

Editorial note

Welcome to Volume 1 of the *Electronic Journal of Informatics*. This is an annual publication produced by the Faculty of Business and Informatics, Divine Word University. The Editorial team welcomes all contributions on the general theme of *innovation* across the disciplines under business and informatics. In Volume 1, we present the following cross-cutting technical-demo, conceptual and case studies that propose the application of technology and mathematics to address issues in: rural education; campus security; e-learning adoption; modeling population growth and species extinction in fisheries; determining the likelihood of human development, and; verifying aphorisms such as the ‘rich getting richer and poor getting poorer’ in Papua New Guinea:

Picky Airi uses a case study to highlight the opportunities and challenges of introducing offline open educational resources for schools in rural Papua New Guinea. The study outlines how the Central Province Students Association of Divine Word University custom-built a portable plug-and-play server called the Remote Area Community Hotspot Education and Learning service or RACHEL-Pi, which was trialed in a rural school. RACHEL-Pi runs on a small low power computer called the Raspberry Pi, which stores offline educational content including websites, simulations, text files, images, sound and video in digital format. Content is stored in the RACHEL-Pi is shared using a wifi signal between laptops and mobile devices, when it is plugged into any computer in an existing LAN.

Martin Daniel presents the main challenges including strategy, leadership, infrastructure, human resource capacity, financial resources, attitudes to technology, and training that could, potentially affect e-learning adoption by educational institutions in Papua New Guinea. The discussion is illustrated with an example of how the MOODLE learning management system was adopted at the Divine Word University.

Rodney Gunik and **Lyll Dale** propose the use of an intelligent Alarm Detection Model by adapting the motherboard of a Raspberry Pi computer and programming it to detect, and distinguish the intensity and frequency of sounds in order to identify the location of an alarm sounded from wall-mounted units placed in campus accommodations. The paper also outlines how to enhance the existing wireless infrastructure at Divine Word University to extend its capacity to include ‘smart’ alarm detection and location and relay more timely information to relevant users such as security guards.

Peter Anderson, Graham Supiri and **Doris Benig** show that the exponential function becomes useful for modelling size and population growth. In the paper, the exponential function is used to formulate the logistic equation which shows extinction of fish as a result of over harvesting.

Cyril Sarsoruo, Raunu Gebo and **Peter Anderson** demonstrate that the lognormal distribution is associated with the Law of Proportionate Effect. The paper simulates lognormal distributions by multiplying sequences of variates based on both uniformly and normally distributed interactive events using a Monte Carlo method of simulation. The findings provide the bases to explain the Human Development Index (HDI) data in lognormal distributions and QQPlots.

Raunu Gebo and **Peter Anderson** discuss the Human Development Index (HDI) as a measure of human well-being and its development over time in multiple countries across the world. The paper analyses the HDI data in lognormal distributions and associated QQPlots. From these results, it is concluded that without special intervention, the rich will become richer and the poor, poorer.

The editorial team hopes that readers find the range of articles both interesting and informative.

Cyril Sarsoruo