THE 1ST INTERNATIONAL CONFERENCE ON LIFESPAN INNOVATION

ICLI2025

"Aging and Longevity: An Interdisciplinary Approach to Enhancing Quality of Life"

Hosted by Payap University in cooperation with international partners

JUNE | 12-13 | 2025

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Preface

We are honored to present the proceedings of the **1st International Conference on Lifespan Innovation (ICLI 2025)**, held virtually on **June 12–13, 2025**, and hosted by **Payap University**, in collaboration with esteemed international partners. This inaugural conference marks a significant milestone for both the academic and professional communities dedicated to aging and longevity, and it coincides with Payap University's 50th anniversary, a celebration of five decades of academic excellence, innovation, and global engagement.

The central theme of ICLI 2025, *"Aging and Longevity: An Interdisciplinary Approach to Enhancing Quality of Life,"* reflects the growing urgency and opportunity in addressing aging through a multifaceted lens. To this end, ICLI 2025 convened thought leaders, researchers, and practitioners across disciplines to explore new paradigms, share evidence-based innovations, and develop collaborative strategies that advance health span and quality of life in aging societies.

The conference featured five primary technical tracks:

- **Health and Medicine**
- **Society and Humanities**
- **Business and Economics**
- **Technology**
- **Psychology**

Each track provided a forum for engaging with critical aspects of aging, ranging from wellness technologies and mental health care to smart assistive systems and the social dynamics of aging. The discussions held over the two-day conference underscored the necessity of integrated solutions, bringing together insights from science, medicine, engineering, economics, and the humanities.

We are pleased to report that ICLI 2025 received a total of **139 submissions** from scholars and professionals worldwide. Following a rigorous **double-blind peer review** process involving three independent reviewers per manuscript, **76 papers were accepted**, and **63 were rejected**, ensuring the academic integrity and relevance of the proceedings. Selected peer-reviewed papers are scheduled for publication in the *Advances in Health Sciences Research* series by Atlantis Press (part of Springer Nature) and will be submitted for indexing in **CPCI (Clarivate Web of Science)**, with additional evaluation for inclusion in **Ei Compendex** and **Scopus**, where applicable.

Beyond academic exchange, ICLI 2025 aimed to foster long-term collaboration among researchers, policymakers, and innovators across sectors. The conference also served as a platform for students and early-career professionals to engage with global experts and emerging ideas at the forefront of aging research and innovation.

On behalf of the organizing committee, we extend our sincere gratitude to all who contributed to the success of this conference including authors, reviewers, keynote speakers, session chairs, and participants. Your dedication and insights have laid a strong foundation for future editions of ICLI and helped shape an inclusive, collaborative vision for addressing the complex challenges of aging.

We look forward to continuing this important dialogue and advancing the science and practice of lifespan innovation together.

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Conference Program

Day 1: Conference Schedule (June 12, 2025, GMT+7)

Time	Room A	Room B	Room C
09:00 – 09:30	**Opening Ceremony (Room A)** **Apicha Insuwan** President of Payap University **Wallapa Songprakun** General Chair and Vice President of Payap University		
09:30 – 10:15	**Keynote Session (Room A)** **Bernard T. Adeney-Risakotta** *Rebirth and Death after Retirement*		
10:15 – 11:00	**Keynote Session (Room A)** **Mei-Chih Hu** *Forecasting Technological Convergence for Smart Long-Term Care Industry*		
11:00 – 11:15	**Coffee Break**		
11:15 – 12:15	**Session A1: Business and Economics** Session Chair: Warawut Ruankham PID 37 PID 94 PID 127 PID 138	**Session B1: Health and Medicine** Session Chair: Manisha R. Dhage PID 50 PID 55 PID 78 PID 100	**Session C1: Society and Humanities** Session Chair: Saber Alavi PID 32 PID 25 PID 57 PID 30 PID 124
12:15 – 13:15	**Lunch Break**		
13:15 – 14:00	**Keynote Session (Room A)** **Ingrid Rügge** *Soft Skill Development for Multidisciplinary Cooperation*		

Time	Room A	Room B	Room C
14:00 – 14:15	**Coffee Break**		
14:15 – 15:15	**Session A2: Business and Economics** Session Chair: Mihlayifani Nicholas Nyoni PID 73 PID 82 PID 86 PID 112	**Session B2: Psychology** Session Chair: Piyatida Pianluprasidh PID 14 PID 23 PID 33 PID 72	**Session C2: Society and Humanities** Session Chair: Sonporn Sirikan PID 15 PID 17 PID 34 PID 132
15:15 – 16:15	**Session A3: Business and Economics** Session Chair: Yi-Chun Lu PID 79 PID 89 PID 90 PID 96	**Session B3: Health and Medicine** Session Chair: Jitendra M. Bakliwal PID 59 PID 62 PID 101 PID 119 PID 123	**Session C3: Technology** Session Chair: Witoon Prommee PID 110 PID 113 PID 131 PID 134

Day 2: Conference Schedule (June 13, 2025, GMT+7)

Time	Room A	Room B	Room C
09:00 – 09:45	**Keynote Session (Room A)** **Dhanashree Ghare** *Medication and Mental Health Care for Longevity*		
09:45 – 10:30	**Keynote Session (Room A)** **Seung Hwan Kang** *Smart Assistive Technologies for Longevity Lifestyle*s		
10:30 – 10:45	**Coffee Break**		
10:45 – 11:45	**Session A4: Technology** Session Chair: Khukrit Osathanunkul PID 60 PID 71 PID 104 PID 126	**Session B4: Health and Medicine** Session Chair: Rathchataphol Chaikiattitham Pimpaka Panyoyai PID 31 PID 53 PID 56 PID 128	**Session C4: Technology** Session Chair: Thanyarat Jitpeera PID 26 PID 42 PID 44 PID 98
11:45 – 12:45	**Session A5: Technology** Session Chair: Hemlata Jadhav PID 61 PID 84 PID 102 PID 107	**Session B5: Health and Medicine** Session Chair: Suphanaree Kasemmala Pimpaka Panyoyai PID 28 PID 35 PID 105 PID 115	**Session C5: Technology** Session Chair: Harsh Namdev Bhor PID 54 PID 70 PID 75 PID 99 PID 108
12:45 – 13:45	**Lunch Break**		

Time	Room A	Room B	Room C
13:45 – 14:30	**Keynote Session (Room A)** **Yipei Liu** *Towards A Structured Approach to Quality Ageing*		
14:30 – 14:45	**Coffee Break**		
14:45 – 15:45	**Session A6: Technology** Session Chair: Kalpana Thakare PID 45 PID 74 PID 95 PID 106	**Session B6: Technology** Session Chair: Smita Chaudhari PID 29 PID 76 PID 122 PID 130	**Session C6: Technology** Session Chair: Kingkan Puansurin PID 52 PID 68 PID 77 PID 125 PID 129
15:45 – 16:15	**Closing Ceremony (Room A)** Thank You Statement Next-Host Announcement Final Remarks		

*Meeting links for each room and session will be emailed to all authors and participants.
Each author will have 8–10 minutes to present their research paper. This time does not include the Q&A session, which will last 2–3 minutes.

Keynote Speakers

Bernard T. Adeney-Risakotta

Title: Rebirth and Death after Retirement

Abstract: "He who is not busy being born, is busy dying." (Bob Dylan) These are the sentiments of a young man. However, being reborn and dying may not be dualistic contradictions or mutually exclusive choices but rather complementary challenges. Old age and retirement bring a new awareness of the inescapable reality of death. Consciousness that our days are numbered, concentrates the mind wonderfully. This can lead to new questions about who we are, who we want to be and how we want to spend the limited amount of time, which we have left on this earth. In order to die well, we may need to be reborn.

Biography: Bernard Adeney-Risakotta, founder of Edge Resort Yogyakarta, was the first director of ICRS at Universitas Gadjah Mada. He has taught at several universities and authored books on ethics, religion, and multicultural identity. Email: baryogya@gmail.com

Mei-Chih Hu

Title: Forecasting Technological Convergence for Smart Long-Term Care Industry

Abstract: With the global aging population increasing, aging has gradually become a critical challenge that governments and various sectors urgently need to address. As a result, the smart long-term care industry is becoming increasingly important. Understanding the development trends in the smart long-term care industry not only helps enterprises gain a competitive advantage but also accelerates the industry's growth cycle. Technology convergence, which involves combining multiple existing technologies into new ones, has become a major pathway for technological innovation. Given the smart long-term care industry's focus on integrating diverse applications, technology convergence plays a significant role in its technological development. The primary purpose of this study is to utilize link prediction, combined with the Boost model in machine learning, to predict impending technology convergence in the smart long-term care field. This study uses data from the United States Patent and Trademark Office (USPTO), considering the simultaneous appearance of multiple patent classification codes in a single patent as an indication of technology convergence. Cluster indicators are calculated using social network analysis, with a total of 12 indicators aggregated. Subsequently, principal component analysis is used to retain variance while reducing dimensionality. Finally, XGBoost is employed to identify potential technology convergence. This study provides companies within the industry with a reference for research and development directions

Biography: Mei-Chih Hu is a Professor at the Institute of Technology Management, National Tsing Hua University, Taiwan (email: mchu@mx.nthu.edu.tw). She is also the Director of Center of Technology Innovation & Entrepreneurship and a Research Fellow for Advanced Biohydrogen Technology Asia-Pacific Economic Cooperation(APEC). Her research is in the areas of entrepreneurship, innovation system, intellectual property rights, emerging industries (particularly green energy and biotechnology) in Asia, and latecomer strategy. She is currently acting as an Editor-in-Chief at Technological Forecasting and Social Change and Advisory Editorfor Research Policy. Her papers have been published in a variety of journals including Research Policy, Nature, World Development, Regional Studies, Innovation and Industry, and etc.

Dhanashree Ghare

Title: Medication and Mental Health Care for Longevity

Abstract: The integration of medication, mental health care, and yoga presents a promising approach to enhancing longevity by fostering both physical and psychological well-being in aging populations. As life expectancy continues to rise, managing mental health conditions such as anxiety, depression, and cognitive decline becomes critical for promoting healthy aging. Medications, can alleviate symptoms of mental health disorders and improve quality of life. However, combining pharmacological interventions with practices like yoga offers a holistic approach that addresses not only the biological aspects of health but also the emotional and cognitive dimensions. Yoga, with its emphasis on mindful movement, breath control, and meditation, has been shown to reduce stress, enhance mood, improve cognitive function, and promote relaxation. These benefits complement the effects of medication, potentially reducing the need for higher doses of pharmaceutical treatments and their associated side effects. This paper explores the synergistic potential of combining medication with yoga to optimize mental health care, emphasizing how this integrative approach can contribute to longer, healthier lives by promoting emotional balance, cognitive resilience, and overall well-being.

Biography: Dhanashree Ghare is a mental health professional and is working as a Counsellor at Marathwada Mitra Mandal Institutes. She has a master's degree in educational psychology from Savitribai Phule Pune University (SPPU) and an additional Masters and Specialist (Ed.S) degree in School Psychology from the University of Dayton, US.

She focuses on Positive Psychology, holistic mental health and well-being among students and faculty. She has conducted workshops on Happiness, Mindfulness and other topics related to mental health.

Seung Hwan Kang

Title: Smart Assistive Technologies for Longevity Lifestyles

Abstract: With age, it is becoming harder to live independently and ensure a high quality of life. Simultaneously, recent smart devices allow elderly people to live more comfortably and safely. These technologies, based on Artificial Intelligence (AI), provide individual support for elders' special needs. Devices like wearables that collect information, such as heart rate and activity levels, can be used to spot early health issues, such as falls, strokes, or impairments due to chronic disease. By using these tools, supported by telemedicine, healthcare becomes more accessible and can be personalized to the needs of each individual. AI additionally plays a role in brain health, for instance, with dementia, Alzheimer's, or multiple sclerosis. Smart devices, virtual assistants, and memory aids offer mental challenges that help train and activate the brain. These technologies can also provide emotional support, creating the effect of human companionship and belonging. Smart home devices are also playing a role in keeping elderly people safe at home. The use of a smart home environment, where lights, thermostats, and alarms act automatically, can create a safer area for the elderly and provide them with a sense of safety. In general, such artificial intelligence-driven tools not only promote physical safety but also psychological well-being. They also allow older people to stay connected to others, enabling them to socialize and stay physically active. This has allowed older adults to live more independently and enjoy an improved quality of life.

Biography: Assistant Professor Seung Hwan Kang, Ph.D., previously served as the Dean of the International College. He has over 20 years' experience of Information Technology in higher education. During his career, he has published over 50 papers in international conference proceedings and journals. He has worked on the Technical Program Committees and Editorial Review Boards of many conferences and journals besides his work. He has also been invited to deliver presentations on other occasions, at which he shares his knowledge and experience with other audiences. Though his early work concerned the Semantic Web and Artificial Intelligence, lately he has given attention to the role of IT in business and corporate contexts.

Yipei Liu

Title: Towards A Structured Approach to Quality Ageing: Experience from China

Abstract: Like many other countries in the developing world, China is experiencing rapid ageing in its population. While this trend presents pressing socio-economic challenges, it also provides opportunities for innovation in care delivery, community building, and business incubation. Efforts have been made in the public as well as private sectors to create and upgrade a network of infrastructure and services covering home-, community-, and facility-based settings, with the aim to create an accessible, affordable and sustainable system that enables the elderly to age with dignity, quality, and opportunity. This presentation will share some of the practices being implemented and experimented in China, and preliminary lessons drawn, in hope to spark interest and inspiration among international practitioners.

Biography: Yipei Liu is the President of Polus International College, a higher educational institution in Chengdu, China, specializing in technical and vocational education in the services sector. Prior becoming an educator, Yipei worked as a strategy consultant at Deloitte and Boston Consulting Group, where he had extensive experience serving leading healthcare providers, insurers, developers, investors, and government agencies on corporate development, strategic investment and industrial planning initiatives. Some of his clients included China Resources, CITIC Group, Taikang Life, and regional governments in Sichuan, Guangdong, and Anhui Province. Yipei holds a BA in Economics and Management from Oxford University, and an M.Phil in Planning, Growth, and Regeneration from Cambridge University.

Ingrid Rügge

Title: Soft Skill Development for Multidisciplinary Cooperation

Abstract: Aging and Longevity of human beings are challenges that the world is facing increasingly. To deal with these challenges, research, innovations, and measurements are needed in and from different academic disciplines. To be mostly efficient, international cooperation across these disciplines would be helpful. That is commonly agreed. But what has to be done concretely and what has to be avoided? The talk will share the lessons learnt from nearly 20 years of coordinating a multi-disciplinary international doctoral training group. It will focus on pitfalls as well as on opportunities of multi-disciplinary international cooperation. It will give useful hints on what to consider beyond published papers if you want to integrate results from Health and Medicine, Society and Humanities, Business and Economics, Technology, and Psychology to solve a global problem through an interdisciplinary approach to Enhancing Quality of Life. The main thesis of this talk is that the soft skill development of the involved researchers will be an important success factor. It will give examples from a technic-based area – logistics – that faces similar challenges. The aim of the talk is to discuss the options for knowledge transfer.

Biography: Dr.-Ing. Ingrid Rügge holds the position of Managing Director at the International Graduate School for Dynamics in Logistics (IGS) at the University of Bremen. Her research interests lie in the domain of human-computer interaction, with a particular focus on mobile work environments and the application of wearable computing technologies in industrial and healthcare sectors. Dr. Rügge is actively involved in numerous international collaborations and projects, notably within the Erasmus+ framework, demonstrating a strong commitment to fostering global academic partnerships. Her responsibilities also encompass significant teaching and mentoring activities, including the supervision of a substantial number of doctoral candidates. Her contributions to internationalizing doctoral training have been recognized through prestigious awards.

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Digital Transformation in Education, Research and Community Service for Smart Campus

Meliana Christianti Johan*[,1,2], Armein Z. R. Langi[1] and Radiant Victor Imbar[2]

[1]Bandung Institute of Technology, Bandung Jawa Barat 40132, Indonesia
[2]Maranatha Christian University, Bandung Jawa Barat 40164, Indonesia
33224001@mahasiswa.itb.ac.id

Abstract. Technological developments, particularly in the field of Information and Community Technology (ICT), have made it possible for Higher Education Institutions (HEIs) to adopt digital technologies that enhance education, research, and community service. These three components are interrelated in higher education and are referred to as the three pillars of Tridharma. A tangible example of DT in HEIs is the Smart Campus concept. The 61 selected articles from 2014 to 2024 that comprise this paper's systematic literature review explore and clarify the ways in which DT contributes to the development of Smart Campus environments. In addition to outlining research directions that advance campus smartness, the study explains the idea of DT. The study puts the TridharmaX model, a conceptual framework that combines technical breakthroughs with the traditional ideals of education, research, and community service. The goal of this approach is to address the challenges and opportunities involved in becoming a Smart Campus. The research highlights the necessity of using particular standards and evaluation instruments to gauge the success of the Smart Campus initiative. The results show that DT can greatly increase HEI efficacy in education, research, and community service. Clear measuring frameworks are used to establish the advantages of integrated ICT techniques in Smart Campuses.

Keywords: Campus smartness, Digital transformation, Higher education, Smart Campus.

1 Introduction

Strategic DT is becoming more and more necessary for HEIs to adapt to societal and technical changes as hubs for innovations and knowledge production. The Smart Campus is one of the new ideas in this area [1],[2]. According to Imbar et al., a Smart Campus is a campus that utilizes technological resources to solve challenges by offering Smart Services to improve the quality of life. The Smart Services use available technologies to run Smart System processes automatically with minimum human intervention [3].

The Smart Campus approach enables HEIs to align more effectively with the demands of the digital economy and the evolving needs of students, employers, and society [4].

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HEIs, as centers of knowledge, research, and community services, are required to achieve the best targets because a Smart Campus is not just a physical campus. By implementing the Smart Campus concept, educational institutions can set and measure relevant Key Performance Indicators (KPIs), such as student satisfaction levels, academic outcomes, and teaching effectiveness, all of which contribute to improving the overall quality of education. In addition, KPIs for HEIs include graduate employability, external student engagement, lecturers outside the HEIs, lecturer qualifications, implementation of faculty research, study program partnerships, classroom learning, and international [5][6]. However, structured guidelines for Information and Communication Technology (ICT) application in HEI settings are limited, posing challenges for institutions attempting to develop a Smart Campus [2].

Driven by competition, HEIs seek to improve their education, research, and community service processes to remain relevant. Emergency remote teaching during COVID-19 further highlighted the importance of technology in reshaping learning activities and assessments [7]. Digitalization in HEIs is an issue that concerns many educational stakeholders. ICT skills are becoming increasingly relevant in every context. One of the prime objectives for HEIs is to prepare future professionals to deal with problems and search for solutions, including digital competence as a vital skill set [8]. This challenge requires HEIs to improve the quality of learning to meet the demands of the times and optimize the use of technology to create a better academic environment.

In order to meet these demands, DT has emerged as a crucial facilitator for HEIs, enabling the creation of successful learning models that are amenable to ongoing improvement [9]. DT refers to new commercial ventures and methods of operation. Digital technology involves integrating digital technology into ever aspect of business, which will fundamentally change how companies function and provide value to their clients [10]. The education, research, and community service processes are the three interconnected parts of HEIs. These components are called the three pillars of Tridharma. Based on the Law of the Republic of Indonesia Number 12 of 2012 on higher education, Tridharma is the obligation of HEIs to conduct education processes, research, and community service [11]. This integrated approach ensures that educational institutions focus on academic excellence and contribute to community development through research and community engagement. The Director General of Higher Education, Ministry of Education and Culture, has also provided guidelines for higher education implementation and evaluation of lecturer workloads in carrying out the Tridharma of higher education [12].

Guided by the current need to equip young minds with 21st-century skills, the integration of ICT in education has changed the teaching and learning take place in educational institutions [13]. This study presents a systematic literature review to explore the intersection of DT and Tridharma through the lens of Smart Campus development.

2 Review Results

A systematic literature review is a method for evaluating and interpreting all relevant research relevant to a specific research question, topic area, or phenomenon of interest.

This study provides an unbiased evaluation of the research topic using a reliable, rigorous, and auditable methodology [14]. Table 1 shows inclusion and exclusion criteria as selection criteria for articles. A total of 61 selected articles from 2014 and 2024 were included after screening and quality assessment.

Table 1. Table captions should be placed above the tables.

Inclusion	Exclusion
Papers published between 2014 and 2024	Papers published before 2014
Journal Articles	Articles not relevant to the RQs
Conference Papers	News, reviews, non-academic articles, and opinions.
Publications in English	Publications in other languages
Studies related to Digital Transformation, Higher Education, Smart Campus, Smart Campus Framework and Smart Campus Model	Studies that are not relevant to the research topic

This section provides a detailed discussion based on the selected articles that answer the RQs.

2.1 RQ1: What Are the Key Areas where Smart Tridharma Applied in Developing Smart Campus?

The three primary pillars of HEIs (education, research, and community service) are connected to Smart Campus initiatives through the Smart Tridharma. The findings often demonstrate students' interest in attending a particular university [3], [15].

The Smart Tridharma identifies three critical areas that are essential to the creation of a smart campus. These domains provide a foundation for integrating Smart Systems to enable comprehensive operations. Several conceptual models have been proposed to support Smart Campus development. For instance, the Garuda Smart Campus Model, developed by SCCIC, provides a contextualized framework for measuring smartness in Indonesian HEIs [16]. A Smart Campus measurement model can be developed to measure the current level based on anthropocentric, systemic, and technological perspectives [2], [3], [17]. HEIs development also includes administrative modernization, curriculum reshaping, and instructional redesign, as shown in studies like Nguyen's [9] These modifications are a component of a larger Smart Campus Model that supports flexible learning spaces by including Smart Classroom settings [18], [19], [20], [21].

2.2 RQ2: What Are the Opportunities and Challenges in Implementing Smart Tridharma within Higher Education?

Some of the most noteworthy benefits are as follows: Smart technologies facilitate more successful and tailored educational experiences by enabling innovation in research, data-driven training, and adaptive learning systems [22], [23]. Increasing competitiveness and attractiveness: Smart campus implementations attract more students and improve university rankings [24], [25]. Efficiency and data-driven decision-making: Improved governance and resource allocation are made possible by real-time data analytics [22].

Despite these benefits, there are still many obstacles to overcome, such as: Technological and Infrastructure Restraints: Access to dependable digital infrastructure is a problem for many HEIs [26]. Institutional Readiness and Faculty Resistance: Institutional inertia and skills deficits frequently impede the adoption of new technology. Due to a lack of desire, training, or a clear institutional vision, faculty and staff may oppose digital projects [27]. Digital Skills and Readiness: Disparities in staff and student digital literacy may make it more difficult for Smart technology to be adopted and used fairly. HEIs must address these issues with all-encompassing initiatives that include inclusive digital policies, professional capacity building, and infrastructure development if they are to fully grasp the potential of Smart Tridharma [28].

2.3 RQ3: How Should Smart Tridharma Be Used To Accelerate The Achievement Of Campus Smartness?

Implementing Answer RQ3 to enhance campus smartness selecting articles present valuable insights into Smart Campus concepts integration and operationalization, emphasizing technological enhancement, effective user engagement, and adaptive support systems. (1) Technological Infrastructure and Smart Campus Models [2], [9], [10]. (2) Digital Transformation in Education and Personalized Learning [29], [25], [24], [30]. (3) Student-Centric Services and Support Systems [31], [23], [32], [33]. (4Evaluation and Measurement for Continuous Improvement [2], [10], [34], [35].

Moreover, the adoption of Education 4.0, driven by the Fourth Industrial Revolution, underscores the necessity of aligning ICT infrastructure, pedagogical design, and institutional policies. The integration of competencies, technologies, and innovation ecosystems is vital to creating learning environments that are agile, inclusive, and future-ready [17], [36].

3 Research Opportunities

The Smart Tridharma method offers a basis for integration as HEIs work to develop more responsive learning environments. AI and big data provide personalized learning, which fosters lifelong learning and allows for customized educational experiences. A ranking that takes into account the responsibilities of both technology and people is

necessary for a smart system to achieve requirements. The more technology is used, the more intelligent the system gets.

The TridharmaX places a high value on interconnection, flexibility, and inclusivity while designing Smart Campuses. It promotes the thoughtful synchronization of policy, infrastructure, instruction, and engagement in the community. It establishes the foundation for future research that will evaluate, enhance, and broaden the use of Smart Campuses in different learning settings.

The Smart System cycle consists of the following processes: Sensing involves gathering data, understanding involves preprocessing and analyzing data, decision-making involves making decisions based on analysis, action involves choosing the optimal course of action, and learning involves learning from the decisions made.

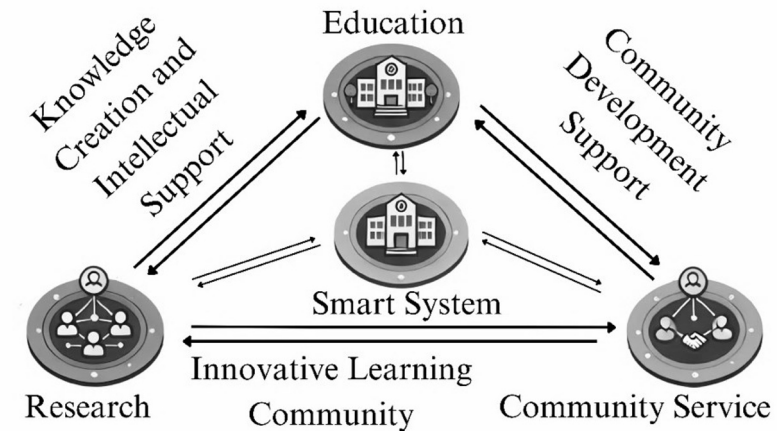

Fig. 1. TridharmaX Model

4 Conclusion

This systematic literature review has identified key areas where Smart Tridharma can be applied, indicating that its integration into education, research, and community service can significantly enhance campus smartness. The findings suggest that technology applications can improve the quality of learning, drive research innovation, and increase community engagement in community service. Furthermore, the review has highlighted the opportunities and challenges of implementing Smart Tridharma. The ability to integrate DT is critical in response to the needs of a Smart Campus. This study emphasizes the need for clear guidelines and measurement instruments to evaluate the effectiveness of Smart Campus initiatives. The study proposes the TridharmaX model as a foundational framework for future research and implementation. This model encapsulates the dynamic interplay between traditional academic missions and emerging technologies, offering a pathway toward more agile, inclusive, and sustainable higher education systems. Future research is recommended

to develop concrete guidelines, metrics, and case studies that demonstrate the model's adaptability across varied institutional contexts.

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