SDG 9

9.1 Research on Industry

Parameter	Data
Scholarly Output	672
Field-Weighted Citation Impact	1.56
Citation Count	6,388

Between 2022 and 2024, Amrita Vishwa Vidyapeetham made significant contributions toward achieving United Nations Sustainable Development Goal 9 — Industry, Innovation and Infrastructure, through cutting-edge research driving technological advancement and sustainable industrial growth. With 672 scholarly outputs and a Field-Weighted Citation Impact of 1.56, Amrita's research demonstrates global competitiveness and a strong focus on innovation-led development. The university's research portfolio spans transformative areas such as Industry 4.0, Artificial Intelligence, Internet of Things (IoT), Lean Manufacturing, and Supply Chain Management, reinforcing its role in shaping the future of sustainable and intelligent industries. Emerging frontiers like Blockchain, Fused Filament Fabrication, and Tribology highlight Amrita's leadership in advancing smart manufacturing and resilient infrastructure solutions. Supported by 202 international collaborations, over 33,600 views, and 6,388 citations, Amrita's SDG 9

research exemplifies its global impact and unwavering commitment to fostering innovation, industrial efficiency, and sustainable infrastructure development.

Amrita Accelerates Research Impact through Global Collaborations and Innovation Symposia

Amrita organized multi-campus innovation symposia under the ARISE initiative throughout 2024, serving as platforms to showcase interdisciplinary research in smart systems, green technologies, data analytics, AI, and digital infrastructure. Hosted across campuses in Coimbatore (January 7–10, 2024), Bengaluru (March 10–11, 2024), Kochi (May 18–19, 2024), and Amaravati (June 3–4, 2024), these events featured interactive exhibitions, workshops on patent filing, and entrepreneurship mentoring sessions. Student-led innovations were recognized through AIRA 2024 Awards, while national

forums like Anokha Techfest (October 17–19, 2024) and Cython '24 fostered collaboration among researchers and industry professionals.

9.2 Patents Citing University Research

Patents Advancing Societal Impact through Amrita Research

Between September 2023 and February 2024, Amrita recorded multiple patents

demonstrating research relevance to healthcare, energy, infrastructure, and cybersecurity. These innovations exemplify the translation of academic research into practical technologies with broad societal benefit. Key patents include:

- US Patent 11,903,961: Hemostatic Agent and Method of Production Thereof (February 20, 2024)

- Indian Patent 503394: Portable Secure Health Record Device & System for Patient–Provider Communication (January 25, 2024)

- Indian Patent 500165: Hand Orthosis Control Using Electrooculography (January 17, 2024)

- Indian Patent 492341: Fabric-Based Floating Coastal Reservoirs (December 30, 2023)

- Indian Patent 489807: Transparent System for Mitigating Web Vulnerabilities (December 27, 2023)

Indian Patent 459006: Systems and Methods for Remote Health Monitoring and Management (October 13, 2023)

These patents highlight Amrita's expanding influence in applied innovation, bridging scientific research with real-world industrial needs.

9.3 University Spin-Offs

Fostering Innovation and Future Spin-Offs

While no new university spin-offs were formally registered during the reporting period (July 2023–December 2024), Amrita continued to build an entrepreneurial

pipeline through its national events and innovation platforms. Initiatives like ARISE, Anokha Techfest, and the Utkarsh MSME Idea Hackathon empowered students and researchers to prototype market-ready solutions. Faculty mentors guided participants in developing IP-based business models and connecting with investors and incubators. These consistent efforts establish the foundation for future technology ventures emerging from Amrita's research ecosystem.

9.4 Research Income from Industry and Commerce

Driving Sustainable Mobility: Amrita Signs MoU with Renault-Nissan

On December 19, 2023, a Memorandum of Understanding was signed between Amrita Vishwa Vidyapeetham and Renault Nissan Technology & Business Centre India at the Coimbatore campus to foster innovation in automotive and thermal engineering.

The collaboration opens avenues for student placements, internships, MTech programs, and elective courses such as NVH Engineering. Joint research focuses include vehicle emissions, alternative fuels, battery chemistry, sensor analytics, and digital twin modeling. Renault-Nissan also donated a research vehicle to support projects in eMobility and vehicle dynamics. This partnership strengthens Amrita's applied research capacity in sustainable

automotive technologies.

Amrita and Volvo Group Collaborate for Industry-Integrated Education

On December 5, 2024, Amrita Vishwa Vidyapeetham entered into a strategic collaboration with Volvo Group India Pvt. Ltd. to launch a two-to-four semester credit-based program in automotive engineering. The partnership bridges academia and industry by integrating real-world experience through research projects, expert lectures, faculty training, and internships. Special provisions include scholarships for women and pre-placement opportunities for outstanding

students. This initiative equips graduates with hands-on industrial exposure, fostering a future-ready workforce for the automotive sector.

Amrita, Continental & MathWorks Drive Next-Gen Automotive Innovation

Amrita launched the Continental–MathWorks AUTOSAR Training Initiative to

enhance automotive software and system design capabilities. The program included expert-led talks and faculty development sessions from August 30 to September 21, covering automotive protocols, architectures, and model-based design. This collaboration strengthens Amrita's role in advanced driver-assistance systems (ADAS), connected vehicles, and software-defined mobility research. It reflects the university's focus on aligning education with emerging industrial technologies.

Utkarsh Industry Collaborations Advance Innovation in Smart Systems

From July–September 2023, under the Utkarsh initiative, Amrita partnered with several industry leaders to drive applied research in sustainable technologies. Collaborations included funded projects with MulticoreWare (Smart Health, Smart City, and Industry 4.0), LionsBot (robotics), Telesto Energy (digital transformation), Parachute Kalpavriksha (agri-innovation), and Reep Industries (EV development). Additional engagements with Saint-Gobain and Garuda Aerospace expanded research into drones, materials, and green energy. These partnerships fostered joint research, technology transfer, and innovation-led funding, strengthening Amrita's contribution to India's industrial ecosystem.

AIRA 2024 Awards Recognize Excellence in Research and Innovation

The AIRA 2024 Awards, held on January 18, 2024 as part of the ARISE initiative, celebrated outstanding research and innovation at Amrita. A total of 570 faculty were honored across categories including the Chancellor's Research Excellence, Innovation, and Publication Awards. Over INR 200 million in seed grants were distributed to support compassion-driven, industry-relevant research projects. Twenty-four scientists featured in Stanford's Top 2% Researchers list were recognized by the Chancellor, with special guests Dr. Akhilesh Gupta (SERB) and Venu

Govinda Raju underscoring the importance of multidisciplinary collaboration.

PQC-Enhanced eSIM Framework: Driving Innovation, Cybersecurity, and Smart-City Resilience

This research aligns strongly with SDG 9 by advancing secure and innovative digital infrastructure through post-quantum cryptography for IoT devices. It also supports SDG 16 by strengthening data protection, authentication, and cybersecurity resilience for institutions and users. Additionally, the solution contributes to SDG 11 by enabling safer and more reliable smart-city and connected-community applications.