Libraries as Catalysts for Sustainable Research Innovation

Prof. Dr. Habibah Binti A Wahab Deputy Vice Chancellor (Research and Innovation) Universiti Sains Malaysia

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- Promote culture and enquiry (open science)
- Preservation and accessibility of knowledge & Access to comprehensive resources (databases, physical collection & e-collection)
- Connecting global research and communities (ACS on campus, ELSEVIER librarian summit)

$\mathbf{0}$ Introduction to **USM & USM** Library





USM: Fast Facts



Top 100 for 2 Subject

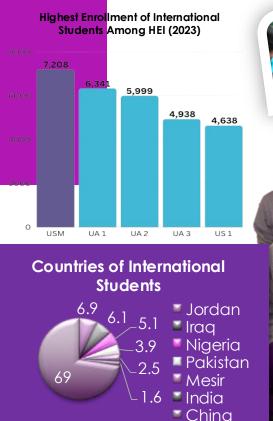
1. Pharmacy & Pharmacology - #2 In Malaysia - #76 Globally

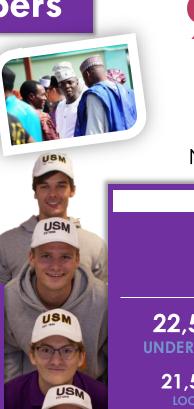
2. Education - #2 in Malaysia - #89 Globally Top 200 for 14 Subject Areas including:

> 1. Social Sc. & Management - #183 Globally

> 2. Engineering & Technology - #186 Globally

USM In Numbers





941

INTERNATIONAL

92.8% USM's GE 91.6% National GE **USM STUDENTS** 38,195 TOTAL 22,527 15,668 **UNDERGRAD** POSTGRAD 6,582 21,586

> **4,571** INTERNATIONAL

USM STAFF

9,674 TOTAL TOP MANAGEMENT 2,052 **ACADEMICS** 1,126 **MANAGEMENTS & PROFESSIONALS** 6,486

SUPPORTING



USM SCHOOLS





RESEARCH CENTER: HICEO & COE



PENANG MAIN CAMPUS

Applied Sciences

School of Housing, Building and Planning School of Industrial Technology School of Pharmaceutical Sciences School of Computer Sciences

Applied Arts

School of Educational Studies School of Management Graduate School of Business (GSB School of Communication School of the Art

Pure Arts

School of Languages, Literacies and Translation School of Humanities School of Social Sciences

Pure Sciences

School of Biological Sciences School of Chemical Sciences School of Mathematical Sciences School of Physics

School of Distance Education Institute of Postgraduate Studies

ENGINEERING CAMPUS

School of Electrical and Electronic Engineering School of Materials and Mineral Resources Engineering School of Aerospace Engineering School of Chemical Engineering School of Civil Engineering School of Mechanical Engineering

HEALTH CAMPUS

School of Health Sciences School of Medical Sciences School of Dental Sciences



HI-CENTRES OF EXCELLENCE

National Poison Centre River Engineering and Urban Drainage Research Centre (REDAC) Institut for Research in Molecular Medicine (INFORMM) Centre for Drug Research

CENTRE OF EXCELLENCE

Applied Sciences

Analytical Biochemistry Research Centre (ABrC) Centre for Global Sustainability Studies (CGSS) National Advanced IPv6 Centre (NAv6) Unit Terjemahan Melalui Komputer Malaysian Institute of Pharmaceuticals and Nutraceuticals

Applied Arts

Basic Education Research Unit (BERU) Centre for Instructional Technology and Multimedia National Higher Education Research Institute

Pure Arts

Centre for Global Archaeological Research Centre for Policy Research and International Studies (CenPRIS) Centre for Research on Women and Gender (KANITA) Centre for Education, Training and Research in Renewable Energy and Energy Efficiency (CETREE) Centre for Islamic Development Management Studies (ISDEV) Research and Education for Peace (REPUSM)

Pure Sciences

Centre For Chemical Biology (CCB) Centre For Marine & Coastal Studies (CEMACS) Vector Control Research Unit (VCRU) Unit Penyelidikan Ilmu Falak & Sains Atmosfera

Medical

Advanced Medical & Dental Institute (AMDI) Pusat Genom Manusia (Pusat Vitual)

Engineering

Pusat Kecemerlangan Kejuruteraan (CEE) Collaborative Microelectronic Design Excellence Centre (CEDEC) Science & Engineering Research Centre(SERC) Institute of Nano Optoelectronics Research and Technology (INOR)



INFRASTRUCTURE



EMPOWERING STUDENTS' EXPERIENCE

Realising USM's H.E.B.A.T* agenda

Hostel room facelift

Creative spaces, studios and entrepreneurhsip hub

Student leaders' lounge, cultivating future leadership

STUDENT HOSTEL

STUDENT LOUNGE

USM is a Sustainability Research Led University

Mengekalkan Kecemerlangan USM

Sebagai Universiti Peneraju Kelestarian





SUSTAINABLE GOALS



Increase income of communities / participants through market / business chains.



The group of Bumiputera B40 especially in rural areas can increase their income and reduce the income gap in urban areas.



Knowledge transfer from the academician's expertise to the community through the introduction of innovations in order to improve knowledge and skills in the cultivation and livestock sector in line with current technology



Community involvement in the cultivation and livestock sector leads to natural sustainability especially in rural areas and reduce mobilizations to the city.



The provision of employment opportunities to the community to generate income and improve the economy in the cultivation and livestock sector.



The community as a producer plays a role in generating productivity and connecting industry players as intermediaries for sale to buyers / consumers.

9 NOUSTRY, INNOVATION ANDIN/RASTRUCTURE

The latest innovations can improve the quality and quantity of productivity.



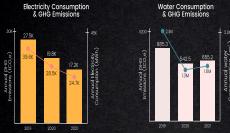
The role of industry players and the government agencies plays an important role in contributing to the economic growth of the group of Bumiputera B40 especially in rural areas.



Environmental, Social & Governance



CARBON FOOTPRINT



ption Waste Generation & GHG Emissions

22K

solar modules

30%

power cost saving

- Carbon footprint electrification reduction of 37.5% in 2021 (from 2019) which equates to 10,286.95 tCO.e, equivalent to a reduction of 14,822.69 MWh
- Carbon footprint water reduction of 26% in 2021 (from 2019) which equates to 230.15 tCO₂e, equivalent to a reduction of 459,284 m³
- Carbon footprint waste reduction of 9.85% in 2021 (from 2019) which equates to 129.565 tCO_2e , equivalent to a reduction of 220.9 tonne

10.66MWp

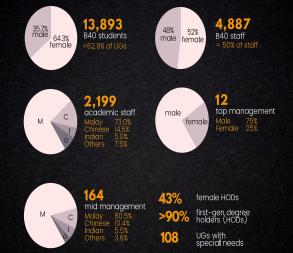
on-site rooftop system

64%

peak power demand

SOLAR@USM





Note: USM also appoints the first Orang Asli as dean, and one international director



GOVERNANCE

Sexual Harassment Core Committee (JK Teras Gangguan Seksual)

The Office of the Ombudsman

Integrity Unit

Internal Audit Unit





Prof. Dato' Ir. Dr. Abdul Rahman Mohamed

TECHNOLOGICAL PURSUIT OF SUSTAINABLE FUTURE

A USM-PETRONAS strategic partnership to develop catalysts that convert CO₂ into high-value products

Transforming waste into wealth and reducing greenhouse gases

PETRONAS



STRENGTH

FOUR (4) main RESEARCH STRENGTH





Strength are based on:

Publications

Web of Science WHAT USM RESEARCHERS PUBLISHED IN?

Documents Published by WoS Categories

In which categories are authors publishing most?

MATERIALS SCIENCE, MULTIDISCIPLINARY	ENGINEERING, ELECTRICAL &	CHEMISTRY,		POLYMER SCIENCE	
1,609 Web of Science Documents	856 Web of Science Documents	732 Web of Science		620 Web of Science	
	PHYSICS, APPLIED 814 Web of Science Documents	ENGINEERING, CHEMICAL 616 Web of Science Documents			
ENVIRONMENTAL SCIENCES	PHARMACOLOGY & PHARMACY	BIOCHEMISTRY & MOLECULAR		GREEN &	
1,089 Web of Science Documents	738 Web of Science Documents	566 Web of Science Documents		562 Web of	

Box size indicates Web of Science Documents ①

Baseline for All Items 17,501 Web of Science Documents

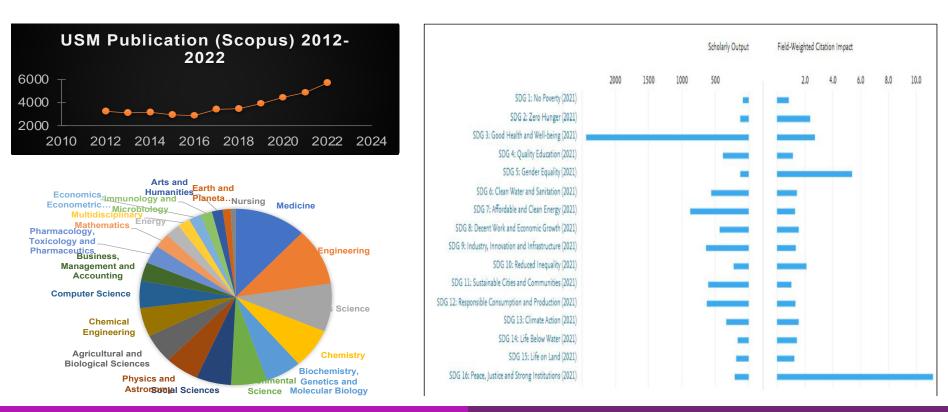
Indicators: Web of Science Documents. Time Period:2018-2022. Schema: Web of Science. Collaborates With ID Type Group:name. Person ID Type Group:name. Organization Name: Universiti Sains Malaysia. Dataset: InCites Dataset InCites dataset updated Jan 27, 2023. Includes Web of Science content indexed through Dec 31, 2022. Export Date: Feb 8, 2023.

MATERIALS SCIENCE, MULTIDISCIPLINARY	1609
ENVIRONMENTAL SCIENCES	1089
ENGINEERING, ELECTRICAL & ELECTRONIC	856
PHYSICS, APPLIED	814
PHARMACOLOGY & PHARMACY	738
CHEMISTRY, MULTIDISCIPLINARY	732
POLYMER SCIENCE	620
ENGINEERING, CHEMICAL	616
BIOCHEMISTRY & MOLECULAR BIOLOGY	566
GREEN & SUSTAINABLE SCIENCE & TECHNOLOGY	562
PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH	538
COMPUTER SCIENCE, INFORMATION SYSTEMS	532
ENGINEERING, MULTIDISCIPLINARY	512
ENGINEERING, ENVIRONMENTAL	490
CHEMISTRY, PHYSICAL	469
ENGINEERING, CIVIL	433
ENERGY & FUELS	411
MEDICINE, RESEARCH & EXPERIMENTAL	403
FOOD SCIENCE & TECHNOLOGY	402
BIOTECHNOLOGY & APPLIED MICROBIOLOGY	388
EDUCATION & EDUCATIONAL RESEARCH	359

Data from



OUR INCREASING NUMBERS & CONTRIBUTION TO SDG



USM Library – library.usm.my



← → C 25 lib.usm.my/index.php					\$	£) ₹	(H) New Chrome available
			ABOUT US	HOW TO USE THE LIBRARY	ACADEMIC & RESEAU	RCH SUPPORT	LIBRARY AND THE COMMUNITY
LIBRARY HOURS AND LOCATIONS Special collections USM Archives		LIBRARY POLICIES STRATEGIC OVERVIEW Working at the Library Contact the Library		LIBR/ HA HA	ARY BRANCHES MZAH SENDUT MDAN TAHIR GINEERING	STUDENTS 2	023/2024
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Puan Arinawati Ayob Chief Librarian

Total	160
Support Staff	112
Librarian	48



Operation Time Monday - Friday : 8.30 am - 9.30 pm Saturday & Sunday : 9.00 am - 4.30 pm Public Holiday : Closed Operation Time Sunday - Thursday: 8.30 am - 6.00 pm Friday & Saturday: Closed

Public Holiday : Closed

Operation Time Monday - Friday : 8.30 am - 9.30 pm Saturday & Sunday : 9.00 am - 4.30 pm Public Holiday : Closed

Operation Time Monday - Friday : 8.30 am - 5.00 pm Saturday & Sunday : Closed Public Holiday : Closed

ttps://lib.usm.my/index.php

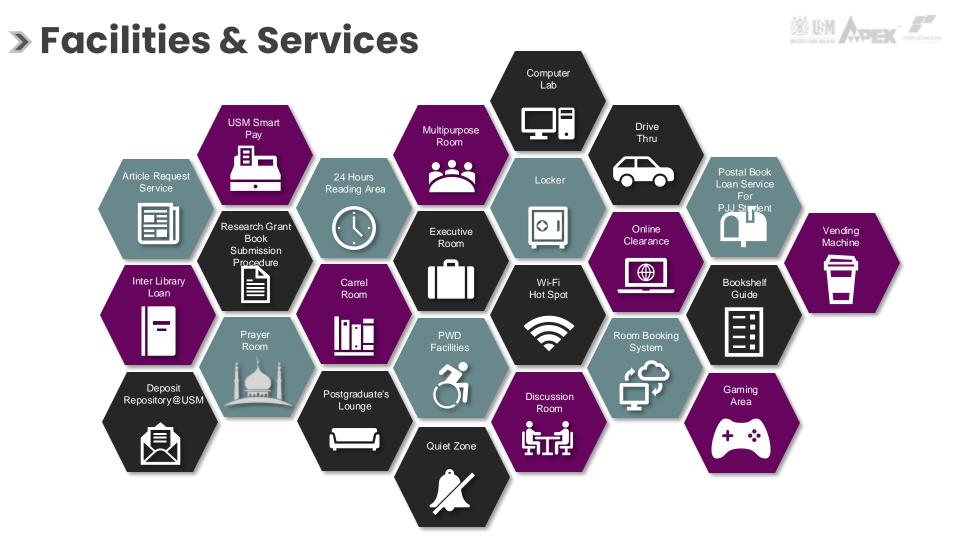
WELCOME ONBOARD

Perpustakaan Hamzah Sendut



Arkib







Library Today

Library today

Traditional	Role	Today			
Acquiring and cataloging physical books and materials.	Collection Management	Curating digital resources, including e-books, databases, and multimedia content.			
Providing in-person assistance at reference desks.	Reference ServicesOffering virtual refer services via chat, ema online platforms				
Managing physical checkouts and returns.	Circulation and Loans	Facilitating digital loans, interlibrary loans, and e- book lending.			
Preserving physical archives and rare materials.	Archiving and Preservation	Digitizing and preserving digital archives, born-digital content, and cultural heritage.			
Offering quiet reading rooms for individual study.	Quiet Study Spaces	Creating flexible, collaborative spaces that encourage group work and knowledge co-construction.			



Library's Roles in Sustainable R&I



1. Preservation and accessibility of knowledge & Access to comprehensive resources

Databases, Physical Collection & E-collection



2. Facilitating in Interdisciplinary Collaboration

Examples: Light Letters

The Light Letters (1768-1794) is a collection of manuscripts, comprising 1,200 letters written in Jawi, bound in 11 volumes, which include correspondences, writings and notes involving Malay rulers and dignitaries from around the Malay Archipelago, business partners, wives of Malay aristocrats, Francis Light, and some English traders originally written over a period of 26 years between 1768 and 1794.

The letters provide a new source for the writing, research and reinterpretation of the history of Pulau Pinang and the nation.



The Light Letters Digital Collection

The Universiti Sains Malaysia Library is responsible for storing and maintaining the Light Letters Digital Collection in fulfillment of the agreement by ensuring that: digital images of the collection will be accessible through a created portal; transliteration and transcription of material will be produced by the Center for Policy Research and International Studies (CenPRIS) and the descriptive metadata prepared by the Library.



USM Digital Library (Portal for Light Letters digital collection) (<u>https://libdigital.usm.my</u>)

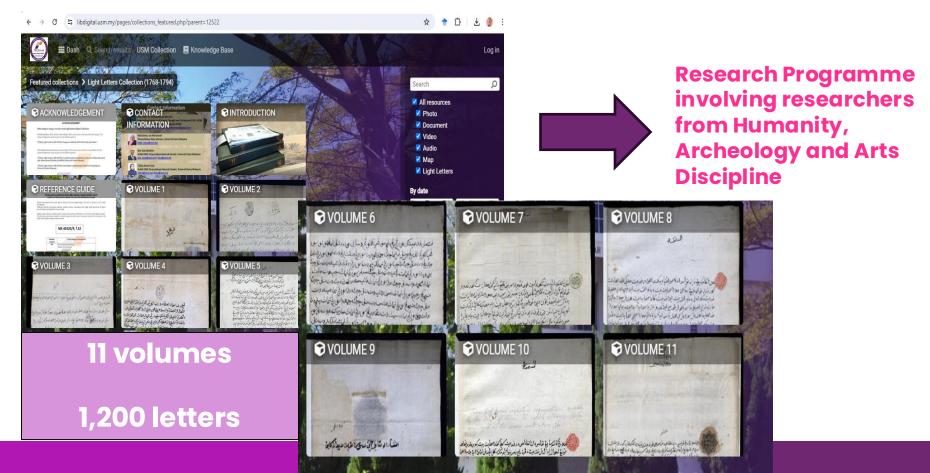
25 libdigital.usm.my/pages/collections_featured.php?

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Dash Q Search results / USM Collection E Knowledge Base Log in Q Search (PIPPT) Perpustakaan (PHS) Perpustakaan (PHT) Perpustakaan Hamzah Sendut Hamdan Tahi IPPT All resources Photo Document Video Audio 🗹 Map Light Letters Collection 🗀 (PK) Perpustakaan Light Letters (1768-1794) eiuruteraan By date Any year Any month 🗸 V Clear Search Geographic search Advanced search

USM Digital Library



Program Dari Arkib USM: Syarahan Warkah-Warkah Kepulauan Melayu 1768-1794



Siri 1 & 2

Siri 3 & 4

3. Integrating technology





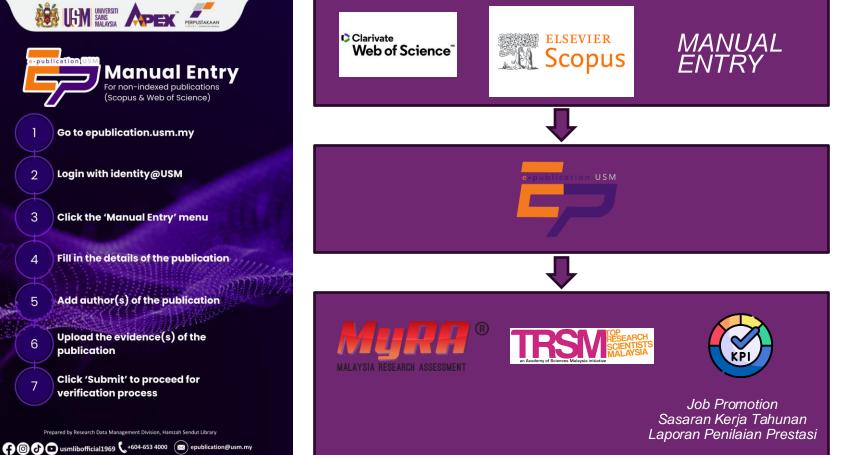
Publication Data Verification System

Research Data Repository

Publication Data Verification System

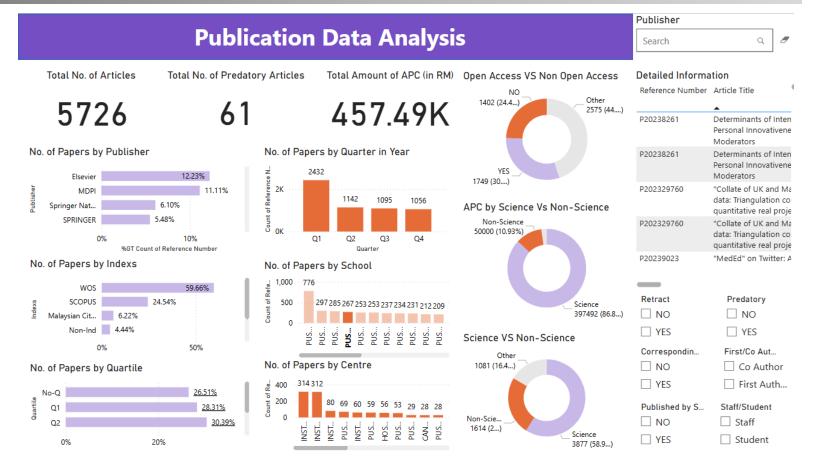


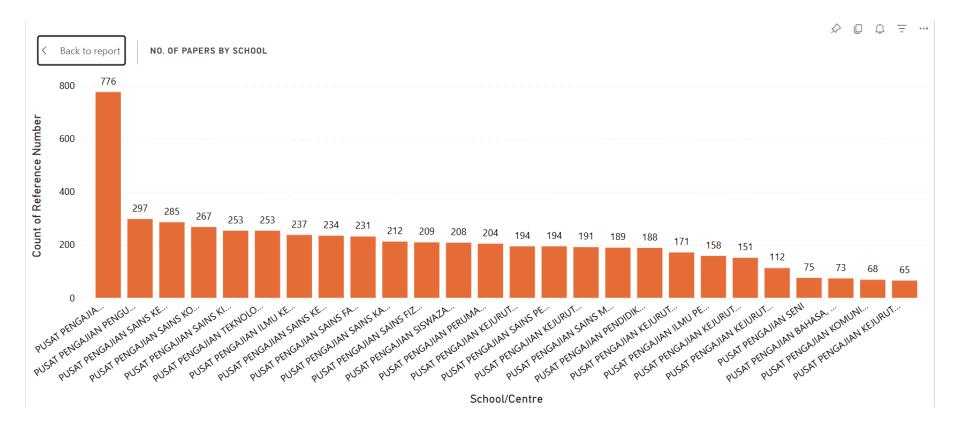




E-publication: Data Analytic



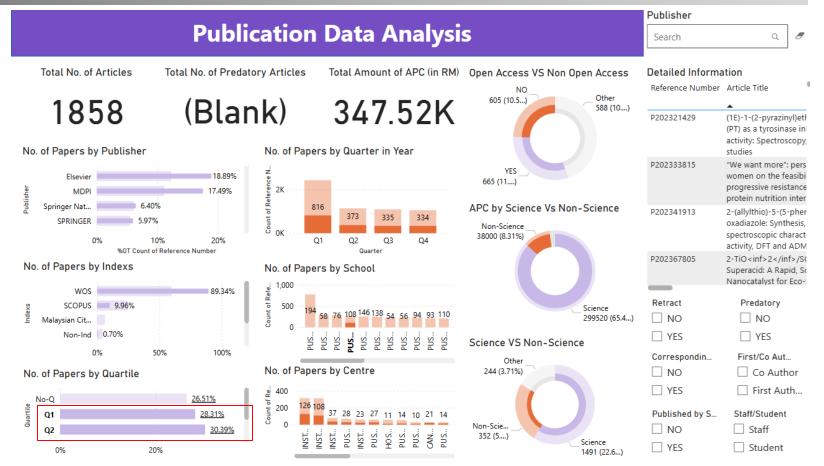




UGM We lead Quartile (Q1 & Q2)

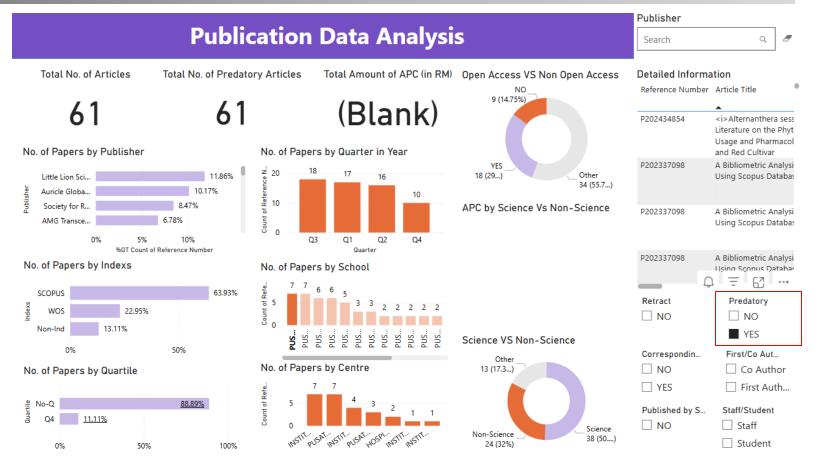
According to Scopus.com





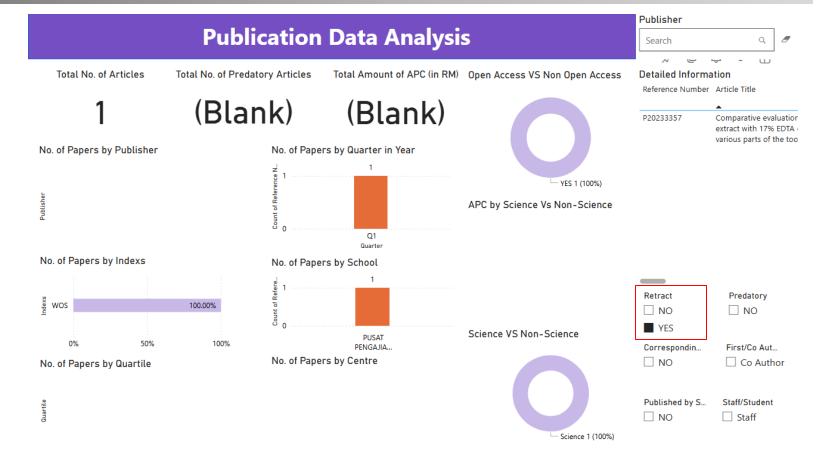
Predatory Articles





Retracted Journal



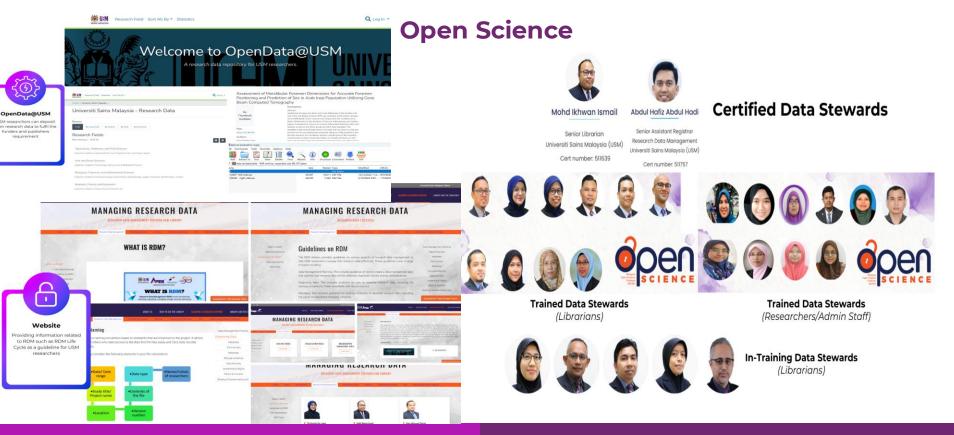




"Making research data Findable, Accessible, Interoperable and Reusable (FAIR) will not only democratize knowledge, it reinforces open scientific inquiry and integrity, enables better research management and promotes open innovation, citizen science as well as data intensive research. Integrating the diverse data streams and huge datasets across multiple disciplines offers unprecedented insights and solutions towards local, regional and global complex challenges".

The Pilot Initiative with five Research Universities (RU) is a three-year (2020-2022) project funded by MOSTI, spearheaded by Malaysia Open Science Alliance and implemented by the Academy of Sciences Malaysia (ASM). Three focus areas in this project are as follows:











Open Science

Mapping biodiversity on campus and deposit the knowledge in Open Science Platform



COMPENDIUM by paperASIA

Universiti Sains Malaysia Campus Nature Challenge: A Collaborative Citizen Science Initiative For Biodiversity Conservation And Environmental Awareness

Cik Ramlah Che Jaafar^{1*}, Musa Mohamed Ghazali¹, Mohd Ikhwan Ismail¹, Noor Adilah Azmi¹, Mohd Abdul Muin Md AkiF, Nadine Ruppert³

Hamzah Sendut Library, Universiti Sains Malaysia (PHS), 11800 USM, Pulau Pinana, Malaysia ²Centre for Global Sustainability Studies (CGSS), Universiti Sains Malaysia, 11800 USM, Pulau Pinana, Malaysia 3School of Biological Sciences, Universiti Sains Malaysia, 11800 USM, Pulau Pinana, Malaysia

*Corresponding author email: cramlah@usm.mv

ABSTRACT

Considering the growing global biodiversity crisis, citizen science initiatives have emerged as powerful tools for Iona-term ecological data collection involving non-experts in research, "USM Campus Nature Challenge", a collaborative effort led by the USM Library in partnership with the School of Biological Sciences and the Centre for Global Sustainability Studies, aimed to create awareness about ecological concerns and biodiversity conservation within the university community by documenting biodiversity at USM's main campus, Methodologically, the project organized a 6-week 'bio blitz' event open to citizen scientists to explore the flora and fauna of USM's diverse campus habitats while cataloging species through the iNaturalist gpp. The results revealed that plant species dominated the observations, constituting 64.9% of recorded biodiversity and reflecting the rich botanical diversity on the USM campus. Further observations included insects (10.4%), fungi (7.6%), birds (6.3%), and various other species underscoring the complexity of the ecological web of the campus. An evaluation of data quality revealed that 36.6% of the species identifications were categorized as "Research Grade", 47.8% were designated as needing further identification, and 15.7% were graded as "casual". In conclusion, the project leveraged the approach to create more public awareness about local ecological concerns and to strengthen the University community's connection to nature. This USM Library's pilot initiative closely aligns with the Open Science movement related to citizen science in Malaysia

KEYWORDS: Citizen science, Academic library, Sustainable Development Goals, SDG15, Environmental conservation

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1 INTRODUCTION

Citizen science in Malaysia is growing and showing areat potential to involve non-science professionals. Libraries play a crucial role in supporting citizen has been an increasing interest in involving local communities and layman individuals in scientific fields. This approach alians with the alobal movement of engaging the public in scientific activities, offering an opportunity for non-scientists to contribute to scientific

sense of ownership of environmental issues (Chapman et al., 2020)

in scientific data collection. In recent years, there science initiatives by serving as a hub for information. resources, and community engagement. According to The European Association of Research Libraries (2024). research and environmental monitoring in diverse research libraries are well placed to be "an active partner in citizen science and develop the necessary infrastructure to support public researchers in their work effectively". In contributing to Open Science initiatives knowledge and decision-making. Citizen science has in Malaysia, the Universiti Sains Malaysia (USM) Library emerged as a promising and cost-efficient approach to has willingly declared its preparedness to lead Open engaging citizens in monitoring and conservation efforts Science and Research Data Management (RDM) efforts (Potsikas et al., 2023). Engaging citizens in scientific at USM since 2021 (Kamal et al., 2022). According to projects not only increases data collection capabilities Ismail et al. (2022), the USM library has implemented but also promotes public awareness, education, and a advocacy programs for open science, including talks,

INOUIRY : rdm@usm.mv

LIVE

You Tube

phsusm USM Library TV

🛞 www.lib.asm.my 🚯 phsusm 🙆 phsusm 🕢 usmilbrary_official 💿 usm library tv

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Trainings For Researchers And Students







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Tetupai Lounge, USM Engineering

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Research Consultation Day @ The Library



Collaborations with Publishers



6. Connecting global research and communities

ACS On Campus



Link: https://acsoncampus.acs.org/events/universiti-sains-malaysia/

6. Connecting global research and communities

ACS Library Event: Universiti Sains Malaysia Digital Sustainability: Transforming University Library for A Sustainable Future



Link: https://link.acs.org/libusm

6. Connecting global research and communities ELSEVIER libraries of the future summit



SEA Libraries of the Future Summit 2024

"Building the Library of Tomorrow: Sustainable Innovations for a Resilient Future"

G Hotel Gurney, Penang, Malaysia
Tuesday, 11th June 2024
0. 08.00am - 16.10pm

Event Overview:

In an era marked by rapid technological advancements and evolving societal dynamics, libraries emerge as pixtal hubs of knowledge and innovation. The theme 'Building the Library of Tomorrow. Sustainable Innovations for a Resilient Future' embodies the collective aspirations of librarians and information science professionals dedicated to driving enduring progress in the field.

Join us for a day of insightful discussions, keynote presentations, and networking opportunities tailored to address emerging trends and innovative practices within the field of library sciences.

From exploring the future roles of librarians in AI and technology to understanding the transformation of collection development, this summit promises to be a catalyst for transformative change within the region's library landscape.



https://www.elsevier.com/events/con ferences/all/sea-libraries-of-thefuture-summit



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THANK YOU