Research Methodology

Authors:
Saliza Azlina Osman, Nurulhidayah Basari, Norhazirah Kemin

email:
salizaz@uthm.edu.my
hidayahb@uthm.edu.my
norhazirah@uthm.edu.my

Abstract:

This Research Methodology Module is designed to provide postgraduate students at UTHM with a structured and comprehensive approach to understanding and applying research methodologies in academic studies. It offers a detailed exploration of the principles. techniques, and ethical considerations that support scientific inquiry across diverse disciplines

The module is carefully organized to guide postgraduate students through fundamental concepts of research, including hypothesis development, data collection, and analysis, with a balanced emphasis on qualitative and quantitative methods. It also features in-depth discussions on data analysis techniques and related aspects of research. Furthermore, the use of artificial intelligence (AI) in streamlining literature reviews is highlighted as a critical tool for postgraduate research endeavors.

This module represents a collaborative effort by academics to ensure its relevance and alignment with postgraduate academic needs. It serves as an essential resource for postgraduate students, empowering them to strengthen their methodological capabilities and excel in their academic pursuits.

Keywords: Axiology, Boolean Operators, Gap Identification, Key Concepts of Research, Ontology

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Saliza Azlina Osman
Nurulhidayah Basari
Norhazirah Kemin

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Nurulhidayah Basari
Norhazirah Kemin

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AUTHORS

Wan Hanim Nadrah Wan Muda
Nor Lisa Sulaiman
Hairuddin Mohammad
Muhammad Faiz Ramli
Khairunesa Isa
Mazidah Mat Rejab
Norhadilah Abdul Hamid
Norliana Sarpin
Wan Mahani Hafizah Wan Mahmud
Chan Chee Ming
Alina Shamsuddin
Zulida Abdul Kadir
Eta Wahab
Yee Mei Heong
Shahrul Niza Mokhatar
Nazirah Mohamad Abdullah
Basil David Daniel
Norhalina Senan
Nor Hazana Abdullah
Anizam Mohamed Yusof
Nan Mad Sahar
Normayati Nordin
Faridah Abu Bakar
Aimi Syamimi Ab Ghafar
Syahira Mansur
Norzila Othman
Asrul Affendi Abdullah
Riduan Yunus
Nur Zainatul Nadra Zainol
Andri Kusbiantoro
Siti Suhana Jamaian
Angzzas Sari Mohd Kassim

CO-EDITOR

Mohamad Firdaus Zaini
Mohd Firdaus Mahmood
Nurul Ain Juhari
Nur Raimi Ab Razak

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Preface

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Saliza Azlina Osman
Nurulhidayah Basari
Norhazirah Kemin

MODULE 1: INTRODUCTION

WAN HANIM NADRAH WAN MUDA
NOR LISA SULAIMAN
HAIRUDDIN MOHAMMAD
MUHAMMAD FAIZ RAMLI

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MODULE 2: LITERATURE REVIEW

KHAIRUNESA ISA
MAZIDAH MAT REJAB
NORHADILAH ABDUL HAMID
NORLIANA SARPIN
WAN MAHANI HAFIZAH WAN MAHMUD

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MODULE 3: RESEARCH METHODOLOGY

CHAN CHEE MING
ALINA SHAMSUDDIN
ZULIDA ABDUL KADIR
ETA WAHAB
YEE MEI HEONG
SHAHRUL NIZA MOKHATAR

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MODULE 4A: RESULTS AND DISCUSSION (SCIENCE & TECHNOLOGY)

NAZIRAH MOHAMAD ABDULLAH
BASIL DAVID DANIEL
NORHALINA SENAN

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MODULE 4B: DATA ANALYSIS, RESULT & DISCUSSION (SOCIAL SCIENCE)

NOR HAZANA ABDULLAH
ANIZAM MOHAMED YUSOF

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MODULE 5: ABSTRACT, CONCLUSION AND RECOMMENDATION

NAN MAD SAHAR
NORMAYATI NORDIN
FARIDAH ABU BAKAR
AIMI SYAMIMI AB GHAFAR
SYAHIRA MANSUR

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MODULE 6: THESIS WRITING, PUBLICATION AND COMMERCIALIZATION

NORZILA OTHMAN
ASRUL AFFENDI ABDULLAH
RIDUAN YUNUS
NUR ZAINATUL NADRA ZAINOL
ANDRI KUSBIANTORO
SITI SUHANA JAMAIAN
ANGZZAS SARI MOHD KASSIM

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Biography

Assoc. Prof. Dr. Wan Hanim Nadrah Wan Muda conduct research in the area of management and leadership in education focuses on developing change management and effective leaders in educational institutions. She is an applied broad empirical interest focusing on mathematics education to examining and improving the nature of expertise in mathematics instructions. She is currently a faculty member, senior researcher of the Center of Research at University Tun Hussein Onn Malaysia; Advanced Center for Technical and Vocational Education (ACTiVE) and Affiliate Researcher of Malaysia Research Institute for Vocational and Training (MyRIVET).

She acquired B.Sc. in Computational Mathematics from Universiti Malaysia Terengganu (UMT) and M.Ed. In Technical and Vocational Education at Universiti Tun Hussein Onn Malaysia (UTHM). She further her study in PhD at Universiti Technology Malaysia in Technical and Vocational Education in 2013.

Dr. Wan Muda's primary research interests include organizational management and effective leadership. She has published research papers on knowledge creation and knowledge sharing in leadership capabilities. Most recently, she has been involved in a study on collaborative applied mathematics, technique and system development to addressed paddy disease.

She takes a mixed-method approach to create a research outcome stronger, leading debates about key issues and collaborating for change. One of the most satisfying aspects of her work is that it allows her to express and advocates her thinking in management and leadership challenges in education research.

Assoc. Prof. Dr. Nor Lisa Sulaiman, Ph.D. is currently a faculty member, research scientist, consultant, and trainer at Universiti Tun Hussein Onn Malaysia. Nor Lisa has more than 12 years of experience teaching research methodology. She obtained her B.Sc. (Hons.) in Electronic Communication Engineering and M.Ed. in Technical Education from Universiti Teknologi Malaysia. She continued her quest for knowledge by earning her Ph.D. in Education and Human Resource Studies with specialization in Leadership, Renewal, and Change: Curriculum and Instruction (Critical Thinking) from Colorado State University, U.S.A. in 2012.

Her commitment to knowledge expansion is evident in her diverse academic pursuits, including a two-year postdoctoral fellowship at the same university in 2017. She seeks to build more connections to explore and expand new possibilities for her knowledge and skills in her specific areas of research, consultation, and training.

Dr. Hairuddin Mohammad completed his PhD in Built Environment at the Faculty of Architecture, Planning, and Surveying, Universiti Teknologi MARA. Aside from teachings, he actively conducts research, publishment, consultancy, and other related services. Having a speciality in competency development within the construction realm, he has and currently helped several organisations for strategic betterment, including the Department of Skills Development (DSD, MOHR), the Construction Industry Development Board (CIDB Malaysia), the Malaysian Qualification Agency (MQA), and other government and private entities - with his aim to contribute his humble expertise for the betterment of Malaysia's academia and industry.

Apart from being knowledgeable in translating research outcomes into commercial products, he has accumulated several awards in national and international competitions. Finally, since 2016, he has held several copyrights, industrial design, and patent files.

Dr. Muhammad Faiz Ramli is a lecturer at the Faculty of Mechanical Engineering and Manufacturing, Universiti Tun Hussein Onn Malaysia (UTHM). He holds a Bachelor's degree in Aircraft Engineering from Universiti Kuala Lumpur MIAT and a Master's degree in Aerospace Mechanics and Avionics from the Institut Supérieur de l'Aéronautique et de l'Espace (ISAE), which he completed in 2014. In 2020, he earned his PhD. in Mechanical Engineering from UTHM. Dr. Faiz's research interests focus on Artificial Intelligence, with a specific emphasis on computer vision and image processing techniques. His work aims to leverage these advanced technologies to address complex challenges in aerospace and mechanical engineering, contributing to the ongoing advancement of the field.

Assoc. Prof. Dr. Khairunesa Isa is an Associate Professor at the Centre for General Studies and Co-curricular, Universiti Tun Hussein Onn Malaysia. With over a decade of experience in teaching, research, publication, consultancy, and community engagement, she has made significant contributions to both academia and practice. Her research interests focus on Social Sociology, Social Sciences, and Human Resource Development. In her consultancy work, Dr. Khairunesa specializes in research methodology and training tailored specifically for postgraduate students, as well as corporate professionals. She is committed to equipping her clients with the necessary skills and knowledge to excel in their respective fields. A prolific author, Dr. Khairunesa has published extensively across various genres, including books, academic journals, and conference proceedings, with her work featured in both print and digital media. Her contributions reflect a deep commitment to advancing both scholarly research and practical applications.

Ts. Dr. Mazidah Mat Rejab is Senior Lecture at Faculty of Computer Science and Information Technology, Universiti Tun Hussein Onn Malaysia. She received BSc in Software Engineering at Universiti Teknologi Malaysia (UTM) and MSc in Software Engineering at Universiti Teknologi Malaysia (UTM). Her PhD degree in Software Engineering from Razak Faculty of Technology and Informatics, Universiti Teknologi Malaysia. She had 12 years industry experience in software engineering field.

Assoc. Prof. Ts. Dr. Norhadilah Abdul Hamid is a lecturer at the Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia (UTHM). She holds a BSc in Technology Management (Universiti Utara Malaysia), an MSc in Engineering Management, and a PhD in Management (Universiti Putra Malaysia). She teaches Technology Management, Innovation and Commercialisation Management, Production and Operation Management and Industrial Engineering. Her research focuses on technology and operation management. Contact: hadilah@uthm.edu.my | +07-4533883.

Ts. Dr. Norliana Sarpin is a Senior Lecturer in the Department of Construction Management at the Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia (UTHM). She earned her Ph.D. in Construction Management from Queensland University of Technology in 2015, following a Master degree in Construction Management (2006) and a Bachelor degree in Quantity Surveying (2000) from Universiti Teknologi Malaysia. Her research interests encompass construction management, sustainability in construction, facility management and human resource management in construction. Dr. Norliana has contributed to various publications, including the book "Inovasi Pengurusan Pembinaan" and several journal articles focusing on sustainable construction management practices.

Assoc. Prof. Dr. Wan Mahani Hafizah Wan Mahmud received the B.E. degree in biomedical engineering from the Universiti Teknologi Malaysia, Malaysia, in 2009, and later received her PhD. degrees in biomedical engineering from the same university in 2013. In 2014, she started joining the Department of Electronic Engineering, Universiti Tun Hussein Onn Malaysia, as a Lecturer. Her current research interests include ultrasound imaging, medical image processing, computer aided system, telemedicine, and rehabilitation.

Prof. Ir. Dr. Chan Chee Ming is a distinguished figure in geotechnical engineering, currently serving as a professor at Universiti Tun Hussein Onn Malaysia (UTHM). He earned his Doctor of Philosophy in Geotechnical Engineering from the University of Sheffield in 2006 and his Bachelor's degree in Civil Engineering from Kolej Universiti Teknologi Tun Hussein Onn in 2001.

Throughout his career, Prof. Chan has held several significant academic and administrative positions at UTHM. Notably, he served as the Deputy Dean (Academic and Research) at the Center for Graduate Studies from March 2015 to February 2017.

Prof. Chan's research primarily focuses on geotechnical engineering, with a particular interest in soil stabilization and the reutilization of dredged marine soils. His scholarly contributions are well-recognized, with his publications garnering over 1,300 citations, reflecting his impact on the field.

In addition to his research, Prof. Chan has authored and contributed to several books and book chapters, including "The Sinking Earth" published by UTHM in 2012, which delves into geotechnical challenges and solutions.

Assoc. Prof. Dr. Alina Shamsuddin is a Professor of Technology Management at the Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia (UTHM), and one of the founding members of the faculty. She obtained her Ph.D. in Performance Measurement from the University of Strathclyde, Glasgow, Scotland in 2007. Her academic experience spans more than 20 years during which she hones her expertise in Technology Adoption, Supply Chain Management, and Halal Logistics. She is actively involved in program development at UTHM and has more than 10 years of experience as a program and institutional auditor for the Malaysian Qualification Agency (MQA and consulted by various Polytechnics, Kolej Kemahiran Teknologi Mara (KKTM), and vocational colleges for her expertise in academic assessment and assurance. She has led research portfolios valued at more than RM500,000 and has been involved in projects with a total value of almost RM2 million.

Assoc. Prof. Dr. Zulida Abdul Kadir, an associate professor at Universiti Tun Hussein Onn Malaysia, has authored works on Problem-Based Learning (PBL), Motivation, Communication and Language Teaching. She obtained her PhD and Master's degrees in Human Communication. She holds a bachelor's degree in English Language and Literature. Furthermore, she has accumulated over two decades of experience in the field of education. She instructs undergraduate students in English language and postgraduate students in Research Methodology. Her most proficient writing is in the field of quantitative research. Her passion lies in travelling, and she thoroughly enjoys participating in students' activities, particularly mobility courses.

Assoc. Prof. Dr. Eta Wahab is an Associate Professor at the Department of Management and Technology, Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia (UTHM). She earned her Ph.D. in Management from Curtin University Australia, in 2010. Her research focuses on Human Resource Management, Management, Technology Management and Organizational Behaviour. She is also a certified Microsoft Certified Technology Specialist, a Power BI Data Analyst Associate, and a member of the Malaysian Institute of Management (MIM). She has also served as the chief editor for the Journal of Humanistic, Management and Social Science Review and is a reviewer for several other management journals. Dr. Eta has over 25 years of teaching experience, having taught a variety of courses including Management, Human Resource Management, Organizational Behaviour, Research Methodology, Service Management, Innovation and Commercialization Management, Technology Management, Occupational Safety and Health and Strategic Management.

Assoc. Prof. Ts. Dr. Yee Mei Heong is a senior lecturer in the Department of Professional Education and Postgraduates at the Faculty of Technical and Vocational Education, Universiti Tun Hussein Onn Malaysia (UTHM). She obtained her first degree, the Bachelor of Technology with Education, from the Faculty of Education, Universiti Teknologi Malaysia. She completed her master's in Technical and Vocational Education at the same university. She received her Doctor of Philosophy of Technical and Vocational Education doctorate from Universiti Tun Hussein Onn Malaysia in 2015. She has been the head of program for the Doctor of Philosophy in Education since 2014. She also was a head of the laboratory in 2014–2016.She also supervises postgraduate students, undergraduate, teaching practicum, industrial training and also appointed as trainer, subject matter expert in Technical and Vocational Education courses, professional consultant for Learning Styles, Higher Order Thinking Skills (HOTS) and Problem solving Inventory from various universities and institutions. Her academic expertise includes problem-solving skills, higher order thinking skills, learning styles, teaching styles, modular approaches to teaching and learning, 21st learning skills and approaches. She has successfully completed 32 research grants since 2007 and is now working on three ongoing research grants. She has published over 100 journal articles, teaching modules, books, book of chapters and copyrights in her area of expertise.

Assoc. Prof. Ir. Dr. Shahrul Niza Mokhatar is a lecturer at the Faculty of Civil Engineering and Built Environment, Universiti Tun Hussein Onn Malaysia. He earned his Ph.D. in Civil-Structural Engineering from Kyushu University, Japan, in 2013. His primary research interests include structural engineering, materials engineering, computational modeling of reinforced concrete (nonlinear finite element analysis and the smoothed particle hydrodynamics method), and impact engineering. Ir. Dr. Shahrul is a registered professional engineer with the Board of Engineers Malaysia (BEM), an ASEAN Chartered Professional Engineer, and a member of both the Institution of Engineers, Malaysia (IEM), and the International Association of Engineers (IAENG). He has published over 100 articles in international journals and conference proceedings.

Assoc. Prof. Sr. Dr. Nazirah Mohamad Abdullah obtained her PhD in Geomatic Engineering from Universiti Teknologi Malaysia (UTM) Skudai in 2017. She began her career as a lecturer in 1999 and is currently serving as a senior lecturer at the Faculty of Applied Science and Technology. In recognition of her dedication to mentoring, she was awarded the Best PhD Supervisor award in the Science and Technology category in 2024. Dr. Nazirah is actively engaged in writing scientific books and participating in innovative projects, contributing significantly to her field of expertise.

Dr. Basil David Daniel is a senior lecturer at the Faculty of Civil Engineering and Built Environment, Universiti Tun Hussein Onn Malaysia, specialising in Traffic and Transportation Engineering. With over 20 years experience in the academia, he obtained a Doctor of Philosophy from the University of Canterbury, New Zealand in 2013 and a Master of Science from Universiti Putra Malaysia in 2003.

Dr. Norhalina Senan is a Senior Lecturer in the Multimedia Department at the Faculty of Computer Science and Information Technology (FSKTM), Universiti Tun Hussein Onn Malaysia (UTHM). She completed her Bachelor of Science in Computer Science and Master of Science in Computer Science at Universiti Teknologi Malaysia (UTM). She later earned her Doctor of Philosophy (PhD) in Information Technology from Universiti Tun Hussein Onn Malaysia (UTHM). Norhalina Senan is actively involved in research, with her areas of expertise including soft computing, data mining, augmented reality, virtual reality, and human-computer interaction. She is dedicated to advancing knowledge and practical applications in these dynamic fields.

Prof. Dr. Nor Hazana Abdullah holds a Bachelor of Science in Psychology from Indiana University Bloomington, a Master of Science in Human Resource Development from Universiti Teknologi Malaysia (UTM), and a Ph.D. from Universiti Tun Hussein Onn Malaysia (UTHM). With over 20 years of teaching experience and 11 years of industrial experience, she specializes in Industrial Psychology, Organizational Behavior, and Human Resource Development.

An expert in quantitative research methodologies, Prof. Dr. Nor Hazana is proficient in both Covariance-Based Structural Equation Modeling (CB-SEM) and Partial Least Squares Structural Equation Modeling (PLS-SEM). She is also a Certified Competency-Based Talent Manager and a Power BI Analyst, with additional credentials including the Advanced Leadership Certificate from the Institute of Leadership & Management, UK.

Her academic and professional pursuits reflect a deep commitment to advancing human resource development and organizational excellence. Prof. Dr. Nor Hazana

has not only contributed significantly to her field through research and publication but has also demonstrated a strong dedication to developing the next generation of leaders and practitioners in her areas of expertise.

Ts. Dr. Anizam Mohamed Yusof is a Senior Lecturer at the Department of Vocational Education, Faculty of Technical and Vocational Education, Universiti Tun Hussein Onn Malaysia (UTHM). She began her academic journey with a Diploma in Electronic Engineering, followed by a Bachelor's Degree in Electrical Engineering and a Master's Degree in Education from Universiti Teknologi Malaysia (UTM). She later advanced her studies by earning a Doctor of Philosophy (PhD) in Special Education from Universiti Kebangsaan Malaysia (UKM).

Anizam possesses extensive experience and a strong dedication to qualitative research, with demonstrated expertise in understanding and applying qualitative methodologies within the domain of technical and vocational education and training (TVET). Her academic background and research focus reflect her passion for advancing knowledge and practice in qualitative research methodologies, contributing significantly to the field.

Ts. Dr. Nan Hj. Mad Sahar is a Senior Lecturer in the Department of Computer Engineering, Faculty of Electrical and Electronic Engineering, Universiti Tun Hussein Onn Malaysia (UTHM). He holds a Ph.D. in Engineering from Okayama University, Japan, a Master's degree in Information and Computer Engineering from Okayama University of Science, and a Bachelor's degree in the same field from Okayama University of Science. Dr. Nan specializes in artificial intelligence, deepfake detection and augmented reality, leveraging his extensive research and teaching experience to inspire the next generation of engineers.

Assoc. Prof. Ts. Dr. Normayati Nordin is an Associate Professor in the Department of Mechanical Engineering at the Faculty of Mechanical and Manufacturing Engineering, Universiti Tun Hussein Onn Malaysia (UTHM). She earned her Ph.D. in Mechanical Engineering from Universiti Teknologi PETRONAS in 2016, following a Master's degree in Process Systems Engineering from Cranfield University in 2007, and a Bachelor's degree in Mechanical Engineering from Kolej Universiti Teknologi Tun Hussein Onn in 2005. Her research interests encompass thermofluids, energy systems and thermal processes, computational fluid dynamics (CFD), flow measurement and visualization, and energy management and efficiency. Dr. Normayati has contributed significantly to her field, with her publications receiving over 429 citations, reflecting her impact on the academic community.

In addition to her research, she has held various administrative roles at UTHM, including Head of the Department of Postgraduate Studies and Head of the Flow

Analysis, Simulation, and Turbulence Research Group. She is also a member of several professional societies, such as the Malaysia Board of Technologists (MBOT) and the Board of Engineers Malaysia (BEM). Her expertise and contributions have been instrumental in advancing mechanical engineering education and research at UTHM.

Dr. Aimi Syamimi Ab Ghafar is currently a lecturer in the Department of Electrical Engineering Technology, Faculty of Engineering Technology, Universiti Tun Hussein Onn Malaysia (UTHM). She obtained Bachelor of Engineering (Electrical - Telecommunications) in 2010 and Doctor of Philosophy (Electrical Engineering) in 2015, both from Universiti Teknologi Malaysia (UTM).

ChM Dr. Faridah Abu Bakar has been serving as a researcher and academic at Universiti Tun Hussein Onn Malaysia since 2008. She holds a Doctor of Philosophy in Chemistry from the University of Canterbury in 2014, a Master of Science in Chemistry from Universiti Teknologi Malaysia in 2010, and a Bachelor of Science in Environmental and Analytical Chemistry from Universiti Malaysia Terengganu in 2007.

Dr. Faridah's research expertise lies in the investigation of the physical and chemical properties of titanium dioxide, with a particular focus on its application as a photocatalyst. Her work includes enhancing its visible light activity and exploring the synergistic effects of eco-friendly gold nanoparticles on titanium dioxide nanomaterials, aiming to develop innovative and sustainable solutions to address environmental challenges.

In addition to her research, Dr. Faridah is also recognized for her innovation in teaching and learning. She is committed to enhancing the educational experience by integrating contemporary pedagogical methods, thereby cultivating a dynamic and engaging learning environment that fosters academic excellence among her students.

Dr. Syahira Mansur is a lecturer in the Department of Mathematics and Statistics, Faculty of Applied Sciences and Technology at Universiti Tun Hussein Onn Malaysia. She holds a PhD in Applied Mathematics from Universiti Kebangsaan Malaysia, a Master's Degree in Mathematics from Universiti Teknologi Malaysia, and a Bachelor's Degree in Mathematical Science from the International Islamic University Malaysia. Syahira's research focuses on fluid mechanics, where she explores complex mathematical models and their applications in understanding fluid dynamics.

Prof. Ts. Dr. Norzila Othman is a distinguished academic and researcher, currently serving as a Professor at the Department of Civil Engineering, Faculty of Civil Engineering and Built Environment, Universiti Tun Hussein Onn Malaysia (UTHM) in Johor, Malaysia. With a passion for environmental engineering and sustainable development, Prof. Norzila has made significant contributions to the fields of water and wastewater treatment, environmental management, and the development of innovative biomaterials. She also leads the Micro Pollutant Research Centre (MPRC) as a Principal Researcher, focusing on critical environmental challenges.

Assoc. Prof. Ir. Ts. Dr. Riduan Yunus, an Associate Professor at Universiti Tun Hussein Onn Malaysia (UTHM), specializes in sustainable construction, offsite construction, and project management. Holding a Ph.D. in Construction Management from Queensland University of Technology, he has contributed significantly to research and education in civil engineering. With leadership roles such as Head of the Department of Building and Construction Engineering and Deputy Director at UTHM's Innovation and Commercialization Center, Dr. Riduan is also recognized as an ASEAN Chartered Professional Engineer and Professional Technologist.

Assoc. Prof. Dr. Mohd Asrul Affendi Abdullah is an Associate Professor at the Faculty of Applied Sciences and Technology, Universiti Tun Hussein Onn Malaysia (UTHM). He also serves as the Deputy Director (Innovation Services) at the Innovation and Commercialization Center of UTHM.

Dr. Mohd Asrul holds a PhD in Biostatistics from Universiti Sains Malaysia, a Master's degree in Statistics from Universiti Putra Malaysia, and a Bachelor's degree in Mathematics from Universiti Utara Malaysia. His expertise lies in Mathematical Sciences, Applied Statistics, Survival Analysis, and Bayesian Modeling. His research interests include biostatistics, health analytics, high-dimensional regression, and food security.

He has taught various courses such as Financial Mathematics, Research Methodology, and Medical Statistics, and has supervised numerous undergraduate and postgraduate projects. Dr. Mohd Asrul is an active researcher with multiple publications in areas such as survival analysis, Bayesian inference, and sustainability practices. For more information, you can contact him via email at afendi@uthm.edu.my.

Dr. Nur Zainatul Nadra Zainol is a Senior Lecturer (DS13) at the Department of Islamic Studies, Universiti Tun Hussein Onn Malaysia (UTHM), and the Head of Research and Publication at the Institute of Ahli Sunnah Wal Jamaah. Her academic focus includes Quranic studies, Islamic thought, and integrating Islamic and scientific knowledge. She has made significant contributions through her research and publications, which cover diverse issues of Ummah such as Quranic exegesis, study on gender disorder, Kuda Kepang, integration study of Tibb Nabawi Approach and Traditional Malay Herbs.

Assoc. Prof. Dr. Andri Kusbiantoro is a dedicated academic and researcher specialising in civil engineering, with a strong passion for advancing knowledge in structural design and innovative materials. He began his academic journey with a Bachelor of Engineering in Civil Engineering from Institut Teknologi Sepuluh Nopember, followed by a Master of Science and a Doctor of Philosophy in Civil Engineering from Universiti Teknologi PETRONAS.

Assoc. Prof. Ts. Dr. Siti Suhana Jamaian received her first degree in Industrial Mathematics from Universiti Teknologi Malaysia in 2007. She then furthered her studies in master's degree at the same university and graduated in 2009. In 2013, she completed her PhD study in Applied and Computational Mathematics at the School of Mathematics, The University of Edinburgh. She is now an Associate Professor in the Department of Mathematics and Statistics, Faculty of Applied Sciences and Technology, Universiti Tun Hussein Onn Malaysia.

Assoc. Prof. Dr. Angzzas Sari Mohd Kassim obtained her Bachelor's Degree in Chemical Engineering from the University of Manchester Institute of Science and Technology (UMIST), United Kingdom, and a Doctor of Philosophy (PhD) in Plant Biotechnology from the University of Strathclyde, Glasgow, United Kingdom. She is currently a lecturer at Department of Chemical Engineering Technology, Universiti Tun Hussein Onn Malaysia (UTHM) and the Executive Director of ProNature Living Solutions Sdn. Bhd., a spin-off company of UTHM specializing in halal products made from natural ingredients for health and wellness. Inspired by her passion for well-being, Dr. Angzzas strives to drive positive change through innovative natural solutions that promote healthier lifestyles and sustainabil

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Research Methodology

This Research Methodology Module is designed to provide postgraduate students at UTHM with a structured and comprehensive approach to understanding and applying research methodologies in academic studies. It offers a detailed exploration of the principles. techniques, and ethical considerations that support scientific inquiry across diverse disciplines

The module is carefully organized to guide postgraduate students through fundamental concepts of research, including hypothesis development, data collection, and analysis, with a balanced emphasis on qualitative and quantitative methods. It also features in-depth discussions on data analysis techniques and related aspects of research. Furthermore, the use of artificial intelligence (AI) in streamlining literature reviews is highlighted as a critical tool for postgraduate research endeavors.

This module represents a collaborative effort by academics to ensure its relevance and alignment with postgraduate academic needs. It serves as an essential resource for postgraduate students, empowering them to strengthen their methodological capabilities and excel in their academic pursuits.

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