



**Collaborating for
knowledge, discovery
and impact.**

**HDR Research
Conference 2025**

Thursday 10 July 2025 | Online



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Federation University Australia acknowledges the Traditional Custodians of the lands and waters where our campuses, centres and field stations are located and we pay our respects to Elders past and present, and extend our respect to all Aboriginal and Torres Strait Islander and First Nations Peoples.

The Conference Committee would like to acknowledge and thank staff and HDR candidates who assisted with the organising of this event and contributed to the success of the conference.

Conference Committee

Professor Wendy Wright
Dr Robert Watson
Miss Emma Crawford

Keynote Speaker

Dr Arinola Akinnibosun

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Professor Wendy Wright

Dean, Graduate Research

It is my very great pleasure to welcome all HDR candidates and supervisors to our 2025 HDR Conference. Our conference theme this year is: *'Collaborating for knowledge, discovery and impact'* and I trust that delegates will enjoy sharing their achievements, their learnings and their experiences of the HDR journey. Our HDR conference is intended to provide a supportive environment in which HDR candidates can practise the skills associated with collaboration, including presenting their work and refining their communication skills.

The Federation University HDR Conference is held every year, alternating between an on campus and an online format. In 2025, our HDR conference is held online, allowing equal opportunities for candidates at all campuses and locations, and with various other commitments, to participate fully. We welcome all delegates and hope that you enjoy the opportunity to hear from colleagues across the University.

The annual HDR conference is a wonderful celebration of the work and contributions of the Higher Degree by Research candidates and a great opportunity to understand how HDR-led research at Federation is *transforming lives and enhancing communities*.

Welcome, and enjoy your HDR conference!



Professor Andrew Barton

Deputy Dean, Graduate Research

Welcome to the 2025 online Higher Degree by Research (HDR) conference. This important event brings together the HDR community to showcase research, celebrate progress, and share in each other's successes.

Communicating our work to peers is a fundamental element of research, and the ability to express complex ideas with clarity and insight is a skill that will serve you throughout your research journey and future career.

This year's theme, *Collaborating for knowledge, discovery and impact*, highlights the essential role of collaboration in expanding knowledge, uncovering new insights, and achieving meaningful outcomes. I'm especially eager to see how these dimensions are reflected in your presentations and posters.

At the heart of collaboration lies connection. The Graduate Research School is proud to see so many of its HDR candidates fostering deep, productive research partnerships. As we come together for this conference, let us celebrate this strength in our research community.

The Graduate Research School is deeply committed to supporting your research training and success. We're pleased to provide this opportunity for you to engage, connect, and be inspired. I encourage you to take full advantage of the conference and to support those participating in the program. May what you hear, and share, renew your enthusiasm for research and your broader professional endeavour.

Best of luck to all presenters and participants!



Oral Presentations

Collaborating for knowledge,
discovery and impact.



Financial technology and financial inclusion: Transforming access in the ASEAN region

Hemali Abeysooriya

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Doctor of Philosophy (Business)

Financial inclusion is pivotal for economic development, particularly in emerging markets. The Association of Southeast Asian Nations (ASEAN) region experienced rapid growth in financial technology (FinTech), which plays a crucial role in advancing financial inclusion particularly during the COVID-19 pandemic, by making financial services accessible and affordable. This study examines the determinants of financial inclusion in ASEAN, with a special focus on the role of FinTech. Data were extracted from the Global Findex, World Bank, and IMF's Financial Access Survey (FAS) covering 2010 to 2023. A three-stage Principal Component Analysis (PCA) was used to identify key variables influencing financial inclusion, particularly in relation to FinTech, and to reduce multicollinearity in regression models. The analysis focused on six of the most economically developed ASEAN countries: Indonesia, Malaysia, the Philippines, Thailand, Singapore, and Vietnam. The results reveal that both financial inclusion and FinTech have grown significantly across the ASEAN region, through the extent of their developments. This study provides a robust foundation for future research and continuous monitoring, supporting the development of effective and sustainable strategies for data-driven financial inclusion. Ultimately, the findings contribute to promoting more inclusive and resilient economic growth across the ASEAN region.



The impact of individuals' mental models of privacy on organisational cybersecurity readiness

Md Yeahia Bhuiyan

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Doctor of Philosophy

Cybersecurity remains a critical concern for higher education institutions, which often handle large volumes of sensitive information generated by students, faculty, and internal operations. The effectiveness of these institutions' cybersecurity efforts can be determined by technological measures, as well as the mental models of privacy held by employees and the broader organisational readiness.

This study proposes a framework exploring the relationship between individual employees' mental models of privacy and their influence on the institution's overall readiness to address cybersecurity threats. The research is focused on a qualitative single case study conducted at a regional Australian university, using semi-structured interviews and template analysis to gather insights from a diverse group.

Guided by the Protection Motivation Theory, this study examines how university individuals perceive privacy and security. Findings suggest that individuals' mental models of privacy shape their cybersecurity attitudes and behaviour, impacting organisational cybersecurity readiness. Factors including knowledge and experience, threat and coping, individual behaviour intention with lack of leadership and organisational support, largely influence individuals' decisions under sensitive circumstances. These findings assist institutions in working toward a more cohesive and proactive cybersecurity culture, where individuals are better equipped to protect privacy and data to serve the overall organisational readiness.



Withdrawn

Understanding justice interventions from young people's perspectives: Preliminary findings

Kerrie Bryant

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Doctor of Philosophy

Young people's voices are often missing from matters which affect them; this is particularly the case in the justice system (Bateman, 2020; Smithson & Jones, 2021). The aim of this research is to examine whether young peoples' experiences of justice interventions are appropriate and beneficial to their needs and give a voice to their experience. The research also explores comparative experiences between young people and facilitators of the interventions to see if there are correlations or gaps between how experiences are delivered compared to perceived.

The research design consists of a Constructionist approach. The theories of Social Ecological Theory and Critical Criminology aim to inform the researcher's understanding of the experiences of young people in a criminal justice setting. The method includes qualitative interviews with nine young people to elicit their lived experiences. Juxtaposing these narratives are the perceptions of nine workers on the efficacy of the interventions extracted via survey. The emergent themes indicate that young people are involved with the initial identification of the goals they want to work through, which is supported by workers but the success of the outcomes of the goals is dependent on whether they connect with their workers.

Kerrie Bryant is supported by an Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia.



Drivers and barriers of value addition in agricultural products in Australia

Thuy Van Dao

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Doctor of Philosophy

Value addition to agricultural products is a key strategy for enhancing farm profitability, stimulating local economic growth, and supporting sustainable regional development. This research investigates the perceptions, motivations, and constraints faced by farmers in rural Victoria, Australia, when adding value to their agricultural products.

The study used a mixed-methods approach, and an online survey was conducted with 83 farmers in Australia. Findings indicate that a significant majority view value addition as important, with 70% rating it as “very” or “extremely” important. Key motivations include increased profitability (73.5%), income diversification (46.9%), and capturing more value within the supply chain (51%).

However, several barriers hinder value-addition efforts. These include high production costs, regulatory complexity, limited infrastructure access, and difficulties securing finance—particularly due to high interest rates and stringent lending requirements. Challenges in accessing value-adding technology were also reported, with cost-effectiveness, technical reliability, and access to training identified as key influencing factors. A preliminary binary logistic regression model was tested to explore the relationship between demographic factors and value-adding behaviour. The study provides practical insights for policymakers and rural development agencies aiming to support innovation and competitiveness in the agricultural sector.

Thuy Van Dao is supported by a scholarship co-funded by the Ararat Rural City Council, Federation University Australia, and the Destination Australia Program.



Older Victorian Hospital in the Home Patients: demographics, admission pathways and outcomes

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Doctor of Philosophy

Due to the burden of caring for patients (particularly the elderly), hospitals have sought to reduce the burden of hospitalisations and improve patient outcomes through the use of “Hospital In The Home” (HITH) which provides hospital-level care in a patient’s home. This study investigates the demographics, admission pathways and outcomes of HITH patients aged 65+ in regional Victoria using data contained in the VAED (Victorian Admitted Episodes Dataset). Our study identified 2846 HITH episodes of care, accounting for 2.98% of all hospital admissions for patients aged 65 and over for 2022 and 2023. Males were more likely to be admitted to HITH. Overall the mean age for patients was 76.94, and most were admitted as elective (planned).

Overall, planned admissions were associated with longer length of stay compared to emergency admissions. The most common reason for planned admissions was chemotherapy. This is quite different than emergency admissions, where infections, respiratory diseases and urological/renal conditions were most prevalent. Most admissions were from private accommodation and discharged back to their own home. These findings may influence decision-making, to help profile the characteristics of patients who use HITH, which patients can be successfully treated in HITH and likely outcomes.



Enhanced engagement index to identify student engagement in online synchronous learning environment

Cinthia Joy Godly

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Doctor of Philosophy (Information Technology)

In recent years, online synchronous learning has evolved significantly to engage students effectively. Students have adopted online learning rapidly. However, research has shown that synchronous online learning has a variety of positive and negative impacts on student engagement when compared to traditional face-to-face learning. As teachers are accustomed to face-to-face teaching, one of the major challenges for them is to provide real-time feedback on students' progress during the online classroom session. The teacher's intuitiveness and factors in identifying the students' engagement during the traditional face-to-face classroom environment may not be applicable during online synchronous learning. Therefore, teachers need unconventional factors or parameters to determine student engagement during online delivery. The paper identifies online synchronous engagement parameters, and an engagement index is used to indicate the students' engagement, and a novel enhanced engagement index (eEI) is formulated to suit the online delivery mode. Our initial study results show that the enhanced engagement index varies proportionally based on the student's engagement during online synchronous learning. This enhanced engagement index (eEI) will assist teachers in identifying the disengaged students during the online delivery, enabling teachers to give real-time personal or reflective feedback.

Cinthia Joy Godly is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia



Decision-making and mental health in migrant Latin-American older adults

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Doctor of Philosophy (Nursing)

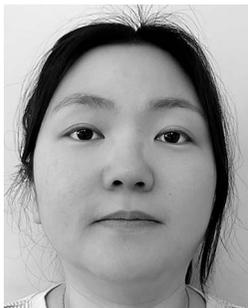
Understanding how older Latin-American immigrants make their own mental health decisions is crucial to understanding their needs. However, the mental health of older Latin-American immigrants in Australia has not been fully explored.

This study aimed to determine and explain the factors that underlie mental health decision-making among community-dwelling older Latin Americans in Australia, addressing a gap in understanding their mental health needs.

This study was conducted following a constructivist grounded theory approach. The inclusion criteria were Spanish-speaking immigrants aged 60 and older living in Australia. Twenty-three participants were included in this study. In-depth data analysis was undertaken. Ethical approval was conferred before starting data collection.

The findings revealed three key categories: Overcoming loneliness, ageing healthy, and Choosing one's own country. These categories are integrated into the core category of "Autonomous Decision-Making in Health." This framework illustrates how older Latin Americans approach mental health decisions, emphasising their strengths and challenges. They typically make decisions independently, valuing advice from trusted individuals and seeking information. Cultural factors significantly influence their decision-making.

Several psychosocial factors represent and outline the complexity of mental health decision-making in older Latin-American immigrants in Australia. Understanding these factors would help healthcare providers elaborate tailored interventions for these populations.



Perspectives of carers on the physical health of young people with early psychosis

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Doctor of Philosophy (Nursing)

Preventable physical health conditions are the leading cause of premature death among individuals with mental illness, and established literature confirms the importance of early prevention, detection, and intervention. The experience of carers navigating the mental health system for the first time with their loved ones experiencing early psychosis can be daunting and frightening. Left alone, they must find the right services and resources for physical health care or even determine what steps to take while accessing the mental health system. Young people who are at ultra-high risk of psychosis, or experiencing early psychosis are particularly vulnerable to poor physical health due to the impact of psychosis on their psychosocial and functional well-being, as well as the complications associated with psychotropic medications. Lifestyle interventions targeting physical health would not be sustainable without thoroughly considering and incorporating the needs and preferences of all key stakeholders into the intervention's design. Carers play a crucial role in promoting the physical health of young people with early psychosis. A qualitative study using an exploratory descriptive approach was conducted.

The aim of the study was to explore the experiences of carers of young people with early psychosis regarding physical health care. Semi-structured interviews were conducted with twelve carers via Microsoft Teams. Major themes were identified using thematic analysis, with a key finding highlighting the disconnection between physical and mental health care for young people with early psychosis. Participants described feeling overwhelmed while navigating the youth mental health system to access physical health care. The term "suboptimal care" emerged in the findings, with carers emphasising that challenges in accessing physical health care stem from a lack of coordination and resources within the mental health system. Unaware of the available resources and how to access them, carers are often left to act as self-coordinators for their loved ones, attempting to piece together the fragmented system in an effort to secure the necessary physical health care.

Ting Ting Hui is supported by the Australian Government Research Training Program Fee-Offset Scholarship through Federation University Australia.



Exploring the long-term impact of Generative AI on student learning and digital resilience in higher education

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Doctor of Philosophy

The rapid rise of Generative Artificial Intelligence (GenAI) tools such as ChatGPT has significantly reshaped the learning landscape in higher education. This research investigates how higher education students engage with GenAI tools over time, focusing on their evolving learning behaviours, academic integrity, and digital resilience. While some studies suggest that GenAI enhances efficiency and creativity, others raise concerns about reduced critical thinking, ethical challenges, and overdependence. Using a qualitative longitudinal approach, this study captures student experiences across multiple time points, exploring whether GenAI supports or hinders deeper learning and independent skill development. Braun and Clarke's reflexive thematic analysis was used to interpret interview data, revealing emerging themes around cognitive adaptation, ethical tensions, and shifts in academic practices. The findings contribute to understanding how students are not only using GenAI for immediate academic needs but also reshaping their relationship with learning technologies. This study highlights the need for universities to develop long-term strategies and training that foster ethical engagement and critical use of AI tools, supporting the development of true digital resilience. The outcomes aim to inform policy, curriculum design, and support services in the context of rapidly advancing educational technologies.



Teachers and parental voices in oral health of children: a qualitative study

Shariq Ali Khan

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Doctor of Philosophy (Public Health)

Aim: This qualitative study aimed to assess the perceptions, norms and practices of parents and teachers regarding oral health of the children living in Islamic boarding schools in Pakistan.

Methods: A qualitative study was conducted in May-June 2024 in four Islamic boarding in Lahore, Pakistan. Purposive sampling was utilized to recruit participants for the study. Ethics approval was taken from Human Research Ethics Committee of Federation University Australia and University of Punjab, Pakistan. Thematic analysis was done to identify major themes in the collected data.

Results: Three focused group discussions comprising of 7-10 participants per session with teachers, and 17 in-depth interviews with parents were conducted. Five major themes emerged from the data: oral health is part of Islamic teachings and Sunnah or Prophet (PBUH), use of alternatives to toothbrush, brushing habits and dental problems among children and caregivers, oral health-seeking behaviours and barriers, and schools have a positive role to play.

Conclusion: The study findings concludes that children's oral health behaviours are affected by their parents and teachers at school. Religio-cultural influences impact oral hygiene habits and schools should assist in providing regular access to dental products and dental services for the children living in Islamic boarding schools.



Carbon footprint and farm economics: strategies for net-zero agriculture

Kashif Khaqan

Supervisors: Professor Harpinder Sandhu (Principal Supervisor), Dr Benedikt Fest (Associate Supervisor) and Dr Tim Harrison (Industry Supervisor)

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Doctor of Philosophy (Business)

Achieving net-zero emissions in agriculture demands robust carbon accounting measurements and economically viable mitigation strategies at the farm level. This study estimates greenhouse gas emissions (GHG) and profitability of eight broadacre farms in Western Victoria, Australia, representing mixed enterprises, including livestock and cropping systems. The study reported emissions ranged from 0.71 to 2.13 tonnes per hectare, while profits varied between AUD 328 and 1210 per hectare from farm one to farm eight.

Scope 1 emissions such as enteric fermentation (38-84%), manure management (2-5%), and Scope 3 emissions from synthetic fertilizer (0-53%) use were the highest contributors to total emissions. In contrast, scope 2 emissions from energy use (0-1%) contributed less to the total emissions. Furthermore, the variability in emissions and profit between farm to farm was associated with number of sheep per hectare. This study helps to investigate the baseline emissions and provides carbon farming solutions including tree planting, and sheep reduction to mitigate GHG gases and achieve carbon neutrality at the farm level. However, this resulted in a decrease in profitability ranging from 20 to 99% depending on farm type and operation. The presentation will discuss the strategies and collaborative approaches for achieving net-zero agriculture.



Development and validation for competence assessment insights survey for Australian registered nurses

Lucy Osborn

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External Supervisors: Dr Georgina Willetts and

Associate Professor Jahar Bhomwik

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Doctor of Philosophy

Introduction/Purpose: Assessing nursing competence is essential for delivering safe, high-quality care and ensuring a capable workforce. However, current assessment methods often lack consistency and fail to capture the complexity of nursing practice. This study aimed to develop and validate the Competence Assessment Insights Survey for Australian Registered Nurses (CASIA-RN) to explore nurses' perceptions of competence assessment.

Methods: A cross-sectional online survey was developed using the framework by Boateng et al. (2018) and recommendations from O'Connor (2022). The instrument was informed by a literature review, expert input, and iterative refinement. It included Likert-scale items and open-ended questions. Psychometric development involved Principal Component Analysis, Exploratory Factor Analysis (EFA), and Confirmatory Factor Analysis (CFA).

Results: Pilot testing confirmed strong content and construct validity. Expert review supported content validity, while alignment with national frameworks supported construct validity. Psychometric testing led to the removal of one poorly correlated item, improving overall scale reliability. A two-factor structure was confirmed.

Conclusion: The CASIA-RN is a valid, reliable instrument for capturing Australian nurses' views on competence assessment and may support improved consistency in evaluation practices across clinical settings.

This PhD project support by an Australian Government Stipend Scholarship.



Farm-level data and sustainability assessment: Australian growers' perspectives

Bhola Paudel

Supervisors: Professor Harpinder Sandhu, Professor Shyh Wei Teng, Dr Shoaib Riaz and Dr Ramachandra Rao Kolluri

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Doctor of Philosophy (Business)

There is an increasing global interest in sustainable agriculture practices and the environment, social and governance (ESG) frameworks. However, a gap remains in the literature regarding how farmers themselves perceive and apply these concepts at the farm level. An online survey of Australian farmers was conducted to address this gap and examine sustainable agricultural practices, understanding of ESG concept, use of smart-farm technologies, and use of farm data in decision making. The survey results completed by 192 number of farmers across Australia, with leading from Victoria (50%), New South Wales (20%) and Queensland (10%). The survey results indicate that Australian farmers view sustainability primarily as an ethical responsibility handed down through generations, rather than as a set of technical measures. In contrast, ESG is largely unrecognized by 50% of respondent or regarded as tools used by corporates. This suggests that acceptance depends on collaboratively developing tools that speak farmers' language and respect their existing knowledge systems. Although 40 percent of respondents reported using at least one smart farming technology, barriers such as poor connectivity, high costs, and software usability issues impede broader adoption. Most farmers (76%) still rely on manually managed records and lack an integrated, offline-capable platform that can convert raw data into actionable insights while preserving autonomy and reliability. These findings highlighted the need for a farmer-centric ESG assessment framework that combines quantitative data streams with qualitative expertise.

Acknowledgement: Bhola Paudel's PhD is supported by Destination Australia and Department of Education Stipend Scholarship with tuition fee scholarship from Federation University in partnership with IBM.



Guardian at the source: Sensor self-assessment of data reliability in IoT applications

Sakib Shahriar Shafin

Supervisors: Professor Gour Karmakar, Professor Iven Mareels, and Dr Ramachandra Rao Kolluri

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Doctor of Philosophy

In an Industry 4.0 setting, data reliability of IoT sensors is crucial as the data informed decisions are made by humans or AI agents. Self-detection of the reliability of data at the sensor node presents itself as the natural first line of defence to ensure the integrity of subsequent decision processes. Given the limited computational and communication resources of typical field-deployed sensors, existing methodologies to evaluate data reliability are too demanding.

As past observations provide an acceptable hypothesis for the reliability of the present data, we present Kalman Filter inspired and computationally lightweight approaches to estimate the reliability of the present sensor data. Moreover, an adaptive mechanism that dynamically adjusts data block size is introduced to deal with temporal changes when estimating the reliability of a block of data for batch processing. Estimated reliability levels are conveyed using TCP header reserved bits, incurring no communication overhead. The approach is tested against two different test beds: water quality monitoring (WQM) and a healthcare application. Results show that our lightweight and highly scalable approach attains accurate reliability estimation in WQM (89.06%) and healthcare (82.63%) for 5-level reliability assessments. A real-world deployment using an Arduino-based sensor node demonstrates the feasibility of the approach.

Sakib Shahriar Shafin is supported by the Destination Australia and Department of Education Stipend with tuition fee scholarship from Federation University in partnership with IBM.



Rural Hospital generalist nurses experiences of client-initiated workplace violence: a scoping review

Christine Trotman

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Doctor of Philosophy

Workplace violence and aggression is a growing concern across most industry sectors globally. The healthcare industry is among the highest prevalence sectors, of which nurses are over-represented. High-risk hospital units including Emergency Departments, Aged Care and Mental Health Units have been well-researched. However less is known about these incidents increasingly seen in general hospital wards, where most nurses work. Workplace violence contributes to nursing workforce shortages with rural hospitals experiencing greater nursing workforce challenges than their urban counterparts. Resourcing issues in rural hospitals differentiate the risk of client-initiated violence towards nurses in general wards, compared to urban hospitals. The purpose of this study was to describe what is known about rural hospital general ward nurses' experiences of client-initiated workplace violence and aggression.

The literature review used PRISMA-ScR guidelines and sourced publications from CINAHL, Cochrane Library and Medline databases. Data synthesis of selected articles highlighted four major themes: high prevalence, incident under-reporting, contributing factors and negative psychosocial impacts. This identified a paucity of research on client-initiated violence towards nurses in rural hospital general wards. Workplace violence has serious implications for nurses' physical and psychosocial safety, adverse patient outcomes and recruitment and retention of nurses in rural hospitals and warrants further research.

Christine Trotman is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-offset scholarship jointly funded by Federation University Australia and Latrobe Regional Hospital.



World's first the digital Financial Resilience Index: Measuring nations by the prognostic value of digital financial literacy and inclusion

Dinesh Velusamy

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Doctor of Philosophy (Business)

In today's ever-changing digital financial environment, grasping digital financial literacy and promoting inclusion are essential for building resilience. These elements enable individuals to efficiently navigate disruptions, protect themselves from economic shocks, and foster long-term security and adaptability at both personal and national levels. This research assesses the predictive significance of digital financial literacy and inclusion, presenting a novel Digital Financial Resilience (DFR) Index for comparative purposes.

The DFR Index, developed through Exploratory Data Analysis (EDA) and a three-stage Principal Component Analysis (PCA), will rank nations based on their digital financial literacy and inclusion metrics (e.g., data from the 2023 Global Findex report and other reputable sources). This index aims to provide actionable insights for policymakers, educators, and fintech startups, driving strategies to enhance global financial resilience.

By using a comprehensive approach and thorough data analysis, the DFR Index will be an essential tool for measuring financial resilience among countries. It will highlight areas of strength and pinpoint opportunities for improvement, providing a roadmap for stakeholders to create targeted interventions. This innovative index promotes informed decision-making and nurtures a more inclusive and resilient financial ecosystem worldwide.



Poster Presentations

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Financial technology and financial inclusion: Transforming access in the ASEAN region

Hemali Abeysooriya

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Professor Bhavna Antony

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Doctor of Philosophy (Business)

Financial inclusion is pivotal for economic development, particularly in emerging markets. The Association of Southeast Asian Nations (ASEAN) region experienced rapid growth in financial technology (FinTech), which plays a crucial role in advancing financial inclusion particularly during the COVID-19 pandemic, by making financial services accessible and affordable. This study examines the determinants of financial inclusion in ASEAN, with a special focus on the role of FinTech. Data were extracted from the Global Findex, World Bank, and IMF's Financial Access Survey (FAS) covering 2010 to 2023. A three-stage Principal Component Analysis (PCA) was used to identify key variables influencing financial inclusion, particularly in relation to FinTech, and to reduce multicollinearity in regression models. The analysis focused on six of the most economically developed ASEAN countries: Indonesia, Malaysia, the Philippines, Thailand, Singapore, and Vietnam. The results reveal that both financial inclusion and FinTech have grown significantly across the ASEAN region, through the extent of their developments. This study provides a robust foundation for future research and continuous monitoring, supporting the development of effective and sustainable strategies for data-driven financial inclusion. Ultimately, the findings contribute to promoting more inclusive and resilient economic growth across the ASEAN region.



The impact of individuals' mental models of privacy on organisational cybersecurity readiness

Md Yeahia Bhuiyan

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Doctor of Philosophy

Cybersecurity remains a critical concern for higher education institutions, which often handle large volumes of sensitive information generated by students, faculty, and internal operations. The effectiveness of these institutions' cybersecurity efforts can be determined by technological measures, as well as the mental models of privacy held by employees and the broader organisational readiness.

This study proposes a framework exploring the relationship between individual employees' mental models of privacy and their influence on the institution's overall readiness to address cybersecurity threats. The research is focused on a qualitative single case study conducted at a regional Australian university, using semi-structured interviews and template analysis to gather insights from a diverse group.

Guided by the Protection Motivation Theory, this study examines how university individuals perceive privacy and security. Findings suggest that individuals' mental models of privacy shape their cybersecurity attitudes and behaviour, impacting organisational cybersecurity readiness. Factors including knowledge and experience, threat and coping, individual behaviour intention with lack of leadership and organisational support, largely influence individuals' decisions under sensitive circumstances. These findings assist institutions in working toward a more cohesive and proactive cybersecurity culture, where individuals are better equipped to protect privacy and data to serve the overall organisational readiness.



The V δ 2 T cell response to Group A Streptococcus

Tabitha Byron

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Doctor of Philosophy (Science)

T cells are a central element of the immune system and include subsets that help protect us from infections, cancer and damaged cells. A less well-defined subset — V δ 2 gamma delta T cells, recognise phosphoantigens in stressed, infected or cancerous cells. They have a rapid, potent cytokine response and can directly kill cells.

We recently found that V δ 2 T cells respond to a strain of Group A Streptococcus (GAS). GAS infections can cause sepsis and rheumatic fever and have a higher incidence in children. My project will analyse the V δ 2 T cell response to multiple clinically relevant strains.

Using in vitro stimulation assays and high-dimensional flow cytometry, we have discovered that V δ 2 T cells in adults are rapidly activated by five different strains of GAS. Furthermore, we have characterised a strong cytokine response in V δ 2 T cells, preceding the activation of CD4 and CD8 T cells.

We have also shown a diminished response from cord blood V δ 2 T cells compared to adults, indicating that maturation may be critical to their activation and response to GAS strains. Finally, we are exploring the activation mechanism of V δ 2 T cells to potentiate immune targets for GAS vaccines and immunotherapies.



Investigating improved '*Haemonchus contortus*' parasite surveillance in Victorian sheep

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Doctor of Philosophy

Gastrointestinal nematode infections are a major economic disease impacting sheep productivity in Australia. Although infrequently reported in Victoria, it appears *Haemonchus contortus* infections are now becoming more widespread and common. Necessary surveillance of infections is currently lacking due to costs, time and labour required for testing. The current industry standard test is larval culture, which takes 1-2 weeks, and requires a trained specialist. This is problematic as *H. contortus* infection in sheep can cause death quickly, so rapid diagnostics would be valuable.

This research compared a colorimetric loop-mediated isothermal amplification (LAMP) rapid test for *H. contortus* to Nemabiome deep-amplicon sequencing and larval culture from sheep faecal samples. There was a 74% agreement between LAMP and larval culture results (n=20/27 samples). Similarly, LAMP and deep-amplicon sequencing both agreed within 70% of the same samples (n=19/27 samples). An expanded study of samples from Victorian saleyards, resulted in a 66% agreement between LAMP and deep-amplicon sequencing techniques (n=42/63 samples).

Colourimetric LAMP may be a promising, rapid diagnostic, helping improve animal welfare through rapid infection surveillance, adding knowledge on *H. contortus* infection distribution and the influence of climate in Victoria. This information will be provided to stakeholders through an online portal.



Enhanced engagement index to identify student engagement in online synchronous learning environment

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Doctor of Philosophy (Information Technology)

In recent years, online synchronous learning has evolved significantly to engage students effectively. Students have adopted online learning rapidly. However, research has shown that synchronous online learning has a variety of positive and negative impacts on student engagement when compared to traditional face-to-face learning. As teachers are accustomed to face-to-face teaching, one of the major challenges for them is to provide real-time feedback on students' progress during the online classroom session. The teacher's intuitiveness and factors in identifying the students' engagement during the traditional face-to-face classroom environment may not be applicable during online synchronous learning. Therefore, teachers need unconventional factors or parameters to determine student engagement during online delivery. The paper identifies online synchronous engagement parameters, and an engagement index is used to indicate the students' engagement, and a novel enhanced engagement index (eEI) is formulated to suit the online delivery mode. Our initial study results show that the enhanced engagement index varies proportionally based on the student's engagement during online synchronous learning. This enhanced engagement index (eEI) will assist teachers in identifying the disengaged students during the online delivery, enabling teachers to give real-time personal or reflective feedback.

Cinthia Joy Godly is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia



Predicting hydrogen production from PEM electrolyzers

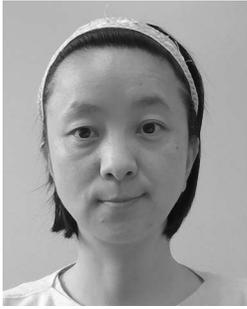
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Doctor of Philosophy

A Proton Exchange Membrane (PEM) water electrolyser is a clean energy device that uses electricity to split water into hydrogen, oxygen, and heat. Its design and components are key areas of green hydrogen research, where performance and durability testing are essential. In this study, 15 input parameters were used to predict the Hydrogen Production Rate (HPR) using two modelling approaches: Artificial Neural Network (ANN), a machine learning model, and Polynomial Regression (PR), a statistical method. The ANN model demonstrated superior performance, achieving a Mean Absolute Error (MAE) of 1.61 for training and 2.72 for testing, with R2 scores of 1.0000 and 0.9998, respectively. In contrast, the PR model showed lower predictive accuracy. These results highlight the effectiveness of AI-based approaches in reducing time, cost, and effort in the development of PEM electrolyzers.



Optimizing cheese production with machine learning – enhancing consistency, yield, and efficiency

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Master of IT

Cheese production is a vital component of the global dairy industry, contributing significantly to both economic value and dietary habits. Among the vast array of cheese varieties, Cheddar cheese stands out as one of the most widely produced and consumed, making it a critical focus for optimization efforts. Despite its popularity, the production of Cheddar cheese is highly variable due to fluctuations in milk composition, fermentation dynamics, and processing conditions. These challenges often lead to inconsistencies in quality, inefficiencies in yield, and higher production costs.

To address these issues, this project focuses on developing an AI-driven system tailored specifically for optimizing Cheddar cheese production. By leveraging machine learning (ML) techniques, the project aims to improve consistency, yield, and efficiency of Cheddar cheese manufacturing processes. This research will integrate historical and real-time production data, such as milk composition, fermentation profiles, and processing conditions, to develop predictive models and optimization tools. These ML-powered tools will enable process adjustments, ensuring uniformity while maximizing yield and reducing waste. The study will lay a solid foundation for future large-scale implementations, leveraging a collaborative partnership with Food Science experts to apply cutting-edge ML techniques to the specific challenges of Cheddar cheese production.

Xiaojie (Jane) Hu is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.



Exploring beef producers' perceptions of cultivated beef: challenges and opportunities

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Doctor of Philosophy

Cultivated beef has gained attention as a potentially promising protein source that can enhance sustainability and improve animal welfare, while also presenting challenges and opportunities for the livestock sector. This study explores the perceptions of beef producers in the United States of America (USA) and France regarding cultivated beef, focusing on familiarity, perceived risks and opportunities, and prospects for collaboration with the cultivated meat industry. We conducted online surveys of 111 beef producers in the USA and 61 in France to assess their awareness, perception on potential impacts, and openness to collaborate with cultivated meat industry. Both groups were aware of cultivated meat, however, producers in USA were more familiar with its production process (92.68% in the USA and 84.91% in France). Producers with prior knowledge of the cultivated beef production rated its environmental benefits (75.36 vs. 54.47; $p < 0.001$) and zoonotic risks reduction (72.09 vs. 57.58; $p = 0.012$). Many respondents were uncertain about the possibility of collaboration with the cultivated meat industry (36.71% in the USA and 67.31% in France). It shows that sharing knowledge and communication are important in supporting coexistence and enabling potential collaboration.

Priyambada Joshi is funded by a fee-offset scholarship through Federation University Australia and industry scholarship from Aleph Farms.



Oral health of children in Pakistani Islamic boarding schools: a mixed-method study

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Doctor of Philosophy (Public Health)

Oral diseases affect half of world population yet oral health services are not distributed in equitable manner. Globally, Islamic boarding school attendance represents a substantial proportion in Muslim countries including Pakistan. This study aimed to explore Oral Health (OH) among these children in Pakistan. The tools included: self-reported questionnaire (children), focused group discussions (teachers) and in-depth interviews (parents).

A total of 534 adolescents participated, mean age was 15.37 ± 1.63 and 49.6% were girls. 74% had never visited a dentist, 24% were unable to afford dentist fee, 56% had no plans of seeking dental treatment, 58% reported bleeding gums, 95% brushed regularly, and 59% were consuming sugary products. Mean scores were calculated as: oral health status 13.44 ± 4.64 , oral health literacy 17.55 ± 5.14 and OHRQoL 99.4 ± 23.44 . Parents informed financial barriers and unawareness about need of regular dental checkups for not seeking dental treatment for their children. Teachers emphasised on Islamic teachings about using miswak regularly, but oral health screening or treatment programs/policies were not established in any of the schools.

These results suggests that majority of children had not visited a dentist and were unaware of the importance. Health promotion strategies could be incorporated into the school curriculum to increase awareness.

Shariq Ali Khan is recipient of Australian Government Research Training Program (RTP), Fee-Offset Scholarship through Federation University Australia. He is also a recipient of HDR Foundation Scholarship 2025.



A systematic review of the prevalence of ADHD and autism amongst those experiencing gambling harm

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Doctor of Philosophy (Psychology)

Preliminary research has found that people with Attention-Deficit Hyperactivity Disorder (ADHD) and Autism Spectrum Disorder (ASD) have a higher susceptibility to participating in harmful gambling behaviours (Vintró-Alcaraz, 2024). In addition to this susceptibility to addictive behaviours, those with co-occurring ADHD and gambling addiction have also been noted as experiencing more severe issues with gambling when compared to their neurotypical counterparts (Brandt & Fischer, 2017). The same co-occurrence exists within Autistic people who participate in gambling, as existing research finds a strong association between autistic traits and symptoms of problem gambling (Grant & Chamberlain, 2020). The susceptibility and severity of risky gambling behaviours in those with ADHD and Autism highlights the need to prevent and reduce harm from gambling.

The objective of this ongoing systematic review is to determine the prevalence of ADHD and autism in those participating in harmful gambling behaviours globally. The review is designed with the aim to establish this issue as a public health concern and inform future research to better protect people with ADHD and autism from gambling harm.

Lochie Timms-McLean is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.



Building life after migration: how programs and events help refugee youth settlement outcomes?

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Doctor of Philosophy (Business)

There's a growing body of literature on migrant and refugee settlement; however, there is a lack of understanding of the factors that promote successful integration and settlement for young migrants and refugees in Australia. Therefore, to create a more inclusive and equitable society, it's vital to understand the programs and initiatives that can help streamline the settlement of refugees, especially refugee youth. This study will examine the effectiveness of programs, projects, and events provided by a community organization for refugee youth, especially South Sudanese youth. It will also evaluate how these initiatives contribute to positive settlement outcomes. The poster presents an overview of this research project starting from a research background, followed by the main aim and research question, proposing a conceptual framework, advising the method and methodology, and ending with the potential outcomes for this research project.

Tam Tran is supported by the Wyndham Community and Education Centre Inc Co-Op Scholarship and an Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia.



World's 1st the digital Financial Resilience Index: Measuring nations by the prognostic value of digital financial literacy and inclusion

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Doctor of Philosophy (Business)

In today's ever-changing digital financial environment, grasping digital financial literacy and promoting inclusion are essential for building resilience. These elements enable individuals to efficiently navigate disruptions, protect themselves from economic shocks, and foster long-term security and adaptability at both personal and national levels. This research assesses the predictive significance of digital financial literacy and inclusion, presenting a novel Digital Financial Resilience (DFR) Index for comparative purposes.

The DFR Index, developed through Exploratory Data Analysis (EDA) and a three-stage Principal Component Analysis (PCA), will rank nations based on their digital financial literacy and inclusion metrics (e.g., data from the 2023 Global Findex report and other reputable sources). This index aims to provide actionable insights for policymakers, educators, and fintech startups, driving strategies to enhance global financial resilience.

By using a comprehensive approach and thorough data analysis, the DFR Index will be an essential tool for measuring financial resilience among countries. It will highlight areas of strength and pinpoint opportunities for improvement, providing a roadmap for stakeholders to create targeted interventions. This innovative index promotes informed decision-making and nurtures a more inclusive and resilient financial ecosystem worldwide.



Defining ageing well in Australia

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Doctor of Philosophy (Psychology)

Currently there is no consensus of what 'ageing well' means. This has implications for research, and the provision of appropriate support for older Australians. In response, this research project sought to define ageing well, as informed by the older Australian population. Two participant cohorts participated in a mixture of interviews and qualitative surveys. All participants were aged 65 years or above, lived in Australia, and could read and understand English. Seven-hundred-and-twenty-two participants (476 women, 245 men, 1 gender-non-conforming female) from the general population were included, aged between 65 – 98 years ($M = 74.48$, $SD = 6.12$). In addition, 14 victim-survivors of the Holocaust were included in the project (6 women, 7 men), aged between 80 - 93 years ($M = 86.92$, $SD = 3.94$; age missing for one participant). Qualitative responses were analysed among each cohort using inductive thematic analyses. Findings were synthesised to produce a single definition of ageing well, provided in this poster. Most Australians considered themselves to be ageing well, regardless of gender, health status, or whether they experienced the Holocaust. This definition and knowledge provide a contemporary framework for policy makers, client-facing workers, carers, and older Australians, to understand and support ageing well among their communities.

Chloe Waddell is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.



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