LEMBAR HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW KARYA ILMIAH : PROSIDING

Judul karya ilmiah (paper)	ANALYSIS OF FACTORS AFFECTIN	
Jumlah Penulis	ONLINE SHOPPING (CASE: DIPONEGO 4 orang (Zainal Fanani Rosyada, Naniek U Ega Rizkiyah.)	RO UNIVERSITY) tami Handayani, Manik Mahacandra,
Status Pengusul	Penulis ke-1	
Identitas Makalah	a. Judul Prosiding	: the 2nd African International Conference on Industrial Engineering and Operations Management
	b. ISBN/ISSN	: 2169-8767
	c. Tahun Terbit, Tempat Pelaksanaan	24 Februari 2021, Harare. Zimbabwe
	d. Penerbit/organiser	: IEOM Society International
	e. Alamat repository PT/web prosiding	
PROSIDING	: https://aip.scitation.org/doi/abs/10.1063/	1.5010636
ARTIKEL	: https://aip.scitation.org/doi/pdf/10.1063/	1.5010636?class=pdf
	f. Terindeks di (jika ada)	: SCOPUS
	g. Turnitin Similarity	: 11 %
Kategori Publikasi Makalah : (beri √pada kategori yang tepat)	 ✓ Prosiding Forum Ilmiah Internasion Prosiding Forum Ilmiah Nasional 	al

Hasil Penilaian Peer Review :

		Nilai Maksimal Jurnal Ilmiah		Nilai Yang Diperoleh
Komponen Yang Dinilai		Reviewer 1	Reviewer 2	
a.	Kelengkapan unsur isi prosiding (10%)	3	3	3
b.	Ruang lingkup dan kedalaman pembahasan (30%)	8.4	6.8	7.6
C.	Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	6	6,1	6.05
d.	Kelengkapan unsur dan kualitas penerbit (30%)	8	8,5	8.25
	Total = (100%)	25,4	24,4	24.9
	Nilai Pengusul = 60%*24.9 = 14.94			

Semarang, Reviewer 1

4

Dr. Ratna¹Purwaningsih, ST, MT, IPM. NIP. 197212311998022001

Reviewer

Dr. rer. Oec Arfan Bakhtiar ST MT NIP. 197503062000121001

C-5

LEMBAR HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW KARYA ILMIAH : PROSIDING

C-5

Judul karya ilmiah (paper)	ANALYSIS OF FACTORS AFFECTE	NG BEHAVIOR OF STUDENTS
Jumlah Penulis	ONLINE SHOPPING (CASE: DIPONEGO 4 orang (Zainal Fanani Rosyada, Naniek U Ega Rizkiyah.)	Jtami Handayani, Manik Mahacandra,
Status Pengusul	Penulis ke-1	
Identitas Makalah	a. Judul Prosiding	the 2nd African International Conference on Industrial Engineering and Operations Management
	b. ISBN/ISSN	: 2169-8767
	c. Tahun Terbit, Tempat Pelaksanaan	24 Februari 2021, Harare, Zimbabwe
	d. Penerbit/organiser	: IEOM Society International
	e. Alamat repository PT/web prosiding	:
PROSIDING https://aip.scitation.org/doi/abs/10.1063/1.5010636		
ARTIKEL	: https://aip.scitation.org/doi/pdf/10.1063/	1.5010636?class=pdf
	f. Terindeks di (jika ada)	: SCOPUS
	g. Turnitin Similarity	2 %
Kategori Publikasi Makalah (beri √pada kategori yang tepat)	✓ Prosiding Forum Ilmiah Internasion Prosiding Forum Ilmiah Nasional	ıal

Hasil Penilaian Peer Review :

	Nilai Maksimal Prosiding		
Komponen Yang Dinilai	Internasional	Nasional	Nilai Akhir Yang Diperoleh
a. Kelengkapan unsur isi prosiding (10%)	3		3
 Ruang lingkup dan kedalaman pembahasan (30%) 	9		8.4
 Kecukupan dan kemutahiran data/informasi dan metodologi (30%) 	9		6
 Kelengkapan unsur dan kualitas terbitan/prosiding(30%) 	9		8
Total = (100%) Nilai Pengusul = (60%)*25.4 = 15.24	30		25,4

Catatan Penilaian Paper oleh Reviewer :

- Kesesuaian dan kelengkapan unsur isi paper: Penulisan artikel sesuai dengan Author Guidelines (Title, Abstract, Introduction, Materials and Methods, Rmults and Discussion, Conclusion, Acknowledgement, References). Substansi artikel sesuai bidang ilmu pengusull/penulis pertama (Teknik Industri). Mengetahui faktor-faktor yang mempengaruhi perilaku belanja online sesuai dengan beberapa MK di TI spt Perancangan dan Pengembangan Produk, Kewirausahaan, Analisa dan Perancangan Perusahaan, Maajemen Pemasaran dll
- 2. Ruang lingkup dan kedalaman pembahasan: penelitian memberikan kontribusi yang signifikan untuk memperoleh informasi tentang perilaku siswa dalam belanja online dengan data primer yang dikumpulkan melalui kuisioner dan diolah dengan multiple regression.
- 3. Kecukupan dan kemutahiran data/informasi dan metodologi disajikan dengan baik dengan model dan hasil uji statistik yang sesuai. Penulisan artikel kurang rapi banyak bentuk list yang tidak ditabelkan dan output SPSS yang belum ditulis ulang.
- 4. Kelengkapan unsur dan kualitas terbitan: Prosiding diterbitkan oleh penerbit prosiding Internasional, yaitu AIP Web of Conferences terindeks Scopus, Inspec, CAS, ADS, SJR=0,18 e-ISSN: 1551-7616

Semarang Reviewer

Dr. Ratna Pluwaningsih, ST, MT, IPM. NIP. 197212311998022001

LEMBAR HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW KARYA ILMIAH : PROSIDING

C-5

Judul karya ilmiah (paper) Jumlah Penulis	ANALYSIS OF FACTORS AFFECTE ONLINE SHOPPING (CASE: DIPONEGO 4 orang (Zainal Fanani Rosyada , Naniek U Ega Rizkiyah.)	RO UNIVERSITY)
Status Pengusul	Penulis ke-1	
Identitas Makalah :	a. Judul Prosiding	the 2nd African International Conference on Industrial Engineering and Operations Management
	b. ISBN/ISSN	: 2169-8767
	c. Tahun Terbit, Tempat Pelaksanaan	24 Februari 2021, Harare, Zimbabwe
	d. Penerbit/organiser	: IEOM Society International
	e. Alamat repository PT/web prosiding	
PROSIDING	F	1.5010636
ARTIKEL	: https://aip.scitation.org/doi/pdf/10.1063/	
	f. Terindeks di (jika ada) g. Turnitin Similarity	: SCOPUS
	g. Tumun Sumany	: 11 %
Kategori Publikasi Makalah (beri √pada kategori yang tepat)	 ✓ Prosiding Forum Ilmiah Internasion Prosiding Forum Ilmiah Nasional 	nal

Hasil Penilaian Peer Review

	Nilai Maksimal Prosiding		
Komponen Yang Dinilai	Internasional	Nasional	Nilai Akhir Yang Diperoleh
 Kelengkapan unsur isi prosiding (10%) 	3		3
 Ruang lingkup dan kedalaman pembahasan (30%) 	9		6.8
 Kecukupan dan kemutahiran data/informasi dan metodologi (30%) 	9		6,1
 Kelengkapan unsur dan kualitas terbitan/prosiding(30%) 	9		8,5
Total = (100%)	30		24,4

Catatan Penilaian Paper oleh Reviewer :

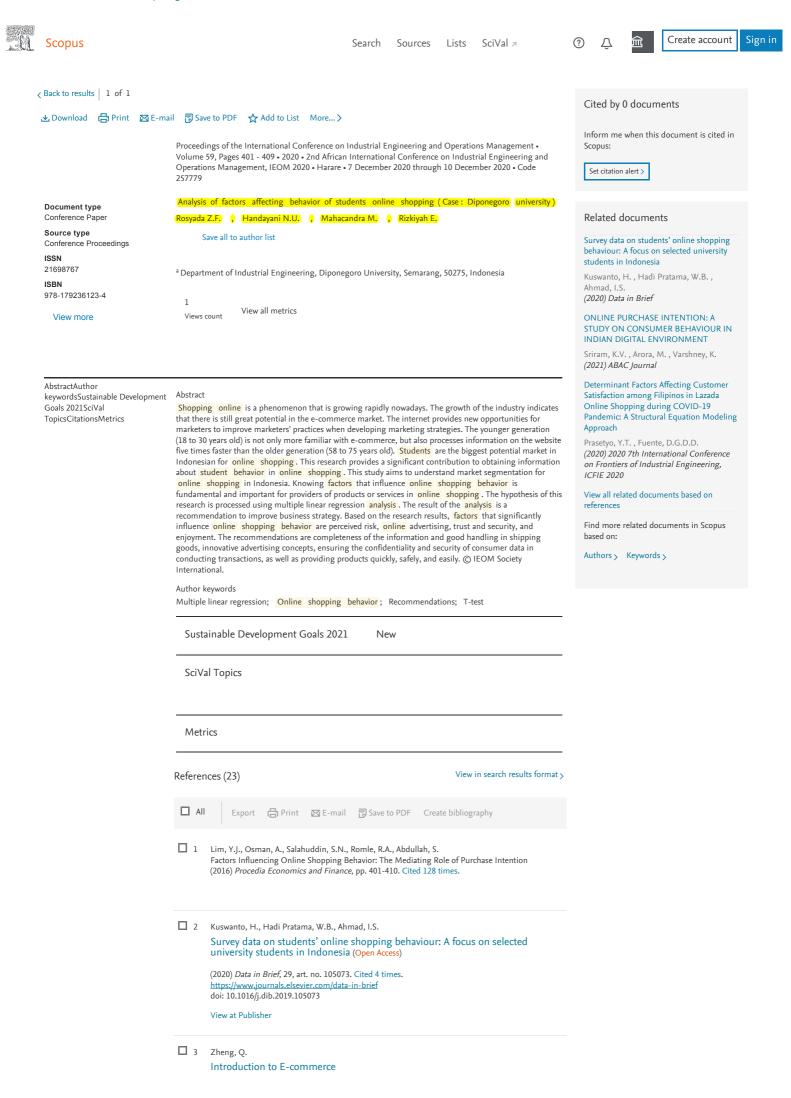
a. Penulisan artikel sesuai dengan Author Guidelines (Title, Abstract, Introduction, Materials and Methods, Rmults and Discussion, Conclusion, Acknowledgement, References). Substansi artikel sesuai bidang ilmu pengusull/penulis pertama (Teknik Industri). Terdapat benang merah dalam struktur penulisannya. Format penulisan tidak konsisten.

b. Substansi artikel squat dengan ruang lingkup Seminar (International Conference on Engineering, Technology and Industrial Application). Artikel ini membahas tentang factor-faktor yang mempengaruhi perilaku mahasiswa dalam berbelanja online. Jumlah reference tidak sama dengan yang tercantum disitasi

c. Data-data hasil penelitian dan pembahsan kurang menunjukkan adanya kebaruan informasi. Sebagian rujukan menunjukkan kemutakhiran (6 rujukan benisia kurang dari 10 tahun). Dari 18 rujukan, 5 diantaranya berupa jurnal.

d. Prosiding diterbitkan oleh penerbit prosiding Internasional, terindeks Scopus.

Semarang, Reviewer 2 Dr/rer. Oec Arfan Bakhtiar ST MT NP. 197503062000121001







International Conference on Industrial Engineering and Operations Management – A Virtual Conference

Harare, Zimbabwe, December 8-10, 2020

Host: University of Zimbabwe

Website: http://www.ieomsociety.org/harare2020/

IEOM Society International is organizing the 2nd African Industrial Engineering and Operations Management Conference in Harare, Zimbabwe during December 8-10, 2020. Conference is planned with hybrid mode (virtual + Onsite) due to current COVID-19 global outbreak. Based on the situation, it could be fully online. IEOM has become a premier international platform and forum for academics, researchers, scientists and practitioners to exchange ideas and provide insights into the latest developments and advancements in the fields of Industrial Engineering and Operations Management. IEOM has successfully organized previous international conferences in Dhaka (2010), Kuala Lumpur (2011), Istanbul (2012), Bali (2014), Dubai (2015), Orlando (2015), Kuala Lumpur (2016), Detroit (2016), Rabat (2017), Bristol, UK (2017), Bogota (2017), Bandung (2018), Paris (2018), Washington DC (2018), Pretoria (2018), Bangkok (2019), Toronto (2019), Riyadh (2019), Dubai (2020) and Detroit (2020).

Some the events and activities that are planned include: keynote speakers, global engineering education, Industry 4.0, industry solutions, women in industry and academia, undergraduate student paper competition sponsored by Siemens, graduate student paper competition sponsored by Eaton, Doctoral Dissertation Competition, Masters Thesis Competition, Simulation competition, senior design project competition, undergraduate research competition, high school STEM competition, undergraduate and graduate poster competition, panel sessions, and awards.

Authors can submit full paper(s) or abstract(s) only. IEOM Society encourages to submit full paper(s). All full papers will be subjected to double peer review. Accepted papers will be published in Proceedings and **indexed by Scopus.**

Tracks: Topics covering industrial issues/applications and academic research include, but are not limited to:

Logistics Management

Artificial Intelligence Automation and Control **Business Management** Case Studies Computers and Computing **Construction Management** Data Analytics and Big Data Decision Sciences Defense Management Science Design and Analysis E-Business and E-Commerce Energy Engineering Economy Engineering Education Engineering Management Entrepreneurship and Innovation Facilities Planning and Management Financial Engineering Healthcare Systems Human Factors and Ergonomics Industrial Management Information Technology/Information Systems Inventory Management Lean and Six Sigma

Material Flow Cost Accounting (MFCA) Modeling and Simulation Occupational Safety and Health (OSH) Operations Management **Operations Research** Product Design and Development Product Lifecycle Management Production Planning and Management Project Management / Program Management Quality Control and Management Reliability and Maintenance Sensors and Sensing Systems Service Systems and Service Management Smart Mobility Software Testing and Quality Assurance Statistical Process Control Statistics and Empirical Research Supply Chain Management Sustainability and Green Systems Sustainable Manufacturing Sustainable Production and Quality Management Systems Dynamics Systems Engineering

Special Tracks Global Engineering Education (GEE) Industry 4.0 – IoT, AI, iCloud Industry Solutions Women in Industry & Academia (WIIA) Panel Sessions

Work Design, Measurement and ISO

Technology Management

Total Quality Management

Transportation and Traffic

Competitions

Undergraduate Student Paper Competition Graduate Student Paper Competition Doctoral Dissertation Competition Master Thesis Competition Undergraduate STEM Research Competition Senior Capstone Design Project Competition High School & Middle School STEM Competition Poster Competition Simulation Competition Lean Six Sigma Competition Logistic Supply Chain Competition

Conference Chair

Professor Charles Mbohwa, Pro-Vice Chancellor Strategic Partnerships and Industrialisation, University of Zimbabwe, Harare, Zimbabwe

Conference Co-Chairs

Professor Mqhele Dlodlo, Vice-Chancellor, National University of Science and Technology (NUST), Ascot, Bulawayo, Zimbabwe



IEOM Society International, 21415 Civic Center Dr., Suite # 217, Southfield, Michigan 48076, USA, www.ieomsociety.org

The Second African International Conference on Industrial Engineering and Operations Management

December 7-10, 2020 Harare, Zimbabwe Host: University of Zimbabwe

iversity of Zimb



Industrial Engineering and Operations Management Society International 21415 Civic Center Dr., Suite 217, Southfield, Michigan 48076, USA

Welcome to the 2nd African IEOM Society Conference Harare, Zimbabwe

To All Conference Attendees:

We want to welcome you to the 2nd African IEOM Society Conference in Harare, Zimbabwe hosted by the University of Zimbabwe, December 7-10, 2020. This unique international conference provides a forum for academics, researchers, and practitioners from many industries to exchange ideas and share recent developments in the fields of industrial engineering and operations management. This diverse international event provides an opportunity to collaborate and advance the theory and practice of significant trends in industrial engineering and operations management. There were more than 400 papers/abstracts submitted from 43 countries, and after a thorough peer review process, approximately 300 have been accepted. The program includes many cutting-edge topics of industrial engineering and operations management. The theme of the conference is "*Operational Excellence in the era of Industry 4.0*".

Our keynote speakers:

- Prof. Kuzvinetsa Peter Dzvimbo, Chief Executive Officer, Zimbabwe Council for Higher Education (ZIMCHE), Harare, Zimbabwe
- Dr. Esther T. Akinlabi, Director, Pan African University for Life and Earth Sciences Institute (PAULESI), Ibadan, Nigeria -African Union Commission
- Henk Viljoen, Siemens Xcelerator, Portfolio Development Manager Siemens Digital Industries Software, Pretoria, Gauteng, South Africa
- Dr. Douglas Mboweni, Ph.D., Group Chief Executive Officer, Econet Wireless Zimbabwe Limited, Harare, Zimbabwe
- Dr. Robert Van Til, Chair and Pawley Professor of Lean Studies, Department of Industrial and Systems Engineering, Oakland University, Michigan, USA
- Professor Mqhele Dlodlo, Vice-Chancellor, National University of Science and Technology (NUST), Ascot, Bulawayo, Zimbabwe
- Corrado La Forgia, VP Operations Manager and Managing Director, BOSCH VHIT CR, Offanengo, Lombardy, Italy
- Dr. Marco Lübbecke, Professor of Operations Research, RWTH Aachen University, Aachen, Germany
- Prof. Quinton Kanhukamwe, Vice Chancellor, Harare Institute of Technology, Harare, Zimbabwe
- Professor Paul Mapfumo, Vice Chancellor, University of Zimbabwe, Harare, Zimbabwe
- Professor Maneesh Kumar, Professor in Service Operations, Cardiff Business School, Cardiff University, UK
- Prof. Nidhal Rezg, Professor & Director of LGIPM, Director General of UPS DITEX, University of Lorraine Metz, France
- Prof. Ephraim Tobela Gwebu, Vice Chancellor, Solusi University, Bulawayo, Zimbabwe
- Professor David Simbi, Vice-Chancellor, Chinhoyi University of Technology, Chinhoyi, Zimbabwe
- Professor Thong Ngee GOH, Emeritus Prof., Dept. of ISE and Former Head of Industrial and Systems Engineering & Dean of Engineering, National University of Singapore

The 19th IEOM Society Global Engineering Education session will feature distinguished speakers who will discuss the workforce readiness and engineering education challenges and opportunities. Industry Solutions and Industry 4.0 will showcase major topics including IoT, AI, data analytics, iCloud, cybersecurity, automation, digital manufacturing, and MSV. Industry Solutions will showcase the best industry practices as well as shared experiences. Women in Industry and Academia panel session is organized.

The IEOM Society would like to express our sincere appreciation to the University of Zimbabwe for hosting it and special thanks to our sponsors, university partners, organization partners, authors, reviewers, keynote speakers, panelists, track chairs, advisors, the local committee, and the many volunteers. They have given so much of their time and talent to make this unique international conference an overwhelmingly successful event.

Our best wishes to all conference participants for a successful and enjoyable event.

Enjoy the conference!



Professor Charles Mbohwa Conference Chair Pro-Vice Chancellor Strategic Partnerships and Industrialisation University of Zimbabwe



Dr. Perkins Muredzi Conference Co-Chair Dean, School of Industrial Sciences & Technology, Harare Institute of Technology, Zimbabwe



Dr. Londiwe Cynthia Nkiwane Conference Co-Chair Associate Professor and Chairperson, Dept. of Fibre and Polymer Materials Engineering, National University of Science and Technology, Zimbabwe



Dr. Wilbert Mtangi Conference Co-Chair Director: Institute of Materials Science, Processing and Engineering Technology, Chinhoyi University of Technology, Zimbabwe



Dr. Ahad Ali Conference General Chair Associate Professor and Director of Industrial Engineering Program Lawrence Technological University, Michigan, USA

Keynote Speakers

Opening Keynote - Tuesday, December 8, 2020, 2:00 - 4:30 pm

December 8, 2020, Tuesday

Conference Chair Remarks and Welcome Address: December 8, 2020, Tuesday, 1:45 - 2:00 pm - Zoom Meeting Room 1

Opening Keynote: Tuesday, December 8, 2020, 2:00 - 2:30 pm (Zimbabwe Time) / 8:00 am - 8:30 am (USA EST)



Prof. Kuzvinetsa Peter Dzvimbo Chief Executive Officer Zimbabwe Council for Higher Education (ZIMCHE) Harare, Zimbabwe

Prof. Dzvimbo has been working in tertiary education and training; management training and consulting, open and distance learning; and the use of ICTs in higher education in Africa since 1979. He currently works as Chief Executive Officer of the Zimbabwe Council of Higher Education, previously he was a Deputy Vice-Chancellor (Academic and Research) of the Vaal University of Technology, South Africa. From March 2009 to July 2011, Prof. Dzvimbo was a Deputy Executive Dean in the College of Human Sciences, then an Executive Dean in the College of Education at the University of South Africa (UNISA). Professor Dzvimbo was a member of the UNESCO international jury on Electronic Learning for five years which met annually in Paris to assess global projects in eLearning.

Prior to his appointment to UNISA, he was a Professor of Education Management and Head of the Department of Education Management at the University of Johannesburg. He became Rector of the African Virtual University (AVU) in Nairobi, Kenya, for four years from the World Bank in Washington, DC where he was a Senior Education Specialist in tertiary education and training. As Rector of the AVU in Kenya, he worked with almost 60% of the major universities on the African continent in the field of ICTs in education. During that time, he gained valuable experience in working in education development, leadership and management in Francophone Africa (Burundi, DRC, Djibouti, Madagascar, Malawi, Mali, Mauritania, Niger, Rwanda, Senegal), Lusophone (Mozambique) and Anglophone Africa (Ghana, Kenya, Lesotho, Namibia, Nigeria, Somaliland, Swaziland, Uganda, South Africa, Tanzania, Zambia, and Zimbabwe,). He was responsible for strategic direction and leadership of the AVU and its activities in Africa and its partners in Canada, the USA and Australia. While in the World Bank, he worked in the fields of strategic planning and management, sector studies, program evaluation and monitoring, ICTs in education, education policy and planning, tertiary education and training, capacity development at national level and teacher education in Ghana, Grenada, Jamaica, Mozambique, Namibia, Sierra Leone, St. Lucia, Tanzania, Trinidad and Tobago. He also provided sector support to a number of education projects globally.

He was the founding Vice-Chancellor of the Zimbabwe Open University. Prior to that appointment, he was a Pro-Vice Chancellor at the University of Zimbabwe and a Dean in the Faculty of Education at the same institution for five years. He held teaching positions at the University of Zimbabwe, the University of Wisconsin-Madison (USA); the University of the Witwatersrand (RSA); the Rand Afrikaans University (1995-1998) (RSA); and the School of Basic Studies at Ahmadu Bello University (Nigeria) from 1979-1981. He was a deputy principal of a secondary technical teachers college and trained primary school teachers through open and distance learning in Zimbabwe during the early 1980s. His first teaching career was as a secondary school teacher in Freetown, Sierra Lone in 1977.

Prof. Dzvimbo obtained his PhD from the University of Wisconsin-Madison (USA) in Educational Policy Studies; a M.Ed. in Administration and Planning from Ahmadu Bello University in Nigeria; a Post Graduate Diploma in Education from Fourah Bay College, the University of Sierra Leone; and a BA from the same university. He has worked in over 20 countries in Africa in teacher education; change management in education; the use of ICTs in higher education; and open, distance and electronic learning (ODEL) since 1990. His main areas of interest are basic and applied research in ODeL.

Keynote II: Tuesday, December 8, 2:30 - 3:00 pm (Zimbabwe Time) / 8:30 am - 9:00 am (USA EST)



Dr. Esther T. Akinlabi Director Pan African University for Life and Earth Sciences Institute (PAULESI) Ibadan, Nigeria African Union Commission

Professor Esther Titilayo Akinlabi is a Full Professor of Mechanical Engineering. She was recently appointed as the Director of the Pan African University for Life and Earth Sciences Institute (PAULESI), Ibadan, Nigeria. The Pan African University (PAU) is a continental initiative of the African Union Commission, Addis Ababa to revitalize Higher Education and Research in Africa. PAULESI represents the West African Hub of the Pan African University hosted by the University of Ibadan, Nigeria.

Prior to joining PAULESI, she had a decade of meritorious service at the Department of Mechanical Engineering Science, Faculty of Engineering and the Built Environment, University of Johannesburg (UJ), South Africa. During her period of service at UJ, she had the privilege to serve as the Head of Department of the De

of Mechanical Engineering Science and as the Vice Dean for Teaching and Learning for the Faculty. Her research interest is in the field of modern and advanced manufacturing processes – Friction stir welding and additive manufacturing. Her research in the field of laser based additive manufacturing include laser material processing and surface engineering. She also conducts research in the field of renewable energy, and biogas production from waste. She is a rated National Research Foundation (NRF) researcher in South Africa and has demonstrated excellence in all fields of endeavors.

Keynote Speakers

Prof Akinlabi has supervised to completion 22 PhD candidates and 28 Masters Students. Her leadership, mentorship and research experience is enviable as she guides her team of postgraduate students through the research journey. She is a recipient of several research grants and has received many awards of recognition to her credit. She is a registered member of the Engineering Council of South Africa (ECSA), Council for the Regulation of Engineering Profession in Nigeria (COREN), South African Institution of Mechanical Engineers (SAIMechE), the Nigerian Society of Engineers (NSE) and the American Society of Mechanical Engineers (ASME), USA. Prof Akinlabi has filed two patents, edited four books, published seven books and authored/co-authored over 500 peer reviewed publications.

Keynote III: Tuesday, December 8, 3:00 - 3:30 pm (Zimbabwe Time) / 9:00 am - 9:30 am (USA EST)



Henk Viljoen Siemens - Xcelerator Portfolio Development Manager Siemens Digital Industries Software Pretoria, Gauteng South Africa

Keynote IV: Tuesday, December 8, 3:30 - 4:00 pm (Zimbabwe Time) / 9:30 am - 10:00 am (USA EST)



Douglas Mboweni, Ph.D. Group Chief Executive Officer Econet Wireless Zimbabwe Limited Harare, Zimbabwe

Douglas Mboweni is the CEO of Econet Wireless Zimbabwe Limited, the country's leading provider of telecoms services and has over 20 years of senior management experience in the Information Technology and Telecommunications industry. Under his stewardship, Econet Wireless Zimbabwe used innovation in the face of difficult economic conditions to grow its subscriber base from 200,000 in 2002 to over eleven million today, a commanding market share of above 65%. Dr Mboweni was instrumental in the promotion of local mobile

financial services through EcoCash, up to the unbundling and listing of its parent company, Cassava Smartech on the Zimbabwe Stock Exchange as well as the set up of Mascom (Botswana) and Econet Wireless Nigeria. Dr. Mboweni graduated with a Doctor of Philosophy (PhD) Degree in Business Leadership from the Zimbabwe Open University (ZOU) in 2019. In his doctorate thesis, he proposed the Leadership-Driven Resilience Model (LDRM), which theoretically proffered possibilities for business leaders to develop sustainable coping strategies in response to extreme business operating environments. Dr. Mboweni is also a visiting Professor of Practice at the University of Johannesburg since 2018 and is a holder of a Masters in Business Leadership (UNISA), and a BSc Mathematics and Computer Science degree from the University of Zimbabwe (UZ). In recognition of his leadership and his success, Dr. Mboweni has won several national and international accolades. He continues to show leadership and abroad. Dr. Mboweni is married to Sarudzayi and they are blessed with 3 children.

Keynote V: Tuesday, December 8, 4:00 - 4:30 pm (Zimbabwe Time) / 10:00 am - 10:30 am (USA EST)



Dr. Robert Van Til Chair and Pawley Professor of Lean Studies Department of Industrial and Systems Engineering Oakland University Rochester, Michigan, USA Lessons Learned Integrating Industry 4.0 into an Educational Program

Robert Van Til is the Pawley Professor of Lean Studies and Chair of Oakland University's Industrial and Systems Engineering Department. He earned a B.S. in Mechanical Engineering from Michigan State University

as well as M.S. and Ph.D. degrees in Mechanical Engineering from Northwestern University. Dr. Van Til is also associated with Oakland University's Pawley Lean Institute.

Dr. Van Til's educational and research interests focus on the modeling, analysis and control of manufacturing systems, lean and Industry 4.0. His projects have been supported by the National Science Foundation and the Michigan Economic Development Corp. as well as by companies such as Fiat Chrysler Automobiles, Ford.

2nd Day Keynote - Wednesday, December 9, 2020, 2:00 – 4:30 pm

December 9, 2020, Wednesday

Conference Co-Chair Remarks: December 9, 2020, Tuesday, 1:45 - 2:00 pm - Zoom Meeting Room 1

Keynote VI, Wednesday, December 9, 2:00 - 2:30 pm (Zimbabwe Time) / 8:00 am - 8:30 am (USA EST)



Professor Mqhele Diodio, PhD (FZweIE; Pr.Eng. (ECZ); FZAS) Vice-Chancellor National University of Science and Technology (NUST) Ascot, Bulawayo, Zimbabwe

Innovative Industrialisation - the Impact of Education 5.0 on University Operations in COVID-19 Times

Mqhele Enock-Hershal Dlodlo (FZweIE, MIEEE, Pr.Eng. (ECZ), FZAS) earned a PhD (1996) from Delft University of Technology, a master's degree in electrical engineering (1989) from Kansas State University, and two bachelor's degrees in electrical engineering (1980), mathematics and independent studies in engineering management (1983), from Geneva College, Beaver Falls, PA, USA.

He is the Vice-Chancellor of the National University of Science and Technology. At the University of Cape Town, Rondebosch, South Africa, he is an Emeritus Associate Professor in telecommunications in the Electrical Engineering Department. His research interests are in wireless communication systems and applications.

An active member of the Communications Research Group (CRG) in the Telkom Centre of Excellence (CoE) for Broadband Networks and Applications he continues to co-supervise PhD students. His CoE projects have attracted substantial funding to the CoE from industry and THRIP since 2007. The research has led to over eighty international refereed publications, eight PhD theses and numerous master's dissertations.

Between May 2008 and August 2011, he successfully led a departmental team working on an Innovation Fund (TIA) Project T70026 on lowbandwidth video streaming, with a patent application filed in South Africa, and a number of international refereed publications. Team members: an Emeritus Professor, a PhD candidate and four MSc (Eng) students - two of the masters' students graduated with nearly error-free dissertations. Spin-off: an online business linked to a consortium consisting of UCT, CSIR (Meraka in Pretoria) and East Coast Access (Pty) Ltd (a media solutions provider in Durban). The research and development consortium handed the project over to a spin-off company, Tuluntulu (Pty) Ltd. The project brought R 2 477 410 to the department and commercialisation may bring in some profits in the medium term.

In the time at UCT, Prof. Dlodlo served as Assistant Dean for Internationalization and Programme Convener for the Master of Engineering (Telecommunications) degree programme. He has also designed curricula, taught, consulted, researched, headed departments and faculties at NUST as well as the Bulawayo Polytechnic over twenty-one years. In 2003 he became a Fulbright Senior African Scholar at Virginia Tech in America, studying Learning and Information Technology Initiatives for academic leadership in research, learning, and fundraising.

Keynote VII, Wednesday, December 9, 2:30 - 3:00 pm (Zimbabwe Time) / 8:30 am - 9:00 am (USA EST)



Corrado La Forgia VP Operations Manager and Managing Director BOSCH VHIT - CR Offanengo, Lombardy, Italy

Title: "Digitalization of production processes"

How can we let the machines "talking", transforming data in precious information How can we use artificial intelligence and how can we digitalize also old equipment (digital revamping) Born in 1965, Mr. la Forgia Corrado Felice graduated at University in Bari as Mechanical Engineer and he started his career as manufacturing manager in companies like ANSALDO, OSRAM, MAGNETI MARELLI and BOSCH Group, for which he has been working for 12 years.

He had working experiences abroad (Germany and Austria) and he has been working as Managing Director and Operational Manager in Bosch plant in Crema (manufacturing plant for components in automotive market) for more than 7 years.

He is also Vice President and Deputy for Innovation in regional Confindustria Cremona (Industrial Association) and a member of National Task Force of Federmeccanica (Mechanical Companies Association) on Industry 4.0 topic.

He worked together with Economics Department of University in Genova on digital innovation. Interested in innovation issues and in particular in enabler technologies of Industry 4.0, he is the author, together with Nicola Intini, Luca Beltrametti e Nino Guarnacci, of the book: 'La Fabbrica Connessa - La manifattura italiana (attra)verso Industria 4' (Edizioni Angelo Guerini e Associati S.r.I.).

In 2019 his second book 'Ada, Alan and the Mysteries of The IoT ', written with Nicola Intini, Raffaella Misciosca, Sabrina De Santis and Pierpaolo Pontrandolfo (Angelo Guerini Editions and Associates S.r.l.) was published.

Keynote Speakers

Keynote VIII, Wednesday, December 9, 3:00 - 3:30 pm (Zimbabwe Time) / 9:00 am - 9:30 am (USA EST)



Dr. Marco Lübbecke Professor of Operations Research RWTH Aachen University Aachen, North Rhine-Westphalia, Germany

Keynote IX, Wednesday, December 9, 3:30 - 4:00 pm (Zimbabwe Time) / 9:30 am - 10:00 am (USA EST)



Prof. Quinton Kanhukamwe Vice Chancellor Harare Institute of Technology Harare, Zimbabwe

Keynote X, Wednesday, December 9, 4:00 - 4:30 pm (Zimbabwe Time) / 10:00 am - 10:30 am (USA EST)

Professor Paul Mapfumo Vice Chancellor University of Zimbabwe Harare, Zimbabwe



3rd Day Keynote - Thursday, December 10, 2020, 2:00 - 4:30 pm

December 10, 2020, Thursday

Conference Co-Chair Remarks: December 10, 2020, Tuesday, 1:45 - 2:00 pm - Zoom Meeting Room 1

Keynote XI, Thursday, December 10, 2:00 - 2:30 pm (Zimbabwe Time) / 8:00 am - 8:30 am (USA EST)



Prof. Maneesh Kumar Professor in Service Operations Cardiff Business School Cardiff University, Cardiff, UK

Maneesh Kumar is a Professor of Service Operations at Cardiff Business School, Cardiff University. He conducts cross disciplinary applied research in the area of Operational Excellence including topics such as Quality Management, Lean Six Sigma (LSS), Lean, Green, and Innovation (iLEGO), Healthcare Process/Service Innovation using Big Data Analytics, Knowledge Clusters for capability enhancement within SMEs. This has resulted in publications of over 120 journals and conferences papers, edited books, and conference proceedings. His research participants encompasses range of industry including Automotive Industry (India, UK, Japan), Service Industries and Public Sector organizations including NHS. His current research interests are integration of Operations Excellence with Industry 4.0 and Big data environment,

Operational Capabilities development in micro and small companies through cluster formation, sustaining operations excellence, Innovative Circular Economy Business Models.

He is co-hosting 25th Lean Enterprise Research Centre (LERC) conference on 10th September 2019 in Cardiff university. He co-chaired 21st Quality Management & Organisational Development Conference hosted in Cardiff University from 22nd-24th August, 2018. He has also initiated a first practice based forum on Lean Green and Innovation (iLEGO) that brings practitioner community together to have engaged discussion on synergies and misalignments between the three topics and promote cross learning between different industries. The 3rd iLEGO workshop was hosted on 15th January 2019 in Cardiff University.

He has been recognised for his outstanding contributions to teaching at Cardiff University's Celebrating Excellence Awards 2018 in the category of 'Excellence in Teaching including Training & Development'.

He has been involved in delivering LSS training up to Black Belt level and delivered several workshops on LSS application in different type and size of industries including Kwik-Fit Insurance Services, Standard Life, Admiral, Principality, Bakkavor Group, Norbert Dentressangle, Norgine Ltd., Celsa Steel, NHS Grampian, NHS Sheltand, Edinburgh City Council, Aberdeenshire Council, Automotive Component Manufacturers Association of India (ACMA) and Tata Motors. He is also a regular speaker at International Conferences and Seminars on LSS & Process Excellence.

Keynote XII, Thursday, December 10, 2:30 - 2:00 pm (Zimbabwe Time) / 8:30 am - 9:00 am (USA EST)



Prof. Nidhal Rezg, Ph.D. Professor and Director of LGIPM University of Lorraine Metz, Grand Est, France Secretary General of the MATERALIA Pole Director General of UPS DITEX

Keynote XIII, Thursday, December 10, 3:00 - 3:30 pm (Zimbabwe Time) / 9:00 am - 9:30 am (USA EST)



Professor Ephraim Tobela Gwebu, PhD Vice Chancellor Solusi University Bulawayo, Zimbabwe

Keynote XIV, Thursday, December 10, 3:30 - 4:00 pm (Zimbabwe Time) / 9:30 am - 10:00 am (USA EST)

IEOM Harare Conference



Professor David Simbi Vice-Chancellor Chinhoyi University of Technology Chinhoyi, Zimbabwe



Keynote XV, Thursday, December 10, 4:00 - 4:30 pm (Zimbabwe Time) / 10:00 am - 10:30 am (USA EST)

Professor Thong Ngee GOH Emeritus Professor Department of Industrial Systems Engineering and Management Former Head of the Industrial and Systems Engineering Department Former Dean of Engineering National University of Singapore

Title: Megatrends facing the Industrial Engineers

GOH, Thong Ngee holds a PhD from the University of Wisconsin-Madison and is a Registered Professional Engineer. A Project Specialist at Lockheed Aircraft before joining the National University of Singapore, he has served as Head of the Industrial and Systems Engineering Department and Dean of Engineering; he was also Director of the University's Office of Quality Management. He was CEO of Design Technology Institute International, a joint venture between Singapore and the Netherlands.

Professor Goh is a Founding Fellow of the Singapore Academy of Engineering, and Founder President of the Singapore Institute of Industrial Engineers. He has been named "Educator of the Year" by the IEEE Engineering Management Society, was recipient of the inaugural Masing Book Prize of the International Academy for Quality, Harrington-Ishikawa Medal of the Asia-Pacific Quality Organization, the William Hunter Award and the Eugene Grant Medal of the American Society for Quality.

Professor Goh has been on the editorial boards of some ten international research journals, published more than four hundred technical papers and six specialized books. A frequent invited speaker at professional conferences and corporate meetings, he has served variously as advisory board member, awards judge, external examiner or reviewer for academic institutions and government agencies in various countries.

Abstract: Many Industrial Engineering and Operations Research curricula today in universities and colleges are still built upon traditional paradigm along the line of "Scientific Management". While canonical techniques are useful, new breeds of IEOR practitioners should deliberate beyond them and consciously make themselves relevant in the days to come. In this presentation, some notable megatrends that exist in the real world are highlighted to bring about awareness of various related issues.

Conference Committee

Conference Chair

Professor Charles Mbohwa

Pro-Vice Chancellor Strategic Partnerships and Industrialisation University of Zimbabwe Mt Pleasant, Harare, Zimbabwe

Conference Co-Chairs

Dr. Perkins Muredzi, Dean, School of Industrial Sciences & Technology, Harare Institute of Technology, Zimbabwe

Dr. Londiwe Cynthia Nkiwane. Associate Professor and Chairperson in the Department of Fibre and Polymer Materials Engineering. National University of Science and Technology. Bulawavo, Zimbabwe

Dr. Wilbert Mtangi, Director: Institute of Materials Science, Processing and Engineering Technology, Chinhoyi University of Technology, Chinhoyi, Zimbabwe

Conference General Chair

Dr. Ahad Ali, Associate Professor and Director of Industrial Engineering, A. Leon Linton Department of Mechanical, Robotics and Industrial Engineering, Lawrence Technological University, Detroit, Michigan, USA

Organizing Committee

Dr. Tawanda Mushiri, Department of Mechanical Engineering, University of Zimbabwe

Dr. Loice K Gudukeya, Department of Mechanical Engineering, University of Zimbabwe Dr. Ignatio Madanhire, Department of Mechanical Engineering, University of Zimbabwe

Dr. Wilson R. Nyemba, Department of Mechanical Engineering, University of Zimbabwe Dr. Bupe Mwanza, University of Zambia

Prof. Michael Mutingi, Associate Professor of Industrial Engineering, Department, Mechanical and Marine Engineering, Namibia University of Science and Technology, Windhoek, Namibia Dr. William Msekiwa Goriwondo, Dean, Faculty of Engineering, National University of Science and Technology, Zimbabwe Monica Mureriwa, Director for Public Relations and Marketing, Catholic University of Zimbabwe, Harare, Zimbabwe

Dr. Sam Takavarasha Jr. Women's University in Africa

Global Engineering Education Chairs TBA

Industry Solutions Chairs TBA TBA

Women in Industry and Academia (WIIA) Chairs

Dr. Loice Gudukeyes, Senior Lecturer, Department of Mechanical Engineering, University of Zimbabwe, Harare, Zimbabwe Dr. Fortunate Fariral, PhD (Pr. Eng.), Chief Executive Officer of Sustenergy Zimbabwe

Sponsors and Exhibitors Chair

Professor Don Reimer, Lawrence Technological University, Southfield, Michigan, USA

Conference Secretariat Dr. Taufiqul Islam, Operations Manager, IEOM Society International, Michigan, USA

African Support Committee

Bruno Emwanu, School of Mechanical, Industrial and Aeronautical Engineering, University of the Witwatersrand, Johannesburg, South Africa Dewa Mncedisi, Cape Peninsula University of Technology, Cape Town, South Africa

Dothan Moyo, Industrial Pharmacist and Director at Pharmanova (Pvt) Ltd., Zimbabwe Dr. Anoop Kumar Sahu, Department of Mechanical Engineering, School of Studies in Engineering and Technology Guru Ghasidas Vishwavidyalaya (A Central University), Bilaspur, State – Chhattisgarh, India

Dr. Arthhea Amadi-Echendu, Senior Lecturer, Acting Chair of the Department of Operations Management, University of South Africa Dr. Attul Kumar Sahu, Department of Industrial and Production Engineering, School of Studies in Engineering and Technology, Guru Ghasidas Vishwavidyalaya (A Central University), Bilaspur, State - Chhattisgarh, India

Dr. Bingwen Yan, Cape Peninsula University of Technology, Cape Town, South Africa Dr. Bolanle Tolulope Abe, Tshwane University of Technology (TUT), South Africa

- Dr. Bolane Toilape Abe, rstware University of Technology (T0T), South Africa Dr. Esther Toilape Abe, rstware University of Johannesburg, South Africa Dr. Hannelie Nel, University of Johannesburg (UJ), South Africa Dr. Harendra Kumar Narang, Department of Mechanical Engineering, National Institute of Technology, Raipur, Chhattisgarh, India Dr. Iruka Chijindu Anugwo, Department of Construction Management & Quantity Surveying, Durban University of Technology, Durban Area, South Africa Dr. Ishmael Sango, Chinhoyi University of Technology (CUT), Zimbabwe Dr. Joke Buhrmann, University of the Witwatersrand (Wits), South Africa

Dr Joseph Dr. Kubheka

Dr. Lavern Samuels, Director International Education and Partnerships, Durban University of Technology, Durban Area, South Africa Dr. Lloyd Matowe, Director at Pharmaceutical Systems Africa

Dr. Michael Agarana, Department of Mathematics Covenant University, Ota, Nigeria Dr. Nelson Madonsela, Department of Quality and Operations Management, University of Zimbabwe Dr. Nita Sukdeo, Full Time Senior Lecturer in Quality and Operations Management, Department of Quality and Operations Management, University of Johannesburg, South Africa

Dr. Obinna Ozumba, Associate Professor, School of Construction Economics and Management, University of the Witwatersrand, Johannesburg, South Africa Dr. Olasumbo Ayodeji Makinde, Tshwane University of Technology (TUT), South Africa

Dr. Oludolapo Akanni Olanrewaju, Durban University of Technology (DUT), South Africa

Dr. Olufemi Adetunji, Senior Lecturer, Department of Industrial and Systems Engineering, University of Pretoria, Pretoria, South Africa Dr. Philip Oladijo, Department of Chemical, Materials and Metallurgical Engineering, BUIST, Palapye, Botswana

Dr. Sanjeevikumar Padmanaban, Department of Energy Technology, Aalborg University – Esbjerg Campus, Denmark Dr. Sanjeevikumar Padmanaban, Department of Energy Technology, Aalborg University – Esbjerg Campus, Denmark Dr. Sriyogi Kottala, School of Business Management, Department of Operations and School of Science, Program Director – B.Sc(Applied Statistics & Analytics), SVKM's Narsee Monjee Institute of Management Studies (Deemed to be University), Hyderabad Campus, Tarnaka, Hyderabad, Telangana, India

Dr. Trust Nhubu, Projects Engineer, Shamah Water Engineering, Zimbabwe Eng. Chigerwe, Midlands State University (MSU), Zimbabwe and Harare Polytechnic Eriyeti Murena, Department of Industrial & Manufacturing Engineering, National University of Science and Technology (NUST), Bulawayo, Zimbabwe

Fortu Zim

Ms. Sebonkile Thaba, Lecturer and Community Engagement Coordinator, Department of Transport and Supply, University of Johannesburg (UJ), South Africa Nitin Kumar Sahu, Department of Industrial and Production Engineering, School of Studies in Engineering and Technology, Guru Ghasidas Vishwavidyalaya (A Central University), Bilaspur, State - Chhattisgarh , India

Paul Agachi, Botswana International University of Science & Technology, Palapye, Botswana

Prof. Alessandro Bonadonna, Department of Management (Commodity Science Area) of the University of Turin, Italy Prof. Clinton Aigbavboa, Vice Dean-Postgraduate Studies, Research and Innovation and Head of Sustainable Human Settlement and Construction Research Centre, University of Prof. Isreal Dunmade, Faculty of Science & Technology, Mount Royal University, Calgary, Canada Prof. Isreal Dunmade, Faculty of Science & Technology, Mount Royal University, Calgary, Canada Prof. Joha Alfred Trimble, Tshwane University of Technology (TUT), South Africa Prof. Kahilu Kajimo-Shakantu, Department of Quantity Surveying and Consultation Management, University of the Free State, South Africa

Prof. Khumbulani Mpofu, Tshwane University of Technology (TUT), South Africa Prof. Mukondeleli Grace Kanakana, University of South Africa (UNISA), South Africa Prof. Pule Kholopane, Vaal University of Technology (VUT), South Africa

Prof. Ruben Ndihokubwayo, Associate Professor, Walter Sisulu University, Cape Town Area, South Africa

Prof. Thomas Tengen, Vaal University of Technology (VUT), South Africa Professor Mulaba, University of Zimbabwe Vennan Sibanda, National University of Science and Technology (NUST), Zimbabwe Wilbert, Harare Institute of Technology (HIT), Zimbabwe
Track Chairs
Agricultural Engineering Systems P. Udomkun, International Institute of Tropical Agriculture (IITA), Bujumbura, Burundi S. Nsabimana, Department of Geography, University of Burundi, P.O. Box: 1550, Bujumbura, Burundi Minteh, Agricultural Engineering Services (AES) Unit, Department of Agriculture (DoA), Ministry of Agriculture, Gambia
Artificial Intelligence Dr. L. Razanakolona, Laboratory Application the Computer Model in Development, LIMAD, Uneversity Fianarantsoa, Madagascar
Automation and Control Dr. Rajab Abdullah Hokoma, University of Tripoli, Libya Dr. G.M. Bouba, LTI Laboratory, ESP/UCAD, Dakar, Senegal
Business Management Dr. M Sandada, Senior Lecturer, Graduate School of Management, University of Zimbabwe
Case Studies Dr. G.A. Mboro Nchama, Departamento de Ciencias Técnicas, Universidad Nacional de Guinea Ecuatorial (UNGE), Malabo, Equatorial Guinea
Climate GN.T. Longandjo, Faculty of Environmental Science and Engineering, Université Nouveaux Horizons, Lubumbashi, Democratic Republic Congo
Cyber Security Dr. Sam Takavarasha Jr. Women's University in Africa Dr. Alfred Musarurwa CIO Nedbank, Zimbabwe Computers and Computing
Joseph Shitote, Strathmore University, Kenya
Construction Management Hossam Hassaan, University of Alexandria, Alexandria, Egypt
Data Analytics Rym Nassih, École Mohammadia d'ingénieurs (EMI) Rabat, Morocco
Decision Sciences Dr. Bupe Mwanza, University of Zambia
Design and STEM Workshop Dr. Marni Lafleur, University of Madagascar
E-Business and E-Commerce Dr. N. Armando, Escola Superior Politécnica do Uíge, Universidade Kimpa Vita, Kondo Benze Uíge, Angola
Energy Rannditsheni Pfunzo, University of Johannesburg, South Africa Kátia C.P. Gabriel, Instituto Superior Politécnico de Tecnologias e Ciências (ISPTEC), Departamento de Engenharias e Tecnologias (DET), Av. Luanda Sul, Rua Lateral Via S10, Talatona- Município de Belas, Luanda, Angola
Engineering Economy Dr. Clarimon Georges Kiakondo, Faculté des sciences et technologies, Brazzaville, Congo, Republic of the (Congo-Brazzaville)
Engineering Education Dr. J. Kamaghe, Nelson Mandela African Institution of Science and Technology, Tanzania Dr. Tagwa Musa, Sudan University of Science and Technology, Khartoum, Sudan
Engineering Management Dr. Ignatio Madanhire, University of Zimbabwe
Entrepreneurship and Innovation Dr. Khedidja Allia, Department of Process Engineering, FGMP – USTHB - Algiers, Algeria
Environmental Engineering Systems Ronald Ragoasha, Council of Geoscience, Pretoria, South Africa Rui Sitoe, Universidade Eduardo Mondlane, Mozambique
Facilities Planning Dr. Abderrezzak Hocine, University Badji Mokhtar, Sidi Amar, Algeria
Financial Engineering Dr. Amevi Acakpovi, Accra Technical University, Accra, Ghana
Healthcare Systems F. Tshibasu, Cliniques Universitaires de Kinshasa, Democratic Republic Congo C.O. Bagayoko, Centre d'Innovation et de Santé Digitale, DigiSanté-Mali, USTTB, Bamako, Mali
Human Factors and Ergonomics Dr. Osatohanmwen Enehizena, University of Benin
iCloud M.T. Dandjinou, Nazi BONI University/LAMDI, Bobo-Dioulasso, Burkina Faso
IE / OM in Africa
Industry 4.0 in African Context

COMMITTEE

Industry 4.0 in African Context Emmanuel Lule, African Center of Excellence in Internet of Things (ACEIoT), College of Science and Technology (C.S.T.), University of Rwanda, Kigali, Rwanda C. Mikeka, Chancellor College, Faculty of Science, Department of Physics, University of Malawi (UNIMA), Zomba, Malawi

Information Technology and Management Information Systems

Dr. Euch Jalel OLID Laboratory, ISGIS, Sfax University, LR19ES21, 3021, Sfax, Tunisia Department of Management Information Systems and Production Management, College of Business and Economics, Qassim University, Buraydah, Saudi Arabia

IEOM Harare Conference

Prof. Ruben Ndihokubwayo, Associate Professor, Walter Sisulu University, Cape Town Area, South Africa Prof. Sarma Yadavalli, University of Pretoria (UP), South Africa Prof. Thomas Tengen, Vaal University of Technology (VUT), South Africa

December 7-10, 2020

Inventory Control and Management Abebayehu Abdela, School of Mechanical and Industrial Engineering, Manufacturing Engineering Chair, EiTM – Ethiopian Institute of Technology Mekelle, Mek'ele, Ethiopia

IoT - Internet of Things M.M. Wielfrid, Institut National Polytechnique Felix Houphouët-Boigny (INPHB), Yamoussoukro, Cote d'Ivoire

Lean and Six Sigma

Dr. Adekunle Kolawole, Senior Lecturer, Department of Industrial and Production Engineering, University of Ibadan, Nigeria

Logistics

Noredine Sadki, Industrial Engineering Science, Faculty of Sciences and Technology Tangier, Morocco and Abdelmalek Essaadi University, Morocco

Manufacturing

Dr. AMM Nazmul Ahsan, Assistant Professor of Mechanical Engineering, School of Engineering & Technology, Western Carolina University, Cullowhee, North Carolina, USA Dr. Nicholas Tayisepi, Lecturer in Industrial and Manufacturing Engineering at National University of Science and Technology, Zimbabwe Dr. Khobatha Setetemela, Department of Mathematics and Computer Science, National University of Lesotho, Roma, Lesotho

Material Flow Cost Accounting (MFCA) Dr. Wichai Chattinnawat, Chiang Mai Úniversity, Thailand

Modeling and Simulation Dr. Ali ElKamel, University of Waterloo, Canada Dr. Magdy Helal, American University of the Middle East (AUM), Kuwait

Occupational Safety and Health (OSH)

Dr. A.M. Idriss, Department of Surgery, Faculty of Medicine, Al Aassriya Nouakchott University, Nouakchott, Mauritania Dr. F.N. Osman, Department of Biomedical Engineering, University of Medical Sciences and Technology, South Sudan

Operations Management Lawrance Seseni, University of Johannesburg, South Africa

Operations Research Dr. Michael Mutingi, National University of Science and Technology, Windhoek, Namibia

Optimization Prof. Lagouge Tartibu, Associate Professor: Department of Mechanical and Industrial Engineering Technology, Faculty of Engineering & the Built Environment, University of Johannesburg, South Africa Prof. Sandile Motsa, Department of Mathematics, University of Eswatini, Kwaluseni, Swaziland

Product Development Dr. R. Kumar, Associate Professor, Department of Mechanical Engineering, Eritrea Institute of Technology, Asmara, Eritrea

Product Lifecycle Management Dr. Ali Allahverdi, Kuwait University, Kuwait

Production Planning and Management Jerekias Gandure, Lecturer at University of Botswana

Project Management Edison Lubua, Institute of Accountancy Arusha, Arusha, Tanzania

Quality Control and Management Dr. Devkumar Callychurn, Mechanical and Production Engineering Department (MPED) at the Faculty of Engineering, University of Mauritius

Robotics and Mechatronics Engineering Dr. Tawanda Mushiri, Department of Mechanical Engineering, University of Zimbabwe

Reliability and Maintenance Thierry Ngoundou Boulamatari, Gabon

Sensors and Sensing Systems Kizito Mubiru, Kyambogo University, Kampala, Uganda

Service Systems and Service Management Dr. N.D. Lamso, Université de Abdou Moumouni, Niamey, Niger

Statistics Dr. H. Wurie, College of Medicine and Allied Health Sciences, University of Sierra Leone, Freetown, Sierra Leone Dr. G. Nallo, University of Liberia Pacific, Institute for Research and Evaluation, Monrovia, Liberia

Supply Chain Management

Ms. Sebonkile Thaba, Lecturer, College of Business and Economics, Department of Transport and Supply Chain Management, University of Johannesburg, South Africa

Sustainability and Green Systems Dr. Loice K Gudukeya, Department of Mechanical Engineering, University of Zimbabwe F.A. Muvundja, Centre de Recherche en Environnement et Géoressources, Université Catholique de Bukavu (UCB), Central African Republic

Sustainable Manufacturing Dr. J.B.M. Moungomo, Ecole Normale Supérieure de l'Enseignement Technique (ENSET), Boulevard Léon Mba, Libreville, BP 3989, Gabon Dr. I. Pachoukova, Ecole Nationale Supérieure d'Ingénieurs (ENSI), University of Lome, Togo

Systems Engineering Dr. Kamga Tchwaket Ignace, Chef du département d'Economie à l'ISSEA, Cameroon

Technology Management Dr. J. Mbainaibeve, Université de DOBA, Doba, Chad

Total Quality Management (TQM) Dr. Salah Haridy, Department of Industrial Engineering and Engineering Management, University of Sharjah, Sharjah, UAE Dr. M. Shamsuzzaman, Department of Industrial Engineering and Engineering Management, University of Sharjah, Sharjah, UAE

Transportation and Traffic Dr. Abbas Mahmoudabadi, Mehrastan University, Gilan, Iran

Work Design, Measurement, Standardization and ISO Dr. Yunos Ngadiman, Universiti Tun Hussein Onn Malaysia

African Academic Committee

Grace Kanakana, University of South Africa

© IEOM Society International

Venkata Seshachala Sarma Yadavalli, University of Pretoria, South Africa Bolanle Abe, Tshwane University of Technology, Pretoria, South Africa Olufemi Adetunji, University of Pretoria, Pretoria, Gauteng, South Africa Joe Amadi-Echendu, University of Pretoria, Pretoria, Guateng, South Africa MELLAK Abderrahmane, Boumerdes University - Algeria Ambrosia Moeng, University of Botswana Kamga Tchwaket, President, Head of Economics, ISSEA, Cameroon Noha Jalal, Zagazig University, Egypt Abebayehu Abdela, Mekelle University, Ethiopia Thierry Ngoundou Boulamatari, Gabon Felix Atsu Ackuayi, President, Junior Chamber International (JCI), Ghana Veronica Ngunzi, Kisii University, Kenya Nickson Kipngetich, Mechanical & Manufacturing Eng. Dept. Kenyatta University, Kenya Saber Elmabrouk, University of Tripoli, Libya Santaram Venkannah, University of Mauritius Ilham Kissani, Al Akhawayn University, Ifrane, Morocco Michael Mutingi, Namibia Univ. Sci. and Tech., Namibia Elkanah Oyetunji, President, Lagos State University, Nigeria GAYE Khalifa, University Assane Seck of Ziguinchor, Senegal Tagwa Musa, Sudan University of Science and Technology, Sudan Safa Layeb Bhar, Ecole Nationale d'Ingénieurs de Tunis, Tunisia Kizito Mubiru, Makerere University, Uganda

Honorary Committee

- Honorary Committee

 Pr. Moulay Larbi Abidi, Director, École Mohammadia d'ingénieurs (EMI), Rabat, Morocco

 Dr. Hesham Kamal Al-Fares, King Fahd University of Petroleum and Minerals, Saudi Arabia

 Dr. Khaled S. Al-Sultan, King Fahd University of Petroleum and Minerals, Saudi Arabia

 Dr. Khaled S. Al-Sultan, King Fahd University of Petroleum and Minerals, Saudi Arabia

 Dr. Khaled S. Al-Sultan, King Fahd University of Petroleum and Minerals, Saudi Arabia

 Dr. Khaled S. Al-Sultan, King Fahd University of Petroleum and Minerals, Saudi Arabia

 Dr. Hamidi Bashir, Chairperson, Department of Industrial and Engineering Management, University of Sharjah, UAE

 Dr. Mohamed Essaaidi, Professor and Director (Dean), ENSIAS College of Engineering Mohamed V University in Rabat, Morocco

 Dr. Devashis Mitra, Dean Faculty of Businees Administration, University of New Brunswick, Fredericton, Canada

 Prof. Dr. Mohd Razali Muhamad, Deputy Vice Chancellor (Academic and Internationalization), Universiti Teknikal Malaysia Melaka

 Professor Dr. Norazman Mohamad Nor, Deputy Vice Chancellor (Research and Innovation), National Defence University of Malaysia in Kuala Lumpur

 Dr. Ismail Tag, SVP & Provost, The Petroleum Institute, Abu Dhabi, United Arab Emirates

 Dr. Noordin Mohd. Yusof, Professor and Past Dean, Faculty of Mechanical Engineering, Universiti Teknologi Malaysia

- Advisory Committee Prof. Jens Bo Holm-Nielsen, Aalborg University Esbjerg Campus, Denmark Prof. Frede Blaabjerg, Aalborg University Esbjerg Campus, Denmark

- Prof. John K. Pedersen, Aalborg University Esbjerg Campus, Denmark Prof. Lasse Alstrup Rosendahl, Aalborg University Esbjerg Campus, Denmark
- Prof. Dan M. Ionel, University of Kentucky, USA

- Prof. Dan M. Ionel, University of Kentucky, USA Prof. Michael Pecht, University of Maryland, USA Prof Volker Pickert, Newcastle University, UK Prof. Derek Abbott, The University of Adelaide, Australia Prof. Gabriele Grandi, University of Bologna, Italy Prof. Vincenzo Pieuri, University of Milano, Italy Prof. David Infield, University of Strathclyde, United Kingdom Prof. Massimo Mitolo, Irvine Valley College, CA, USA

- Dr. Innocent Kamwa, Hydro-Quebec Research Institute, Canada Prof. Christian Rehtanz, TU Dortmund, Germany Prof. Patrick William Wheeler, Fellow IET, Nottingham University, United Kingdom
- Pr. Moulay Larbi Abidi, Director, École Mohammadia d'ingénieurs (EMI), Rabat, Morocco Dr. Muhammad Abid, Ghulam Ishaq Khan Institute of Engineering Sciences & Technology, Pakistan
- Dr. Olufemi Adetunji, University of Pretoria, South Africa

- Dr. Otuerini Adeutini, University of Petroleum and Minerals, Saudi Arabia Dr. Umar AL-Turki, King Fahd University of Petroleum and Minerals, Saudi Arabia Dr. Ronald G. Askin, Arizona State University, USA Dr. Shekar Babu, Founding Head, AMRITA School of Business, Bangalore, India Dr. Mohammed Ben-Daya, King Fahd University of Petroleum and Minerals, Saudi Arabia Dr. Abdul Talib Bon, Universiti Tun Hussein Onn Malaysia Dr. Boi Den Libisoriti of Auel/and New Zoeland

- Dr. Raj Das, University of Auckland, New Zealand Dr. Kudret Demirli, Khalifa University, Abu Dhabi, UAE

- Dr. Jose Arturo Garza-Reyes, University of Derby, UK Dr. Alireza Ghasemi, Dalhousie University, Halifax, NS, Canada Dr. Moncer Abdelhamid Hariga, American University of Sharjah, United Arab Emirates (UAE)
- Dr. Mohammad D. Al-Tahat, The University of Jordan, Amman, Jordan Dr. Arun Kumar, Royal Melbourne Institute of Technology (RMIT) University, Australia

- Dr. Jay Leo, University of Cincinnati, USA Masaru Tezuka, Hitachi Solutions East Japan, Ltd., Sendai, Japan Dr. Abu Masud, Wichita State University, Kansas, USA
- Dr. Charles Mbohwa, University of Johannesburg, South Africa Dr. Samar Mukhopadhyay, GSB-Sung Kyun Kwan University, Seoul, Korea Dr. Nor Hasni Osman, Universiti Utara Malaysia

- Dr. Leonard Perry, University of San Diego, USA Dr. Ho Thanh Phong, International University VNUHCM, Vietnam
- Dr. Yassine Ouazene, University of Technology of Troyes, France Dr. Abdur Rahim, University of New Brunswick, Canada Dr. Jafri Mohd Rohani, Universiti Teknologi Malaysia

- Dr. Mehmet Savsar, Kuwait University, Safat, Kuwait Dr. Rapinder Sawhney, University of Tennessee Knoxville, USA

- Dr. Rosemary Seva, De La Salle University of Termessee Knowlie, USA Dr. Rosemary Seva, De La Salle University Manila, Philippines Dr. Devdas Shetty, University of Hartford, Connecticut, USA Dr. Hamid Seifoddini, University of Wisconsin-Milwaukee, USA Dr. Alfredo Soeiro, University of Porto, Portugal Dr. Robert de Souza, The Logistics Institute Asia Pacific, Singapore
- Dr. Masine Md. Tap, Universiti Teknologi Malaysia Dr. Zulkifli Mohamed Udin, Universiti Utara Malaysia
- Dr. Alok Verma, Old Dominion University, Norfolk, Virginia, USA
- Dr. Venkata Seshachala Sarma Yadavalli, University of Pretoria, South Africa Dr. Hari Agung Yuniarto, Universitas Gadjah Mada, Indonesia
- Dr. Li Zheng, Tsinghua University, China
- Dr. Henk Zijm, Dutch Institute for Advanced Logistics, University of Twente, Netherlands

Global Engineering Education Committee

- Dr. Abu Masud, Wichita State University, Kansas, USA (Chair)
- Dr. Hamid Parsaei, Texas A&M University (College Station) and Texas A&M University, Qatar (Co-Chair)
- Dr. Jafri Mohd Rohani, Universiti Teknologi Malaysia Dr. Mukondeleli Grace Kanakana, Assistant Dean: Teaching and Learning, Faculty of Engineering and the Built Environment, Tshwane University of Technology, Pretoria, South Africa Dr. Syed Ahmad Helmi Al Haddad, Program Coordinator for MSc in Industrial Engineering and Associate Fellow, Center for Engineering Education (CEE), Universiti Teknologi Malaysia, Skudai, Johor, Malaysia
- Dr. Mehmet Savsar, Professor, Department of Industrial and Management Systems Engineering, Kuwait University, Safat, Kuwait

COMMITTEE

- Dr. Vitor M. Caldana, Professor, Depto. de Eletroeletrônica, IFSP Instituto Federal de São Paulo Campus Sorocaba, Santana de Parnaíba, SP, Brazil
- Dr. Chan Chee-Ming, Associate Professor and Deputy Dean (Academic and Research), Universiti Tun Hussein Onn Malaysia Dr. Ilham Kissani, Faulty of Engineering & Management Science, Al Akhawayn University, Ifrane, Morocco

Dr. Ho Hwi Chie, Bina Nusantara University (Binus), Indonesia Dr. Rosemary Seva, De La Salle University – Manila, Philippines Dr Hannelie Nel, Senior Lecturer, Postgraduate School of Engineering Management, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa

Program Committee

- Dr. M. Khadem, Sultan Qaboos University, Muscat, Oman Dr. Abdul Talib Bon, Universiti Tun Hussein Onn Malaysia

- Dr. Jouda Failo Bon, oniversit fun fussion of ministration of the second state of the
- Dr. Jaouad Boukachour, Université Le Havre, France

Industry Solutions Committee

Abdullah Y Dhafer, Aramco, Saudi Arabia Ali Massaeli, National Iranian Gas Company, Iran

Amine Belhadi, Industrial Engineering Research Team, Higher School of Technology, Safi, Cadi Ayyad University, Marrakech, Morocco Bob Mathur, Sr. Project Manager, Phillips 66 Refinery (Exxon), Linden, NJ, USA

- Bob Mathur, Sr. Project Manager, Phillips 66 Refinery (Exxon), Linden, NJ, USA Dr. Adel Hejagij, Engineering Services Management (ESM) Limited, Essex, UK Dr. Anwar Hossain, Daikin Applied, Minneapolis, Minnesota, USA Dr. Banu Ozkeser, Istanbul, Turkey Dr. Gerard O'Connor, Adelaide and Meath Hospital, Dublin, Ireland Dr. Kenichi Funaki, Hitachi, Yokohama, Japan Dr. Rahul Chougule, Caterpillar India Pvt Ltd, Bangalore, India Dr. Sushil K. Shetty, Wilsonart LLC, Temple, Texas, USA Dr. Zeki Ayağ, Kadir Has University, Turkey German Mova, President at IEEE Costa Rica Section. Costa Rica

- German Moya, President at IEEE Costa Rica Section, Costa Rica
- Hwa Kooi Kok, Intel Malaysia

Hwa Nuoi Nuo, mia maraysia Infasuziella Ibrahim, Construction Research Institute of Malaysia (CREAM) Masaru Tezuka, Hitachi Solutions East Japan, Ltd., Japan

Natasha Dzulkarnain, Construction Research Institute of Malaysia (CREAM)

Navpreet Singh Chandok ,O2i Technologies, India Paul Moore, International Mining, England, UK Sameh Moh. Nour El-Din A-Razek, Al Ezz Dekheila Steel Co., Alexandria, Egypt

Women in Industry and Academia (WIIA) Committee

Dr. Adibah Shuib, Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA, Malaysia Dr. Chan Chee-Ming, Associate Professor and Deputy Dean (Academic and Research), Universiti Tun Hussein Onn Malaysia Dr. Docki Saraswati, Universitas Trisakti, Jakarta, Indonesia

Dr. Funda Sivrikaya Şerifoğlu, Bilgi University, İstanbul, Turkey Dr. Ho Hwi Chie, Bina Nusantara University (Binus), Indonesia

Dr. Ibram Cine, bina Ausaniaa oniversity (Dinus), indonesia Dr. Ilham Kissani, Faulty of Engineering & Management Science, Al Akhawayn University, Ifrane, Morocco Dr. Mey Goh, Assoc Professor in Product Design, Loughborough University, UK Dr. Stefanie Pillai, Dean and Associate Professor, Faculty of Languages & Linguistics, University of Malaya, Kuala Lumpur, Malaysia

Dr. Vanajah Siva, Chalmers University, Sweden Prof. Soumaya Yacout, École Polytechnique de Montréal, Canada

Resh Plaha, Crystal Quality, UK Vanessa Victoire, University of Mauritius

Technical Committee

Ali I. Al-Mosawi, Miskolic University, Faculty of Materials Science and Engineering, Hungary Amine Belhadi, Industrial Engineering Research Team, Higher School of Technology, Safi, Cadi Ayyad University, Marrakech, Morocco Annue Dennau, industrial Engineering Research Fean, higher Condo of Fechnology Dr. D. K. Banwet, IIT-Delhi, India Dr. A.O. Adewumi, University of KwaZulu-Natal, South Africa Dr. Abdelaziz Berrado, The Ecole Mohammadia d'Ingénieurs (EMI), Rabat, Morocco Dr. Abderahmane Mellak, University of Boumerdes, Algeria Dr. Abdollah Aghaie, K.N. Toosi University of Technology, Iran Dr. Abdollah Aghaie, K.N. Toosi University of Technology, Iran

- Dr. Abdul-Rahman Al-Ali, American University of Sharjah, United Arab Emirates Dr. Abdussalam Shibani, Coventry University, UK

- Dr. Abrued Kadhim Hussein, Babylon University, Iraq Dr. Ahmed Kadhim Hussein, Babylon University, Iraq Dr. Amir Azizi, Universiti Malaysia Pahang, Malaysia Dr. Arun N. Nambiar, California State University Fresno, USA

- Dr. Balan Sundarakani, University of Wollongong in Dubai, UAE Dr. Behnam Bahrami, Eastern Mediterranean University, Famagusta, Cyprus Dr. Bhuvenesh Rajamony, University Malaysia Perlis (UniMAP), Malaysia

- Dr. Biudvertesh Rajandriy, University Malaysia Petins (University) Dr. Boudouda Malik, University of Champagne-Ardenne, France Dr. Brigitte Jaumard, Concordia University, Canada Dr. Cecilia Nembou, Divine Word University, Papua New Guinea Dr. Dinusha Gamage, University of Moratuwa, Sri Lanka Dr. Eui H. Park, North Carolina A&T State University, USA Dr. Episeet Abdul Asia University Detector Molecers Malay

- Dr. Faieza Abdul Aziz, Universiti Putra Malaysia, Selangor, Malaysia Dr. Fernando González Aleu, Departamento de Ingeniería, Universidad de Monterrey, Mexico

- Dr. Francis Leung, City University of Hong Kong, China Dr. Fulufhelo Masithulela, University of South Africa, Johannesburg, South Africa Dr. Gopalan Srinivasan, University of New Brunswick, Canada

- Dr. Haider Ali Biswas, Khulna University, Bangladesh Dr. Hui-Ming Wee, Chung Yuan Christian University, Taiwan Dr. Ilias Mamat, Quest International University Perak, Ipoh, Perak, Malaysia
- Dr. Indra Gunawan, The University of Adelaide, Australia Dr. Jahara bint Ghani, UKM, Malaysia
- Dr. Javad Khamisabadi, Islamic Azad University, Tehran, Iran Dr. Javad Khamisabadi, Islamic Azad University, Tehran, Iran Dr. Jayakanth Srinivasan, MIT Sloan School of Management Dr. Kannan Govindan, University of Southern Denmark, Denmark Dr. Kondo H. Adjallah, Paul-Verlaine University, France Dr. Kuchkarov Atamurat, Uzbekistan National University, Uzbekistan

- Dr. Linda L. Zhang, IESEG School of Management, Lille-Paris, France Dr. Mahdi Bashiri, Shahed University, Iran Dr. Mahmood Shafiee, Cranfield University, Bedfordshire, United Kingdom
- Dr. Maruf Hasan, University of New South Wales, Australia Dr. Md. Abdus Samad Kamal, Monash University, Sunway Campus, Malaysia

- Dr. Md. Abdus Sainta Ranta, Woltzein Chinester, Canway Saintay, Saintay Saintay, Saintay Saintay, Saintay Saintay, Saintay Saintay, Saintay Saintay, Saintay Saintay, - Dr. Michael Mutingi, University of Botswana, Botswana Dr. Miguel Sanz Bobi, Comillas Pontifical University, Spain
- Dr. Mohammad Ishak Desa, Universiti Teknologi Malaysia, Johor Bahru, Malaysia
- Dr. Mohd Abdur Rashid, University Malaysia Perlis (UniMAP), Malaysia Dr. Motah Mahendrenath, University of Technology, Mauritius

- Dr. Murat Caner Testik, Hacettepe University, Ankara, Turkey Dr. Nani Kurniati, Institute of Technology Sepuluh Nopember (ITS), Surabaya, East Java, Indonesia Dr. Nejib Chouaibi, Polytechnic School of Tunisia, Tunisia
- Dr. Norhamidi Muhamad, UKM, Malaysia Dr. Norzaidahwati Zaidin, Universiti Teknologi Malaysia, Johor, Malaysia
- Dr. Nubia Milena Velasco Rodriguez, Universidad de Los Andes, Colombia
- Dr. Omar Elmabrouk, Benghazi University, Libya Dr. P. Sanjeevikumar, Dublin Institute of Technology, Ireland
- Dr. Raja Kothandaraman, Alpha College of Engineering, Chennai, Tamilnadu, India
- Dr. Raja Zuraidah Raja Mohd Rasi, Universiti Tun Hussein Onn Malaysia Dr. Ramakrishnan Ramamoorthy, Yanbu Industrial College, Yanbu, Saudi Arabia
- Dr. Ramy Harik, University of South Carolina, USA Dr. Ramy Harik, University of South Carolina, USA Dr. Rashmi Jha, Gitarattan International Business School (GIBS), Affiliated to Guru Gobind Singh Indraprastha University, New Delhi, India
- Dr. Ratri Parida, National Institute of Construction Management and Research (NICMAR), Pune, Maharashtra, India
- Dr. Ravi Gor, St. Kabir Institute of Professional Studies, Ahmedabad, India Dr. Rodrigo Garrido, Universidad Adolfo Ibaez, Chile
- Dr. Ruchi Mishra, Institute of Management, Nirma University, Ahmedabad, India
- Dr. Salah Haridy, Department of Industrial Engineering and Engineering Management, University of Sharjah, Sharjah, UAE Dr. Sarbjit Singh, National Institute of Technology, Jalandhar, Punjab, India
- Dr. Sawat Pararach, Thammasat University, Thailand Dr. Shahrul B. Kamaruddin, Universiti Sains Malaysia
- Dr. Shahryar Sorooshian, University Malaysia Pahang, Malaysia
- Dr. Sinaniyar Soroosniani, University ivialaysia Panang, Malaysia Dr. Sharan Shetty, School of Management & Business, Manipal International University, Putra Nilai, Malaysia Dr. Suat Kasap, Industrial Engineering, American University of the Middle East, Kuwait Dr. Suhaiza Hanim Zailani,University Malaya, Malaysia Dr. Syed Asif Raza, Qatar University, Qatar

- Dr. T. Ramayah, School of Management, Universiti Sains Malaysia
- Dr. Theodore B. Trafalis, University of Oklahoma, USA Dr. Vassilis Gerogiannis, Department of Project Management, Greece
- Dr. Vladimir Beresnev, Sobolev Institute of Mathematics, Russi
- Dr. Vladimir I. Tsurkov, Russian Academy of Sciences, Moscow, Russia
- Dr. Vladimir Modrak, TUKE, Slovakia

- Dr. Vong Yin, Yamagata University, Japan Dr. Yong Yin, Yamagata University, Japan Dr. Yuan Xue Ming, SIMTech: Singapore Institute of Manufacturing Technology, Singapore Dr. Zuraidah Sulaiman, Universiti Teknologi Malaysia (UTM), Johor, Malaysia Gasim Al-Hawarii, Senior Fleet Management Engineer, Dubai Municipality, United Arab Emirates Prof. Dr. Anand Kumar, M.S. Engineering College, Bangalore Karnataka, India

Student Support Committee

Jinendra Ijari, MSIE Student, Lawrence Technological University, Michigan, USA Kaustubh Kale, MSIE Student, Lawrence Technological University, Michigan, USA Swapnamurti Wagh, MSIE Student, Lawrence Technological University, Michigan, USA





Parallel Sessions

December 7, 2020 (Monday) - Session: 8:00 – 9:30 am

8:00 – 9:30 am, MONDAY Business Management Room 2

Session Chair: Dr. Ikshan

ID 261 Green Brand Awareness Factors on the Body Shop Product

Nadya Moeliono, Devilia Sari, Benny Kurnia, Mahendra Fakhri, and Diaz Adia Anindita, School of Communication and Business Telkom University, Indonesia

ID 347 Evolution of Strategic Indian Defence

PARUL MEHTA India

ID 235 Hospital Pharmaceutical Vendor Managed Inventory Supported by Internet of Things

M. Dachyar and Rebecca Yolanda, Department of Industrial Engineering, Universitas Indonesia, Depok, Indonesia

ID 218 Implementation Barriers in the Establishment and Management of Bumdesa in Deli Serdang City, Indonesia

Nelly Armayanti, Department of Office Adminsitration, Universitas Negeri Medan, Medan, Indonesia Dodi Pramana, Department of Office Adminsitration, Universitas Negeri Medan, Medan, Indonesia Indra Maipita, Department of Business Education, Universitas Negeri Medan, Medan, Indonesia Rangga Restu Prayogo, Department of Entrepreneurship, Universitas Negeri Medan, Medan, Indonesia

ID 429 Improving the Management Quality of Research and Community Service Institute using SIMPEMAS

Deden Ardiansyah, Departement of Computer Technologies, Vocational School, Universitas Pakuan, Indonesia Prihastuti Harsani, Department of Computer Science, Faculty of Mathematics and Natural Sciences, Universitas Pakuan, Indonesia Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 085 Market Risk and Market Value of Listed Deposit Money Banks in Nigeria

Ahmadu Abubakar, Department of Business Management, Federal University Dutsin-Ma, Katsina State, Nigeria

ID 536 Need for Resilience Healthcare Facilities Management (RHFM) In Malaysia's Public Hospitals. A Critical Literature Review

Noralfishah Sulaiman, Sheikh Kamran Abid, Umber Nazir, Nur Putri Najwa Mahmud, Siti Kursiah Kamalia Abdul Latib, Haridzah Fathini Muhammad Hafidz, KANZU Research: Resilient Built Environment (RBE), Department of Real Estate, Faculty of Technology Management & Business, Universiti Tun Hussein Onn Malaysia (UTHM), 86400, Johor, Malaysia

Artificial Intelligence

Ahmed Farhan Roslan, Construction Research Institute of Malaysia (CREAM), Malaysia

Norbaya Ab Rahim, Department of Estate Management, Faculty of Architecture, Planning & Surveying, Universiti of Teknologi Mara (UiTM)

8:00 - 9:30 am, MONDAY

Session Chair: Henrique Ewbank de M. Vieira, Facens University, Sorocaba, São Paulo, Brazil

ID 087 Adaptive Radial Basis Function Artificial Neural Network Control for Two-Flexible-Link Robots

Francis Kunzi Tekweme, Department of Mechanical and Industrial Engineering Technology, University of Johannesburg, Johannesburg, South Africa

ID 113 Anomaly Detection on the High Throughput Network of the ATLAS DAQ System

Mitchell Phiri, Simon H.Connell, and Pathmanathan Naidoo, Department of Mechanical Engineering Science, University of Johannesburg, Johannesburg - 2006, South Africa

Mikel E. Pozo Astigarragay, ATLAS Trigger and Data Acquisition, European Organisation for Nuclear Research, Meyrin - 1217, Switzerland Dave Nichollsz, NESCA Board, South African Nuclear Energy Corporation, North West Province - 0240, South Africa

ID 053 Attempt for an Expert Systems Leading to Intelligent Extraction of Cobalt and Copper from Co-Cu Complex Ore Antoine F. Mulaba – Bafubiandi and Divin Shabani,

Mineral Processing and Technology Research Centre, Department of Metallurgy, School of Mining, Metallurgy and Chemical Engineering, Faculty of Engineering and The Built Environment, University of Johannesburg, P.O Box 17911, Doornfontein, Johannesburg 2028, South Africa

ID 304 Automatic Detection of Surface Defects in Fused Deposition Modeling (FDM) using Computer Vision and Deep Learning

Naquib Mahmud Chowdhury and Md. Galib An-Noor Amio, Department of Industrial and Production Engineering, Bangladesh University of Engineering and Technology, Dhaka-1000, Bangladesh

ID 365 FEA of a Lab-Scale IC Engine Connecting Rod

Daramy Vandi Von Kallon, Department of Mechanical Engineering Technology, University of Johannesburg, Johannesburg, South Africa Bai Kamara, Department of Mechanical Engineering Technology, University of Johannesburg, Johannesburg, South Africa

ID 054 Simultaneous Resin and Coal Recovery from Coal Bearing Resin

Antoine Mulaba - Bafubiandi and Nokubonga G. Zulu, Mineral Processing and Technology Research Centre, Department of Metallurgy, School of Mining, Metallurgy and Chemical Engineering, Faculty of Engineering and The Built Environment, University of Johannesburg, 37 Nind Street Doornfontein, Johannesburg, 2028, Johannesburg, South Africa

Room 3

PARALLEL SESSIONS

December 7-10, 2020

Firdaus Pratama Wiwoho, Department of Civil Engineeering, Institut Teknologi Sepuluh Nopember, Surabaya, 60117, INDONESIA

ID 490 (Performance Comparison and Indoor Air Quality Exposure Assessment of a Fan-Powered Cook Stove) Dustin Mariel G. Cabangal, Daniel Joshua N. Festin, Neil Darren P. Marasigan and Mark Christian E. Manuel, PhD. School of Mechanical and Manufacturing Engineering, Mapua University, Intramuros, Manila, Philippines) Ma. Janice J. Gumasing, School of Industrial Engineering and Engineering Management, Mapua University, Intramuros, Manila, Philippines

11:30 am – 12:00 pm Break

December 7, 2020 (Monday) - Session: 12:00 – 1:30 pm

12:00 – 1:30 pm, MONDAY

Optimization

Room 2

Session Chair:

ID 435 Mitigation Efforts and Natural Disaster Insurance Schemes in Indonesia

Kalfin, Doctor Program of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia Sukono, Sudradjat Supian, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia Mustafa Mamat, Faculty of Informatics and Computing, Universiti Sultan Zainal Abidin, Kuala Terengganu, Malaysia Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 445 On Line One Stop Government and Open Government from Citizens Perspective (Case: Bogor City and District, West Java, Indonesia)

Eneng Tita Tosida, and Fajar Delli Wihartiko, Department of Computer Science, Faculty of Mathematics and Natural Sciences, Universitas Pakuan, Indonesia

Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 433 Optimization JKN Mobile for Informal Sector of BPJS Health Insurance Membership Growth

Fredi Andria, Meli Deranti, and Lisa Mila Sari, Department of Management, Faculty of Economics Pakuan University, Bogor Indonesia

Department of Law, Faculty of Law Pakuan University, Bogor Indonesia

Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia

ID 434 Reserve of Life Insurance Prospective Dwiguna Joint Life and Last Survivor With Gompertz Law

Hasriati, Tumpal Parulian Nababan, and Inda Hasbiyati, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Riau, Indonesia

Sukono, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Indonesia.

Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 450 The Caracteristics of Alpha Cut on Fuzzy Graphs and Its Application in Scheduling System

Triyani, S. N. Nurshiami and N. Larasati, Department of Mathematics, Faculty of Mathematics and Natural Science, Jenderal Soedirman University, Central Java, Indonesia

Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 448 The Graphically Analysis of the Power of Hypothesis Parameters on Discrete (Binomial) and Continuous (Gamma) Distributions

B. Pratikno, A. Kurniasih, Mashuri and N. Azizah, Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Jenderal Soedirman, Indonesia

Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

ID 437 Usability testing on the Drug e-Dictionary using the Think-Aloud Retrospective Method and USE Questionnaire

Halimah Tus Sadiah and Ema Kurnia, Information System Department, Universitas Pakuan, Bogor, 16143, West Java, Indonesia Eneng Tita Tosida, Computer Science Department, Universitas Pakuan, JI. Pakuan, PO Box 452, Bogor, 16143, West Java, Indonesia Abdul Talib Bon, Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia

12:00 – 1:30 pm, MONDAY Industry 4.0

Room 2

Session Chair:

ID 306 Addressing Covid-19 in Higher Learning Institutions through Implementing Cryptocurrency Payments Based on Blockchain Technologies

Chimuka Moonde, Jackson Phiri, Computer Science Department, University of Zambia, Lusaka, P.O. Box 32379, Zambia

ID 147 (Analysis of Factors Affecting Behavior of Students Online Shopping (Case: Diponegoro University) Zainal Fanani Rosyada, Naniek Utami Handayani, Manik Mahacandra, Ega Rizkiyah. Department of Industrial Engineering, Diponegoro University, Semarang, 50275, Indonesia

ID 308 Designing e-Commerce Supply Chains

Tri Pujadi, Yosafati Hulu, and Tumar, Information Systems Departments - School of Information Systems, Bina Nusantara University, Jakarta, Indonesia

Vikas Kumar, Bristol Business School, University of the West of England, Bristol, BS16 1QY, UK Bachtiar H. Simamora, Department of Management Binus Business School, Bina Nusantara University, Jakarta, Indonesia

ID 348 E-procurement Application for a Distributor Company

Performance Comparison and Indoor Air Quality Exposure Assessment of Fan-Powered Stove versus Charcoal-Fueled Stoves

Dustin Mariel G. Cabangal, Daniel Joshua N. Festin, Neil Darren P. Marasigan, and Mark Christian E. Manuel, PhD.

> School of Mechanical and Manufacturing Engineering Mapua University Intramuros, Manila, Philippines afrombaoa@mymail.mapua@edu.ph, eboang@mapua.edu.ph

Ma. Janice J. Gumasing School of Industrial Engineering and Engineering Management Mapua University Intramuros, Manila, Philippines mjjgumasing@mapua.edu.ph

Abstract

The Philippines still has struggled in energy distribution throughout the country that nearly 35% of Filipino households still make use of charcoal as their fuel for cooking especially in rural areas. Using the traditional way of cooking leads to some serious health problems as charcoal is not burned efficiently leading to produce harmful contaminants that affect the indoor air quality (IAQ). This is the reason why Chen et al. (2015) made a study about designing and fabricating three improved charcoal-fueled stoves that were efficient and produce lesser harmful contaminants than the traditional stove. These stoves have undergone testing to check their efficiency and performance by using the water boiling test (WBT) provided by the Global Alliance for Clean Cook Stoves. For this reason, it became the research interest of the authors to design and fabricate a fan-powered stove and compare its IAQ exposure and performance to the charcoal-fueled stove developed by Chen et al. Major contaminants which are carbon dioxide (CO2), carbon monoxide (CO), and particulate matter (PM), were recorded in the IAQ assessment, while other IAQ criteria, which are temperature, relative humidity, fuel consumption, firepower and thermal efficiency were also measured and evaluated in the study. Based on the results of the water boiling test, the fan-powered stove developed by the researchers was much better than the charcoal-fueled stove in terms of performance except on the firepower. Furthermore, the fan-powered stove was efficient enough to lower the parameters within standards except for the Particulate Matter (PM).

Keywords

Indoor air quality, carbon monoxide, carbon dioxide, particulate matter, fan-powered cookstove

1. Introduction

According to Lawrence Berkeley National Laboratory, about three billion people around the world use wood-fired cookstoves to cook their meals because of its low-cost biomass fuels, such as wood or charcoal. However, these common cook stoves are not properly designed and regulated to limit the emission of air pollutants which can affect the indoor air quality (IAQ) in household areas leading to indoor air pollution. Around 25% of black carbon emission in global output comes from traditional cookstoves which is a major factor contributing to indoor air pollution and climate change (Bond et al. 2007; Bond et al. 2004). These are all produced by inefficient cookstoves with poor combustion of its biomass fuel. Indoor air pollution is produced by biomass fuel such as charcoal which can cause several pulmonary sicknesses (Fullerton et al. 2008). According to the World Health Organization, exposures to this indoor air pollution lead to an estimated 4.3 million people dying every year. This study is part of a series of studies aimed at replicating the methodology used in the previous studies, but with more trials per cookstove.

Cryptocurrency Payments Implementation Based on Blockchain Technologies in Addressing Covid-19 in Higher Learning Institutions

Chimuka Moonde, Jackson Phiri Computer Science Department

University of Zambia Lusaka, P.O. Box 32379, Zambia 2018248898@student.unza.zm, jackson.phiri@cs.unza.zm

Abstract

With regard to higher education institutions in Africa, it is undoubtedly ineffective, inconvenient, and time-consuming for students to pay student fees. In addition, the rise in the number of students studying in higher learning institutions has led to long frustrating queues and severe overcrowding in the majority of financial institutions when paying student fees. With the advent of Covid-19, the financial institutions and students do not have a favourable situation. This paper seeks to implement a cryptocurrency for higher education institutions. In this study, the proposed payment system was implemented using an object-oriented programming software development methodology.

Keywords

Universities, Blockchain, Blocks, Cryptography and Cryptocurrency.

1. INTRODUCTION

Payment systems have become a critical component of contemporary societies' economic existence. The smooth functioning of payment systems is important for the overall effectiveness and reliability of the payment systems (Payment system oversight and interoperability). The Digital Financial Services Ecosystem maps the overall ecosystem of Digital Financial Services by identifying all key stakeholders as well as looks at the critical elements necessary to make the ecosystem develop so that it encourages and enables financial inclusion policies (Benson et al, 2017).

Digital Financial Services (DFS) refers to accessing financial services through an electronic system or a mobile phone application. Digital Financial Infrastructure includes electronic financial systems, in which funds are deposited, making and receiving payments (Martin and Mauree, 2016). DFS has become a viable avenue for the financially excluded to access formal financial services. Users can safely receive funds, pay bills, make bank deposits, transfer funds, and buy products and services. Most convincing evidence suggests that growing access to formal financial services not only decreases financial exclusion but has also become an important development target to promote economic growth, improve welfare and minimize poverty (Martin and Mauree, 2016). As such, the recent growth of mobile money has allowed millions of financially excluded people to conduct financial transactions relatively cheaply, securely and reliably (Nandhi, 2012).

The education sector is one sector that can greatly benefit from the services provided by Digital Financial Services. In Africa most school systems rely heavily on cash transactions. This cash reliance on financial transactions contributes to inefficiencies, cash leakage and carries risks to security. Furthermore, cash handling can lead to the further spread of Covid-19 among students and different departments in the higher learning institutions that handle cash. Digital Financial Services can provide unique opportunities in educational institutions such as elementary and secondary schools and universities. These opportunities include replacing cash and thus making learning institutions more efficient by improving management, increasing financial support from donors and non-governmental organisations, reducing financial costs and providing a concrete way to develop more multifaceted systems that would otherwise be impossible in a cash environment (Braniff, 2017).

ANALYSIS OF FACTORS AFFECTING BEHAVIOR OF STUDENTS ONLINE SHOPPING (CASE: DIPONEGORO UNIVERSITY)

Zainal Fanani Rosyada, Naniek Utami Handayani, Manik Mahacandra, Ega Rizkiyah.

Department of Industrial Engineering

Diponegoro University

Semarang, 50275, Indonesia

rosyada@lecturer.undip.ac.id, naniekh@ft.undip.ac.id, manik.mahachandra@ft.undip.ac.id, egarizkiyah@students.undip.ac.id

Abstract

Shopping online is a phenomenon that is growing rapidly nowadays. The growth of the industry indicates that there is still great potential in the e-commerce market. The internet provides new opportunities for marketers to improve marketers' practices when developing marketing strategies. The younger generation (18 to 30 years old) is not only more familiar with e-commerce, but also processes information on the website five times faster than the older generation (58 to 75 years old). Students are the biggest potential market in Indonesian for online shopping. This research provides a significant contribution to obtaining information about student behavior in online shopping. This study aims to understand market segmentation for online shopping in Indonesia. Knowing factors that influence online shopping. The hypothesis of this research is processed using multiple linear regression analysis. The result of the analysis is a recommendation to improve business strategy. Based on the research results, factors that significantly influence online shopping behavior are perceived risk, online advertising, trust and security, and enjoyment. The recommendations are completeness of the information and good handling in shipping goods, innovative advertising concepts, ensuring the confidentiality and security of consumer data in conducting transactions, as well as providing products quickly, safely, and easily.

Keywords:

Online shopping behavior, multiple linear regression, t-test, recommendations



IEOM Society International

The 2nd African International Conference Industrial Engineering and Operations Management Harare, Zimbabwe during December 7-10, 2020

Certificate of Presentation

This is to certify that **Zainal Fanani Rosyada**

Diponegoro University, Semarang, Indonesia

Delivered an Oral Presentation entitled "ID 147 Analysis of Factors Affecting Behavior of Students Online Shopping (Case: Diponegoro University)" at the Second African International Industrial Engineering and Operations Management Conference Virtually.

Professor Charles Mbohwa Conference Chair Pro-Vice Chancellor Strategic Partnerships and Industrialisation University of Zimbabwe

Daral M. Reimi

Professor Donald M. Reimer Director of Membership and Chapter Development IEOM Society International President, The Small Business Strategy Group Detroit, Michigan, USA

Dr. Ahad Ali - Conference Co-Chair Associate Professor and Director of Industrial Engineering Lawrence Technological University, Michigan, USA Executive Director – IEOM Society International



IEOM Society International, 21415 Civic Center Dr., Suite # 217, Southfield, Michigan 48076, USA, www.ieomsociety.org