

i-RIC 2024

INTERNATIONAL RESEARCH & INNOVATION CONFERENCE

PROCEEDING

“HARMONY IN DIVERSITY: FOSTERING UNITY
SUSTAINABLE RESEARCH AND INNOVATION SOCIETY”

24 & 25 JULY
| 20
| 24

Organizer



Co-organizer



PROCEEDING I-RIC 2024

INTERNATIONAL RESEARCH AND INNOVATION CONFERENCE

“HARMONY IN DIVERSITY: FOSTERING UNITY
SUSTAINABLE RESEARCH AND INNOVATION SOCIETY”

24 & 25 JULY

20
24

All rights reserved. No part of the articles, illustrations, photos and contents in this proceeding may be republished, reprinted, reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without written permission from the Director of Politeknik Nilai.

Published by:

Politeknik Nilai Negeri Sembilan (PNS)
Kompleks Pendidikan Bandar Enstek,
71760, Bandar Enstek,
Negeri Sembilan

2024

eISBN 978-967-2742-35-7

TABLE OF CONTENT

No.	Content	Page
1	Preface	xii
2	Editorial Board	xiii
3	List of Panel Reviewers	xiv-xv
4	List of Articles	1
	A. Engineering and Technology	
	The Study of Land Surface Temperature in Kulim Hi-Tech Using Landsat OLI 8 <i>Zuraini Basarudin^{1*}, Nurul Atiqah Suhaime², Amirul Afiq Azman³, & Mohd Farid Fahmi Abdul Halim⁴</i>	2-10
	The Study of Noise Emission Level Along KTM Kajang Railway Track to Surrounding Premises <i>Karthigeyan Ramachandran^{1*}, Mohd Eizzuddin Mahyeddin² & Mohd Kamaruzaman Musa³</i>	11-14
	Programme Educational Objectives (PEO) Attainment for Diploma in Electronic Engineering (Communication) at Politeknik Sultan Salahuddin Abdul Aziz Shah <i>M. Ramli^{1*} & R. M. Zali²</i>	15-24
	Raspberry Pi Wlan Cast as A Teaching and Learning Aid in Lecture Halls <i>Mohd Hafiz Haron^{1*}, Muhammad Tarmizi Ab Aziz² & Mohd Firdaus Ibrahim³</i>	25-37
	Remote Lab: An Enhancement in Technical and Vocational Education Training (TVET) <i>Vaina Malar Panneer Selvan^{1*} & Uma Devi Nadarajah²</i>	38-49
	PLC Based Automatic Mini Conveyor Control System Trainer Prototype Design Development <i>Bakiss Hiyana Abu Bakar^{1*}, Mokhtar Bin Hashim² and Sharmiza Kamaruddin³</i>	50-57
	The Impact of Intersection Design on Traffic Volume and Road Service Level <i>Zuraidah Hashim^{1*}, Adilen @ Lucia Sul² & Khairul Nizam Mat Amin³</i>	58-62
	Power Consumption Analysis of Centrifugal Force Apparatus TM 600 <i>Arman Md Said^{1*} & Ahmad Fariz Fauzi²</i>	63-68

Comparative Analysis of Charcoal and Banana Stem Fiber Filters in Fat, Oil, And Grease Traps: A Chemical Parameter Evaluation <i>Nor Aziah Fatma Abdul Ayah @ Abdul Aziz^{1*}, Mohd Azriman Mat Ali² & Rahayu Mhd Adnan³</i>	69-75
Development of a Wind-Powered Battery Bank for Mobile Phone <i>Noranizah Solihin^{1*} & Luqman Hazim Sakariah²</i>	76-83
Smart Early Detection of Rheumatoid Arthritis Tool on Nails with A Certainty Factor Technology Approach Based on Image Processing <i>Abi Mufid Octavio¹, Andinusa Rahmandhika^{2*}, Muhammad Lutfi Kamal³, Nuri Virdausia⁴, Frenischa Yincenia Wijaya⁵, Desta Karina⁶ & Achmad Fauzan Hery Soegiharto⁷</i>	84-88
Effect of Channel Model on Flame Stability in Meso-Scale Combustor <i>Murjito^{1*}, Achmad Fauzan Hery Soegiharto², Yogi Danu Krisnanto³ & Farhan Rahmatullah⁴</i>	89-96
Design of Learnifybot: Supporting Hands-On Experience of Stem Education in Malaysia <i>Juliyanna Aliman^{1*}, Ariffuddin Ibrahim² & Er Zhi Han³</i>	97-103
Design of Cloud-Based Hydroponic Plant Monitoring System Using Aiven Cloud MySQL Database <i>Ariffuddin Ibrahim^{1*}, Juliyanna Aliman² & Muhammad Syaifiq Lim³</i>	104-110
Evaluation of Tourism Development Potential of Traditional Villages in Sichuan <i>Zhou Zi Hua¹, Omar Jamaludin^{1*} & Doh Shu Ing¹</i>	111-124
Benefit of Bim at Design and Planning Stage: A Review <i>Huang Lei¹, Shu Ing Doh^{2*} & Zhang Bai Feng³</i>	125-131
Production of Biochar from Sugarcane Biomass under Slow Pyrolysis Process <i>Is Aizat Samsuri^{1*}, Auni Nurain Borhan², Nurul Insyirah Mohamad Noor³ & Nor Ahmad Danial Abdul Wahab⁴</i>	132-137
The Development of Indoor Hydroponic System <i>Johari Ahmad Ghazali^{1*}, Shanley Oyerd Bong² & Mohammad Qusayhairie Mohd Khairul³</i>	138-144
Evaluation of Biopesticides as a Sustainable Alternative for Controlling Pests on <i>Lactuca Sativa</i> (Green Coral Salad) <i>Muhammad Fadhli Tariq Ishak^{1*}</i>	145-147
Using Aloe Vera as Alternative to Rooting Hormone in <i>Petunia Hybrida</i> <i>Muhammad Fadhli Tariq Ishak^{1*}</i>	148-151

Integrating Biomimetic Design Principles from The Namib Desert Beetle into Landscape Rain Harvesting Systems to Enhance Water Collection Efficiency and Sustainability: An Early Phase <i>Mohd Khairil Hilmi Abd Halim^{1*}</i>	152-155
Numerical Study of The Thermal Characteristics of an Integrated Solar Collector-Storage System <i>Nasser Yahya Ayed Alahmary^{1*}, Mohamad Kchaou² & Mohammed Alquraish³</i>	156-167
Fabrication of Cat Bath Station Using Foot Paddling System <i>Mohd Rosli Saad^{1*}, Jessica Clair Peter Nonok² & Elyana Ann Rosly³</i>	168-174
Crashing Infrastructure Projects Considering Scheduling Flexibility <i>Ali Alyami^{1*}, Mohamed Alsharyah² & Mohammed Kchaou³</i>	175-181
B. Business and Management	
Leveraging Risk Management to Enhance ESG Performance <i>Ahmad Saiful Azlin Puteh Salin^{1*}, Roslan Abd Wahab,¹ Amizahanum Adam¹ & Wan Razazila Wan Abdullah¹</i>	183-189
The Knowledge and Practices Environmental Among Students of Kuching Polytechnic Sarawak <i>Faridah Che In^{1*}, Suraya Yope@Yahya² & Noorul`Ashikin Md Salih³</i>	190-194
Unveiling Greenwashing: Risks in Sustainability and ESG Reporting <i>Nurul Nazlia Jamil^{1*} & Ersya Tri Wahyuni²</i>	195-206
Is the Business Incubation Program a Catalyst in Implementing Digital Entrepreneurship Education? Developing a Multiple Case Study in Malaysian Polytechnics <i>Nur Syahirah Rosli^{1*}, Suhaida Abdul Kadir², Rahimah Jamaluddin³ & Enio Kang Mohd Sufian Kang⁴</i>	207-215
C. Education, Teaching, and Learning	
Immersive Learning Experience <i>Akhlak Islamiyyah</i> via Augmented Reality (AKHAR): ADDIE Model Approach <i>Mastura Mohamad¹, Norsalwati Mohd Razalli^{1*}, Asri Sabri¹, Zainal Ariffin Ahmad² & Ari Budiharto³</i>	217-222
YouTube for Research Courses: Implications on Learner Satisfaction & Subject Performance <i>Nurul Hidayana Mohd Noor^{1*}</i>	223-228
Engaging Culinary Students Through Game-Based Learning: Assessing the Culinaryconquest Board Game <i>Wan Ruhaifi Wan Yub Ibrahim^{1*}, Ahmad Ikhwan Fitri Arefin² & Mohamad Arif Abdul Kadir³</i>	229-234

The Development of Jawi Tutor Mobile Application using Kodular <i>Farrah Waheda Abdullah^{1*}, Nurzaitul Natasya Forkan¹ & Siti Nur'ain Maligan¹</i>	235-243
Evaluation of Pedestrian Walkways Quality at POLISAS CAMPUS using P-Index and PLOS Methods <i>Adilen @ Lucia Suil^{1*}, Tee Lian Yong² & Zuraidah Hashim³</i>	244-250
Cultivating a Culture of Trust: Enhancing Organizational Effectiveness in Malaysian Technical Education <i>Ying-Leh Ling^{1*}, Cynthia Yu Shung Chen² & Charles Muling Libau³</i>	251-256
The Effectiveness of the GDB Compiler: Online Tool for Student Learning in Programming C++ <i>Noor Afzan Ahmad^{1*}, Anis Awi² & Zuraidah Mohd Ramly³</i>	257-262
Maker Market Use: Case Survey in Temerloh Community College <i>Rozallienny Zainal^{1*} & Paliza Deraman²</i>	263-268
The Usefulness of Steps to Effective Presentation (StEP) for Beginners Module in Improving Student Presentation Skills at Sarikei Community College <i>Lesta Engkamat^{1*}, Mohammad Zahir Mohd Yazid², Ngu Toh Onn³ & Ying-Leh Ling (Ph.D)⁴</i>	269-274
The Perception of Mechatronic Engineering Diploma Students at Polytechnic Sultan Azlan Shah Towards the Implementation of Interactive Augmented Reality (AR) Visualization for Autonomous Vehicle Robots <i>Ninie Farahana Kamarulzaman^{1*}, Nur Raihana Sukri² & Limi Chong³</i>	275-281
An Analysis of Grammatical Errors in Students' Written Assignment: A Thorough Look at Dialogue Writing <i>Nor Azma Manan^{1*} & Lukman Hakimi Ahmad²</i>	282-289
The Development of Switchless for Multi-Level User <i>Mohd Saifuddin Ahmad^{1*}, Muhammad Ahmad Kamal² & Maheran Sulaiman¹</i>	290-298
Portable Solar Kit as a Teaching Tool for the Course SEE 10013: Electrical Fundamental of Certificate of Electrical Technology Programme <i>Muhamad Hafiz Abd Razak^{1*}, Jamil Sharipuddin² & Mohd Soffian Abdul Samat³</i>	299-304
Compact Solar Fish Dryer <i>Siti Saleha Abdul Azis^{1*}, Mohamad Asyraf Othoman² & Adzuikeen Nordin²</i>	305-310

Tahap kemahiran, Kefahaman dan Minat Pelajar Melalui Bengkel Penghasilan Produk Berinovasi sebagai Program Pembelajaran Sepanjang Hayat <i>Ariffuddin Ibrahim^{1*} & Juliyanna Aliman²</i>	311-317
Stakeholders Perspectives on Industry Engagement Sessions in Final Year Project (FYP) Title Refinement <i>Aminah Bibi Bawamohiddin^{1*}, Munirah Abdullah¹ & Nor Hanani Mohd Yusoff¹</i>	318-323
Analysis of Malaysian Polytechnic Students that Successful Commissioned RELASIS Brigade Credit Co-Curriculum Course towards Producing Quality TVET Graduates <i>Mohammad Fahmy Ibrahim^{1*}, Kamarul Ariffin Abd Rashid² & Norfazila Ahmad³</i>	324-330
Tiktok Addiction and its Impact on Academic Performance among Teenagers <i>Amirah Othman^{1*} & Mohamad Hafizul Mohd Zaid²</i>	331-340
D. Health and Life Sciences	
Preliminary Investigation on the Use of Organic Waste as a Medium for Fast-Acting Biofiltration Systems <i>Mohamad Azlan Yusuff Abdul Rahim^{1*}, Mugilan Nalliannan², Darshini Sree Ahnathan³ & Azizah Alias⁴</i>	342-346
The Effectiveness of Tannic Acid from Tea Waste as a Coagulant for Reducing Solids & Cod in Wastewater Treatment <i>Mohamad Azlan Yusuff Abdul Rahim^{1*}, Is Aizat Samsuri², Nurul Syafika Zulkifli³, Siti Nurafiqah Nasir⁴ & Muhammad Hariz Hazwan Hamidi⁵</i>	347-350
Study of Malay Traditional Architecture Approach in Landscape Architecture Design <i>Mohamad Hafiz Sulaiman^{1*}</i>	351-357
The Potential of Shrub Plants as Soil Erosion Control <i>Mohamad Hafiz Sulaiman^{1*}</i>	358-363
Climate Change Increases the Risk of Infectious Diseases and Solutions to Address the Issues <i>Rabiatul Adawiyah Mohd Radzuan¹ & Nur Adibah Mohidem^{1*}</i>	364-379
Telang Flower: A Novel Approach to Pharmaceutical Innovation in Malaysia <i>Saiful Mohamed Shuib^{1*}, Elena Anwar² & Anwar Abdul Rahman³</i>	380-386
Development of Bio-Board from Reutilization of Spent <i>Pleurotus Cajor-Saju</i> Substrate <i>Muhammad Naim Razali^{1*} & Shaveena Devi Venilen²</i>	387-392

E. Social Sciences

Consumer Rights: What Consumers Should Know in Dealing with E-Commerce Transactions <i>Nur Farahin Afiqah Daud¹</i>	394-399
Mastery Level of Generic Skills Among Students' Community College of Sarawak Region Through Teaching and Learning Processes Via Genral Courses (MPU) <i>Chong Chiew Ching¹, Liu Tse Hui² & Ngu Toh Onn³</i>	400-405
Development of Tofu Sausage Tomyam <i>Nur Nafisa Shafie@Mohd Alias^{1*}, Latifah Mahmood² & Norzilahwati Md Noh³</i>	406-409
Retail Management Education in Malaysia: Identifying and Integrating Essential Skills <i>Nur Aliyah Azizi^{1*} & Noor Rahayu Mohd Salleh²</i>	410-415
Students' Intention Towards Sustainability: The Moderating Role of Emotional Intelligence <i>Siti Yummy Faridatul Akmar Mohamad¹</i>	416-421
Literasi Kewangan Pelajar Diploma Pengajian Perniagaan Jabatan Perdagangan Politeknik Ungku Omar <i>Sazaliana Shairali^{1*} & Yanti Yusop²</i>	422-428
Effects of Biofeedback Training on Heart Rate Variability and Performance of College Golf Players <i>Huang Donghai¹, Muhammad Nubli Abdul Wahab^{2*} & Zhang Xiuling³</i>	429-434
Levels of Student Involvement in Green Programs and Their Impact on Environmental Stewardship Attitudes <i>Zainatun Nisa Sapaat¹ & Halizah Alwi²</i>	435-440
Islamic Digital Marketing Template for Asnaf in Perlis <i>Izwan Nurli Mat Bistaman^{1*}, Muhammad Nurfiqri Mohd Hajar² & Razinda Tasnim Abdul Rahim³</i>	441-445

F. Logistic and Supply Chain Management

The Influence of Organizational Ambidexterity, Business Strategies, and Supplier Performance on Customer Satisfaction, and Its Implications on Logistics Performance at Bandung Main Branch Office of PosIND <i>Yogi Sudrajat^{1*} & Saptono Kusdanu Waskito¹</i>	447-453
Analysis of Factors That Influence the Effectiveness of Export Performance (Case Study at PT. Sinergi Mitra Lestari Indonesia) <i>Anida Wafiq Adawiyah S. Log¹ & Erna Mulyati, S.T., M.T²</i>	454-460

Analysis of Factors That Influence the Effectiveness of Hazardous and Toxic Materials Waste Warehouse Management at the Company PT Sinergi Mitra Lestari Indonesia <i>Muhammad Andrey Alfian, S. Log.¹, Dr. Erna Mulyati, S.T., M.T.²</i>	461-467
Challenges and Strategies for Rice Price Stability: A Systematic Review of Supply Chain Dynamics in Indonesia During Critical Periods <i>Rizki Alifnur Harmawan^{1*} & Erna Mulyati²</i>	468-476
Analysis and Implementation of the User-Centered Design Method in Designing a Web-Based Bidding Participation Information System: A Case Study at PT Pos Indonesia (PERSERO) <i>Kokoh Handoko^{1*} & Agus Purnomo¹</i>	477-483
The Impact of Digital Transformation, Logistics Competence, Transformational Leadership on Business Model Innovation and Its Implications for Company Performance <i>Realyta B. U. Sirait¹ & Saptano Kusdanu Waskito²</i>	484-490
A Literature Review: Analysis of Courier Business Strategies in Facing Global Challenges <i>Emay Marsita¹ & Maniah²</i>	491-500
From Farm to Fork: Leveraging Blockchain Technology to Improve Food Supply Chain Integrity in Indonesia <i>Syifa Salsabila¹ & Agus Purnomo²</i>	501-512
Integrating Advance Technology and Logistics Customer Service for Optimal Logistics Performance: A Study at Shopee Express Pangalengan Branch <i>Muhamad Faisal Nasrudin^{1*} & Agus Purnomo¹</i>	513-524
The Impact of Ambidextrous Leadership, Logistics Organizational Culture, Logistics Organizational Structure, On Logistics Innovation and Its Implications for Company Performance PT Pos Indonesia Bangkalan Branch Office <i>Ahmad Rosadi¹ & Saptano Kusdanu Waskito²</i>	525-529
Risk Management Design in Optimizing Employee Performance with The Approach of Enterprise Risk Management (ERM) <i>Ramadani Al Mantinu^{1*}</i>	530-537
Proposed Logistics Distribution Pattern for Regional Head Election in Bulukumba Regency (Case Study of the 2024 Regional Head Election) <i>Mirza Azzahra Damayanti¹ & Melia Eka Lestiani²</i>	538-551
The Impact of Export Parcel Price, Parcel Service Quality, and Logistics Service Innovation on Purchasing Decisions and the Implications for Company Performance at PT PosIND KCU Denpasar <i>Depi Darpiyan¹ & Erna Mulyati²</i>	552-557

- The Impact of Dedicated Storage and Class-Based Storage Methods on the Warehouse Layout of KPK PosIND Jakarta Centrum on the Distance and Time of Item Movement 558-568
Hendri Lasmana¹ & Agus Purnomo²
- The Effect of Express Mail Service (EMS) Tariff, Direct Flight, and Logistics Competence on Service Quality and the Implications for Company Performance at PT PosIND KCU Denpasar 569-572
Yullia Ika Setyanhi¹ & Erna Mulyati²
- The Role of Dynamic Logistic Capabilities which is Influenced by Customer Experience and Operational Excellent for PT Pos Indonesia Regional West Java 573-576
Arif Yudha Wahyudi & Agus Purnomo M. T. (Dr.)

PREFACE

It is a great privilege for us to present the proceedings of the International Research and Innovation Conference (i-RIC 2024) to the authors and delegates. We hope that you will find it useful, exciting, and inspiring. The International Research and Innovation Conference (i-RIC 2024) was held online from 24 to 25 July 2024, organized by Politeknik Nilai in collaboration with Universitas Logistik dan Bisnis Internasional (ULBI) with the theme, “Harmony in Diversity: Fostering Unity Sustainable Research and Innovation Society.”

i-RIC 2024 aims to gather more researchers, students, government agencies, and private sectors in an event with a larger international impact. The organization of this program also serves as a platform for sharing research findings, ideas, and knowledge among members of polytechnics, community colleges, higher education institutions, public universities, as well as government and private agencies involved. Researchers, academics, and experts from various sectors will have a global stage at i-RIC 2024 to discuss the latest findings and research that support sustainable development goals. The conference aims to generate knowledge to make our world greener and better for us and our future generations.

There were 4 keynote speeches covering different areas of the conference. The first day started with Associate Professor Dr. Ir. Agus Purnomo (ULBI Indonesia) talk on "How to Boost Green Supply Chain Resilience?" and Professor Dr. Mohamed Kchaou (University of Bisha, Saudi Arabia; University of Sfax, Tunisia) on "Latex Based Membrane for Oily Wastewater Treatment Technology Process and Perspectives". The second day featured Professor Dr. Recai Kus (Selcuk University, Turkey) on "Load Optimization of AISI 1040 and AISI 5140 Joint" and Dr. Umawathy a/p Technamurthy (Universiti Kebangsaan Malaysia) with her talk on "Harnessing the Potential of Maker Education in Enhancing Student Learning Outcomes".

A total of 124 presenters participated in the parallel presentation sessions, which ran smoothly over the two-day event supported by 109 i-RIC 2024 organizing committees. This included 16 online presentation moderators, 42 reviewers, 19 judges, and all participants who took the time to attend the online sessions. A total of 124 research papers and 56 innovations were presented in this program across 7 fields, namely:

- A. Engineering and Technology
- B. Business Management
- C. Education, Teaching, and Learning
- D. Health and Life Sciences
- E. Social Sciences
- F. Information Communication Technology
- G. Logistics and Supply Chain

Information regarding i-RIC 2024 can be accessed through the Program Book at <https://heyzine.com/flip-book/521619ef82.html> and overall results can be found at <http://iric.polinilai.edu.my/.../confe.../results-innovation>.

We would like to express our heartfelt thanks and sincere appreciation to all the authors for their contributions to this publication. We also express our gratitude and appreciation to all of the reviewers for their constructive feedback on the papers. Warmest thanks to the members of the organizing committee for their hard work and dedication in ensuring the success of the event.

Congratulations to everyone involved in making this conference a success.

EDITORIAL BOARD

Advisors

Tn. Haji Wan Zulkifly bin Wan Zakaria
(Director of Politeknik Nilai)
Dr. Ahmad Razimi bin Mat Lazim
(Head of Research and Inovation Unit, Politeknik Nilai)

Editor-in-Chief

Dr. Hjh. Nor Hayati Fatmi binti Talib – Politeknik Nilai

Editorial Team

Pn. Nur Hazeleen binti Bashah – Politeknik Nilai
Pn. Syafawati Noorhafizah binti Adnan Adli – Politeknik Nilai
Pn. Fauziah Shaheen binti Sheh Rahman – Politeknik Nilai
Pn. Norfaizah binti Bidin – Politeknik Nilai
Pn. Noriah binti Nawawi – Politeknik Nilai
Pn. Fardhila Syahira binti Salmi Nordin – Politeknik Nilai
Dr. Yusni bin Mohamad Yusak – Politeknik Nilai

Proofreaders

Pn. Shammine a/p Dharmalingam – Politeknik Nilai
Pn. Liyana binti Ibrahim – Politeknik Nilai
Pn. Norliyana Bau binti Muhamad Affendi Bau – Politeknik Nilai
En. Muhammad Asyraf bin Abdul Ghani – Politeknik Nilai

SENARAI PANEL PENILAI

Pejabat Timbalan Ketua Pengaraj (Governan), JPPKK

1. Ts. Mohd Asnawi Abd Wahab

PPI, Jabatan Pendidikan Politeknik Dan Kolej Komuniti (JPPKK)

2. Dr. Siti Rosminah Md Derus

Bahagian Kurikulum Jabatan Pendidikan Politeknik dan Kolej Komuniti (JPPKK)

3. Ts. Dr. Raudyah Md Tap
4. Zamsalwani Zamri

Politeknik Nilai (PNS)

5. LAr Dr. Fara Diba Badrul Hisham
6. Dr. Nur Farahin Afiqah Daud
7. Dr. Yusni Mohamad Yusak
8. Dr. Wan Nor Aishah Wan Omar

Universitas Logistik dan Bisnis Internasional (ULBI)

9. Maniah

Faculty of Civil Engineering and Built Environment (UTHM)

10. Syed Burhanuddin Hilmi Syed Mohamad

Universiti Tun Hussein Onn Malaysia (UTHM)

11. Syed Burhanuddin Hilmi Syed Mohamad
12. Mohd Noor Abdullah

Universiti Malaysia Pahang al-Sultan Abdullah

13. PM Dr. Fazeeda Mohamad
14. PM Dr. Puteri Fadzline Muhamad Tamyez

Universiti Kebangsaan Malaysia (UKM)

15. Umawathy Techanamurthy

Universiti Teknologi MARA Melaka (UiTM)

16. Dr. Ahmad Rosli Mohd Nor

Politeknik Banting (PBS)

17. Nur Raihana Sukri

Politeknik Ibrahim Sultan (PIS)

18. Dr. Hjh. Nor Haniza Mohamad

Politeknik Kuching (PKS)

19. Dr. Jam'aah Suud

Politeknik Melaka (PMK)

20. Kannan Rassiah

Politeknik Metro Johor Bahru (PMJB)

21. Khairul Nizam Mohd Khalid

Politeknik Muadzam Shah (PMS)

22. Dr. Mohammad Ridhwan Nordin
23. Dr. Affizah Mohamad Ghaffar

Politeknik Mukah (PMU)

24. Ts. Dr. Bong Siaw Wee

Politeknik Port Dickson (PPD)

25. Mazlina Mohd Tahir
26. Dr. Mohamad Siri Muslimin

Politeknik Sandakan Sabah (PSS)

27. Dr. Annafatmawaty Ismail

Politeknik Sultan Azlan Shah (PSAS)

28. Nurulaini Hafizah Mohd Hafir

Politeknik Sultan Salahuddin Abdul Aziz Shah (PSA)

29. Dr. Parameswari Shunmugam

Politeknik Tun Syed Nasir Syed Ismail (PTSN)

30. Hasyireen Abdul Halim
31. Khairunnisa A Rahman
32. Nor Hairul Palal

IPG Kampus Pendidikan Islam

33. Aminurrashid Ahmad Dahari

Kolej Komuniti Jelebu

34. Nur Hanim Othman

Kolej Komuniti Kuala Pilah

35. Helen Yong Lee Geok

Kolej Komuniti Kuching

36. Emaria Ahmad

Kolej Komuniti Mas Gading

37. Dr. Hayati Ibrahim

Kolej Komuniti Sungai Siput

38. Ts. Dr. Chow Khoon Keat

STAI Nusantara

39. Dr. Sri Andayani Mahdi Yusuf

LOGISTICS AND SUPPLY CHAIN MANAGEMENT

**“HARMONY IN DIVERSITY: FOSTERING UNITY
SUSTAINABLE RESEARCH AND INNOVATION SOCIETY”**

The Impact of Digital Transformation, Logistics Competence, Transformational Leadership on Business Model Innovation and Its Implications for Company Performance

Realyta B. U. Sirait¹ & Saptono Kusdanu Waskito²

¹University Of Logistics and International Business, Indonesia

Logistics management master's study program

Jl. Sariasih No 54, Sarijadi, Bandung City

¹realitasirait@gmail.com & ²saptono@ulbi.ac.id

Abstract

PT PosIND's revenue realization reached 80%. This means there is a company performance problem. The author examines the influence of digital transformation, logistics competency, leadership transformation on business model innovation, and business model innovation on company performance. The results show there is a positive and significant influence of transformation leadership on business model innovation and logistics competence on business model innovation. Next, there is a positive and insignificant influence of digital transformation on business model innovation. In addition, there is a positive and significant influence of business model innovation on company performance. It is recommended that companies increase improvements in logistics competence and digital transformation because they have no significant impact.

Keywords: Digital Transformation, Logistics Competence, Transformational Leadership, Business Model Innovation, Company Performance

1. Introduction

PT PosIND's revenue realization in 2023 is only 80% of the target. This information proves that there are problems with the performance of the PT PosIND company. Company performance refers to the results of an organization's performance in achieving its goals and effectiveness, which can be influenced by various factors such as organizational culture, structure, strategy, and management knowledge. (Martínez-Caro et al., 2020). Company performance can generally be defined as the company's ability to achieve the desired goals and results, both financially and non-financially. Company performance covers various aspects such as profitability, productivity, operational efficiency, innovation, customer satisfaction, and business growth. Evaluation of company performance is usually carried out by measuring and comparing the results that have been achieved with previously set targets (Büchi et al., 2020). The dimensions of company performance according to (Damayanti et al., 2023) consist of financial performance, marketing performance and operational performance.

Company performance can be defined as the result of various activities and decisions carried out by the company which are reflected in the achievement of the company's overall financial, operational, and strategic goals (Chege & Wang, 2020). Economic performance is all about financial performance (Yusliza et al., 2020). Company performance in the context of includes financial, social and environmental aspects, which are in line with the "Triple Bottom Line" (TBL) concept. Company performance is not only seen from a financial perspective, but also includes contributions to the three traditional pillars of sustainability: environmental, social, and economic (Ortiz-Martínez et al., 2023). Company performance can be defined as the results or output achieved by a company in carrying out its business activities, which includes financial and non-financial aspects.

This performance reflects the company's effectiveness and efficiency in achieving its strategic goals and meeting stakeholder expectations (N. Burhan & Rahmanti, 2012). Company performance can be interpreted as the company's ability to meet the growing market demand for these products by producing devices that have high energy and power density (Yuan et al., 2023). Company performance is influenced by business model innovation. According to Haftor & Climent Costa (2023), business model innovation is defined as the process of creating, modifying, or defining the fundamental structure and components of a business model to create new value propositions, capture new market opportunities, and gain a competitive advantage. The dimensions of business model innovation consist of exchangeables, activities, and machines.

Digital transformation is generally defined as “the use of new digital technologies, such as mobile, artificial intelligence, cloud, blockchain, and the Internet of Things (IoT), to enable significant business improvements (Omrani et al., 2024). Digital transformation is the process of integrating digital technology into all aspects of business operations, fundamentally changing the way an organization operates and delivers value to customers. This process involves the adoption of new technologies, changes in organizational culture, and business model innovation to increase efficiency, responsiveness, and competitiveness in an increasingly digital marketplace. Digital transformation covers various aspects such as process automation, use of analytical data for decision making, development of digital products and services, as well as improving customer experience through technology (Jing et al., 2023). Digital transformation is a company's ability to redesign business components, processes, culture, and strategy to meet market needs thanks to digital advances.

This transformation allows companies to optimize business processes, predict market demand, and create value for customers (Chen et al., 2024). Digital transformation is a significant approach to dealing with managerial issues such as human resources, business efficiency, and business process redesign, enabled by the integration of modern information and communication technologies (Zuzaku & Abazi, 2022). Digital transformation in a government context involves the application of digital technologies among departments, the adjustment of resources, the reform and development of organizational structures, administrative processes, and business procedures (Xiao et al., 2023). Business model innovation is influenced by digital transformation. According to Udovita (2020), digital transformation is the integration of digital technology into all areas of a business, fundamentally changing how you operate and deliver value to customers. Dimensions of Digital Transformation are personalized service, asset sharing, organization (Udovita, 2020).

Logistics competence can be defined as the capability and proficiency in managing and executing logistics activities effectively and efficiently. It involves having the necessary knowledge, skills, and resources to plan, coordinate, and optimize the flow of goods and services from the point of origin to the point of consumption. Logistics competence is crucial for organizations to meet customer demands, reduce costs, and improve overall supply chain performance (Lu & Lin, 2012). Logistics competence is the skills and knowledge required to effectively and efficiently manage and coordinate the movement of goods, materials, and information in global supply chains (Leonova, 2022). Logistics competence is the ability of individuals, divisions or organizations to acquire, manage and apply knowledge effectively and efficiently in order to improve logistics performance (Radzi et al., 2020). Logistics capabilities are defined as the specialized skills, attributes and knowledge within a firm that helps it to manage its logistics activities such as transportation and distribution of raw materials and finished goods, in an efficient, safe and effective way (Mandal et al., 2017).

Logistics capabilities are one of the key dynamic capabilities of a firm, affecting the creation of business models, as well as the formulation of the firm's business strategies. They have been identified as being important in relation to responding to unexpected events or supply chain disruptions. According to Matwiejczuk (2020), logistics capabilities can be developed in both the "real sphere" where they are associated with processes such as transport, storage, and handling, and in the "regulatory sphere" where they are associated with decision processes such as the flow of materials and information, and the subsequent management of these (Al-Madi et al., 2021). Business model innovation is influenced by logistics competence. According to Thepmongkorn & Pitchayadejanant (2020), logistics competence include knowledge, skills, attitude of staff in logistics activities.

Transformational leadership (TL) can be understood as the ability of a leader to influence the behavior of his or her workers through the use of charisma, inspiration, intellectual stimulation and individualized consideration (García-Morales et al., 2008). Authors such as Al-Husseini et al (2021) determined that the relationship between TL and innovation is due to the fact that some key dimensions of TL such as idealized influence, intellectual stimulation, and individualized consideration, favor the innovation process of work teams, considerably increasing the creative thinking of employees and encouraging them to share their ideas with their leader and peers. Transformational leadership is a leader's ability to inspire and motivate followers to achieve higher shared goals, exceed minimum expectations, and bring about significant positive change (Mai et al., 2022), Transformational leadership centers on establishing and conveying a vision that is broader than personal interests.

This vision develops naturally through direct interaction, both verbal and nonverbal, between leaders and followers. The transformational motivation that exists between leaders and their followers is a topic of in-depth research (Greimel et al., 2023). Transformational leadership stands out as a leadership style that is able to lead organizations to achieve higher goals. Leaders with this style have a clear and inspiring vision, motivating their followers to exceed expectations and work together to make that vision a reality (Chen et al., 2024). Business model innovation is influenced by transformational leadership. Transformational leadership is a style of leader who influences sub ordinate to perform beyond the expectation. The dimensions from Transformational Leadership are an intellectual stimulation, inspirational motivation, and individual consideration (Hilton et al., 2023).

The differences that separate the researcher from the articles written above are:

1. There is a positive and insignificant influence of digital transformation on business model innovation.
2. There is a positive and insignificant effect of logistics competency on business model innovation.
3. Until now, there has been no quantitative research that examines the influence of business model innovation on company performance.

2. Body of Paper.

Research Methods

This research uses quantitative, descriptive and analytical methods. According to Arikunto (2021), quantitative research methods are research methods to examine the behavior of a population or sample (part of the population). The author conducted research using descriptive methods. According to Sudaryanyo (2021), descriptive research is research to obtain a description or picture of certain characteristics of the variables being studied, usually described in the form of an average

value of a variable. The author conducted research using the verification method. According to Siregar (2023), verification research is research used to test the truth of knowledge in an existing field. Verification research is used to prove the opinions of experts regarding the influence of independent variables on intervening variables, the influence of intervening variables on dependent variables.

Research Model

The research model in this study is presented in Figure 2.1.

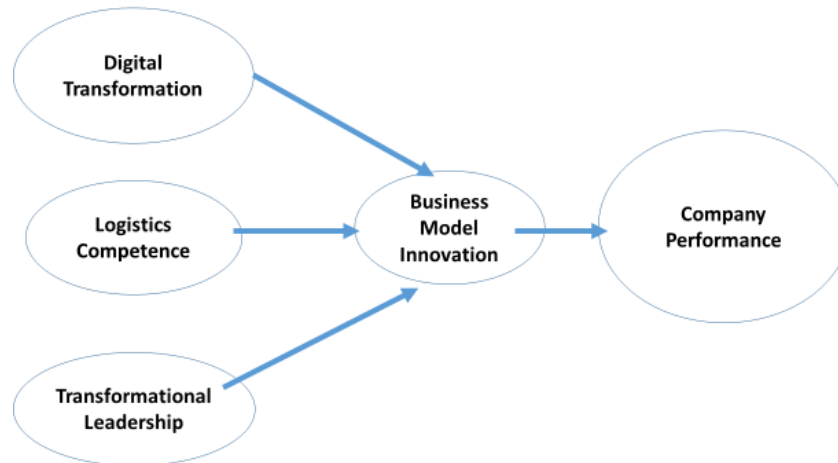


Figure 1: Research Model.

Total population is 240 employees at PT PosIND Head Office. The number of samples was determined using the Slovin formula as 150 people.

Hipotesis

The author sets the following hypotheses:

No Hypotheses

1. H₁ : There is a positive and significant influence of digital transformation on business model innovation.
2. H₂ : There is a positive and significant influence of logistics competence on business model innovation.
3. H₃ : There is a positive and significant influence of transformational leadership on business model innovation.
4. H₄ : There is a positive and significant influence of digital transformation, logistics competence, transformational leadership on business model innovation simultaneously.
5. H₅ : There is a positive and significant influence of business model innovation on company performance.

3. Results

The research results explain that the average value of each indicator is between 2.773 to 3.220 and is grouped as a fairly good variable. Waskito (2023), elaborates that variable that are worth researching are variables that have an average value from 1,000 to 3,400. Based on Waskito's opinion (2023), it can be explained that the variables in this research meet the requirements for research.

The research results explain that the load factor value of all indicators on the variables is between 0.736 and 0.983. This value is greater than 0.700. So, because all indicators have a load

factor value greater than 0.700, then by referring to Hasnita's opinion (2021), all indicators in this research are declared valid. Hasnita (2021) explains that a variable is said to be reliable if each variable has a Cronbach's Alpha value greater than 0.700. All variables have a Cronbach's Alpha value between 0.928 to 0.982 and are above 0.70, so all variables are declared reliable for research.

The results of the research explain that the path coefficient value of transformational leadership for business model innovation is 0.450 with a p value of 0.007. This means that there is a positive and significant influence of transformational leadership on business model innovation. In addition, there is also a positive and insignificant influence of digital transformation on business model innovation with a path coefficient value of 0.264 (positive) with a p value of 0.178. Next, there is a positive and insignificant influence of logistics competence on business model innovation with a path coefficient value of 0.222 with a p value of 0.113 which is greater than 0.05. The research results explain that the R Square value is 0.838. which means that there is a positive and significant influence of digital transformation, logistics competence, transformational leadership on business model innovation.

The Path Coefficient value of the influence of business model innovation on company performance is 0.778 with a p value of 0.000. This means that there is a positive and significant influence of business model innovation on company performance. The overall results of the research using the Structural Equation Model (SEM) with the PLS application are presented in Figure 2.2 below:

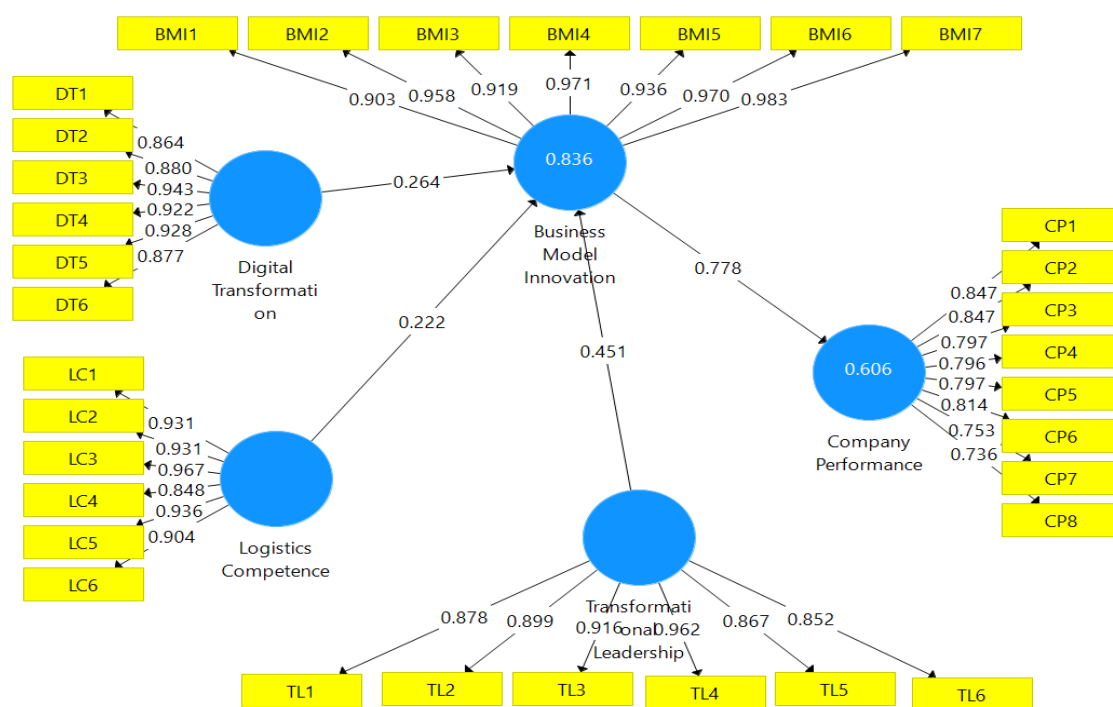


Figure 2: Result Research

4. Implication and Direction for Future Research

Implication

The author recommends that PT PosIND should increase the influence of digital transformation by increasing the use of assets belonging to PT PosIND and those belonging to suppliers hired by PT PosIND and increasing the organization's agility in dealing with dynamic customer desires. PT PosIND should increase its organizational agility to provide fast, precise and safe service to

customers. PT PosIND should also improve the knowledge, skills, and attitudes of staff so that they are ready to provide service excellence to customers. PT PosIND leaders should continuously increase intellectual stimulation for staff by holding training which is expected to improve service to customers. PT Pos IND should increase staff motivation so that they are motivated to improve staff performance to support company performance. PT PosIND should increase awareness of staff, so that staff are inspired to improve performance.

Direction

The author has succeeded in proving that Business Model Innovation influences the Corporate Company PT Pos Indonesia. But the contribution is only 0.778 or 77.80%. There is still an opportunity for other researchers to examine other variables that can influence the Company. For example, the variables Agility Logistics, Lean Logistics.

References

- Al-Madi, F., Alfalah, T., Shraah, A & Abu-Rumman, A. (2021). Supply chain practices and organizational performance: Evidence from Jordanian medical devices firms. *Uncertain Supply Chain Management*, 9(4), 831-840.
- Al-Husseini, S., El Beltagi, I., & Moizer, J. (2021). Transformational leadership and innovation: the mediating role of knowledge sharing amongst higher education faculty. *International Journal of Leadership in Education*, 24(5), 670–693. <https://doi.org/10.1080/13603124.2019.1588381>
- Büchi, G., Cugno, M., & Castagnoli, R. (2020). Smart factory performance and Industry 4.0. *Technological Forecasting and Social Change*, 150(October 2019), 119790. <https://doi.org/10.1016/j.techfore.2019.119790>
- Chege, S. M., & Wang, D. (2020). The influence of technology innovation on SME performance through environmental sustainability practices in Kenya. *Technology in Society*, 60(November 2019), 101210. <https://doi.org/10.1016/j.techsoc.2019.101210>
- Chen, A., Li, L., & Shahid, W. (2024). Digital transformation as the driving force for sustainable business performance: A moderated mediation model of market-driven business model innovation and digital leadership capabilities. *Heliyon*, 10(8), e29509. <https://doi.org/10.1016/j.heliyon.2024.e29509>
- Damayanti, D. A., Fitriani, R., & Wahyudin, W. (2023). Analisis Pengukuran Kinerja Perusahaan Melalui Key Performance Indicator Pada PT. XYZ. *Jurnal Serambi Engineering*, 8(2), 5099–5105. <https://doi.org/10.32672/jse.v8i2.5682>
- García-Morales, V. J., Lloréns-Montes, F. J., & Verdú-Jover, A. J. (2008). The effects of transformational leadership on organizational performance through knowledge and innovation. *British Journal of Management*, 19(4), 299–319. <https://doi.org/10.1111/j.1467-8551.2007.00547.x>
- Greimel, N. S., Kanbach, D. K., & Chelaru, M. (2023). Virtual teams and transformational leadership: An integrative literature review and avenues for further research. *Journal of Innovation and Knowledge*, 8(2), 100351. <https://doi.org/10.1016/j.jik.2023.100351>
- Haftor, D. M., & Climent Costa, R. (2023). Five dimensions of business model innovation: A multi-case exploration of industrial incumbent firm’s business model transformations. *Journal of Business Research*, 154(July 2022), 113352. <https://doi.org/10.1016/j.jbusres.2022.113352>
- Hilton, S. K., Madilo, W., Awaah, F., & Arkorful, H. (2023). Dimensions of transformational leadership and organizational performance: the mediating effect of job satisfaction. *Management Research Review*, 46(1), 1–19. <https://doi.org/10.1108/MRR-02-2021-0152>
- Jing, H., Zhang, Y., & Ma, J. (2023). Influence of digital ambidextrous capabilities on SMEs’

- transformation performance: The mediating effect of business model innovation. *Heliyon*, 9(11), e21020. <https://doi.org/10.1016/j.heliyon.2023.e21020>
- Leonova, S. (2022). *Competency based model for logistics and supply chain management Analysis of the last research*. 12(2022).
- Lu, C. S., & Lin, C. C. (2012). Assessment of national logistics competence in Taiwan, Vietnam, and Malaysia. *Asian Journal of Shipping and Logistics*, 28(2), 255–274. <https://doi.org/10.1016/j.ajsl.2012.08.006>
- Mai, N. K., Do, T. T., & Phan, N. A. (2022). The impact of leadership traits and organizational learning on business innovation. *Journal of Innovation and Knowledge*, 7(3). <https://doi.org/10.1016/j.jik.2022.100204>
- Martínez-Caro, E., Cegarra-Navarro, J. G., & Alfonso-Ruiz, F. J. (2020). Digital technologies and firm performance: The role of digital organisational culture. *Technological Forecasting and Social Change*, 154(February), 119962. <https://doi.org/10.1016/j.techfore.2020.119962>
- N. Burhan, A. H., & Rahmanti, W. (2012). the Impact of Sustainability Reporting on Company Performance. *Journal of Economics, Business, and Accountancy | Ventura*, 15(2), 257. <https://doi.org/10.14414/jebav.v15i2.79>
- Omrani, N., Rejeb, N., Maalaoui, A., Dabic, M., & Kraus, S. (2024). Drivers of Digital Transformation in SMEs. *IEEE Transactions on Engineering Management*, 71, 5030–5043. <https://doi.org/10.1109/TEM.2022.3215727>
- Ortiz-Martínez, E., Marín-Hernández, S., & Santos-Jaén, J. M. (2023). Sustainability, corporate social responsibility, non-financial reporting and company performance: Relationships and mediating effects in Spanish small and medium sized enterprises. *Sustainable Production and Consumption*, 35, 349–364. <https://doi.org/10.1016/j.spc.2022.11.015>
- Radzi, N. A. M., Wahab, S. N., & Bahar, N. (2020). An Inquiry on Knowledge Management in Third-party Logistics Companies. *International Journal of Business Innovation and Research*, 1(1), 1. <https://doi.org/10.1504/ijbir.2020.10024101>
- Thepmongkorn, S., & Pitchayadejanant, K. (2020). Competence Requirements for Logistics and Supply Chain Management Students by Adopting BLM and APICS Competency Framework: An Importance-Expertise *Development Journal*. <https://so01.tcithaijo.org/index.php/HRODJ/article/view/240597>
- Udovita, P. V. M. V. D. (2020). Conceptual Review on Dimensions of Digital Transformation in Modern Era. *International Journal of Scientific and Research Publications (IJSRP)*, 10(2), p9873. <https://doi.org/10.29322/ijsrp.10.02.2020.p9873>
- Xiao, J., Zhang, H., & Han, L. (2023). How Digital Transformation Improve Government Performance: The Mediating Role of Partnering Agility. *IEEE Access*, 11(June), 59274–59285. <https://doi.org/10.1109/ACCESS.2023.3284793>
- Yuan, G., Wan, T., BaQais, A., Mu, Y., Cui, D., Amin, M. A., Li, X., Xu, B. Bin, Zhu, X., Algadi, H., Li, H., Wasnik, P., Lu, N., Guo, Z., Wei, H., & Cheng, B. (2023). Boron and fluorine Co-doped laser-induced graphene towards high-performance micro-supercapacitors. *Carbon*, 212(February). <https://doi.org/10.1016/j.carbon.2023.118101>
- Yusliza, M. Y., Yong, J. Y., Tanveer, M. I., Ramayah, T., Noor Faedah, J., & Muhammad, Z. (2020). A structural model of the impact of green intellectual capital on sustainable performance. *Journal of Cleaner Production*, 249, 119334. <https://doi.org/10.1016/j.jclepro.2019.119334>
- Zuzaku, A., & Abazi, B. (2022). Digital Transformation in the Western Balkans as an Opportunity for Managing Innovation in Small and Medium Businesses - Challenges and Opportunities. *IFAC-PapersOnLine*, 55(39), 60–65. <https://doi.org/10.1016/j.ifacol.2022.12.011>