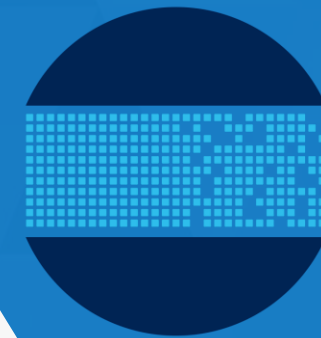




جامعة خليفة  
Khalifa University

# Introducing a 'Research Impact Roadmap' in a Young University – Challenges and Opportunities

Roopa Rajashekar (PhD)  
Research Impact and Metric Senior Specialist  
Khalifa University  
Abu Dhabi, United Arab Emirates



2024  
**Research  
Analytics  
Summit**  
Building Capacity, Empowering Skill Transfer,  
and Energizing a Growing Community

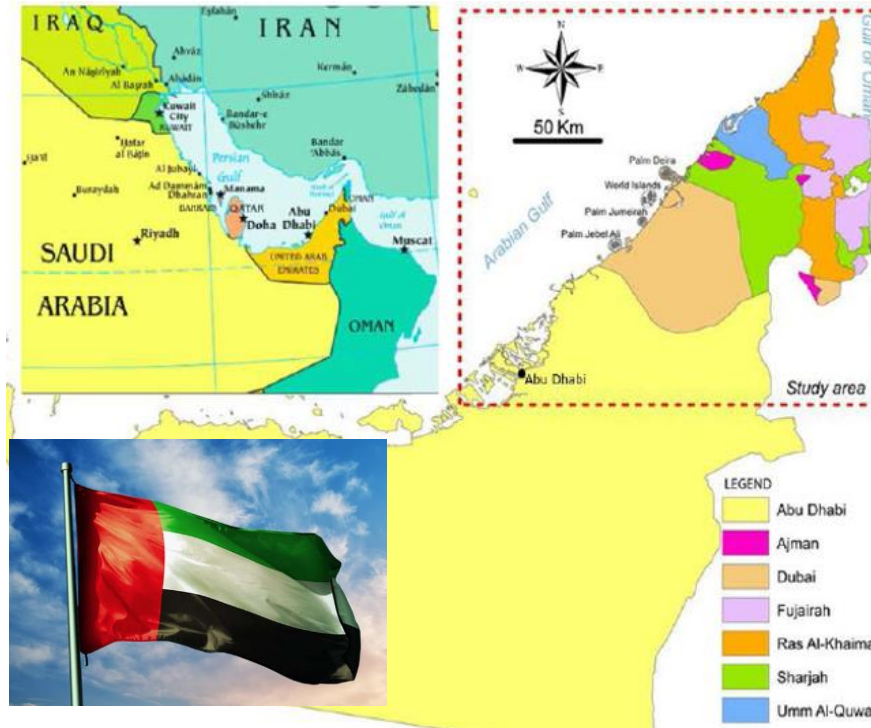
Presented Mar 11 – 12, 2024  
Albuquerque, New Mexico United  
States

Young country & celebrated 50th anniversary in 2021



## The Sheikh Zayed Grand Mosque

Sheikh Zayed believed that developing a culture of tolerance is the evidence of a nation's vitality and proof of its ability to achieve more advancement and progress. The Sheikh Zayed Grand Mosque seeks to promote a culture of tolerance able to reconcile the entire human race through the emphasis on the common bonds that link mankind together. It is one of UAEs most prominent landmarks, and further serves as a melting pot of civilizations that blends and merges various architectural styles, and celebrates the esthetic features of Islamic art and architecture



## Qasr Al Watan

Qasr Al Watan is more than a palace, it is a unique testament to the spirit of the United Arab Emirates' people and its leaders. The Palace invites the world to share our culture, knowledge and inspiring journey. Visitors will learn about the principles that have propelled traditional Arabian design, gain insight into Emirati governance and explore and culture through the Palace's exhibits.

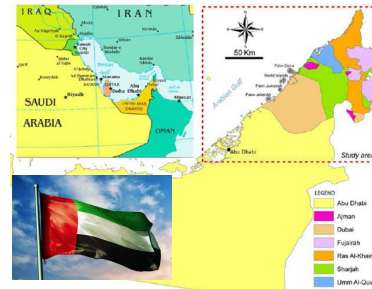


# R&D Funding Ecosystem Model in UAE

UAE established vision 2021 “Competitive Knowledge Economy by 2030”

Propel UAE to be at the forefront of Innovation, Entrepreneurship and R&D Indicators

To create Sustainable Ecosystem to serve the national population



Looking at international standard R&D indicators (between 2015 and 2020, the UAE’s Gross Expenditures on R&D (GERD) increased from a reported 0.8895% to 1.449%, an increase of nearly 62%, and the number of researchers per million inhabitants increased by 23% in the same time period

UAE secured 32nd position globally in 2023 “Global Innovation Index” and is 1<sup>st</sup> regionally in the Middle East

# R&D funding Ecosystem Model in UAE

## R&D Facilitation

Abu Dhabi Government's Advanced  
Technology Research Council (ATRC)

Grantmaking and  
'technology transition'  
(ASPIRE)

Applied Research and  
Collaboration  
Technology Innovation  
Institute (TII)

Commercialisation  
(VentureOne)



## R&D Performance

Higher Education Institutes

Resources allocated to institutions to  
perform R&D activities themselves and  
establish funding programs and grant awards  
for R&D (Grantee/Grantor)

This allows the development and  
maintenance of robust internal  
funding programs as managed in  
Khalifa University

Unique feature of R&D Model in the Middle East region compared to world's with strong R&D ecosystems

## KU 2023 Quick Stats

230 QS Rank

4,268 Total Students

29% International Students

24% PG

14% PhD

### ACADEMICS

Engineering and Physical Sciences

Computing and Mathematical Sciences

Medicine and Health Sciences

Value-adding Industrial & Commercial Base

### INTERDISCIPLINARY AREAS OF SPECIAL FOCUS

Sustainable Secure Society

Managed Energy Transition

Advanced Materials & Manufacturing

Pervasive Digitalization

Healthy Longevity

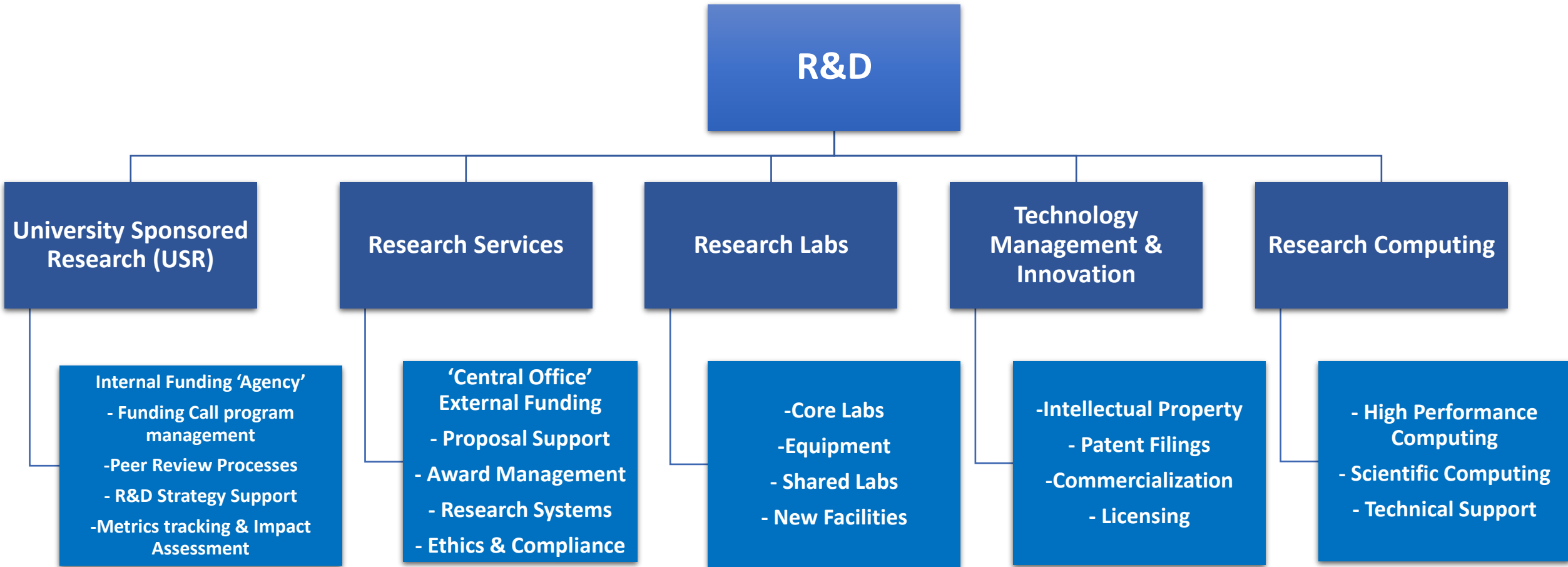
318 Total Faculty Across Disciplines

40% Teaching

40% Research

20% Service

# Research & Development @ KU



# University Sponsored Research Activities



## Institutional Activities of USR

- R&D Strategy support and funding calls
- Institutional policy & process improvement and integration with HR, Finance and IT
- Joint Institutional Research Programs
- Metrics tracking and impact assessment

## Collaborative Activities between USR/ORS

- Research Management System (RMS, 'Fibi') development for grant calls, proposal submissions, reviews, approvals and awards.
- KU policies and processes
- Research compliance oversight bodies (Research Ethics Committee)

## USR Internal Programs

- Develop funding programs & manage Grant Calls
- External peer review process; internal review workflows
- Faculty onboarding support (Fibi; Start-Ups)
- Research output data review, to inform future funding program development

## USR Internal Awards (c. 200 active awards)

- Portfolio fiscal management (Inc. operational approvals)
- Project report collection and approval workflows with feedback into Internal Programs team
- Researcher hiring and payroll (c. 260 non-faculty researchers)





جامعة خليفة  
Khalifa University

# Research Impact Framework





## VISION



A globally leading university, stimulating positive change and shaping the future.



## MISSION



Catalyze growth in the rapidly evolving knowledge-based economy of Abu Dhabi and the UAE, being a destination of choice for world-class education, research, innovation and enterprise to the benefit of society locally and globally."

## VALUES



Excellence

Integrity

Collaboration

People-centricity

Pace and Agility

## GOALS

### 1 OUTSTANDING STUDENT EXPERIENCE



World-class education preparing future leaders and critical thinkers in a stimulating community with a research-oriented, entrepreneurial, learning environment

### 2 IMPACTFUL RESEARCH



Produce influential research and advanced technology with local benefit and global impact

### 3 CATALYST FOR ECONOMIC DEVELOPMENT



Positively impact society and enrich the national economy through innovation, enterprise and research commercialization

### 4 COMMUNITY, PARTNER AND STAKEHOLDER ENGAGEMENT



Foster a people-oriented community within the University and promote mutually beneficial relationships locally and globally.

### 5 OPERATIONAL EXCELLENCE



Promote a culture of continuous improvement to support our people in working together, practicing excellence in all that we do.

# Research Focus Areas and Centers

Khalifa University propels impactful research partnerships thereby contributing to the knowledge-based economy

## VERTICALS

focused on multidisciplinary sectors aligned with UAE and Abu Dhabi priorities



## HORIZONTALS

focused on cross-cutting critical enablers in which KU has a competitive advantage

Advanced Material & Manufacturing

Pervasive Digitalization

Emerging Topics & Fundamental Science

Center for Biotechnology	ASPIRE Sustainable Energy VRI
Emirates Nuclear Technology Center	Advanced Power & Energy Center
Research & Innovation Center on CO2 & Hydrogen	Center for Membranes & Advanced Water Technology
KU Center for Autonomous Robotic Systems	Advanced Research & Innovation Center
Center for Catalysis & Separations	Emirates ICT Innovation Center
6G Research Center	Cybersecurity & Cyber-Physical Systems Center
Research & Innovation Center for Graphene & 2D Materials	

# KU United Nation Sustainable Development Goals Profile (2018 - 2023)

Scholarly Output

## Area of Outstanding Contribution

SDG 7: Affordable and Clean Energy

1500 1250 1000 750 500 250

SDG 9: Industry, Innovation and Infrastructure

## Areas of Competence

SDG 3: Good Health and Well-being

SDG 6: Clean Water and Sanitation

SDG 13: Climate Action

## Areas of Growth

SDG 11: Sustainable Cities and Communities

SDG 12: Responsible Consumption and Production

SDG 8: Decent Work and Economic Growth

## Areas of Improvement

SDG 14: Life Below Water

SDG 4: Quality Education

SDG 15: Life on Land

SDG 10: Reduced Inequality

SDG 16: Peace, Justice and Strong Institutions

SDG 2: Zero Hunger

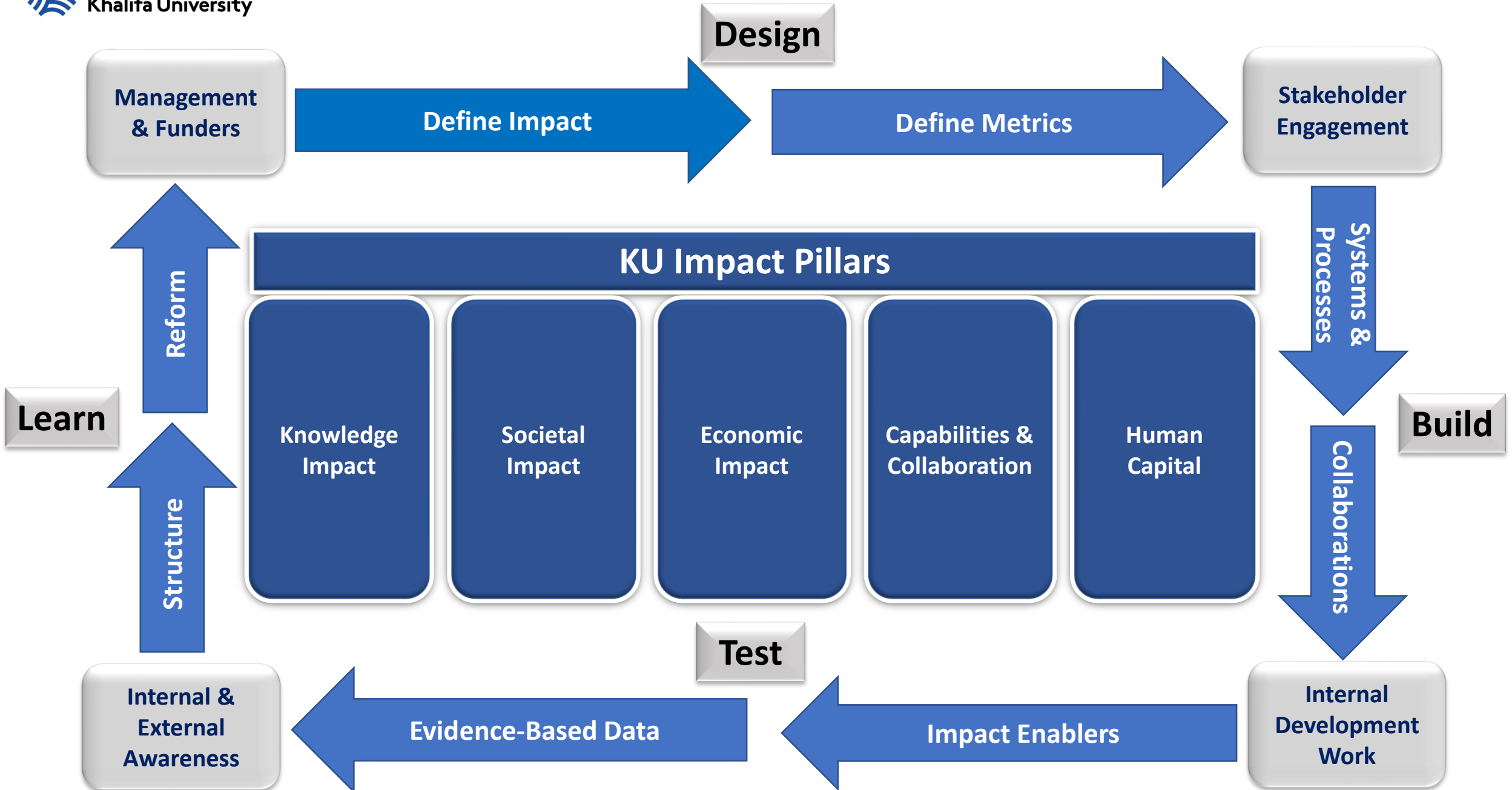
SDG 1: No Poverty

SDG 5: Gender Equality





# Research Impact Assessment Model



## Process and Workflow development



### Systems & Processes Data Collection, Curation & Validation

- Data Mapping
- Current Data & New Metrics



### Analytics & Intelligence Metric & Data Reporting

- SciVal/ SCOPUS/PURE
- Benchmarking
- Alt-metrics



### Branding & Communication Channels & Content Pillars

- Digital Strategy & Social
- Media Outreach
- Impact Narratives & Stories



### Engagement & Outreach Training & Culture Building

- Targeting Impact Training
- Impact Events Calendar
- Case Studies & Showcases

# Operationalizing Research Impact

Systems & Processes : Data Collection, Curation & Validation

✓ Data Mapping



Khazna

Welcome to Khalifa University's Research Portal (Khazna)

Advanced search

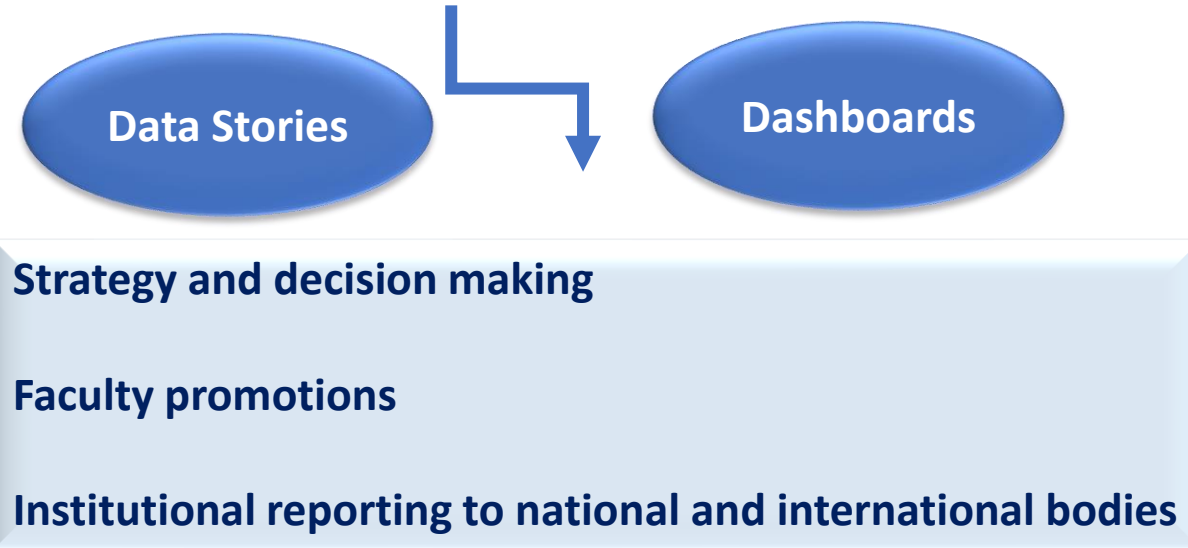
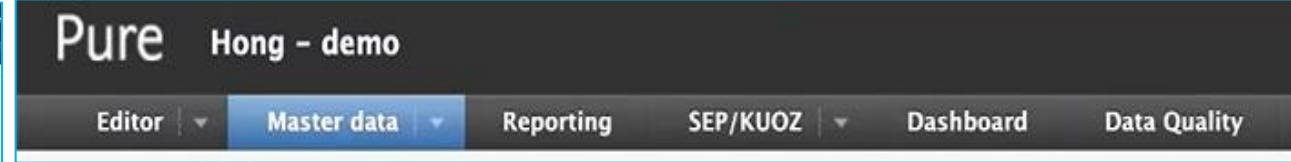
Navigation menu:

- Profiles (709)
- Research units (24)
- Research output (31814)
- Student theses (1795)
- Equipment (1358)
- More (875)

[Khalifa University \(khanza.ku.ac.ae\)](http://khanza.ku.ac.ae)



Category	Count
<b>Users</b>	<b>46</b>
Personal user (staff)	16
Administrator	8
Editor of Research Output	7
Global reporter of Research Output	3
Reporter of Research Output	3
Reporter	2
Access to SciVal	2
Technical administrator	2
Reporter of Activities	1
Administrator of Claims	1
More...	
<b>Organisational units</b>	<b>8</b>
Department	5
University	1
Faculty	1
Research group	1
Active	8
Inactive	0
More...	
<b>External organisations</b>	<b>23131</b>
Academic	8514
Corporate	6245
Funding body	2654
Government	2441
Medical	1863
Unknown	1313
External collaborations	47
University	36
Research funding body	10
Research grants	8
More...	
<b>Persons</b>	<b>29</b>
Academic	18
PhD	3
Research assistant	2
Honorary	1
More...	
<b>External persons</b>	<b>4551</b>
External person	4551
More...	
<b>Author collaborations</b>	<b>34</b>
Approved	22
For approval	12
More...	
<b>Publishers</b>	<b>10750</b>
Publisher	10750
More...	
<b>File handles</b>	<b>33</b>
Unspecified	14
SEP type mapping file	3
KUOZ Activities type mapping file	3
Coversheet configuration xml	2
KUOZ type mapping file	2
Legacy import	1
Synchronisation	1
Student thesis frontpage	1
Coversheet background pdf	1
Experts image	1
More...	
<b>Person Expertise</b>	<b>0</b>



✓ **Data Mapping/Workflow Development**

**Fibi**  
Grant Management System

**Sophia**  
Patent Management system

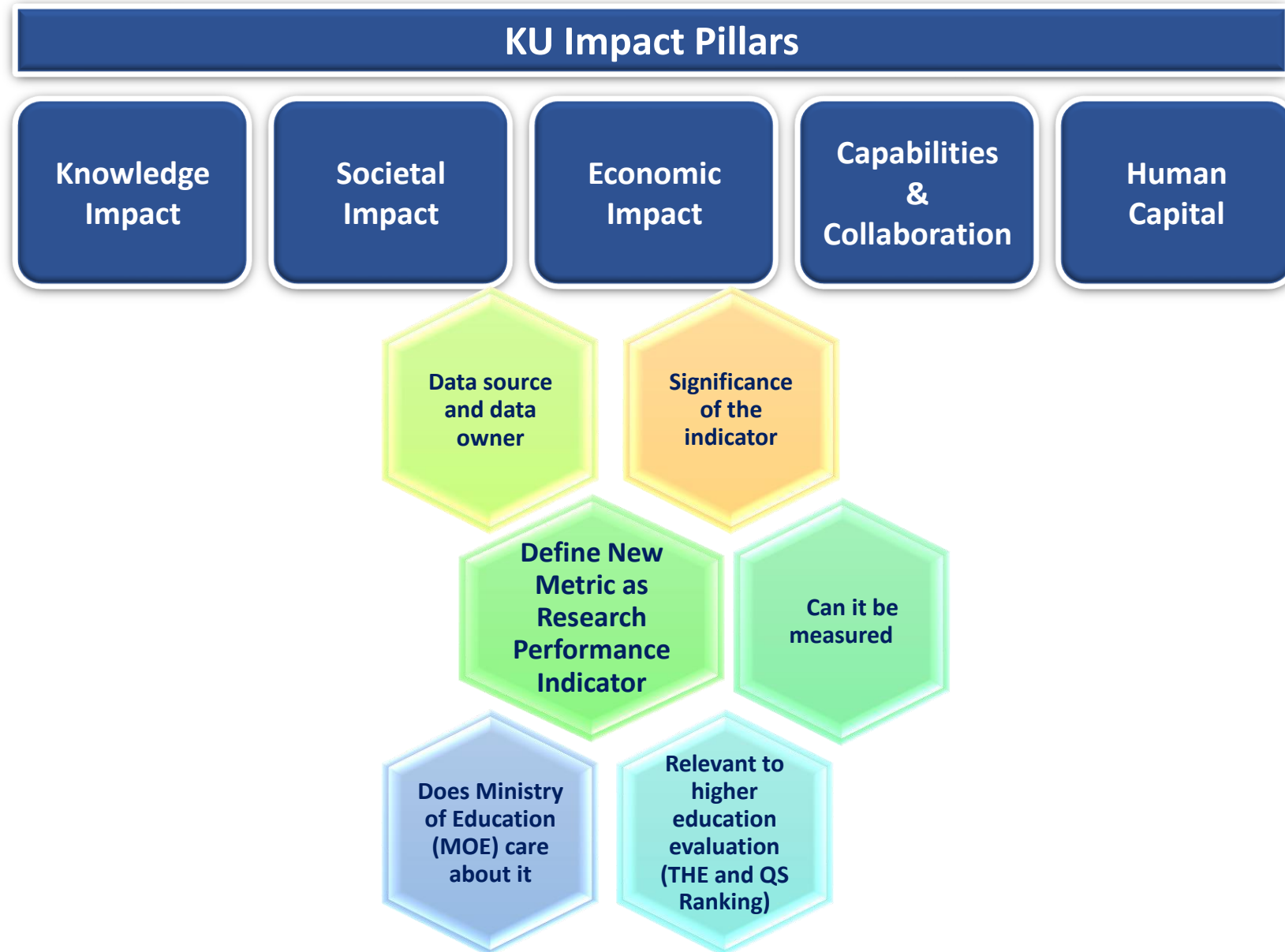
**Library**  
Thesis management system

**Graduate Student Office**  
Student Management system

**Research Labs and Infrastructure**  
Equipment Management system

# Operationalizing Research Impact

## Systems & Processes : Defining New Metric



# Operationalizing Research Impact

## Analytics & Intelligence : Metric & Data Reporting

- ✓ SciVal/ SCOPUS/PURE, Benchmarking, Research Trends, Collaborations, Alt-metrics

**SciVal**  
Build your views on the world's research



Visualize research performance



Develop collaborative partnerships



Benchmark your progress

Research Intelligence

## Pure's Classic Reporting Module

Pure

Choose a content type

EDITOR

- Research output
- Activities
- Prizes
- Press / Media
- Applications
- Awards
- Projects**
- Ethical reviews
- Courses
- Impacts
- Datasets
- Student theses

MASTER DATA

- Equipment/facilities
- Users
- Persons
- Organisational units
- External persons
- External organisations
- Journals

**Matrix (analysis)**

Organisation	2006	2006	2007	2008	2009	2010
Faculty Of Science	306	300	339	617	764	125
Faculty Of Engineering	311	376	331	663	712	331
Professional Services	68	73	63	50	45	12
Faculty Of Law	134	119	100	202	216	104
Faculty Of Business	70	70	67	100	103	68

**Table (analysis)**

Organisation	Author's gender	Research output year	Count
Faculty Of Science	Female	2006	291
Faculty Of Science	Female	2008	285
Faculty Of Science	Female	2009	322
Faculty Of Science	Female	2010	347
Faculty Of Science	Female	2011	365
Faculty Of Science	Female	2012	392
Faculty Of Science	Female	2013	419
Faculty Of Science	Female	2014	446
Faculty Of Science	Female	2015	473
Faculty Of Science	Female	2016	500

**Chart (analysis)**

**Table**

RNO Title	Type	Year	Publication date	Visibility
Management and Innovation in the 21st Century	Book	2010	15/01/10	Public
Management and Innovation in the 21st Century	Book	2010	15/01/10	Public
Management and Innovation in the 21st Century	Book	2010	15/01/10	Public

**Listing**

1.1. 2009

1.2. 2010

**Raw data spreadsheet**

Year	Count
2006	687
2007	712
2008	737
2009	762
2010	787
2011	812
2012	837
2013	862
2014	887
2015	912
2016	937

**Combined content**

Category	Articles	Chapters in book	Activities	Awards
Aerospace Engineering	807	259	18	38,124
Pharmacology	62	9	0	0
Mathematics	93	10	0	0
Institute Of Photonics	305	50	60	22,083
Biochemistry	5	0	0	0
Pure Chemistry	3524	38	349	42,114
Pharmaceutical Sciences	33	1	0	0
Chemical Engineering	388	27	110	8,332
Pharmaceutical Sciences	319	121	18	6,326



ELSEVIER  
Scopus

This author profile is generated by Scopus. [Learn more](#)

**Rajashekar, Roopa**

Universitätsklinikum Erlangen, Erlangen, Germany 6505823532 Connect to ORCID

Is this you? [Connect to Mendeley account](#) [View more](#)

162  
Citations by 117 documents

4  
Documents

4  
h-index [View h-graph](#)

[View all metrics >](#)

Author Profile

Journal Ranking



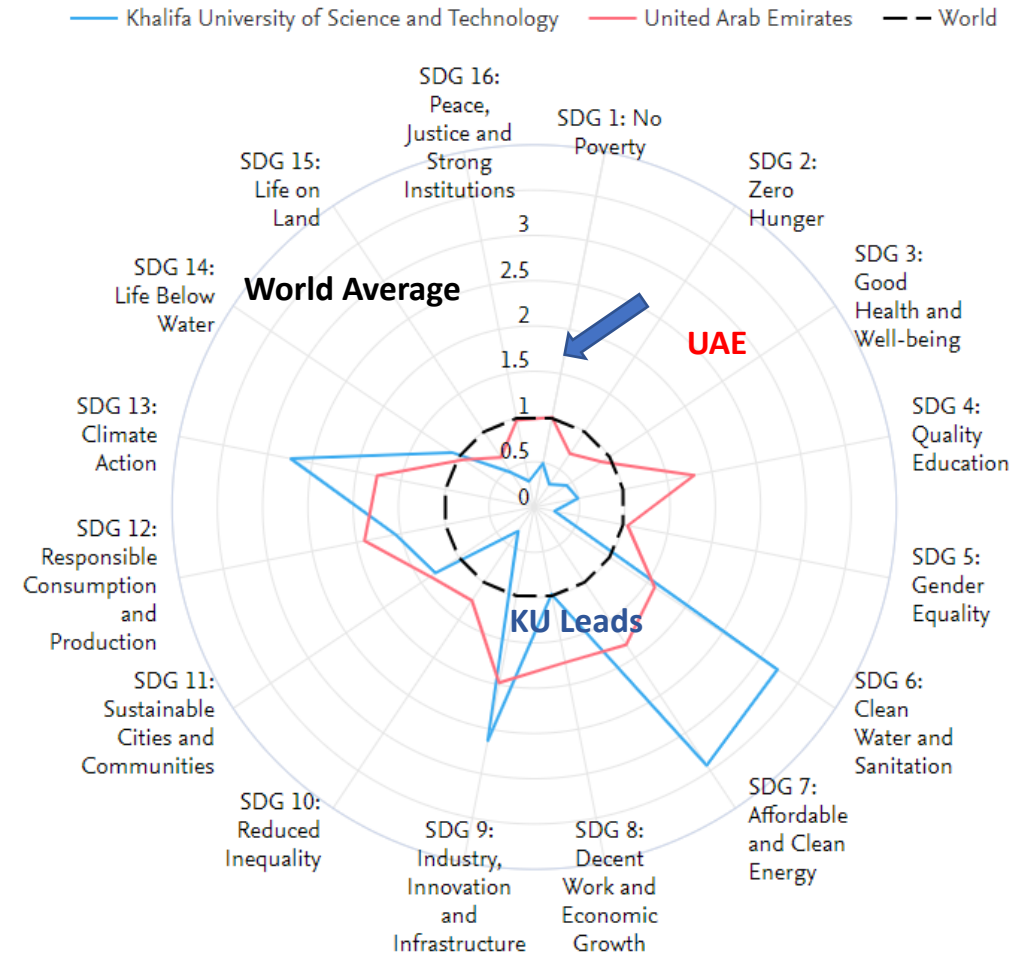
# Analytics & Intelligence : Metric & Data Reporting

High Level Analytics : Based on UN SDG – KU Compared to World

## UN Sustainable Development Goals



## Relative Activity Chart 2017 - 2022



## KU Publication Profile

## Scientific impact

Agency for Science, Technology and Research, Singapore

2017 to >2022

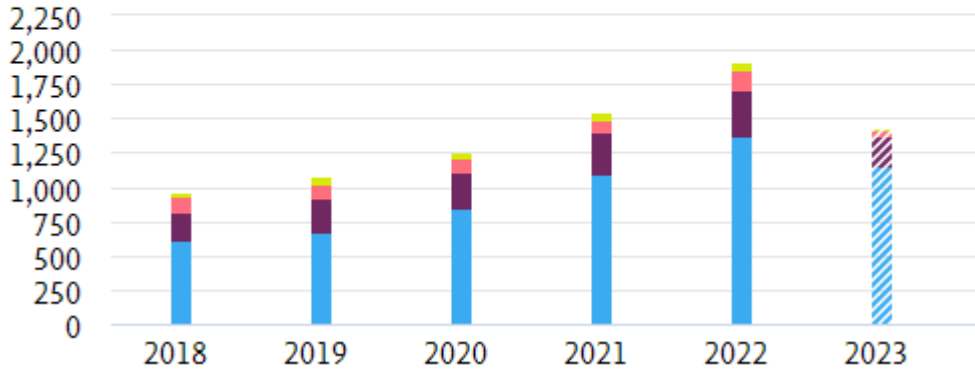
All subject areas

### Publications by Subject Area

2018 -2022

## Publications by Journal quartile

Share of publications per Journal quartile by CiteScore Percentile



Quartiles	Publications ?	Publication share (%)
Q1 (top 25%)	5,775	70.5
Q2 (26% - 50%)	1,556	19.0
Q3 (51% - 75%)	585	7.1
Q4 (76% - 100%)	275	3.4

Q1 (top 25%)

5,775

70.5

Q2 (26% - 50%)

1,556

19.0

Q3 (51% - 75%)

585

7.1

Q4 (76% - 100%)

275

3.4



# Analytics & Intelligence : Metric & Data Reporting

## Benchmarking with STO's – KU's Profile

### Benchmarking

2018 to >2023 All subject areas

ASJC

All Metrics Rankings Metrics

Table Chart

y-axis

Patent-Cited Scholarly Output

x-axis

Scholarly Output

Bubble size

Field-Weighted Citation Impact

Cumulative

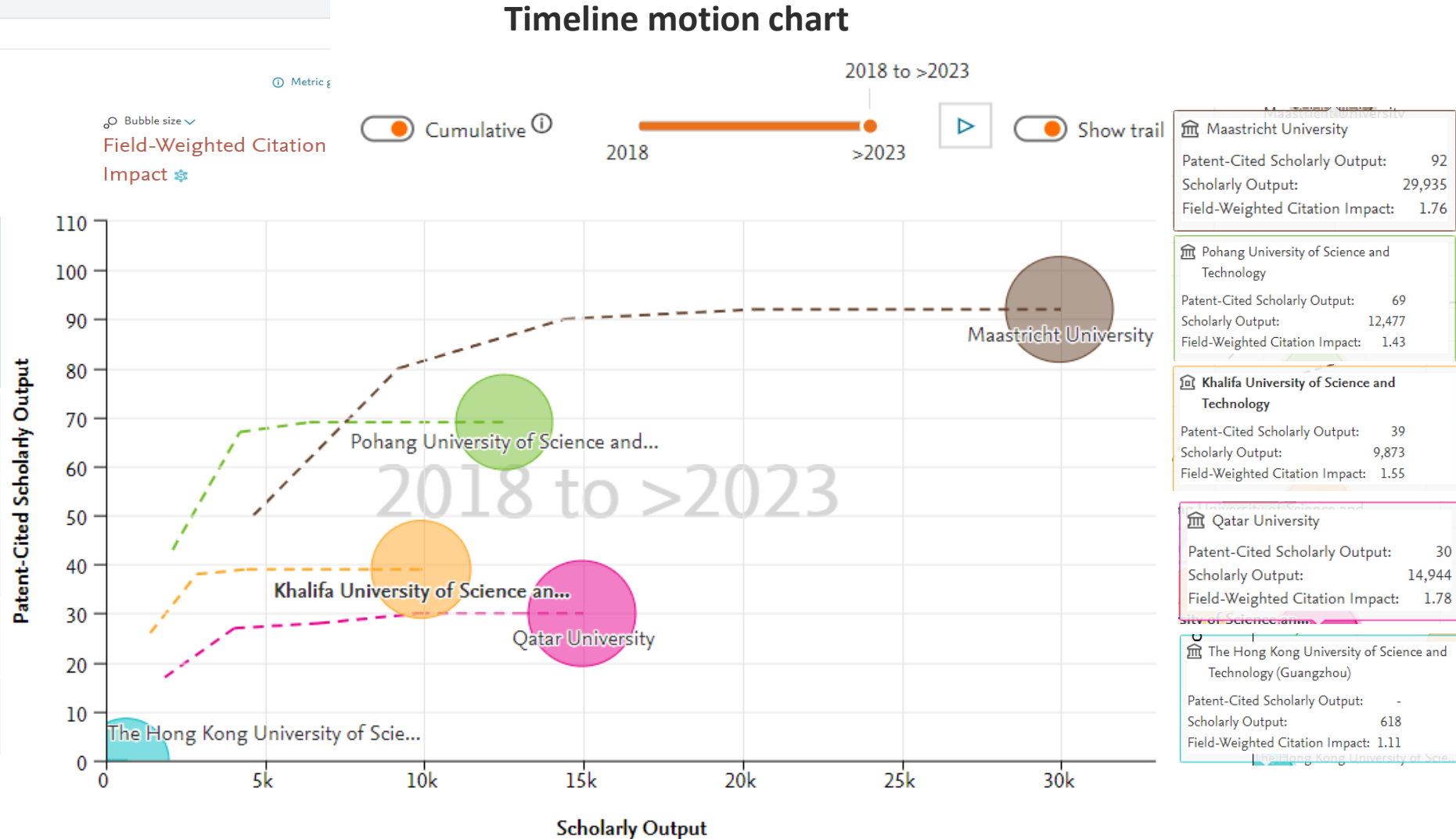
2018

2018 to >2023

>2023

Show trail

Young University THE Ranking (2023)	Global Ranking	Number of students
The HK Uni	2	9,864
Maastricht University	13	19,909
Pohang University	14	3,260
Qatar University	24	9,084
Khalifa University	49	3,029



# Operationalizing Research Impact

## Branding & Communication: Channels & Content Pillars

- ✓ Digital Strategy & Social Media Outreach, Impact Narratives & Stories

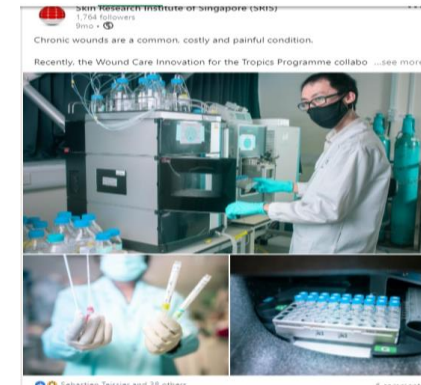
### Scientific messaging as Carousel



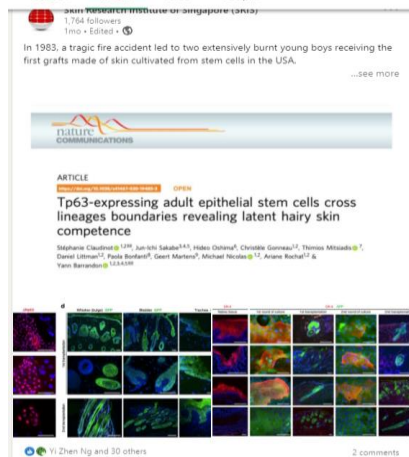
### Videos



### Research Programs



### Impact Papers



### Events



### Featuring Success Stories with industry



KU Innovation Day-2024





# KU Innovation Day

## Feb 2024

---

A five-hour event that featured various prototypes and innovations from multiple research centers, groups, and labs. Simultaneously, an advisory board of trustee meetings convenes alongside an alum recognition ceremony.

The showcase area was divided into sections based on KU's primary focus areas: Pervasive Digitalization, Secure Sustainable Society, Advanced Materials & Manufacturing, Managed Energy Transition, and Health Longevity.



## The Importance of the day

### Collaborations

Encourages collaborations and funding by providing visibility into research projects and start-ups.

### Attendees

Various VIPS, including H.H. Sheikh Hamed Bin Zayed Al Nahyan, the Chairman of KU attended the event.

### Prototypes

Presentations of **65** prototypes were made by **20** centers, labs, and groups in total.

### Research Projects

Over **100** research projects were showcased at the event.

## Impact Story around the Showcases

7 robots were showcased by the Center for Autonomous Robotic Systems (KUCARS) during the Innovation Day.

These robots were launched as part of the collaboration between Khalifa University and Stanford University to explore the use of marine robotics for sustainable ocean ecosystems, including the removal of plastics to curb pollution.

### Example:

Ocean Monitoring and Cleaning for Sustainable Marine Ecosystem.



Currently, oceans contain 26-66 million tons of waste both on the surface and with approximately 94% on the seafloor. These waste products including litters have a significant and growing pollutant in the oceans. The presence of such debris have great implication on the aquaculture production as well as economy being a deleterious source for such industry. Thus, to provide a sustainable, clear and clean marine environment, this project focus on to design and develop autonomous litter monitoring, detection, and collection methods and techniques.



Khalifa University and Stanford University Collaborate to Develop Marine Robots

Khalifa University of Science and Technology today announced the inauguration of Khalifa University Marine Studies and Research Lab, the region's first-ever advanced robotics research facility equipped with wave and stream generation facilities. Khalifa University's Center for Autonomous Robotic Systems (KUCARS) and Stanford University have also announced they have entered into a collaboration to explore the use of marine robotics for sustainable ocean ecosystems, including removal of plastics to curb pollution.

The collaboration was part of a Memorandum of Understanding (MoU) that was signed by Professor Sir John O'Reilly, President, Khalifa University, and Professor Oussama Khatib, Director, Stanford Robotics Laboratory (SRL), in the Computer Science Department at Stanford University. The signing ceremony was attended by His Excellency Salem Butti Salem Al Qubaisi, Member of the Board of Trustees of Khalifa University, and Director-General of the UAE Space Agency, and His Excellency Fahed Salem Ahmed Alkayyoomi, Under-secretary of the Abu Dhabi Department of Government Support.



# Operationalizing Research Impact

## Engagement & Outreach : Training & Culture Building

- ✓ Targeting Impact Training, Impact Events Calendar, Case Studies & Showcases





# Engagement & Outreach : Training & Culture Building

## Research Impact Week @ KU



*Organized by USR & KU HR from  
30<sup>th</sup> Oct 2023 to 3<sup>rd</sup> Nov 2023*



# Engagement & Outreach : Training & Culture Building

## Research Impact Week Program Format

### Faculty Focused Full Day Workshop

Create, Capture, Communicate

#### Topics included

- Creating impact opportunities
- Capturing Impact and
- Communicating complex research findings

Half Day Seminars  
(In-house and virtual)  
open to all KU

Research Impact Theme  
Three back to back lectures

#### Topics included

- Introduction to Knowledge Translation & Research Impact
- Planning for Impactful Research
- Embedding translation into existing projects

Research  
Administrators-  
Focused Full Day  
Workshop

Train-The-Trainer Module

#### Topics included

- Understanding Research Impact
- Marketing Your Service/Support Offering
- Tracking/Evaluation of Impact

## Summary

- **UAE national goal and research ecosystem.**
- **Khalifa University strategy to be a world class research intensive university within the top 100 universities by 2030.**
- **Research & Development ecosystem within the university.**
- **USR activities and leading research impact framework.**
- **Research Impact Framework and Impact pillars.**
- **Establishing good practices in operationalizing research impact.**

## Challenges and Opportunities

- **Opportunity to learn and establish good practices according to local requirements.**
- **Flexibility to implement policies in the best interest of the University to serve the strategic goals.**
- **Developing and Implementing technically sound workflows or processes across various stakeholders to maintain data integrity.**
- **Innovative programs to engage faculty and researchers to participate in this process and not make it a administrative hassle.**



**Thank You**