BOOK OF ABSTRACT ISYSDYN 2021 INTERNATIONAL SEMINAR ON SYSTEM DYNAMICS

"System Dynamic Approach in Solving the Business Sustainability Issue and Challenge"

Virtual Seminar | March 30-31, 2021



Organized by:



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Book of Abstract International Seminar on System Dynamics ISYSDYN

Virtual Conference March 30-31, 2021



Book of Abstract International Seminar on System Dynamics ISYSDYN

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FOREWORD



Indonesian System Dynamics Expert Association (ASDI) is an association that accommodates expert and researchers of System Dynamics in Indonesia. Awareness of professionalism on the understanding and application of System Dynamics, the Indonesian System Dynamics Expert Association (ASDI) was formed to equate ways of thinking and apply System Dynamics in various strategic planning and policies. The level of understanding of System Dynamics is growing, so there needs to be a common understanding, especially System Thinking and implementation of system dynamics, both users at the level of students, teachers, researchers to regional and national strategic policy makers.

ASDI members have spread throughout Indonesia from Sabang to Merouke, and from Miangngas Island to Rote Island. The deployment of ASDI members who are also System Dynamics modeling experts in various fields of science will make the development of System Dynamics modeling growing faster. With the times, a list of system dynamics modeling experts can be searched through a search engine on the <u>www.sistemdinamik.id</u> page, so that policy makers will easily to find modeling experts with qualifications that match the policies to be determined, so that ASDI's goal of "**developing Indonesia with the best scenario**" can be realized.

Board of ASDI

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Research Synergy Foundation is a digital social enterprise platform that focuses on developing Research Ecosystem towards outstanding global scholars. We built collaborative networks among researchers, lecturers, scholars, and practitioners globally for the realization of knowledge acceleration. We promote scientific journals among countries as an equitable distribution tools of knowledge. We open research collaboration opportunities among countries, educational institutions, organizations and among researchers as an effort to increase capabilities.

Known as a catalyst and media collaborator among researchers around the world is the achievement that we seek through this organization. By using the media of International Conference which reaches all researcher around the world we are committed to spread our vision to create opportunities for promotion, collaboration and diffusion of knowledge that is evenly distributed around the world

Our Vision:

As global social enterprise that will make wider impact and encourage acceleration quality of knowledge among scholars.

Our Mission:

First, developing a research ecosystem towards outstanding global scholars. Second, Promoting scientific journals among countries as an equitable distribution tools of knowledge. Third, opening research collaboration opportunities among countries, educational institutions, organizations and among researchers as an effort to increase capabilities. Fourth, creating global scientific forum of disciplinary forums to encourage strong diffusion and dissemination for innovation.

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FUTURE EVENT

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Dr. Dewi Nurhayati Yusuf, M.Sc Haluoleo University

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Prof. Muhammad Rayyan Fazal Riphah International University, Faisalabad

Dr. Prameshwara Anggahegari School of Business and Management, Institut Teknologi Bandung

Dr. Sita Deliyana Firmialy Faculty of Communication and Administration Business - Telkom University

CONFERENCE CHAIR MESSAGE

We are delighted to welcome you to International Seminar on System Dynamics (ISYSDYN) by Indonesian System Dynamics Expert Association (ASDI) and Research Synergy Foundation (RSF) that held virtually on March 30-31, 2021. The congress theme is "System Dynamics Approach in Solving the Business Sustainability Issue and Challenge".

This conference not only give you global forum to share and exchange idea, research, and work. But also, provide wider network and research ecosystem for further collaboration and projects. We are glad to share this good opportunities in the scientific community, that will be offered only for all participants who participate in the conference.

It has been our privilege to convene this conference. Our sincere thanks, to the conference organizing committee; to the Program Chairs for their wise advice and brilliant suggestion on organizing the technical program and to the Program Committee for their through and timely reviewing of the papers. Recognition should go to the Local Organizing Committee members who have all worked extremely hard for the details of important aspects of the conference programs and social activities.

We welcome you to this conference and hope that this year's conference will challenge and inspire you, and result in new knowledge, collaborations, and friendships.

Best regards,

Dr. Irman Firmansyah, S.Hut., M.Si

Conference Chair of ISYSDYN

CONFERENCE CHAIR



Dr. Irman Firmansyah, S.Hut., M.Si is an expert in system dynamics and spatial dynamics. He completed his doctoral education (S3) in 2016 in the Environmental Management Study Program (PSL-IPB) with research using System Dynamics and Spatial Dynamics for Land Use Change. Since 2007 he has been active as a lecturer at several universities with specializations in System Dynamics and Environmental Sciences and has been a reviewer for international system dynamics journal. Apart from being the head of the System Dynamics Center who is often invited to be a resource person in various ministries such as Ministry of National **Development Planning/National Development** Planning Agency (BAPPENAS), State intelligence agency (BIN), Audit Board of the Republic of Indonesia (BPK). Currently, he is the chairman of ASDI for the 2020-2025 period.

OPENING SPEAKER



Prof. Dr. Ir. H. Rokhmin Dahuri, MS.

He was the Minister of Marine Affairs and Fisheries of the Republic of Indonesia in the 2001-2004 period as well as the ASDI Advisory Board. In 1982 he earned a Bachelor of Fisheries (Ir) from the Faculty of Fisheries, Bogor Agricultural Institute in the field of marine resource management. In 1986 he received a master of science (MS) degree from the postgraduate program of the Bogor Agricultural Institute in the field of natural resource and environmental management. while in 1991 he received his Ph.D (Dr) from Dalhousie's School for Resource and Environmental Studies in the field of ecology and the management of coastal and marine resources.

OPENING SPEAKER



Dr. Ir. Medrilzam, MPE works for the Indonesian Ministry for National Development Planning or known as BAPPENAS. He has been serving his institution for 24 years with current position as the Director for Environment Affairs. He completed his Phd in Environmental Management at the University of Queensland, Australia in 2013. Medrilzam did his master degree in economics at the same university and finished his environmental engineering background for his bachelor education at the Institut Teknologi Bandung, Indonesia. Most of his theses from bachelor to PhD were related to modeling works, in particular in System Dynamics modeling. His particular interests are related to environment and climate change, forestry and land-use management, including conservation and peatland management. At the moment, among others, he is preparing the Strategic Environmental Management (SEA) for the next National Mid-Term Development Plan 2020-2024 and collaborates with IIASA to accomplish the task in the land based sector.



Dr. Seyed Hossein Hosseini received his MSc from Iran University of Science and Technology and PhD from University of Tehran in Industrial Engineering (Socio-Economic Systems Engineering). Currently, he works as the CEO of Model-Based Management Systems Institute (SAMAM: http://www.samamsystem.com), a consultancy group which operates as a research arm for public sector projects on simulation and modelling of complex systems. His research focus includes system dynamics modelling, socioeconomic systems engineering, modelbased policy analysis, and modelling and policy research in the public sector.



Dr. Antuela Anthi Tako is a Reader in Operational Research in the School of Business and Economics at Loughborough University. Antuela joined Loughborough University in July 2010 as a Lecturer in Operational Research. Prior to joining Loughborough, Antuela worked as a Research Fellow in Healthcare at Warwick University.

Antuela has a background in management science and operational research. She holds a bachelor's degree from Athens

University of Economics and Business (2002), MSc (with Distinction) in Operational Research and Management Sciences (2003), and a PhD in Operational Research (2009) from the University of Warwick. Prior to completing her PhD, Antuela worked in consultancy.

Antuela is an expert in developing quantitative and qualitative modelling approaches to support stakeholder engagement, primarily in Health and Social Care. Antuela's research interests include alternative simulation approaches, participative and facilitated simulation (and conceptual) modelling, behavioural operational research. Her research has appeared in the European Journal of Operational Research, Decision Support Systems, Journal of the Operational Research Society, Journal of Simulation and BMJ Quality and Safety.

She is the co-founder of PartiSim, which stands for Participatory Simulation, an approach that supports stakeholder involvement in simulation modelling. Antuela has over 15 years' experience of running workshops with various stakeholder groups, primarily in the health sector. The most recent organisations Antuela has worked with include the East Midlands Ambulance Service and Leicestershire County Council (the SIMTEGR8 project) which evaluated the design of integrated community-based health and social care services.

Antuela teaches on several business and statistics modules at Loughborough University, at undergraduate, postgraduate and executive education level.

Antuela welcomes applications from prospective PhD students looking to work in simulation conceptual modelling, multi-methodology and behavioural simulation.

Dr. Ir Hartrisari Hardjomidjodjo, DEA



Dr. Hartrisari. H. is a lecturer at the Department of Agro-industrial Technology, Faculty of Agricultural Engineering and Technology, IPB University. She graduated from IPB University in Agro-industrial Technology and from ENGREF, Paris , France, majoring in System Dynamic modeling. She is also affiliate scientist at SEAMEO BIOTROP.

She has been involved in various projects, mostly collaborated with government institutions and or private sectors

concerning modeling of system dynamics for industries and environment, also for policies analysis. Some of her works in system dynamics research in the form of computer programs prototype such as transportation for city waste and decision support system on spatial planning for Food Security have been recorded as innovation products, published by Indonesian Business Innovation, and also awarded from Government of West Java.

For the last 4 years, her research are focusing on calculating index performance, beginning with index for Small Medium Enterprises performance, index of industrial readiness for facing industrial era 4.0 and industrial reward system design based on quality system.



Dr. John Pastor Ansah is an Assistant Professor of the Programme in Health Services and Systems Research, Duke-NUS Medical School and a faculty fellow at Residential College 4, National University of Singapore.

His recent work includes modelling the trajectory of the Covid-19 outbreak in Singapore, to understand how different interventions (such as containment, social distancing and attainment of herd immunity) may impact on the community spread of COVID-19 in Singapore. The study uses Susceptible-Exposed-Infectious-Recovered (SEIR) model to

simulate the dynamics of COVID-19 infection, accounting for the impact of asymptomatic infections.

Asst Prof Ansah holds a PhD degree in Systems Science methodology of System Dynamics, and has 10 years' experience in the application of simulation modelling to complex health policy issues. His research uses computational modelling—with systems thinking and System Dynamics methodology as the foundation—coupled with the active involvement of stakeholders to better understand complex health systems issues to inform policy and interventions to improve health outcomes. His research interests lie broadly in the area of health systems improvement—to address strategic and operational health and social care challenges – and the evaluation of health system-wide impacts of complex health and social care interventions. Current projects includes long-term care needs, resilience and hip fracture recovery trajectories among the elderly, patients flow in the emergency department, enhanced primary care for an ageing society and human resources for health.

SESSION CHAIR



Dr. Teck Chai Lau BSc, MBA, PhD is an Associate Professor with Southampton Business School. Previously he was an Associate Professor at the Faculty of Accountancy and Management, Universiti Tunku Abdul Rahman. He obtained his BSc in Business Administration (Decision Science and Financial Management) from University of Montana, USA, MBA (Strategic Management) from Universiti Teknologi Malaysia (UTM) and Doctor of Business Administration (Marketing) from Southern Cross University, Australia.

In Universiti Tunku Abdul Rahman, he had served as Coordinator, Head of Programme (PhD and MPhil),

Head of Programme (MBA and MBA (Corporate Governance)), Head of Department (Management) and Head of Department (International Business). Dr. Lau is a prolific researcher and had published extensively in books, book chapters, international journals and conference proceedings. Many of the published papers are indexed in Clarivate Analytics and SCOPUS, and widely cited internationally. He also co-authored and published university textbooks on business ethics and business research which have been adopted in many local public and private universities. Dr Lau is currently Malaysian Qualifications Agency (MQA) assessor in business and also external examiner for several universities and professional bodies.

SESSION CHAIR



Dr. Xin-Jean Lim received her doctorate degree from Universiti Putra Malaysia (UPM). Currently, she worked as a lecturer in Xiamen University, Malaysia. She is also a tutor for data analysis in business research methods in UPM for postgraduate and undergraduate students. Her research interests include consumer behaviour, social media marketing, online marketing and customer relationship management. Her papers are published in Journal of Retailing and Consumer Services, Industrial Management and Data Systems, British Food Journal, Marketing Intelligence and Planning, Young Consumers and Asia Pacific Journal of Marketing and Logistics.

CONFERENCE PROGRAM Day-1

Tuesday, March 30, 2021

International Seminar on System Dynamics (ISYSDYN)

Virtual Conference | March 30-31, 2021

Time (UTC+7) Dur'		Dur'	Activity	
07.50 -	08.00	10'	Participant Login and Join Virtual Conference by ZOOM	
08.00 -	08.10	10'	Welcome Address and Conference Publication Announcement	
08.10 -	08.20	10'	Welcome Remarks and Introduction of ISYSDYN Dr. Irman Firmansyah, M.Si. Conference chair of ISYSDYN; Chairman of System Dynamics Center; IPB University	
08.20 -	08.30	10'	Opening Speech Prof. Dr. Ir. H. Rokhmin Dahuri, MS. CCMRS - IPB University; Advisory Board of ASDI	
08.30 -	08.40	10'	Opening Speech Ir. Medrilzam, M.Prof.Econ, Ph.D Director for the Environment - BAPPENAS	

Time (UTC+7) D		Activity
08.40 - 08.5	0 10'	Global Research Ecosystem Introduction Dr. Hendrati Dwi Mulyaningsih Co-Conference chair of ISYSDYN; Founder & Chairman of Research Synergy Foundation
08.50 - 09.0	0 10'	Group Photo Session
09.00 - 09.4	0 40'	Keynote Speaker Dr. Seyed Hossein Hosseini Model-Based Management Systems Institute (SAMAM)
09.40 - 10.2	0 40'	Keynote Speaker Dr. Antuela Anthi Tako Loughborough University, UK
10.20 - 10.3	0 10'	Preparation for Online Presentation Session and short break
10.30 - 10.3	5 5'	Online Presentation Session and Session Chair Introduction Associate Professor Dr. Teck Chai Lau University of Southampton, Malaysia, UK
10.35 - 12.5	0 135'	Online Presentation Session
12.50 - 13.0	0 10'	Testimonial and Post-conference information announcement
13.00 - 13.0	5 5'	Preparation for Closing Ceremony after online Presentation Session

Time (UTC+7)	Dur'	Activity
13.05 - 13.15	10'	Award Ceremony: Best Paper Best Presentation
13.15 - 13.20	5'	Closing Speech Dr. Regina Deti, SE., M.M Head of Research, Development and Publication of ASDI; Parahyangan Catholic University

Tuesday, 30 March 2021 Session Time : 11.15 - 13.30 Session Chair : Associate Professor Dr. Teck Chai Lau

Track Social Science

Paper ID	Presenter	Paper Title
DYN21102	Fajar Dwi Alfian	Modeling The Sustainable Development Of Indonesia Hajj With System Dynamics
DYN21106	Fauzan Ahmad	Understanding Covid-19 Situation In Indonesia Using System Approach
DYN21107	Arzyana Sunkar	An In-depth Analysis Of Indonesia Illegal Wildlife Trade Mechanism
DYN21110	l Wayan Budiasa	Sustainable Ecotourism Management Model In Batur Unesco Global Geopark Area
DYN21111	Widhianthini - Widhiantini	Effectiveness Of Local Institutions In Bali In Control Of Conversion Of Paddy Fields
DYN21115	Retno Widihastuti	Strategy For The Development Of Vaname Shrimp Cultivation In The District. Pinrang, South Sulawesi Regency

Track Economic Development

Paper ID	Presenter	Media	Paper Title
DYN21105	Ravi Prananda	Virtual	Dynamic System Modelling To Improve Total Container Traffic: Case Study
	Rinaldy	Presentation	Of Jakarta International Container Terminal (jict), Port Of Tanjung Priok
DYN21113	Chaterina	Virtual	Tuna Processing Model At Household Scale Industry In The Coastal Border
	Agusta Paulus	Presentation	Area Of Indonesia-timor Leste
DYN21122	Bagus Sumargo	Virtual Presentation	System Dynamics For Macro Modeling Of Poverty Based On Simultaneous Equation Model

CONFERENCE PROGRAM Day-2

Wednesday, March 31, 2021

International Seminar on System Dynamics (ISYSDYN)

Virtual Conference | March 30-31, 2021

Time (UTC+7) Dur'		Activity	
07.50 - 08	8.00 10'	Participant Login and Join Virtual Conference by ZOOM	
08.00 - 08	8.10 10'	Welcome Address and Conference Publication Announcement	
08.10 - 08	8.20 10'	Welcome Remarks and Introduction of ISYSDYN Dr. Chaterina Agusta Paulus, M.Si Nusa Cendana University; General Secretary of ASDI	
08.20 - 09	9.00 40'	Keynote Speaker Dr. Ir Hartrisari Hardjomidjodjo, DEA Biotrop, IPB University, Indonesia	
09.00 - 09	9.40 40'	Keynote Speaker Dr. John P. Ansah National University of Singapore	
09.40 - 09	9.45 5'	Group Photo Session	
09.45 - 09	9.55 10'	Preparation for Online Presentation Session and short break	

Time (UTC+7) Dur'		Dur'	Activity	
09.55	-	10.00	5'	Online Presentation Session and Session Chair Introduction Dr. Lim Xin Jean Xiamen University, Malaysia
10.00	-	12.30	150'	Online Presentation Session
12.30	-	12.40	10'	Testimonial and Post-conference information announcement
12.40	-	12.45	5'	Preparation for Closing Ceremony after online Presentation Session
12.45	-	12.55	10'	Award Ceremony: Best Paper Best Presentation
12.55	-	13.00	5'	Closing Speech Dr. Casnan, M.Si STKIPM Kuningan; Deputy Chair of Organizations and Institutions of ASDI

Wednesday, 31 March 2021 Session Time : 11.05 - 13.35 Session Chair : Dr. Lim Xin Jean

Track Animal Husbandry (Animal Science)

Paper ID	Presenter	Media	Paper Title
DYN21108	Indra Wahyu Pratama	Virtual Presentation	Understanding Beef Availability System In Central Java Indonesia Using Causal Loop Diagram

Track Industrial Engineering

Paper ID	Presenter	Media	Paper Title
DYN21119	Maghfira Safitri Yasmin	Virtual Presentation	Analysis Of Regulator Production Process For Demand Fulfillment At PT Maju Teknik Utama Indonesia (mtu) Using A Dynamic Systems Approach

Track Transportation

Paper ID	Presenter	Media	Paper Title
DYN21117	Syafrizal Ambiya	Virtual Presentation	Fuel Oil Consumption Analysis Of Pt. Kereta Api Indonesia Using A Dynamic System Approach

Track Management

Paper ID	Presenter	Media	Paper Title
DYN21112	Taufiq Hidayat	Virtual Presentation	The Effect Of Covid-19 To The Credit Risk And Bankruptcy Risk Of State Company Bank In Indonesia
DYN21121	Regina Deti	Virtual Presentation	Trainer's Role towards Sustainability of Financial Training Program

Track Tourism And Hospitality

Paper ID	Presenter	Media	Paper Title
DYN21103	Lenny Yusrini	Virtual Presentation	Towards Sustainability: A Causal Loop Diagram Approach For Biodiversity-based Tourism Village Development

Track Environment

Paper ID	Presenter	Media	Paper Title
DYN21109	Leonarda Sofiani Rame	Virtual Presentation	The Projection Analysis Of Waste Generation, The Total Of Waste And The Projection Of Waste Land Area In Malaka Regency, East Nusa Tenggara Province
DYN21116	Dino Rimantho	Virtual Presentation	Model Of The Potential Risk Of Failure Of Sustainable Solid Waste Management At The University: A Dynamic Systems Approach
DYN21118	Pipin Noviati Sadikin	Virtual Presentation	System Dynamics Diagramming Of Ecotourism Planning In Gonda Mangrove Forest, Polewali Mandar, West Sulawesi

Paper ID	Presenter	Media	Paper Title
DYN21120	Samadi Samadi	Virtual Presentation	An Environmental Monitoring System For The Availability Of Drinking Water For The Population As An Ecosystem Service In Areas Exposed To Covid-19

List of Conference Attendees

Attendee	Affiliation	Country
Ms. Gusti Artama Gultom	IPB	Indonesia
Professor Saifullahi Adam Bayero	Federal University Gashu'a	Nigeria
Dr. Eva Rachmawati	IPB University	Indonesia
Mr. Saidu Mansur Adam	Abubakar Tafawa Balewa University Bauchi	Nigeria
Mr. Muhammed Adam Sallau	Federal polytechnic Bali Taraba state	Nigeria
Mr. Md. Saiful Bari	Brac Business School, Brac University	Bangladesh
Associate Professor Adrian Guinto	Camarines Norte State College	Philippines
Mr. Zain Saeed Qureshi	Bahauudin Zakriya University	Pakistan

Attendee	Affiliation	Country
Dr. REYNALDO V. MORAL	DEPARTMENT OF EDUCATION	PHILIPPINES
Ms. Batool Fatima	NUST	Pakistan
Dr. Eva Rachmawati	IPB University	Indonesia
Ms. Nafeesa Naeem	UOG	Pakistan
Dr. Dr. Ehsan Ullah Mughal	UOG	Pakistan
Mrs. Nur Afiah	IAI DDI Polewali Mandar	Polewali Mandar
Ms. FATIN FARHANA BINTI AWANG	UNIVERSITY MALAYSIA TERENGGANU	MALAYSIA
Ms. Gunel Garayeva	Baku state university	Azerbaijan
Scholar Dr.Tariq Ahmad Sheikh	Bhagwant University Ajmer Rajasthan	India
Mr. Abderrahim NAIM	Sultan Moulay Slimane University	Morroco

Attendee	Affiliation	Country
Ms. Geeta Ravish	Amity University Haryana	India
Associate Professor Worakarmol Wisetsri	KMUTNB	ไทย
Ms. REGINE V. EDUCANO	St. Jaime Hilario School De La Salle Bataan	Philippines
Mrs. M. Accasia thersa	Loyola College	Indian
Ms. Nurhafizah H.Mohammad Bent Muslimen	Mindanao State University	Philippines

Track: SOCIAL SCIENCE

Modeling The Sustainable Development of Indonesia Hajj With System Dynamics

Fajar Dwi Alfian¹, Roikhan Mochamad Aziz², Acep Riana Jayaprawira³

^{1,3}Universitas Trisakti, ²Universitas Islam Negeri Syarif Hidayatullah Jakarta

Abstract

Background - The hajj fund management system is very complex as can be seen from the variables involved and interrelated. The variable of cost of organizing the Hajj is also influenced by many global macroeconomic variables such as exchange rates and macroeconomics in Saudi Arabia. The turmoil that occurs in the global macroeconomic environment can cause fluctuations in the costs of organizing the Hajj which in turn will threaten the sustainability of the Hajj fund itself.

Purpose - The research objective in this research is to analyze the modeling of the sustainability of Indonesia hajj using System Dynamics.

Design/methodology/approach - Modeling based on the System Dynamics method needs to be done so that the problems of managing complex hajj fund can be simplified through models, which are then simulated with several interventions on selected variables in order to obtain the ideal policy for sustainable management of hajj fund in the future. The analysis method used in this research is the System Dynamics Method, which is a scientific method used in studying and understanding the complex problems of a system.

Findings - The result obtained show that the Hajj Fund Management Agency (BPKH) as the manager of the Hajj fund is expected to strengthen the management of Hajj fund in order to be sustainable. The policy that can be taken is to carry out an appropriate investment analysis in order to maximize the benefit value (return) of the hajj fund. Apart from that, the management of the cost of organizing the Hajj is also needed to anticipate unexpected future risks, for example hedging Hajj funds from currency exchange rate risk.

Research limitations - *The limitation in this study is that there are only two sides of the variables studied, namely in terms of investment / benefit value and in terms of the cost of organizing the hajj.*

Originality/value - The hajj fund management system is very complex as can be seen from the variables involved and interconnected. For example, the investment variable will affect what investment instrument will be chosen to increase the benefit value which in turn will increase the hajj fund. On the other hand, the variable of the cost of organizing the haj pilgrimage are also influenced by many global macroeconomic variables such as exchange rates and macroeconomics in Saudi Arabia. The turmoil that occurs in the global macro economy can cause fluctuations in the costs of organizing the Haj and sustainability of the hajj fund.

Keywords : Hajj, System, Dynamics, Sustainability, Modeling

Understanding Covid-19 Situation in Indonesia Using System Approach

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Abstract

Background - COVID-19 already hit Indonesia for 1 year, after the first case announced on March 2nd, 2020. Until 9th February 2021, Indonesia has active cases of 169,351 cases, with cumulative cases of 1,174,779 cases and death number 31,976 people. With the decreasing trend for the last weeks, it is still unclear whether the trend keeps decreasing or potentially increase in next several weeks.

Purpose - The purpose of this study is to understand the mechanism of COVID-19 spread. With this understanding, it can analyze the role of behavioral change (mobility, personal hygiene, etc.), government/business policy to reduce the spread of COVID-19 itself, and handling the COVID-19 patients effectively.

Design/methodology/approach - This study conducted by the system dynamics method; a modeling approach that can capture feedback in phenomena, both physical and social field. The approach used to develop the structure of COVID-19 mechanism, including the mechanism of virus spread, the role of healthcare to handle the COVID-19 patients, and potential policy to reduce COVID-19, especially vaccination program. This study conducted with national data and information of COVID-19 from 2nd March 2020 until 9th February 2020.

Findings - Based on the model simulation, there are several findings of COVID-19 situation, including (1) The peak of the COVID-19 will happen in the third quarter of 2021, with the daily new cases will reach about 80,000's cases per day, (2) The potential action to reduce the spread of the virus including the adaptation in individual behavior, the long-term restriction/limitation (PSBB, PPKM, etc), isolation effectiveness, and vaccination program.

Research limitations - This study only focuses on the aggregate case in Indonesia and limited to COVID-19 spread mechanism only. Therefore, the questions regarding detailed in people mobility, COVID-19 spread in sub-national level, and other questions related to the spatial area, a different type of virus exists in Indonesia, and the impact to socioeconomic become the study limitation that can be improved in the future.

Originality/value - With System Dynamics Modeling, there are two things that can be obtained (1) The understanding of the structure of the COVID-19 mechanism, and (2) Flexibility in scenarios simulations that produce a broad range of future possibilities for COVID-19 in Indonesia.

Keywords : COVID-19, healthcare, System Dynamics, Vaccination, Indonesia

An In-depth Analysis of Indonesia Illegal Wildlife Trade Mechanism

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Abstract

Background - Protected species have long been the targets of illegal wildlife trade both domestic and international. Despite the existing legal frameworks and law enforcement, illegal wildlife trade in Indonesia still persisted, in fact Indonesia is known as the hotspot for wildlife crime. Main causal factors were thought to be the weak legislation and lax enforcement.

Purpose - The purposes of this research were (1) to develop a conceptual model of the dynamic and complex components of the illegal wildlife trade system in Indonesia; and (2) to identify the determining variables causing the persistence of illegal wildlife trade in Indonesia.

Design/methodology/approach - A preliminary conceptual model was developed from an extensive literature and document reviews. In-depth interviews and focus group discussions (FGDs) were also conducted with a wide range of relevant stakeholders to explore their mental models. The development of causal loop diagram fostered insights into the underlying cause – effect mechanisms and leverage points, supporting the identification of interlinkages between the various components of illegal wildlife trade system, and the selection of major drivers for intervention processes.

Findings - The complex system of illegal wildlife trade in Indonesia comprised of three dynamic, vital subsystems, each consisted of four determinant variables as follows: (1) actors (motive, knowledge on wildlife, capital, and regularity); (2) supply chain (number of value chains, rendement, wildlife added value, and price); and (3) law enforcement (number of law enforcers, budget, knowledge on wildlife and state of enforcement). These determinant variables indicated the major drivers/key indicators in the persistence of illegal wildlife trade in Indonesia that formed the points of interventions.

Research limitations - This research focused on the illegal trades of the most traded wildlife within the past 5 years, according to data provided by the Director General Law Enforcement, Ministry of Environment and Forestry, Republic of Indonesia, thus not species-specific

Originality/value - This research highlighted the use of causal loop diagrams in system thinking as a powerful tool for policy makers and law enforcers in Indonesia in understanding the complex illegal wildlife trade and determine the major leverage points.

Keywords : causal loop diagram, law enforcement, protected species, system thinking, wildlife crime

Sustainable Ecotourism Management Model in Batur Unesco Global Geopark Area

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Abstract

Background - Batur Natural Geopark located in Kintamani, Bangli Regency, Bali Province, became the first geopark site in Indonesia which was set on September 20, 2012. Geopark area or earth park, has its own charm. This area has the potential to increase the contribution of tourism to the GDP of Bangli Regency, but the contribution of the tourism sector in Bangli Regency is only 13 percent.

Purpose - The purpose of this research is to build a sustainable ecotourism management model in the Batur UNESCO Global Geopark (BUGG) area. This model is expected to contribute to the social and environmental life of the people in Bangli Regency.

Design/methodology/approach - This model uses dynamic system analysis with the Powersim Studio 10 application. The dynamic model of Batur ecotourism management uses three sub-models, namely: social and environmental sub-models, community income sub-models and government revenue sub-models. In this article only discussed in terms of social and environmental sub-models.

Findings - From the social and environmental sub-models, it is produced that the number of tourist has increased with the development of the BUGG ecotourism area. This increase is influenced by the increased promotion of BUGG ecotourism areas through exhibitions, print media, electronic media, and social media; increasing quality services for tourists, increasing various kinds of attractions presented, and increasing destinations around the area.

Research limitations - This research only examines the supporting factors for the development of the BUGG ecotourism area. It is hoped that further research will include the impacts arising from the development of the area in a dynamic system model.

Originality/value - Novelty from this research includes the advantages or potentials that exist around the BUGG ecotourism area, which will be different from the development of ecotourism areas in other areas.

Keywords : Batur Natural Geopark, sustainable ecotourism, dynamic system

Effectiveness of Local Institutions in Bali in Control of Conversion of Paddy Fields

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Abstract

Background - Subak and Pakraman Village are local institutions in Bali that have many roles in maintaining the integrity of the Balinese territory. Bali as a province in Indonesia has high attractiveness in its charm and agrarian activities, however in pursuing growth there is a trade off between the growth of the agricultural sector and the growth of the tourism sector. There was a change in land functions in all regencies/cities in Bali Province because tourism development requires facilities and infrastructure which in turn change the spatial layout of agricultural land (paddy fields).

Purpose - The purpose of this research is to make a dynamic system modeling of control over the function of paddy fields by including elements of local institutions. Local institutions are used as an influential element in controlling land use change (conversion).

Design/methodology/approach - This study uses a combination of primary data with secondary data. The model was analyzed using a dynamic system by taking the case of land use change in Tabanan Regency. The villages used as case studies are Jatiluwih village and Candi Kuning village.

Findings - The effectiveness level of the subak and pakraman villages in Candi Kuning Village are classified as quite effective in controlling land conversion, although they are lower than the level of effectiveness in Jatiluwih Village. Pakraman village continues to carry out its duties in the field of religion and society.

Research limitations - *This study uses only two examples of village cases in Tabanan. It is hoped that further research can control the conversion of agricultural land*

Originality/value - *The novelty value of this research is to include elements of local institutions as elements that can control the conversion of agricultural land.*

Keywords : local institutions, subak, pakraman village, dynamic system

Strategy for the Development of Vaname Shrimp Cultivation in the District. Pinrang, South Sulawesi Regency

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Abstract

Background - Indonesian society has experienced a shift in consumption patterns. This condition is driven by the growth of public awareness about food nutrition sourced from fish, increased knowledge after getting GEMARIKAN socialization, various quality food products, and the ease of obtaining fish commodities (KKP, 2018). One of the commodities that has the greatest demand value is shrimp. During the three-year period, from 2014-2016, national fish consumption experienced a huge increase, reaching 1.2 million tons. In addition to being a business that requires high production costs, shrimp farming also requires the capacity of skilled cultivators. The support of internal and external micro factors is important to obtain profitable business results.

Purpose - This study aims to determine the strategy for the development of shrimp farming which will be proven by the prediction of the amount of business development from the resulting model for the next 5 years. In addition to the resulting model, the recommended options from the results of this study can be input for stakeholders to assist cultivator efforts towards the creation of national fisheries development.

Design/methodology/approach - This research was conducted in Pinrang Regency, which is an area where most of the people have livelihoods as tiger shrimp and vanname cultivators. The data collection technique was carried out by using semi-structured interviews with informants using non-probability sampling through purposive sampling. Data analysis used descriptive statistical data and dynamic modeling systems. The dynamic modeling system can describe the projection of cultivation business development for at least the next five years, through several strategies that are determined in the form of forming variables or parameters.

Findings - The results showed that there was a decrease in the amount of production by 20% and marketing decreased by 5%. The results of the analysis of this study are that there is a need to increase the capacity of cultivators from the process to the output and marketing stages. Besides that, there are external factors that include the role of marketers and buyers. Another external factor is the occurrence of resilience in natural and non-natural disasters. The results of this study are supported by a dynamic system model that describes the predicted increase in production and sales results for at least the next five years.

Research limitations - The results of this study have limitations on vanname shrimp culture in Pinrang Regency. Vanname shrimp cultivation is a leading commodity for export, although it is still a minority, the main activity in Kab. Areca

Originality/value - This research has never been done before but is a development of literacyrelated to the development of shrimp farming in general land fisheries. Originality is very important in this regard.

Keywords : strategy, development, cultivation, shrimp, vanname

Track: ECONOMIC DEVELOPMENT

Dynamic System Modelling to Improve Total Container Traffic: Case Study of Jakarta International Container Terminal (JICT), Port of Tanjung Priok

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Abstract

Background - Based on Trading Economics data in 2020, it was found that the quality of Indonesia's maritime affairs was even lagging behind several countries in ASEAN; one common was in the aspect of Total Container Traffic.

Purpose - This research aims to identify the causes behind the low Total Traffic Container and provide solutions to increase Total Container Traffic in Indonesia by taking a case study at PT Jakarta International Container Terminal (JICT). JICT is a container terminal with the largest market share in Indonesia, which is 40%.

Design/methodology/approach - This research uses a dynamic systems approach with STELLA 9.1.3 software in determining the leading causes and the best solution scenario for the low Total Container Traffic in Indonesia. In identifying the factors causing the low Total Container Traffic in Indonesia, the authors collected data through literature studies and interviews with experts and academics.

Findings - This research illustrates if a port's performance is very influential on the Total Container Traffic. At PT JICT with a terminal performance index simulation of 84%, it can provide an increase in Total Container Traffic with an initial input of 2,085,691 TEUs in 2019 to 2,919,967 TEUs in 2020 and will continue to increase in the following years.

Research limitations - The calculation of port performance indicators used is simplified by converting them into percent units.

Originality/value - There is still no research that discusses the increase of total container traffic, especially in the dynamics system method. With this research, the port authority will measure the sensitivity level of each variable aspect to port performance improvement and develope a dynamics system model in maritime logistics in the future needs.

Keywords : Maritime Logistics, Port, Dynamics System, Total Container Traffic, JICT

Tuna Processing Model at Household Scale Industry in the Coastal Border Area of Indonesia - Timor Leste

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Abstract

Background - The fact that the poverty of border communities is still a national problem, on the other hand, fishery resources on the border are abundant; therefore, this research was conducted as an effort to optimize the optimal utilization of economic resources through diversification of fishery business, which allows the increase and sustainability of income by border communities. Yellowfin tuna is a leading commodity that has important economic value and is very promising for coastal communities in Belu regency, East Nusa Tenggara province, Indonesia. Yellowfin tuna catches obtained from industrial fisheries today are generally marketed as export commodities in the form of frozen tuna, whereas the diversification of processed tuna such as floss and jerky has the opportunity to be developed as an export commodity.

Purpose - The objectives of this study are 1) to know the projection of processed tuna production; 2) calculate the income of border coastal communities from tuna floss business, and 3) calculate the income of coastal communities from tuna jerky businesses.

Design/Methodology/Approach - This modeling method uses the projection approach of the dynamic system model from 2012 to 2030 with some assumptions, resulting in AVE 0.01% and AME 0.29% in yellowfin tuna catch production.

Findings - *The model predicts that yellowfin tuna catches will reach a catch quota of 300 tons by 2028.*

Research Limitations - Regional restrictions on coastal borders between countries, while data restrictions on the production of tuna catch and processed tuna businesses in the form of floss and jerky household scale.

Originality/Value - *This study was conducted using a comprehensive system approach in analyzing the businesses of tuna floss and tuna jerky in the coastal areas of the border of Indonesia - Timor Leste.*

Keywords: fishery resources, projected production of processed tuna, the income of coastal communities, border areas.

The Golden Indonesia 2030: System Dynamics for Macro Modeling of Poverty Based on Simultaneous Equation Model

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Abstract

Background - Poverty factors are multidimensional and complex. So far, the prediction of the poor people numbers uses a linears thinking concept, so it is necessary to study the causality between these factors in the form of a system dynamics.

Purpose - The study aims to predict the percentage of poor people in "The Golden Indonesia" 2030, through poverty macro models.

Design/methodology/approach - This research method uses a system dynamic, where the system of thinking is built based on the two-stage least square (TSLS) simultaneous equation model

Findings - The results of the TSLS simultaneous equation model testing show that there are 3 significant simultaneous equations, namely poverty, economic growth, and human development index, and at the same time the three simultaneous equations show a causal loop diagram (CLD) in a system dynamics model. The absolute mean error (AME) is 2.34%, so the macro poverty model is valid. The scenario formats for prediction are the "optimistic" scenario for the variable of economic growth, and the "moderate" scenario for the variables of the human development index, total population, unemployment, and environmental quality index. The predicted percentage number of poor people in 2030 is 4,12%, and 0,12% different from the government's target of 4%. All parties need to work hard and work together so that the "optimistic" scenario is implemented, which is to make Indonesia's economic growth reach 7,4%.

Research limitations - *This study uses the assumption that there is no Covid-19 problem, and only predicts 10 years due to limited data used in 2009-2018. So, it is necessary to carry out further research using up-to-date, and to improve the simultaneous equation model by considering the time lag factor (t-1).*

Originality/value - The novelty of this study is the alignment of the prediction results between the system dynamics model and the simultaneous equation model. It's just that system dynamics model can better answer the complexity of a phenomenon by predicting it using scenario analysis based on the black-box diagrams than simultaneous equation model.

Keywords : Multidimensional and complex Poverty, simultaneous equation model, systems thinking, prediction of the poor

Track: Animal Husbandry (Animal Science)

Understanding Beef Availability System in Central Java Indonesia using Causal Loop Diagram

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Abstract

Background - Various strategies to increase the availability of beef in Central Java had been carried out but had not provided maximum results. Information regarding the causal relationship between variables and feedback loops that occur in the beef availability system in Central Java must be understood to prevent the occurrence of counterintuitive behavior due to the selection of inappropriate policy strategies.

Purpose - This study aimed to describe the causal relationship between variables and the feedback loop in the beef availability system in Central Java with a system thinking approach using a causal loop diagram.

Design/methodology/approach - System thinking was used to help understand the complexity of the beef availability system in Central Java. The causal relationship between variables in the beef availability system in Central Java was described in the causal loop diagram. The feedback loop found in the causal loop diagram was then identified and analyzed qualitatively.

Findings - The results showed that increasing beef production in Central Java could increase the population and productivity of beef cattle. The population of cows had an important role in increasing the population. Even so, an increase in the beef cattle population would have an impact on decreasing the availability of forage so that a special strategy was needed to anticipate these potential problems. In the long term, beef import policy had not been able to contribute to increasing the availability of beef in Central Java.

Research limitations - *This study only observed the beef availability system at the provincial level. This study did not involve the characteristics of beef cattle breeders in Central Java in the system.*

Originality/value - Most of the research on increasing the availability of beef in Central Java had not been able to describe the feedback loop that exists in the system. Systems thinking approach could help describe the existing feedback loop using a causal loop diagram. This study tried to provide an understanding of the feedback loop that occurs in the beef availability system in Central Java.

Keywords : Beef Availability, Causal Loop Diagram, System Thinking

Track: Industrial Engineering

Analysis of Regulator Production Process for Demand Fulfillment at PT Maju Teknik Utama Indonesia (MTU) Using a Dynamic Systems Approach

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Abstract

Background - *LPG* (*Liquified Petroleum Gas*) is a gas tube intended for household and industrial needs. LPG tube consists of several components – tubes, regulators, elastomeric hoses, and valves. PT Maju Teknik Utama (MTU) is a company engaged in the manufacturing industry for LPG components to form a whole LPG tube. The research found that PT MTU had a problem with the production of regulator component – diaphragm retainer.

Purpose - This study aims to provide recommendations for alternative solutions to ensure the number of diaphragm retainers in the manufacture of regulators, in order to meet the demand for regulators at PT Maju Teknik Utama Indonesia (MTU).

Design/methodology/approach - In this case, the dynamic system approach is used to see regulators flow and exit with supporting attributes such as storage costs, order costs, capacity, demand, and defects. Besides, scenarios are used to perform calculation experiments to produce the correct value.

Findings - Two scenarios are developed by increasing the production capacity of diaphragm retainer to 30,000 units per month and 45,000 units per month. The result showed that the company need two additional units of machine to produce a diaphragm retainer, so the capacity of diaphragm retainer can increase and fulfill the demand of regulators per month.

Research limitations - The limitation of this research is focused on how to guarantee the availability of regulators by ensuring the availability of one component of regulator – diaphragm retainer. Further research should be conducted to analyze the fulfillment of regulator demand by considering more regulator components.

Originality/value - This study is the first study that discusses how to fulfill the demand for LPG (Liquified Petroleum Gas) regulators using the dynamic system method.

Keywords : Demand, Capacity, Manufacturing, Production, Dynamic System

Track: Transportation

Fuel Oil Consumption Analysis of PT. Kereta Api Indonesia Using a Dynamic System Approach

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Abstract

Background - - Rail fuel consumption in Indonesia has increased due to the raise in the number of passengers each year. PT. KAI (Kereta Api Indonesia) is obliged to provide a recommendations regarding the amount of train fuel needed annually to BPH (Upstream Regulatory Body) Oil and Gas. However, the estimated demand for railroad fuel was proposed by PT. KAI is often inaccurate.

Purpose - This study aims to determine the train fuel consumption for 20 years with several scenarios. This can be taken into consideration by PT KAI to provide recommendations for the amount of train fuel needed each year to BPH Migas.

Design/methodology/approach - This research was conducted by conducting interviews with PT. KAI to identify problems. Then do data collection, making causal loop diagrams, and stock-flow diagrams using STELLA software. After that, scenario development is carried out based on the strategic plan of PT. KAI.

Findings - The results show that under the BaU scenario, PT KAI's fuel consumption will increase by 112% in 2040. Then by replacing fuel with B65 and replacing electric trains by 50% in scenario 2, fuel consumption will only increase by 8%. in 2040. Whereas scenario 3 with B65 fuel and without the replacement of electric trains and the addition of the rail network, fuel consumption will increase by 138%. In scenario 4 the fuel is changed to B100 and there is a change of electric trains by 90%, causing a reduction in fuel consumption of trains by 80%.

Research limitations - The data used in this research only uses the fuel consumption data of PT KAI in 2019. Then the forecasting regarding fuel consumption is carried out over a span of 20 years to come with 4 predetermined scenarios.

Originality/value - *This study is the first study that discusses the forecasting of rail fuel consumption in Indonesia using a dynamic systems approach.*

Keywords : Fuel Consumption, Railways, Forecasting, Dynamic Systems

Track: Management

The Effect of Covid-19 to the Credit Risk and Bankruptcy Risk of State Company Bank in Indonesia: A System Dynamics Model

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Abstract

Background - The covid-19 pandemic has an impact on increasing Bank BNI (Bank Negara Indonesia) credit risk. In 2020, there was an increase in non-performing loans (NPL) of 86.96% compared to the previous year, and loan at risk was at the level of 28.7% of the total loan. If the credit restructuring policy of the Otoritas Jasa Keuangan (OJK) in 2022 ends and the economy does not grow normally, then the bank will face serious problems regarding the risk of bankruptcy.

Purpose - This study will simulate the risk of bankruptcy of BNI banks after the credit restructuring policy of OJK ends in March 2020, especially at Capital Adequacy Ratio (CAR) and non-performing loans (NPL) level.

Design/methodology/approach - This study conducts with system dynamics methodology to develop structure and analyze the behavior of the bank intermediation process to detect the level of credit risk during the Covid-19 between 2020-2022. With this methodology, it can be analyzed various assumption in the future regarding the COVID-19 impact to banking activities and policies to handle it as the improvement to understand banking business process.

Findings - From the model simulation, if 50% of the restructured credit value in 2020 amounting to IDR 150 trillion cannot be converted into current credit, then BNI Bank will face a serious risk of solvency. Policy to handle the potential risk of solvency might be based on the internal decision (regarding interest rate of loan and saving, decision about extended loan restructure, or more third-party fund to collect) and external role of the government as the owner of the bank that needs to prepare an early rescue policy as the last resort.

Research limitations - This research is limited to credit risk modeling, in terms of the impact of the Covid-19 pandemic, there is also liquidity risk, operational risk, and profitability risk that not included in this study.

Originality/value - *This is the first study to discuss the impact of the Covid-19 pandemic on credit risk and bank bankruptcy risk using system dynamics*

Keywords : Covid-19, Credit Risk, Bankruptcy Risk, Banking, System Dynamics

Trainer's Role towards Sustainability of Financial Training Program

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Abstract

Background - This research is focused on the role of training program trainers for financial management. The result of pre-test and post-test that from a number of 110 participants obtained results 30% do not understand, 40% do not understand, while 30% understand the material obtained from the results of training.

Purpose - This research aims to analyze the role of trainers in the sustainability of financial training programs. This research is considered important because it is one of the keys to the sustainability of financial training programs. The success of the training program is based on the increasing interest of participants. This study will develop a model of sustainability of training programs as well as recommendation options.

Design/methodology/approach - The research was conducted in 2020 with locations including Bandung, Indramayu, and Cirebon. The scope of this research is limited to participants with a productive age of 18-30. The data types used are secondary and primary. Data analysis is used qualitative descriptive analysis, descriptive statistical analysis, that as well as of dynamic system analysis.

Findings - The result of a total of 32 sampling trainers financial training, the majority of 45% before giving training, felt enough just mastered the training material; 30% felt it was important to master the material training and the proper way of presenting the participants; while 25% feel it is important to master the training materials, the right way of presentation, as well as master an atmosphere of the implementation of the training. The result of the analysis illustrated that if the role of the training conditions at least 65%, then in a period of 1-5 years, there will be an increase in the number of interests of participants of financial training programs at least 55%. The recommendation is to increase the capacity of trainers related to them.

Research limitations - *This research is still limited in terms of the implications of recommendation options on training programs in general.*

Originality/value - *Research on the role of trainers on the sustainability of the training has never been done before.*

Keywords : role, trainers, sustainability, financial

Track: Tourism and Hospitality

Towards Sustainability: A Causal Loop Diagram Approach for Biodiversity-Based Tourism Village Development

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Abstract

Background - In line with the United Nations World Tourism Organization's recommendation to restart domestic tourism, build back tourism villages would be a promising approach rooted in the inclusiveness of tourism sustainability. Past studies on tourism villages mainly discussed the economic and socio-cultural aspects, leaving the environmental factor (especially biodiversity) behind.

Purpose - The COVID-19 pandemic has forced us to look and rethink tourism sustainability. Through this research, we provide an applicable approach to redefine tourism village sustainability and develop the concept for a biodiversity-based tourism village.

Design/methodology/approach - This research used the causal loop diagram (CLD) approach from a system dynamics perspective. The CLD depicted the overall comprehension and the complexity of the tourism village system. The nexus and connectivity between the input and output variables were presented with positive and negative loops that created the reinforcement and balancing circles. Data were collected through a systematic literature review and interviews with tourism village stakeholders.

Findings - From the findings of this research, we illustrated a biodiversity-based tourism village development as a complex system comprising of several subsystems. The system dynamics approach showed that tourism villages and biodiversity conservation are interdependent and interconnected. The system dynamics brought new perspectives in designing a biodiversity-based tourism village development concept. The conceptual model illustrated how the identified factors of tourism village sustainability were analyzed and utilized for a systemic development in the future. Simultaneously, sustainability can be well explained, met, and achieved in a responsible manner.

Research limitations - This research limits itself in studying the tourism village from the specific ecosystem and cultural perspectives. For future research, we recommend exploring different ecosystems with different cultures to enrich the findings.

Originality/value - Although system dynamics is not a new approach, the use of CLD as an approach in the study of biodiversity-based tourism village sustainability development is not practiced widely. The conceptual model provided in this study can be used by the decision-makers as a framework for biodiversity-based tourism village sustainable development strategy.

Keywords : causal loop diagram, sustainability, system dynamics, system thinking, tourism village

Track: Environment

The Projection Analysis of Waste Generation, The Total of Waste And The Projection of Waste Land Area in Malaka Regency, East Nusa Tenggara Province

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Abstract

Background - The growing number of populations causes the amount of waste increases. One of the environmental issues occurring in Malaka Regency is the absence of landfill and for that reason several unoccupied spots are turned into dumpster which their distribution increase in size annually.

Purpose - *The objective of this study is to carry out a projection on waste generation, the total of waste, the number of populations, and the waste land area in the next few years in Malaka Regency.*

Design/methodology/approach - The method utilized in this study is field observation in order to calculate the waste land area and interview with some key informants to reveal all areas that are utilized as final waste disposal by the government of Malaka Regency.

Findings - Based on the analysis which was carried out on waste generation, the waste generation is 0.38 kg per person per day. The population is projected to grow into 264,144 people in 2037 while the number of populations in 2020 was 194,864 people. The projection of waste generation based on the neighborhood in Malaka Regency in 2017 to 2037 is that the waste generation in 2020 was 0.38 kg/person/day and the total of waste in 2020 was 27,027.64 tons and in 2037 it is projected into 1.02 kg/person/day and the total waste might be 98,340.81 tons. Based on the initial waste land area in 2020 which was 45,678 m2 (4.56 Hectare), after its projection it would increase to 61,918 m2 (6.19 Hectare) in 2037.

Research limitations - This study is limited to only the analysis of waste generation, total of waste, the number of populations and the waste land area in 2037 in accordance to the number of neighborhoods in Malaka Regency in 2017 - 2037.

Originality/value - This study is the first study on waste land area in Malaka Regency. The result of this study can be utilized as a recommendation to the local government in order to immediately establish landfill to prevent the unwanted distribution of waste land area in Malaka Regency.

Keywords : environment, landfill, the distribution of land

Model of the potential risk of failure of sustainable solid waste management at the University: a dynamic systems approach

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Abstract

Background - One of the issues faced by all universities in realizing a sustainable Green Campus is solid waste management. Solid waste management at the University which is complex and dynamic has the potential to raise various potential risks of failure.

Purpose - *To eliminate the risk of failure, we will apply a dynamic modeling approach combined with the FMEA and AHP methods.*

Design/methodology/approach - The assessment of risk factors was carried out by experts as respondents about five people from various fields of expertise. In addition, the experts will also give weight to alternative assessments of interventions offered as risk reduction solutions.

Findings - The research results provide information on the increased risk of each factor from 2019 to 2030. The verification results on the model also show a significant value for the model that has been made. Overall, the various scenarios resulted in differences in risk values after intervention in the moderate and optimistic scenarios.

Research limitations - To obtain a more comprehensive and detailed result, this dynamic model needs further study. Furthermore, the model that has been created provides an overview that still needs improvement, especially concerning several quantitative data to obtain the model for sustainable solid waste management.

Originality/value - *The novelty of this research is the hybrid method of several risk methods and AHP which is developed into a dynamic system method*

Keywords : Solid waste, systems, dynamics, modeling, sustainability

System Dynamics Diagramming of Ecotourism Planning in Gonda Mangrove Forest, Polewali Mandar, West Sulawesi

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Abstract

Background - Gonda coastal area is located in Campalagian Sub-district, Polewali Mandar District. This area is unique due to mangrove forest and coral reefs within the various ecosystem there. This idyllic area was once already known and visited by visitors because of its natural beauty and also reachable. Meanwhile, the actors and stakeholders did not seriously manage it. But indeed, there has not been much development in the long run. Even though this ecotone area has an environmental service role, beside as ecosystem preservation, disaster mitigation, livelyhood support including potential ecotourism function. Based on problem issue identification to develop the ecotourism, there are some problems such as (1) lack of planning and management of mangrove forest area, (2) lack of human resources capacity and capability to arrange and organize ecotourism service, (3) there will be a threat and impact to the preservation and conservation function in form of pollution and waste, (4) lack of marketing management and branding of the ecotourism.

Purpose - The challenge for this mangrove forest area is to develop a development planning to preserve the biodiversity and to utilize the area to have economic benefits through the ecotourism service and activities.

Design/methodology/approach - This paper explains several challenges from existing ciscumstance that inspire development of a planning conceptual model in the form of a causal loop diagram (CLD). The planning model is developed to balance the environmental quality, efficient land use and increasing wealthy through the ecotourism activity.

Findings - The causal loop diagram (CLD) showed that the ecotourism planning model in Gonda Mangrove Forest, Polewali Mandar, West Sulawesi will be grouped in three sub-system, namely (a) sub-system of carrying capacity and ecology resilience, (b) sub-system of ecotourism service and land use, (c) sub-system of social capital.

Research limitations - Furthermore, several suggestions for future research are presented.

Originality/value - This planning CLD may be a guideline for actors and stakeholders to prepare and manage the conservative and preservative Gonda mangrove forest to use it as ecotourism as a tool to increase the welfare of the community, economic income, job opportunity, knowledge benefits derived from mangrove forest and ecotourism management, and strong social capital as well.

Keywords : ecotourism, mangrove forest, model, dynamic system, causal loop diagram

An Environmental Monitoring System for the Availability of Drinking Water for the Population as an Ecosystem Service in Areas Exposed to Covid-19

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Abstract

Background - An effectiveness of the protected or rehabilitated natural assets will provide information on the availability of natural resources to respond to the impacts of climate change and ecosystem health. The emergence of the COVID-19 pandemic disaster increasingly shows that if humans destroy biodiversity, it also destroys human life-support systems.

Purpose - The purpose of the research to obtain a dynamic-empirical description of the availability of clean water for drinking water for residents in areas exposed to the Covid-19 pandemic as an implementation of an environmental monitoring system for ecosystem services.

Design/methodology/approach - Dynamic system measures for the availability of clean water for drinking water for the population in low pressure areas against small water quantity, continuity of dead water, and water quality; done by applying the Quantitative method.

Findings - The results of the study show that although in low pressure areas there are complaints to customers regarding small water, dead water, and water quality, these are not entirely the factors considered important by customers. The low pressure area does not make all customers complain about small water conditions, dead water, and water quality.

Research limitations - *This study is still limited due to the problem of obtaining data directly from the source (PDAM customers), which in "normal" circumstances primary data will be more effective.*

Originality/value - The uniqueness and novelty of this research is that it obtains a description of the correlation between low-pressure service areas and low customer complaints regarding small water, dead water, and water quality. Usually, if the PDAM water pressure is low, customer complaints will be high due to small water, dead water, and water quality.

Keywords : Environmental Monitoring System, Availability of drinking water, Population, Ecosystem service, Exposed Covid-19

FUTURE EVENT

April 14, 2021 | Virtual Conference

5th International Conference on Entrepreneurship Studies, Business, Economy, and Management Science (5th ESBEM)

http://esbem.com/index.php/5th-esbem/

May 5, 2021 | Virtual Conference

6th International Conference on Management Studies and Social Science (6th MASOS)

http://www.masosconference.com/index.php/6th-masos/

May 31, 2021 | Virtual Conference

7th Japan International Conference on Business, Management Studies and Social Science (7th JIBUMS)

https://www.jibums.com/7th-jibums/

June 1-2, 2021 | Virtual Conference

The International Halal Science and Technology Conference 2020-2021 (IHSATEC): 14th Halal Science and Business (HASIB)

https://www.ihsatec.com

July 6, 2021 | Virtual Conference

3rd International Conference on Islamic Education Studies and Social Science (3rd ICISS)

http://www.icissconference.com/index.php/3rd-iciss/

July 28, 2021 | Virtual Conference

2nd International Conferene on Management, Education, and Social Science (2nd MESS)

http://messconference.com/2nd-mess/

August 11, 2021 | Virtual Conference

5th International Conference on Interdisciplinary in Business, Economy, Management, and Social Studies (5th IBEMS)

https://www.ibemsconference.com/index.php/ibems-5th/

August 30, 2021 | Virtual Conference

7th International Conference on Business, Economy, Management and Social Studies Towards Sustainable Economy (7th BEMSS)

http://www.bemssconference.com/index.php/7th-bemss/

September 8-9, 2021 | Virtual Conference

5th International Conference Postgraduate School

http://icpsunair.com/

September 14, 2021 | Virtual Conference

2nd International Conference on Language, Education and Teaching Research (2nd ICLET)

http://www.icletconference.com/index.php/2nd-iclet/

October 4, 2021 | Virtual Conference

7th Singapore International Conference on Management, Business, Economic and Social Science (7th SIMBES)

http://www.simbesconference.com/7th-simbes/

November 8, 2021 | Virtual Conference

6th International Conference on Interdisciplinary Research on Education, Economic Studies, Business and Social Science (6th RESBUS)

http://resbusconference.com/index.php/6th-resbus/

December 6, 2021 | Virtual Conference

7th Japan International Business and Management Research Conference (7th JIBM)

http://www.jibmconference.com/index.php/7th-jibm/



"System Dynamic Approach in Solving the Business Sustainability Issue and Challenge"

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