



1st Faculty of Business & Informatics Research Symposium 2019

Book of Abstracts

How wonderful it is, how pleasant, for God's people to live together in harmony

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Message from the Dean

On behalf of the Faculty of Business and Informatics, Divine Word University, I welcome you all to the 1st Faculty of Business and Informatics Research Symposium. This year we celebrate an achievement of having our 1st Faculty Research Symposium.

We celebrated the launching of the Electronic Journal of Informatics with seven papers in Volume 1 in June. The Journal can be accessed via this link (<https://www.dwu.ac.pg/en/index.php/faculty-pages/277-fp-fbi/fbi-dept/fp-fbi-mcs/709-fbi-e-journal>). We also celebrate the registration of the Journal with an International Standard Serial Number (ISSN). These are great achievements, setting high standards and motivations for future research activities and symposiums.

The symposium provides an avenue for the Faculty staff to present the outcome of their research activities conducted during the academic year. It enables staff to share ideas, knowledge and experiences with others, both within and outside the University. The symposium provides an opportunity to build and maintain a research culture within the Faculty and University.

The symposium provides an opportunity for staff to work together in the spirit of teamwork and collegiality in hosting such an event. The symposium enables staff to discover, develop and realize their gifts and potential, and utilizing their knowledge, skills and experiences to contribute to the body of knowledge in their respective fields.

Once again, welcome to the 1st Faculty of Business & Informatics Research Symposium; an event to be remembered by all.

Dr Martin Daniel (PhD)

Dean, Faculty of Business & Informatics
Divine Word University



Probabilistic modelling: Predicting volcanic eruptions in the Bismarck volcanic arc

Peter K. Anderson & Dulcie Kaivika

A study of mathematics involved in the modelling of volcanic eruptions is presented with a view to a future analysis of historical volcanic eruption data from the Bismarck Volcanic Arc to the north of PNG. The Poisson distribution is considered initially but strict criteria of IID and fixed rate of events λ limit its applicability in the present context. The more realistic Weibull model is then considered which allows λ to vary as a function of time thereby allowing greater flexibility for modelling a wider range of volcanic types where eruption rates might not be constant over time. Finally, a demonstration is provided of the use of a Weibull plot method to graphically determine the parameters θ and β of the Weibull model for a given set of eruption data.

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Biodata

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Provisioning of educational content to rural schools in Papua New Guinea using RACHEL

Picky Airi

This paper discusses the use of offline open educational resources as an alternative for providing educational content in particular to rural schools in Papua New Guinea (PNG). The Remote Area Hotspot for Education and Learning (RACHEL) service is presented as a case study for such provisioning. The paper describes the opportunities and challenges of adopting RACHEL using a recent project as an example. The paper then proposes a follow-up survey on this project to establish empirical data to support the adoption of this technology for PNG schools.

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Picky Airi is a senior tutor in the Department of Information Systems at DWU and the DWU CCNA Academy Coordinator. He hopes to further his studies in ICT industry technical training and aspires to be a Cisco Certified Internetworking Expert. He holds a Bachelor's Degree in Information Systems and Master of Leadership in Business Administration from the DWU. He is a member of the Pacific Island Chapter of Internet Society (PICISOC). Before joining DWU, he worked as an assistant lecturer in computing with the Institute of Business Studies in Port Moresby and later joined Daltron Technology as an IT Trainer. Picky attained several certificates in Train the Trainer, Workplace Assessment, Prometric Certified Online Test Administrator and is a Certified Cisco Academy Instructor. He has a strong interest in using technology to improve the lives of people in rural areas. His research topic in this symposium presentation stems from his involvement with the DWU Central Students Association and his passion for technology as a Raspberry Pi enthusiast. He intends to explore innovative ideas and strategies to enhance the provisioning of educational resources for rural schools and hopes this paper can contribute to the literature that will foster innovation in this area.



Factors that could influence implementation of enterprise resource planning systems by small to medium enterprises in Papua New Guinea

Maryanne Bagore

Enterprise Resource Planning (ERP) systems are being used by both small to medium enterprises (SMEs) in different parts of the world to manage their global supply chains effectively and efficiently. ERP can be defined as a process used by enterprises to manage and integrate all business processes. An ERP system is used to implement resource planning of enterprises by integrating all business processes in a single system. It has the potential to optimize processes, making SMEs competitive and successful when providing goods and services to their customers. Implementation of an ERP system by an SME in PNG can be challenging due to various factors such as implementation cost and solution complexity. This paper presents the factors that could influence the implementation of ERP systems and ways of addressing these challenges as identified in the literature.

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Virtualization: A tool for enhancing teaching & learning network management

Cronicle Nambahin

Virtualization in network management can be defined as a process of installing, configuring and managing server environment without the use of physical devices. With the rapid advancement of Internet technologies, most industries today are moving from hardware devices to cloud using virtualization technologies. From personal observation, it is important to integrate virtualization in teaching and learning for students to have insights into how virtualization is used in the real world. This paper discusses the use of virtualization as a tool to enhance teaching and learning network management. It describes the challenges of having physical hardware equipment for training and then presents the opportunities available through the use of virtualization. The paper also highlights the integration of virtualization in teaching and learning. Finally, the paper demonstrates how the Information System students at the Divine Word University use virtualization in their network management unit.

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Programming in processing: A tool to support the learning of object-oriented programming

Maxie Cletus

Programming in a visual context can be an effective method of teaching and learning the basic principles of object-oriented programming (OOP). As this method presents concepts graphically, it is potentially more intuitive and comprehensible to programmers than conventional, text-based systems. This paper presents the Processing Programming Environment (PPE) as a tool for teaching programming concepts to novice programmers. PPE uses animations to help programmers learn basic programming concepts. To support this, the research comprises a small program where participants test and compare their programming experience with PPE alongside other OOP environments. Research results show encouraging relationships between the students' understanding of program dynamics and OOP concepts when represented with animations.

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Random variables and convex functions in Stochastic orderings with its applications

Cyril Sarsoruo

Randomness is a phenomenon that is mathematically studied in probability theory. Random quantities obtained have to be distributed over some graphs for interpretation. Mean is a descriptive quantity in statistics and is studied well using the convexity theory in mathematics. The means of random variables are called expectations and they are evaluated using cumulative probability distribution functions and well defined convex functions in Riemann-Stieltjes integrals. The main results of this paper show the basic development of probability theory and convex function theory. Merging these two mathematical theories and performing some mathematical analysis, we obtain sufficient conditions for stochastic orderings. Additionally, some applications to stochastic orderings are shown towards the end of the paper.

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Human Development Index: PNG progress and a mathematical explanation

Raunu Gebo

The Human Development Index attempts to measure human well-being and its development over time in multiple countries across the world. Relative values of this index seem to possess an undesirable inherent stability with little indication of the removal of inequality. Per capita Gross National Income data is at least visibly consistent with a lognormal probability distribution suggesting that poverty may be the result of multiplicatively interdependent factors. Thus, there may be a certain inevitability that, without special intervention, the rich will become richer and the poor, poorer.

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Biodata

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Applications of the Internet of things: A consideration for healthcare services in Papua New Guinea

Rodney Gunik

The interconnection of physical objects consisting of hardware and software and their connection to the Internet provides the ability to access remote sensor data and actuators that control the physical object from a distance. This network of interconnected object is the Internet of things (IoT). As a set of existing and developing technology driven by innovative ideas, the IoT can provide solutions to improve healthcare such as patient care, and monitoring and management of medical data. It has been widely applied to interconnect medical resources to provide effective healthcare service to the elderly and patients with chronic diseases. This paper seeks to investigate the applications of IoT in healthcare by analyzing how effective technology has improved health services. From this analysis, the paper presents the factors that motivate the use of IoT in healthcare. Finally, it discusses an IoT framework that could apply to healthcare in Papua New Guinea.

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Blockchain technology: A suggested banking and payment system for Papua New Guinea

Elliot Pitalot

The blockchain technology is an innovative method that can be considered useful for doing banking and making online payments within PNG. This technology is also evaluated against the current centralized banking system and is considered as a recommended solution to the ongoing corrupt practices engaged by members of the hierarchy within both the private and public sectors. The paper aims to show that Blockchain technology can provide the solution to help prevent any corrupt financial practices and increase the economic growth of the country through transparency, security, and accessibility.

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Biodata

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Extraordinary events in extraordinary places: Understanding the legacy of the 2018 APEC Summit in Port Moresby, Papua New Guinea

Vanessa Uiari

This paper signposts emerging findings from fieldwork undertaken by the Department of Tourism and Hospitality to conceptualize interest groups in PNG's wider tourism society, and explore the meanings that its constituents attach to the hosting of the 2018 APEC Summit. The summit, which was staged in Port Moresby, is an annual mega event held in the Asia Pacific region. This paper draws from a preliminary analysis of data collected from 42 in-depth interviews, conducted as part of fieldwork in Port Moresby immediately after the 2018 APEC Leader's Meeting. Preliminary findings show that the summit is leaving a distinctive industrial landscape, where cruise tourism is now a major new entrant, transforming relationships between interest groups in tourism's society, including tourism higher education. Tourism, through the involvement of the lead agency for tourism promotion and development, the PNG Tourism Promotion Authority, played a critical role. Diverse interest groups that comprise the wider tourism society include DWU alumni, higher education providers, entrepreneurs, state-owned enterprises, prison inmates, senior public servants, churches, peri-urban settlers, members of the armed forces, students, taxi drivers, customary landowners, and skilled and semi-skilled events and related tourism and hospitality labour force. During the planning and staging of APEC, these interest groups participated in regenerating national pride in ways that span rural/urban divides and in earning livelihoods. However, informants associated with Hanuabada village, the PNG Defence Force, churches and families with young children, expressed apprehensions about potential violence and dispossession from the peaceful and productive everyday life they hope to lead, and the places in the city that they consider as their homes.

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Event-tourism labour-force-development: Preliminary findings from the 2018 APEC Summit, Port Moresby, Papua New Guinea

Nathaline Murki

This paper aims to explore how event-tourism labour-force-development in PNG, induced by planning and staging mega-events, is related to extraordinary urban regeneration, and positive changes in civic attitudes, national pride and investor confidence. When the PNG Government hosted the 2018 Asia Pacific Economic Cooperation (APEC) Summit in Port Moresby, there was an increased demand for short-term, casual hire of a skilled labour force in event-tourism during this mega event. This paper combines findings from the author's Master's dissertation, with the preliminary analysis of new primary data from 42 in-depth interviews conducted immediately after the 2018 APEC Leaders' Summit held on 12 November to 18 November, 2018, to explore the implications of this on higher education providers. In collecting primary data, purposive and snowball sampling was used to recruit 42 key informants from interest groups in the wider tourism society in PNG. A method of preliminary inductive in vivo coding was used to analyse responses to one question that related to the perceived need for a skilled labour force for planning and managing extraordinary mega-events. Preliminary findings showed a gradual increase in demand from 2013 to 2018, for skills and knowledge for event tourism planning, and related areas in hospitality. This indicates that there are positive relationships between the development of an event-ready labour force, event-related tourism growth, and tourism and event infrastructure development.

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Exploring the challenges of financial inclusion, literacy and management on small to medium enterprise businesses in Papua New Guinea: A comparative study on cultural versus entrepreneurial perspective of business finance

Mike Yandit

The challenges of exploring the financial inclusion, literacy and financial management on small to medium enterprise (SME) in PNG are a national issue. The comparative study of both the subsistence cultural approach and entrepreneurial culture of financial management in SME identifies the research gap to be explored and investigated. The PNG Government created the legislative mechanism to enable citizens to participate in the growth and progress of SME business with reserve list legislation. The foreign dominance of the SME business and the competitive approach to business and financial management creates the competitiveness and ownership of the SME business sector. Creative and innovative thinking is created by entrepreneurship with the start-up process of SME business with the capital injection with either the equity capital or the debt capital through borrowings. The financial literacy and management capacity of entrepreneurs and SME business owners provide the dilemma that is faced today. The literature supports the study to identify the gap for the exploratory of the challenges to discover solutions and sustainable strategies. The methodology to collect data for both mixed methods and the analysis to tabulate the hypothesis and decision-making. The research findings represented with the qualitative and quantitative data approaches to promote SME business and allow the governing authorities at the national, provincial and local levels to sustain the business practice and provide training and development in financial management and accountability. Capacity building and strengthening of the financial inclusion, literacy and management provides medium to long-term sustainable strategies for SMEs in PNG.

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Flexibility and work-life balance in Papua New Guinea

Kosley Wara

Today's modern trend of work nature has significantly changed over time, leading to a need for greater flexibility and an increase in work-life balance initiatives in the organisational workforce in PNG. The flexibility concept relating to work-life balance has become an international human resource tool or standard practice. Many leading and successful organisations have benefited from implementing work-life balance practices in retaining, rewarding and motivating their talented workforce so that they remain competitive and successful. However, the exercise of flexible work-life balance in PNG has moved slightly away from its original intentions as organizations focus more on being profit-driven. Moreover, flexibility and work-life balance are not just about offering special incentives to working mothers, but it should also consider and include working husbands, the aging workforce, as well as employees of diverse ethnic and other backgrounds. Organizational business leaders need to consider both positive and negative impacts when utilizing these flexible work-life practices; otherwise, there can be a displacement factor in pushing away other equally important and skilled employees of its workforce.

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Kosley Wara is a lecturer in the Department of Business Studies at DWU. Prior to joining DWU, he has worked with several organizations in the industry from the Graduate Development Program to the line manager role before deciding to join DWU in 2016. These organisations include Air Niugini Ltd, Morobe Mining Joint Venture, Oil Search Limited, National Agriculture Research Institute and Mainland Holding Limited. He holds a Bachelor Degree in Business Management from the University of Papua New Guinea, 2011, and a Masters of Business Administration from Central Queensland University, Australia, 2015. He is member of the PNG Human Resource Institute and Papua New Guinea Australian Alumni Association. He is currently undergoing his PNG Certified Practicing Accounting modules.



Microcredit: A tool to alleviate poverty in Papua New Guinea

Ray Samuel

PNG can achieve the United Nation's 2030 sustainable development goal of zero poverty if we use correct strategies. Access to finance through microcredit schemes has positively changed the lives of the poor. However, microcredit development in PNG had been slow. Some researchers think this model could not work in PNG because of the environment, cultural diversity and the overall economy while others think a low level of literacy and business skills deny peoples' access to credit facilities. Banks have always been scared of giving micro-loans to the poor because they think that poor people are not creditworthy. Poverty in PNG is related to a low level of income and not necessarily life-threatening. This paper investigates poverty from economical, psychological, philosophical, and sociological perspectives. Access to finance can break the poverty cycle but our banks deny poor people to access credit. Grameen microcredit model has successfully been used in Bangladesh, Malaysia, Philippines and other Asian, European, North and South American countries to alleviate poverty. This model is recommended to alleviate poverty in PNG. Credit based on trust and given in groups' best interests suits the cultural setting of the PNG societies.

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Biodata

Samuel Ray is a lecturer in the Department of Business Studies at DWU. He holds a Master's Degree in Business Administration from the University of Science and Technology Beijing and a banking specialist. His interest areas include the establishment of a village Micro Bank, developing PNG's underlying law and writing PNG's SME startup booklets to improve the financial knowledge of struggling PNG SMEs. He presented papers in Beijing, PRC and UPNG, Papua New Guinea. His email address is sray@alumni.dwu.ac.pg.

Program

8:30am	Welcome and program outline, Master/Mistress of Ceremony
8:35am	Opening Prayer, Fr Romeo Yadao (SVD), DWU Chaplain
8:40am	PNG National Anthem & Pledge, led by Rosemary Paru
8:40am	Welcome remarks, Professor Pamela Norman, Vice President Research and Higher Degrees
8:45-8:55am	<i>Probabilistic modelling: Predicting volcanic eruptions in Bismarck volcanic arc</i> Peter K. Anderson & Dulcie Kaivika
8:55-9:05am	<i>Provisioning of educational content to rural schools in PNG using RACHEL</i> Picky Airi
9:05-9:15am	<i>Factors that could influence implementation of enterprise resource planning systems by small to medium enterprises in Papua New Guinea</i> Maryanne Bagore
9:15-9:25am	<i>Virtualization: A tool for enhancing teaching & learning network management</i> Cronicle Nambahin
9:25-9:35am	<i>Programming in processing: A tool to support the learning of object-oriented programming</i> Maxie Cletus
9:35-9:45am	<i>Random variables and convex functions in Stochastic orderings with its applications</i> Cyril Sarsoruo
9:45-9:55am	<i>Human Development Index: PNG progress and a mathematical explanation</i> Raunu Gebo
10.00-10:30am	Break
10:35-10:45am	<i>Applications of the Internet of Things: A consideration for healthcare services in Papua New Guinea</i> Rodney Gunik
10:45-10:55am	<i>Blockchain technology: A suggested banking and payment system for Papua New Guinea</i> Elliot Pitalot
10:55-11:05am	<i>Extraordinary events in extraordinary places: Understanding the legacy of the 2018 APEC Summit in Port Moresby, Papua New Guinea</i> Vanessa Uiari
11:05-11:15am	<i>Event-tourism labour-force-development: Preliminary findings from the 2018 APEC Summit, Port Moresby, Papua New Guinea</i> Nathaline Murki

11:15-11:25am	<p><i>Exploring the challenges of financial inclusion, literacy and management on small to medium enterprise businesses in Papua New Guinea: A comparative study on cultural versus entrepreneurial perspective of business finance</i></p> <p>Mike Yandit</p>
11:25-11:35am	<p><i>Flexibility and work life balance in Papua New Guinea</i></p> <p>Kosley Wara</p>
11:35-11:45am	<p><i>Microcredit: A tool to alleviate poverty in Papua New Guinea</i></p> <p>Samuel Ray</p>
11:45-11:55pm	<p>Closing Remarks</p> <p>Dr Martin Daniel (PhD), Dean of the Faculty of Business and Informatics</p>