QU Library resources and reference management tools.

9

Sessions were conducted by experts in the field from the University, including Dr. Zubair Ahmad, Section Head of Module Development and Publication from QUYSC, Dr. Jolly Bhadra, Senior Module Development and Publication Specialist from QUYSC, Dr. Elmogiera Elawad, Section Head of Field Operations from SESRI, and Mr. Abdalhakim Bshawi, Acting Head of Research and Instruction Section from Qatar University Library .

Opening Ceremony

At the inaugural ceremony of the internship, The Vice President for Research & Graduate Studies, Prof. Mariam Al-Maadeed, emphasizing the scope of the projects, said, “Summer Research Internship Program 2022 offers projects that provide the theory to application, hands-on experience, and strategic counseling, which nurture students into transformational leaders as well as acknowledging the significance of sustainable development in paving the future.”

In a press release, Prof. Noora Al-Thani, Director of QUYSC implicated the impact of the Summer Research Internship 2022 stating that “the program organizes projects that offer contemporary, valuable and significant contributions to the sustainable development of the nation thereby encouraging students to pursue diverse opportunities to balance their academic coursework, in parallel articulate and reflect their knowledge, skills & attitudes to employers and graduate schools alike.”

Tangible Outcomes

The sessions proved beneficial for students in helping them gain a basic understanding of research methodology and providing them with stepwise guidance to produce tangible outcomes from their internship.

By the end of the training, students demonstrated their capability to present the findings of their internship project in the form of publications at scientific conferences and journals. Presently, 15 such scientific results from various projects have been submitted for possible publication in the Fifth Youth Research Forum 2023. Moreover, the internship teams are currently working on five research publications to be submitted to reputed international journals.

The internship projects covered research pillars of the University, aligned with the nation’s needs and priorities of the Qatar National Vision 2030. These projects constituted of the following:



College of Dental Medicine.



Social and Economic Survey Research Institute (SESRI).



❖ Track 1 – Outcomes-directed Intensive research program (12 Projects)

- Qatar University Young Scientists Center (QUYSC), 4 projects mentored by Dr. Zubair Ahmad, and Dr. Jolly Bhadra.
- Center For Advanced Materials (CAM), 1 project mentored by Dr. Abdul Shakoor.
- Environmental Science Center (ESC), 1 project mentored by Dr. Imran Shahid.
- College of Arts & Science (CAS), 1 project mentored by Dr. Sherine Menshawy.



Laboratory Animal Research Center (LARC).

- Social and Economic Survey Research Institute (SESRI), 1 project mentored by Dr. Elmogiera Elawad.
- College of Dental Medicine (CDM), 2 projects mentored by Prof. Faleh Marino and Dr. Sadeq Al-Maweri.
- College of Education, 1 project mentored by Prof. Hiba Naccache.
- College of Engineering, 1 project mentored by Dr. Muhammad Salman Khan.



Biomedical Research Center (BRC).

❖ Track 2 - Research and training focused (10 projects)

- Center For Advanced Materials (CAM), 3 projects mentored by Dr. Peter Kasak, Dr. Abdul Shakoor, and Dr. Mohammad K. Hassan.
- Laboratory Animal Research Center (LARC), 1 project mentored by Dr. Muralitharan Shanmugakonar.
- Central Laboratories Unit (CLU), 1 project mentored by Dr. Mohammad Ibrahim.
- Environmental Science Center (ESC), 1 project mentored by Dr. Hassan Mustafa Hassan.
- Biomedical Research Center (BRC), 1 project mentored by Dr. Layla Jedea Al-Mansoori.
- Center for Sustainable Development, 2 projects mentored by Dr. Probir Das and Dr. Imen Saadaoui.
- Social and Economic Survey Research Institute (SESRI), 1 project mentored by Prof. Kaltham Al Ghanim.

❖ Track 3 - External Projects (2 projects)

- QAPCO Internship Program.
- ExxonMobil Internship Program.

Overall, the Summer Research Internship 2022, in line with Qatar University Strategy (2018-2022), proved to assist the state's orientation for a knowledge-based economy and was successful in training students about the methods and strategies in scientific research, as well as advancing the students' research capabilities.



Student Feedback

Students participating in the internship were delighted with the program. Specifically, the novel concept of an outcomes-directed intensive research program was substantiated by fostering students with a deep understanding of research methodology and enhanced research competencies. The feedback from a few students is quoted here:

“the internship gave me the ability to do most of the experimental steps.”

Ahmed Faiz Gadalla - College of Engineering
interning in Track 2 stated

“The internship sessions were informative and beneficial, which were represented by the best experts.”

Dana Ali Dajran - College of Arts and Sciences
interning in Track 1 stated

“the internship was an exceptionally high-quality training for research, to begin with. I got a lot of knowledge from the training with its new research approach.”

Mohamed Ali Al-Muhannadi - College
Engineering interning in Track 1 stated

“getting to know the theoretical part and then actually applying what we have learned experimentally was most satisfying.”

Haneen Khaled Hunaiti - College of
Pharmacy interning in Track 2 stated



Center for Advanced Materials (CAM).



Central Laboratories Unit (CLU).

“getting to step into a working environment and researching in labs was most interesting.”

Mohammad Saad - College of Engineering interning in Track 1 stated

“getting to learn how to do a systematic review and choose scientific papers based on the eligibility criteria was most satisfying about the internship experience.”

Reem Ahmed Elsafty - College of Dental Medicine interning in Track 1 stated

“I have learned a lot of things that would help me for my senior project and which I did not know before taking this internship.”

Alshayma Nasser Al-Thani - College of Arts and Sciences interning in Track 1 stated

“the most assuring part of the internship was gaining the knowledge and skills to start writing a research paper and also trying something new which is doing a scientific poster.”

Ayah El-Zaini - College of Dental Medicine interning in Track 1 stated

