



# IEOM Society International

December – Happenings

2021 Volume 6, Issue 2

## **The Year of the Pandemic**

Our organization, like many others, has been faced with the many challenges of a global pandemic. Although this year has been challenging, your IEOM Society has continued to bring its global community many outstanding conference events. The year 2021 has required the IEOM Society continue to deliver most of our conferences virtually using Zoom. We through our many partner universities and volunteers held a total of seven virtual conferences in China, Brazil, India, Haiti, Indonesia, Europe (Rome), Singapore, and Mexico. Only the conference in Monterrey, Mexico was a hybrid event.

The year 2021 concluded with the 4<sup>th</sup> Annual International conference on Industrial and Mechanical Engineering and Operations Management (IMEOM) in Dhaka, Bangladesh on December 26-27. The IEOM Society supports this local organization (IMEOM) and participated in the event. The conference was held as a hybrid event with the local attendees participating onsite. The conference program is available on the IEOM Society website.

Your IEOM Society achieved a few milestones in 2021 as well. We received the largest number of submissions in our history with the Singapore conference surpassing 1,200. We held our first conferences in China, India, and Haiti. We held our largest conference in Monterrey, Mexico with over 2,000 registered attendees. We now have over 150 student chapters around the global.

As editor of the IEOM Society Happenings, I am delighted to bring you an overview of the highlights of the many conferences and activities that occurred during the pandemic. Thank you to our many industry sponsors, university partners, faculty, and students for their support during this period.

## **Welcome new members of the IEOM Society Administrative Team**

The IEOM Society added two full time members to its administrative team. Dr. Ali and I would like to express our deep appreciation to Dr. Taufiqul Islam for continued dedication to providing administrative support to the IEOM Society. We would also like to welcome the newest full-time members of the IEOM Society team:

MD Abdul Bashar, Ph.D., Program Manager – Dr. Bashar is managing editing of the proceeding papers and reviewers. He has a PhD in Systems Design Engineering from University of Waterloo, Canada, MSc in Mathematics from Wilfrid Laurier University, Waterloo, Canada, MSc in Pure Mathematics, University of Dhaka, Bangladesh and BSc in Mathematics from University of Dhaka, Bangladesh.

Admad Mahir Faysal, BSCE, Associate Program Manager – Mr. Mahir is supporting operations manager for society and conference operations and coordinating conference activities. He earned his B.S. in Civil Engineering from University of Asia Pacific, Farmgate, Dhaka, Bangladesh.

Sofia Martinez Tamez, Student Relations Manager, Mexico and South America, Student at UDEM

Dr. Qutubuddin, S.M. IEOM India Operations Director. He is an Associate Professor of Industrial & Production Engineering Department, P.D.A. College of Engineering, Gulbarga, Karnataka, India

Dr. Mizanur Rahman – IEOM Australia Operations Director. He is a Senior Lecturer, School of Mechanical Engineering, Faculty of Engineering, Universiti Teknologi Malaysia, Skudai, Johor, Malaysia

### **Global Council**

The Global Council held a total of four meeting this year. The most recent meeting was held on Tuesday, November 23 virtually. Sixteen members and guests participated in the meeting. Dr. Hamid Parsaei, P.E., is the newly elected chair of the Global Council. Dr. Ali asked Dr. Parsaei to chair meeting.

### **New book from Abu S.M. Masud, Ph.D., P.E.**

The IEOM Society is delighted to inform our global community of a new book that has been published by the immediate past president our Global Council and the 2021 Fredrick Winslow Taylor Awardee.

***A Manager's Guide for Better Decision-Making: Easy to Apply Tools and Techniques. 2021. New York: C.R.C. Press. ISBN: 978-1-032-00016-9 (Hb), 978-1-032-00014-5 (Pb), 978-1-003-17229-1 (eBook).***

Managerial decision-making is often a complex endeavor and takes place in situations or scenarios where choices must be made from the possible courses of action in an environment where the available resources are limited and in the presence of various constraints (legal, corporate, regulatory, contractual, physical, etc.). This book has been written as a guide for all managers at different levels of any organization to improve their decision-making ability based on a quantitative approach. The intended audience of the book includes technical and non-technical professionals, managers and supervisors at all levels, and engineering and business educators. It would also be useful to undergraduate students, beginning graduate students, and recent graduates of professional programs, mathematics, computer science, natural sciences, and humanities. It can also be a resource for short courses and workshops on decision-making, project management, and leadership.

Congratulations Dr. Masud for publishing his new book. The IEOM Society community looks forward to reading - **A Manger's Guide for Better Decision-Making: Easy to Apply Tools and Techniques.**

### **Welcome new awards and sponsors**

Amatrol Curriculum Development Innovation Award sponsored Paul Perkins, C.E.O., Amatrol Corporation, U.S.A.

Hamid Parsaei Distinguished Teaching Award will recognize outstanding achievements by exceptional academics in higher education who are committed to the Industrial Engineering and Operations Management profession. The Hamid Parsaei Distinguished Teaching Award recipient will be recognized the annual international conference of the organization. IEOM is delighted to create an award to recognize outstanding teaching.

### **Upcoming Conferences - 2022**

The upcoming conferences in 2022 will continue using a virtual format; however, in some instances, the local organizing committees are planning a hybrid event. Although our first on site event for 2022 is the 12<sup>th</sup> Annual Conference in Istanbul, Turkey, this is subject to change depending on the pandemic.

12th Annual IEOM Conference, Istanbul, Turkey, March 7-10, 2022 – Hybrid  
Host and Venue: Kadir Has University in collaboration with Sabanci University  
<http://ieomsociety.org/istanbul2022/>

4th African IEOM Conference, Nigeria, April 5-7, 2022 – Hybrid  
Host and Venue: University of Nigeria, Nsukka  
<http://ieomsociety.org/nigeria2022/>

3rd South American IEOM Conference, Paraguay, May 10-12, 2022 – Virtual  
Host: Asuncion National University, Paraguay  
<http://ieomsociety.org/paraguay2022/>

7th North American IEOM Conference, Orlando, Florida, U.S.A., June 12-14, 2022 – Hybrid  
Venue: Holiday Inn & Suites Across from Universal Orlando  
Host: Florida Polytechnic University  
<http://www.ieomsociety.org/orlando2022/>

5th European IEOM Conference, Rome, Italy, July 27-29, 2022 – Hybrid  
Host and Venue: Faculty of Civil and Industrial Engineering – Sapienza – University of Rome, Italy  
[www.ieomsociety.org/rome2022/](http://www.ieomsociety.org/rome2022/)

2nd Indian Conference, Warangal, India, August 16-18, 2022 – Hybrid  
Hosts: NITW and JNTU Hyderabad  
Venue: National Institute of Technology, Warangal, Telangana, India  
[www.ieomsociety.org/india2022/](http://www.ieomsociety.org/india2022/)

3rd Asia Pacific Conference, Johor Bahru, Malaysia, September 13-15, 2022 – Virtual  
Host: Universiti Teknologi Malaysia (UTM)  
[www.ieomsociety.org/malaysia2022/](http://www.ieomsociety.org/malaysia2022/)

1st Australian Conference, Sydney, Australia, December 20-21, 2022 – Hybrid  
[www.ieomsociety.org/australia/](http://www.ieomsociety.org/australia/)

### **Special recognition and thank you – Monterrey Organizing and Planning Committee**

In early November of this year, the IEOM Society held its first hybrid conference in Monterrey, Mexico. This event was remarkable in many ways! Most notably was the outstanding Organizing and Planning Committee chaired by Dr. Luz María Valdez de la Rosa. Despite the many challenges of the pandemic, this event was hybrid, with over 300 attendees onsite at the Monterrey, Centrimex Conference Center and another 1,500 participants virtually from 54 countries. The dedicated team from the University of Monterrey included: Karol Stephany Villarreal Zambrano, Dr. Jenny Díaz, and Dr. Edgar M. A. Granda. Dr. Ali attended the conference and worked closely with the committee and the many student volunteers. Another critical factor that contributed to the event's success was the support of local industry and governmental agencies. Sofía Martínez Tamez did an excellent job of coordinating various student teams.

### **Student and Professional Chapters**

What is happening in your chapter? Let us know, and we will let others know in the IEOM Society community. Your chapter can share your story on: [info@ieomsociety.org](mailto:info@ieomsociety.org). Suppose your university

does not have an IEOM Society Student Chapter or an IEOM Professional chapter in your city, region, or country. In that case, it's easy to complete the process on this link:

<http://ieomsociety.org/ieom/chapters/>.

### **New Student Chapters**

In 2021 we have continued to aggressively reach out to universities around the globe to establish IEOM Society student chapters. The results have been outstanding with the establishment of 16 new student chapters in 13 countries. The following countries have added new student chapters: Algeria, Bangladesh, Jordan, Morocco, Pakistan, Oman, India, Paraguay, Turkey, Indonesia, Bolivia, Italy, and Haiti. As a result of this effort, we now have 153 student chapters Professor in 51 countries.

The IEOM Society Global Council would express its deep appreciation to Dr. Hayder Zghair, Professor Reimer, and Dr. Ahad Ali for conducting several virtual webinars for student chapters. Dr. Hayder Zghair and Dr. Taufiqul Islam have provided chapter documents. Student chapter development will aggressively be pursuit in 2022.

### **Among our newest student chapter are:**

- NIT Warangal, India
- Technical and Vocational University (TVU), Iran
- Universitas Islam Negeri (UIN) Sunan Kalijaga, Yogyakarta, Indonesia
- Universitas Islam Negeri Alauddin Makassar, Indonesia
- University of Nigeria, Nsukka, Nigeria

### **Student Chapter Induction Ceremonies**

- NITW
- Sampoerna University, Jakarta
- Universitas Islam Negeri (UIN) Sunan Kalijaga, Yogyakarta
- Universitas Islam Negeri Alauddin Makassar

### **Recognizing outstanding student chapter activity**

- CUET, Bangladesh
- Effat University, Saudi Arabia
- KFUPM, Saudi Arabia
- MIST, Bangladesh
- P.D.A. College of Engineering, Gulbarga, Karnataka, India
- UNS, Indonesia
- World University of Bangladesh (WUB)
- Zagazig University, Egypt

### **New University Partners**

The IEOM Society International continues to seek universities to join our organization as a partner actively. If your university is not an IEOM Society University Partner, please consider doing so. The annual University Partner membership is \$1,000. As a member, your university logo will appear in all IEOM Society conferences programs, including our annual, African, European, North American Asian, South American conferences. Other benefits of University Partners can be found on the IEOM Society website: <http://ieomsociety.org/ieom/university-members>.

### **International Journal of Industrial Engineering & Operations Management (IJIEOM)**

We plan to publish two issues in the IJIEOM in 2022. Previous issues of the IJIEOM are available at this link: <http://www.ieomsociety.org/journals/issues/>. The IEOM Society would like to express our

deep appreciation to the Editor of IJIEOM. Jose Arturo Garza-Reyes, Professor of Operations Management and Head of the Centre for Supply Chain Improvement at the College of Business, Law and Social Sciences, University of Derby, UK, the Editorial Review Board, and the authors for the support and the research papers that have made our journal an overwhelming success. If you would like to submit your document, you may do so on this link:

<https://mc04.manuscriptcentral.com/ijieom>

**Academy of Fellows - <http://ieomsociety.org/ieom/fellows/>**

The IEOM Society will hold its installation of Fellows at the Awards Dinner in Istanbul on Thursday, March 10, 2022. This recognition is bestowed upon IEOM Society members who have demonstrated their dedication to the organization's mission over the past five years. The Academy of Fellows Selection Committee is currently reviewing the submissions. The Global Council would like to express its deep appreciation to members of the Selection Committee for their assistance in the review and selection process.

### **Best wishes for the New Year**

The Global Council of the IEOM Society extends its best wishes for a safe, healthy, and happy New Year. May 2022 bring many blessings to you and your loved ones. We look forward to your participation in upcoming IEOM Society conferences and activities.

### **2021 IEOM Awards – 6th North American Monterrey Conference**

#### **IEOM Distinguished Academic Leadership Award**

Dr. Jose Benito Flores-Juarez, Dean of Engineering and Technologies School, University of Monterrey, México

#### **IEOM Distinguished Industry Leadership Award**

Dr. Manuel Montoya, General Director of the Automotive Cluster of Nuevo León (CLAUT)

#### **IEOM Distinguished Educator Award**

Dr. José Ignacio Huertas, Professor, School of Engineering and Sciences, Energy and Climate Change Research Group, Instituto Tecnológico y Estudios Superiores de Monterrey, Campus Monterrey, Nuevo León, Mexico

Dr. Juan Baldemar Garza-Villegas, Professor, Engineering Department, University of Monterrey, México

Dr. Jesús Fabián López-Pérez, Professor, Universidad Autonoma de Nuevo Leon (UANL)

#### **Distinguished Industry Achievement Award**

Ing. Mónica Rodríguez, Automotive Cluster of Nuevo León CLAUT

John Ramiro Agudelo, Mechanical Engineering Professor, Universidad de Antioquia, Colombia

Franco Omar Ramos Langer, Channel Technical and Business Enablement Manager, Siemens Digital Industries Software, Digital Factory Division, Siemens DI Mesoamérica, Querétaro, México

Josep Miquel Piqué Huerta. PhD, HVAC at Carrier, President of Technova Barcelona – La Salle Innovation Park, Manager of Internationalization and Innovation – La Salle URL, Barcelona, Spain

#### **Distinguished Professor Award**

Dr. Fernando González Aleu, Associate Professor, Department of Engineering, University of Monterrey, México

Juan Carlos Rodríguez, Master Degree's Professor at IBERO: Universidad Iberoamericana, Ciudad de México

Francisco Javier Solorio Ordaz, Universidad Nacional Autónoma de México

### **Outstanding Professor Award**

Dr. John Ramiro Agudelo, Professor, Universidad de Antioquia, Colombia

Dr. Refugio Chávez-Hernández, Computer Science and Industrial Engineering Department, University of Monterrey, México

Dr. Marco Antonio Vildoso Flores, Secretary for Advance FIT Engineering Studies, San Sebastian University, Santiago, Chile

### **Outstanding Professor in Business Management**

Dr. Federico Guadalupe Figueroa Garza, FACPYA, Universidad Autonoma de Nuevo Leon (UANL), Mexico

Dr. William Henry Steinwascher Sacio, University of Monterrey, México

### **Outstanding Professor in Logistics and Supply Chain**

Dr. José Luis Martínez Flores, Professor, Graduate School in Logistics and Supply Chain Management, Universidad Popular Autónoma del Estado de Puebla (UPAEP), Mexico

Dr. Jose Manuel Sanchez, Professor of Production and Operations Management; Logistics and Supply Chain Management at the Graduate School of Engineering at the Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM), Mexico

### **Outstanding Professor in Lean Six Sigma**

Dr. Jamison Kovach, PMI Houston Endowed Professor in Project Management and Director of the University of Houston College of Technology's Lean Six Sigma Program, University of Houston, Texas, USA

Dr. Edgardo J. Escalante-Vázquez, PhD, MBB, Professor Emeritus in Industrial Engineering, Tecnológico de Monterrey, Mexico

### **Outstanding Professor in Innovation**

Dr. Azael Capetillo, Research Professor on topics of Innovation and Technology Management, and Product Development and Director of the Innovation GYM for pre-incubator, Tecnológico de Monterrey, Mexico

### **Outstanding Professor in HF**

Dr. María Mayela Terán Cázares, FACPYA, Universidad Autonoma de Nuevo Leon (UANL), Mexico

Dr. Cristian Rusu, Full Professor and Head of the Research Group in Human-Computer Interaction "UseCV",

School of Informatics Engineering, Pontificia Universidad Católica de Valparaíso, Chile

### **IEOM Outstanding Researcher Award**

Dr. Ricardo Ambrocio Ramírez-Mendoza, Dean of Research, Tecnológico de Monterrey

Dr. Demófilo Maldonado, Engineering Mechanic and Electric Department, University of Monterrey

### **Innovation and Entrepreneurship Award**

Dr. Juan Ignacio González, Professor, Engineering Management, University of Monterrey, México

Gustavo Alvarez, for his solutions toward sustainable mobility in university communities (bikes, buses). Ecuador. RELIEVE

Dr. Adriana Vargas Martínez, Researcher, Automotive Consortium for Cyberphysical Systems, School of Engineering and Sciences, Tecnológico de Monterrey, Mexico

### **IEOM Woman in Industry and Academia Award**

Dr. Nicole Rodriguez van den Branden, Vice President & Chief Technology Officer, AT&T México

Lydia Gutierrez, President, Hacienda Mexican Foods, Detroit, Michigan, USA

#### **IEOM Global Project Management Education Award**

Dr. Timothy Anderson, Chair, Engineering and Technology Management Department, Portland State University, Portland, Oregon, USA

#### **IEOM Global Engineering Education Award**

Alma Gonzalez, Ph.D., Principal Consultant, STRATHA Learning Corporation, Mexico

Felipe Gómez Gallo, President at SPEED, Vice President for Student Affairs at IFEEES, Trainee, United Nations Institute for Training and Research (UNITAR), Bogota, Colombia

#### **IEOM Global Business Management Education Award**

Dr. Luis Villarreal Villarreal, Director /Dean, Facultad de Contaduría Pública y Administración (FACPYA), Universidad Autonoma de Nuevo Leon (UANL), Mexico

Dr. Federico Trigos, Professor of Business Analytics and Director of the Master in Manufacturing Management, EGADE Business School, ITESM, Monterrey, Mexico and Member of the Mexican Academy of Science

#### **IEOM Industry 4.0 Award**

Ricardo Apaez, Innovation Director, Cluster Automotriz de Nuevo Leon, CLAUT, Monterrey, México

Reynol Eloy Villarreal Gonzalez, Facultad de Contaduría Pública y Administración (FACPYA), Universidad Autonoma de Nuevo Leon (UANL), Mexico

#### **Industry Solutions Award**

Mariela Cerrada, Full Professor in Mechatronics, Universidad Politécnica Salesiana, Quito, Ecuador

José Alfredo Galván Galván, Division Director. Engineering and Sciences School, Monterrey Campus at Tecnológico de Monterrey, Mexico

Dra. Natalia Navarrete, Chassis Technologies for EVs – Commercial Vehicles, Metalsa, Monterrey, NL, Mexico

#### **Industry Solutions in automotive industry Award**

Adrián Siller, General Director, SISTEMAS Automotrices De Mexico S.A. DE C.V. (SISAMEX), Mexico

#### **Lean Six Sigma Award**

Sergio Laria, General Director, Meritor, Mexico

Ana Lucia Arango Montoya, Senior Project Management, Ceiba Software, Medellín, Antioquia, Colombia

#### **Business Management Teaching Award**

Dra. María de Jesús Araiza, Universidad Autonoma de Nuevo Leon (UANL), México

Dr. Osmar Arandia, Postgraduate Director at the Business School, University of Monterrey, México

#### **Teaching Excellence Award**

Dr. Eugenia Suarez Moran, Research Professor, Universidad Panamericana, Zapopan, Jalisco, Mexico

**Teaching Excellence Award in HF**

María Mayela Terán Cázares, Facultad de Contaduría Pública y Administración (FACPYA), Universidad Autonoma de Nuevo Leon (UANL), México

**Teaching Excellence Award in OM**

Dr. Diego Alberto Oliva, Associate Professor, Universidad de Guadalajara, CUCEI, Guadalajara y alrededores, México

**Teaching Excellence Award in IE**

Dr. Patricia Eugenia Sortillón González, Universidad de Sonora, Hermosillo, Sonora, Mexico

Fabiola Sánchez Galván, Instituto Tecnológico Superior de Tantoyuca

**Teaching Excellence Award in SCM**

Teresa Verduzco-Garza, Computer Science and Industrial Engineering, University of Monterrey, México

Dr. Ana Julia Acevedo Urquiaga, Docente-investigador, Directora Grupo Investigación Desarrollos Industriales y SST, Fundación Universitaria San Mateo, Bogota, D.C., Capital District, Colombia

**Teaching and Learning Award**

Arturo Realyvasquez Vargas, Department of Industrial Engineering, Tecnológico Nacional de México/I.T. Tijuana, Tijuana, Baja California, Mexico

**IEOM Distinguished Service Award**

Dr. Luz María Valdez de la Rosa, Professor in Engineering Management, School of Engineering & Technologies University of Monterrey, México

Dr. Edgar M. A. Granda. Director of Masters in Engineering Management. University of Monterrey, Mexico

Dr. Jenny Díaz, Professor, Engineering Department, University of Monterrey, México

M.Sc. Karol Villarreal Zambrano, Engineering Department, University of Monterrey, México

**IEOM Outstanding Service Award**

Dr. M. Affan Badar, CPEM, Professor, Applied Engineering and Technology Management Department, Indiana State University, , Terre Haute, Indiana, USA

Dr. A. Mehran Shahhosseini, Professor, Applied Engineering and Technology Management Department, Indiana State University, Terre Haute, Indiana, USA

**IEOM Ambassador Award**

Dra. Mónica Blanco, FACPYA, Universidad Autonoma de Nuevo Leon (UANL), México

Dr. Laura Peña-Parás, Mechanical and Electrical Engineering Department, University of Monterrey, México

**Outstanding Track Chair Award**

Dr. José Daniel Morcillo. Civil and Management Engineering, University of Monterrey, México

Dr. Jesús Cruz-Álvarez, Autonomous University of Nuevo León, México

**IEOM Outstanding Student Academic Award**



Sebastián Zazueta, University of Monterrey, México

### **IEOM Outstanding Student Leadership Award**

Sofía Martínez Tamez, University of Monterrey, México

## **Completion Awards**

### **Undergraduate Student Paper Competition Sponsored by SIEMENS - Onsite**

#### **1<sup>st</sup> Place** Winner - Onsite

ID 487 Real-time Biofeedback System for Interactive Learning using Wearables and IoT

Milton O. Candela-Leal, Juan M. García-Briones, Gustavo Olivas-Martínez, Rafael Abrego-Ramos, Gabriela J. Álvarez-Espinoza, Diego M. Botín-Sanabria, Karen L. Rodríguez-Hernández, José F. Pachego-Quintana, Sofía Sampogna-Montemayor, Ruben Morales-Menendez, Ricardo A. Ramírez-Mendoza, Mauricio A. Ramírez-Moreno, Jorge de J. Lozoya-Santos

School of Engineering and Sciences, Tecnológico Monterrey, Monterrey, NL 64849, Mexico

Juan C. Tudón-Martínez. School of Engineering and Technologies, Universidad de Monterrey, San Pedro Garza García, NL 66238, Mexico

#### **2<sup>nd</sup> Place** Winner - Onsite

ID 133 Understanding Makerspaces' Goals and Success

Laura A. Valadez Rojas and Azael Capetillo, School of Engineering and Sciences, Tecnológico Monterrey, Av. Eugenio Garza Sada2501

Monterrey 64849, NL, México

#### **3<sup>rd</sup> Place** Winner - Onsite

ID 255 Release and Start-up of the Stellantis DS Mirrors Production Line

Katia MayelaLozano Ortiz, María Fernanda Vázquez Fernández, Alondra Valeria Salazar Orozco, Industrial and Systems Engineering Students, Universidad de Monterrey, Nuevo León, México

### **Undergraduate Student Paper Competition Sponsored by SIEMENS - Online**

#### **1<sup>st</sup> Place** Winner - Online

ID 099 The Alternatives on Last Mile Delivery Logistics: Insights on Customers' PreferencesBrunaMeireKuhlGomes

CassianaTeza, Gabriel Cassino, Rodrigo Luiz Gigante, Henrique Ewbank, FacensUniversity, Sorocaba, SP, Brazil

#### **2<sup>nd</sup> Place** Winner - Online

ID 105 Investigating the Factors Affecting Lean Marketing Readiness in the Retail Sector in Sri Lanka

Apoorwamallanganthilake, RuwanWickramarachchi

Department of Industrial Management

University of Kelaniya, Sri Lanka

Undergraduate Student Paper Competition Sponsored by SIEMENS

**3<sup>rd</sup> Place** Winner - Online

ID 413 Collaborative model between Data Analytics and PDCA for service level improvement in environmental consulting SMEs Juan

Carlos Quiroz-Flores and Martín Collao-Díaz, Faculty of Engineering and Architecture, Industrial Engineering Program, Universidad de Lima, Perú

Gianella Chavez-Osorio and Sebastian Guillen-Valdivia, Faculty of Engineering, Industrial Engineering Program, Universidad Peruana de Ciencias, Aplicadas, Lima -Perú

**3<sup>rd</sup> Place** Winner - Online

ID 275 Determining Strategies for the Perfect Shade Mobile Application Using SWOT Analysis and Six Thinking Hats

Bryelle Timothy C. Nisperos, Joshua Yñigo N. Pascual, Jerome Patrick S. Ramos, Grace Lorraine D. Intal, School of Information Technology,

Mapua University, Makati, Philippines

**3<sup>rd</sup> Place** Winner - Online

ID 150 Designing a Data Governance Model to Implement GDPR in Sri Lankan Enterprises.

P.A. Indhumini Ranathunga, and Ruwan Wickramarachchi, Dept. of Industrial Management, Faculty of Science, University of Kelaniya, Sri Lanka

**Undergraduate Research Competition - Onsite**

**1<sup>st</sup> Place** Winner

ID 272 The Incorporation of Eco-Friendly Light Vehicles in Logistics Distribution Models: A Systematic Review

Sebastián Zazueta-Nassif, Roberto Galarza-Tamez, Vicente Montemayor-Villarreal, Industrial and Systems Engineering, Universidad de Monterrey, San Pedro Garza García, Mexico

Jenny Díaz-Ramírez, School of Engineering and Technologies, Universidad de Monterrey, San Pedro Garza García, Mexico

**2<sup>nd</sup> Place** Winner

ID 274 Discrete Choice Models for Transportation Mode Choice: A Systematic Literature Review

Juan Estrada-García, Juliana Figueroa, Ezequiel González, Jenny Díaz-Ramírez, Department of Engineering, Universidad de Monterrey

San Pedro Garza García, Mexico

**Undergraduate Research Competition – Online**

**1<sup>st</sup> Place** Winner - Online

ID 276 SAFE: Smart Application for Emergency

John Nicolo T. Cruz, Gabrielle Angelo D. Gabatin, John Gerick B. Gabunilas, and Glorén S. Fuentes, School of Information Technology, Mapua University, Makati City, Metro Manila, Philippines

**2<sup>nd</sup> Place** Winner - Online

Undergraduate Research Competition

ID 335 Distraction and Driving Behavior of Young Indonesian Drivers: An Exploratory Study

Wina D. Oktavia, Manik Mahachandra, Excel Verlieson, Industrial Engineering Department, Faculty of Engineering, Diponegoro University,

Semarang, Central Java 50269, Indonesia

**3rd Place** Winner - Online

ID 277 Online Scheduling System for Doctors and Patients in a Hospital

Marion Rylan Q. De Guzman, JonnLouis N. Ordoñez, Ronald O. Somocierra, and GlorenS. Fuentes, School of Information Technology

MapúaUniversity, Makati City, Metro Manila, Philippines

**Sr. Design Project CompetitionSponsored by Tooling Tech Group**

**First Place** Winner

ID 211 Process Improvement for High Precision Components at Medical Devices Company (MDC)

Gamaliel NegrónGuzmán, Joshua Ríos Vachierand JannettePérez-Barbosa, Department of Engineering

Universidad Ana G. Méndez, Gurabo, Puerto Rico 00778, USA

**2nd Place** Winner

ID 021 Reciprocating sliding motion tribometerdesign

DemófiloMaldonado Cortés, Dra. Laura Peña Parás, Mechanical and Electronics Department, University of Monterrey, Monterrey, México

Lizbeth Pérez Alvizo, Yadira LisseteRangel Acosta, JesúsRicardo Puente Martínez, Mechanical Engineering Students, Universidad de Monterrey, Monterrey, México

**High School STEM Competition**

**First Place** Winner

ID 071 Determining SenecioElegansPopulation Size and Dispersion Patterns in order to Inform Volunteer Removal Efforts

Tanisha Gupta, Stanford University Online High School, Redwood City, CA 94063, USA

**Second Place** Winner

ID 073 Relationship between Playing Video Games and Happiness

Allie Lin, Stanford Online High School, Redwood City, CA, USA

**Third Place** Winner

ID 142 Analysis of the Correlation between Imposter Syndrome and Grade Level of Online High School Students

Ester Weinhardt, Stanford Online High School, Redwood City, 94063 CA

**Graduate Student Paper Competition Sponsored by EATON Corporation - Onsite**

**First Place** Winner

ID 515 Efficient Cumulative Sum Chart for Monitoring Fraction Nonconforming

Fathy Alkhatib, Salah Haridy, Mohammad Shamsuzzamanc, Imad Alsayoufd, Department of Industrial Engineering and Engineering Management, University of Sharjah Sharjah, UAE

Ahmed Maged, Deapartmentof Systems Engineering and Engineering Magamanent, University of Hong Kong Kowloon, Hong Kong, China

**2nd Place** Winner

ID 195 Increasing Profitability through the Implementation of an Integrated BSC-OKR Model in a Digital Agency: The Peruvian Case

IyariRojas-Chipana, NicolasAguilar-Pelizzoli, Juan Carlos Quiroz-Flores, Martín Collao-Diazand Alberto Flores-Perez, Facultad de Ingeniería y, Arquitectura, Universidad de Lima, Lima, Perú

**3<sup>rd</sup> Place** Winner

ID 186 Application of Lean Manufacturing tools to decrease non-conforming products in a zinc refinery

Alberto Flores-Pérez, Juan Quiroz-Flores, Facultad de Ingeniería y Arquitectura, Universidad de Lima, Lima, Perú

Iván De Fuentes Pérez, Independent mechanical project consultant, Industrial Engineering Program, University of Applied Sciences, Perú

#### **Graduate Student Paper Competition Sponsored by EATON Corporation - Online**

**First Place** Winner -Online

ID 377 A Hybrid Artificial Neural Network and Logistics Regression Model for Fashion Sales Strategies Prediction

Rifdah Zahabiyah and Andi Cakravastia, Industrial Engineering Program, Faculty of Industrial Technology, Bandung Institute of Technology,

Bandung, Indonesia

**2nd Place** Winner -Online

ID 374 The Analysis on Factors influencing the Use of Mobile Payment System Among Generation Z in Indonesia

Kurnia Fajar Afgani, School of Business and Management, Institut Teknologi Bandung

Dematria Pringgabayu, Politeknik Pajajaran ICB, Bandung, Indonesia

Emilia Fitriana Dewi, School of Business and Management, Institut Teknologi Bandung

Octaviani Ratnasari Santoso, Politeknik Pajajaran ICB, Bandung, Indonesia

Zxavian Zebadia Simorangkir, School of Business and Management, Institut Teknologi Bandung, Indonesia

**3rd Place** Winner - Online

ID 497 Service Quality Assessment of Local Government Units' COVID Pandemic Response using Factor Analysis

Gabriel C. Bucu, Department of Industrial and Systems Engineering, De La Salle University, Taft Avenue, Manila, 1002, Philippines and Department of Industrial Engineering, University of Santo Tomas, España Boulevard, Sampaloc, Manila, 1008, Philippines

Ariel A. Salvador Jr., Department of Industrial and Systems Engineering, De La Salle University, Taft Avenue, Manila, 1002, Philippines

Department of Industrial Engineering, University of Santo Tomas, España Boulevard, Sampaloc, Manila, 1008, Philippines

#### **Master Thesis Competition**

**First Place** Winner

ID 128 Data Driven Supply Chain Optimization a Case Study

Sandra N. Garza Almazán and Edgar M.A. Granda Gutiérrez, Department of Engineering, Universidad de Monterrey, Monterrey, Nuevo León 66238, México

**2<sup>nd</sup> Place** Winner

ID 397 The Stakeholders' Perceptions on Critical Success Factors for Construction Projects

GomolemoLove!! Phetlhu, Faculty of Engineering and the Built Environment, University of Johannesburg, Gauteng, South Africa

**3<sup>rd</sup> Place** Winner

ID 475 Modelo para detectar el estado glucémico en pacientes sanos.

Luis Alejandro Guzmán Rangel, UDEM, Mexico

**Doctoral Dissertation Competition****First Place** Winner

ID 351 Real-world Vehicle Emissions in Mexico

Antonio E. Mogroand José Ignacio Huertas, School of Engineering and Science, Tecnológico Monterrey, Monterrey, Mexico

**2<sup>nd</sup> Place** Winner

ID 417 Medical Surge Capability: An Intelligent Framework for Improving Hospital Emergency Department Operations

Egbe-Etu Etu, Department of Marketing and Business Analytics, San Jose State University, San Jose, CA 95192, USA

Leslie Monplaisir, Celestine Aguwa, Sara Masoud, Department of Industrial & Systems Engineering, Wayne State University, Detroit, USA

Suzan Arslanturk, PhD, Department of Computer Science, Wayne State University, Detroit, MI 48202, USA

Joseph Miller, MD, Department of Emergency Medicine, Henry Ford Hospital, Detroit, MI 48202, USA

**3<sup>rd</sup> Place** Winner

ID 390 The effect of Organizational Culture Dimensions on Work Engagement and Burnout during COVID-19 pandemic

Cynthia Karyna López-Botello, Adriana Segovia-Romo and Joel Mendoza-Gómez, Facultad de Contaduría Pública y Administración

Universidad Autónoma de Nuevo León, Nuevo León, México

**3<sup>rd</sup> Place** Winner

ID 418 A Framework to Foster Innovation-Driven Enterprises Creation in the University, the Case of Monterrey Region in Mexico.

Alejandro Téllez Girón Barrera and David Güemes Castorena, School of Engineering and Sciences, Tecnológico Monterrey, NL, Mexico

**Human Factors and Ergonomics Competition****First Place** Winner

ID 426 Social Media Consumption Pattern Of Generation Z In Malang Towards The Preservation Of Malangan Masks

Erika Danny Mulyadi, Communication Science Department, Faculty of Economics and Communication, Bina Nusantara University

Jakarta 11480, Indonesia

Yanuarita Kusuma Permata Sari, Communication Science Department, Faculty of Economics and Communication, Bina Nusantara University, Jakarta 11480, Indonesia

**2<sup>nd</sup> Place** Winner

ID 022 The Accuracy of Dynamic Simulation with the Use of TSB within JACK Siemens PLM software

Xiaoxu Ji, Justo Hernandez, Emily Schweitzer and Alexa Littman, Department of Biomedical, Industrial and Systems Engineering, Gannon University, Erie, PA 16541, USA

**3rd Place** Winner

ID 432 Human Resource 4.0: A vision of a technological tool to assess and foster employee engagement

Juliana Salvadorinho, Andreia Vitória, João Marques, Celeste Varum, Carlos Ferreira, Leonor Teixeira, Department of Economics, Management, Industrial Engineering and Tourism (DEGEIT), Research unit in Governance, Competitiveness and Public Policies (GOVCOPP), Department of Social, Political and Territorial Sciences (DSPTS), Institute of Electronics and Informatics Engineering of Aveiro (IEETA), University of Aveiro, Aveiro, Portugal

**Supply Chain and Logistics Competition****First Place** Winner

ID 144 Evaluation of the Feasibility of Centralization of Warehouses in the Construction Company VIDUSA

Ana Paula Ocañas Morales, Brando M. Rodríguez Vallejo, Ricardo C. Lozano Cantú, Business Management Engineering, Industrial and Systems Engineering, Industrial and Systems Engineering, University of Monterrey, México

Refugio Chávez Hernández, Doctorate in Supply Chain Management and Logistics, University of Monterrey, México

**2<sup>nd</sup> Place** Winner

ID 613 LAC pilot project for green last-mile urban freight delivery services

Prato Daniel<sup>1</sup>, Reinoso Camila<sup>1</sup>, <sup>1</sup>Latin-American Center For innovation in Logistics, Bogotá, Colombia

**3rd Place** Winner

ID 265 Raw Material Supply Configuration with Short Shelf Life in a Production Scenario MTS/MTO Minimizing Operational Risk and Cost

Lucas Ramírez Ramírez, Engineering Magister Program Student, Universidad de Antioquia, Medellín, Colombia

Carmen Elena Patiño Rodríguez, Industrial Engineering Department, Universidad de Antioquia, Medellín, Colombia

Gloria Milena Osorno Osorio, Industrial Engineering Program, Unidad Central del Valle del Cauca, Tuluá, Colombia

**Supply Chain and Logistics Competition****First Place** Winner

ID 146 Establishing Risks of Food Supply Chains for Small and Medium Food Manufacturing Companies in Malaysia

Siti Aishah Hadawiah Ahmad and Mohd Nizam Ab Rahman, Department of Mechanical and Manufacturing, The National University of Malaysia, Selangor, Malaysia

Ariff Azly Mohamed, Department of Business and Management, Universiti Teknologi Mara, Selangor, Malaysia

**Poster Competition****First Place** Winner

ID 564 Statistical Analysis Methods changed from Traditional to a Continuous Annealing Heat Treatment in a Copper Wire Drawn Machine

Francisco Antonio Perales Carballedo, UPAEP University, México

José Luis Martínez Flores, UPAEP University, México

**Best Track Papers****Best Track Paper - Artificial Intelligence**

ID 308 A Classification Model based Spaced Repetition Approach using Facial Expressions and Hand Over Face (HOF) Gestures

D. M. S. P. Dissanayaka and K. Wijayasiriwardhane, Dept. of Industrial Management, Faculty of Science, University of Kelaniya, Sri Lanka

**Best Track Paper - Technology Management**

ID 094 Curriculum Revision of a Ph.D. program in Technology Management to Keep it Relevant and Manageable

A. Mehran Shahhosseini, M. Affan Badar, Farman A. Moayed, James N. McKirahan, and Cindy L. Crowder

College of Technology, Indiana State University, Terre Haute, IN 47809, USA

**Best Track Paper - Automation and Control**

ID 245 Biodynamic Suspension Model in a Comfort-Oriented QoV Control System

Abelardo Rodriguez-Moreno, E.A. Sánchez-Segoviano, L.A. Santa Cruz, and L.C. Félix-Herrán, School of Engineering and Sciences Tecnologicode Monterrey, Hermosillo, SON, 83000, Mexico

Jorge de-J. Lozoya-Santos, School of Engineering and Sciences, Tecnologicode Monterrey, Monterrey, NL, 64849, Mexico

Juan C. Tudón-Martínez, División de Ingeniería y Tecnología, Universidad de Monterrey, Monterrey, NL, 66238, México

**Best Track Paper - Construction Management**

ID 034 AHP Method for Supply Chain Management Performance Measurement in Construction (Study Case: Bridge Project)

Anita Mustikasari, Management Department, Yogyakarta State University, Indonesia

Naniek Utami Handayani, Industrial Engineering Department, Diponegoro University, Prof. Soedarto, S.H., Semarang, 50275, Indonesia

Mochammad Agung Wibowo Civil Engineering Department, Diponegoro University, Prof. Soedarto, S.H., Semarang, 50275, Indonesia

Chemink Sugondo Simanungkalit, Industrial Engineering Department, Diponegoro University, Prof. Soedarto, S.H., Semarang, Indonesia

**Best Track Paper - Competitiveness and Value Chain**

ID 145 Strategic Value Propositions to Increase Competitiveness in a Tourism Cluster

Teresa Verduzco-Garza, Industrial Engineering, Engineering School, University of Monterrey UDEM, San Pedro Garza Garcia, NL, México

J. Gerardo Rodríguez Beltrán and José Pablo Nuño de la Parra, Popular Autonomous University of Puebla UPAEP Puebla, Pue, Mexico

**Best Track Paper - Data Analytics and Big Data**

ID 521 An aggregated time series forecasting model for the health and wellness sector: case of a Brazilian retail company

Carlos Ernani Fries and Vitor Rodrigues, Department of Production and Systems Engineering, Federal University of Santa Catarina, Florianópolis, SC, Brazil

**Best Track Paper - Data Analytics and Big Data**

ID 419 Dimensionality Reduction and Text Mining for Smart Content Filtering of an Online Health Forum

Reinaldo Sanchez-Arias, Roberto Batista, Levi C. Nicklas, Department of Data Science and Business Analytics, Florida Polytechnic University, Lakeland, USA

Peter Akioyamen, The School of Mathematical and Statistical Sciences, Western University, Ontario, Canada

**Best Track Paper - Engineering Management**

ID 126 A Cost-Benefit Approach to Thermo-Processing Equipment Safety Regulation Analysis

Motshumi Joseph Diphare, Hannelie Nel and Jan-Harm C. Pretorius, Postgraduate School of Engineering Management

University of Johannesburg, Johannesburg, South Africa

**Best Track Paper - Entrepreneurship and Innovation**

ID 143 Design methods and challenges of open innovation: collaborative and multidisciplinary processes.

Felipe Torres Benoni, Civil Engineering Department, University of Santiago, Ave. Libertador Bernardo O'Higgins 3363, Santiago, Chile

Roberto Duran Novoa, Engineering Design Department, Federico Santa Maria Technical University, Ave. Vicuña Mackenna, Santiago, Chile

**Best Track Paper - Entrepreneurship and Innovation**

ID 369 Implementation of MSMEs Competitiveness Improvement Model to Strengthen Entrepreneurial Aspects in Malang City

Ajeng Mira Herdina, Riesta Devi Kumalasari, Priska Arindya Purnama and Murniati, Entrepreneurship Department, BINUS Business School

Undergraduate Program, Bina Nusantara University, Jakarta, Indonesia

**Best Track Paper - Systems Dynamics**

ID 328 Systemic analysis of the electrification of last-mile freight transport

Julieth Stefany García Collazos, Facultadde Minas, Universidad Nacional de Colombia, Medellín, Colombia

Laura Milena Cárdenas, Facultadde Ingeniería, Universidad de Antioquia, Medellín, Colombia

Carlos Jaime Franco, Facultadde Minas, Universidad Nacional de Colombia, Medellín, Colombia

**Best Track Paper - Lean Six Sigma**

ID 214 Productivity Improvement in a Sugar Company: A Lean management approach

Maximiliano Arroyo Ulloa, Faculty of Engineering, Universidad Católica Santo Toribode Mogrovejo, Chiclayo, Peru

Lucio Llontop Mendoza, Universidad Católica Santo Toribode Mogrovejo, Chiclayo, Peru, Lima, Peru

Javier Beltran Reyes, Business Intelligence Department, Comercio-Group, Lima, Peru

**Best Track Paper - Logistics**

ID 166 Developing a Performance Measurement Framework for Logistics Service Providers

Paitoon Varadejsatitwong, Ruth Banomyong and Puthipong Julagasigorn, Thammasat Business School, Thammasat University, Bangkok, Thailand

**Best Track Paper - Supply Chain Management**

ID 268 Two Decades of Closed-loop Supply Chain: A Bibliometric Analysis

Imnatila Pongen, Department of Operations Management, Indian Institute of Management Ranchi, Jharkhand-834008, India

**Best Track Paper - Quality and Reliability**

ID 523 Monitoring Multi-Attribute Characteristics using a Combined Scheme of np and EWMA Charts

Farah Alyassi, Salah Haridy, Mohammad Shamsuzzaman and Imad Alsyounf

Department of Industrial Engineering and Engineering Management



University of Sharjah, Sharjah 27272, United Arab Emirates

**Best Track Paper - Production Planning and Management**

ID 204 The Production Planning Practices and Techniques Impact on Operational Costs in South African Manufacturing industries

Selowa Brian Tumiso, Bakama, Eric Mikobi and Khathutshelo Mushavhanamadi, Quality and Operations Management Department, University of Johannesburg, South Africa

**Best Track Paper - Energy (and Energy Efficiency)**

ID 496 Microgrid Supplier Selection Problem Considering Euclidean Distance and Ideal Vector System

Trinidad Reyes and Jose F. Espiritu, Industrial Manufacturing and System Engineering Department, The University of Texas at El Pas, El Paso, TX, 79968, USA

**Best Track Paper - Materials Engineering**

ID 090 Enhancement of Corrosion Resistance of Hot-Dip Galvanized Carbon Steel by Low Amount of Ni Addition

Rafael Gonzalez-Parra, Arturo Barba-Pingarrón, RaúlValdez-Navarro, Alba Covelo-Villar, Miguel A. Hernández-Gallegos

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**Best Track Paper - Engineering Education**

ID 095 The Toyota Production System Principles and Behaviors in a Higher Education Institution Classroom

Fernando Gonzalez-Aleu, Department of Computer Systems and Industrial Engineering, Universidad de Monterrey, San Pedro Garza García, NL, 66238, México

Jesus Vazquez-Hernandez, Innovation and Strategy, Advanced Value Chain Institute, San Pedro Garza García, NL., 66250, Mexico

Mario Alberto Del Valle Velez, Vicepresidente, Asociación de Exbecarios de Mexico en Japón, Miguel Hidalgo, Ciudad de México, Mexico

**Best Track Paper - Environmental Engineering**

ID 365 Life cycle assessment in the wine industry – a Bibliometric analysis

Adrián Salvador Morales García, Jorge Luis García Alcaraz and Yashar Aryanfar, Department of Electric Engineering and Computers Sciences, Autonomous University of Ciudad Juarez, Ciudad Juárez 32310, Mexico

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**Best Track Paper - Digital Transformation of Business Models**

ID 206 How can BPM and Lean practices accelerate digital transformation? Evidence based on a practical case

Mariana Carvalho, Department of Economics, Management, Industrial Engineering and Tourism (DEGEIT), University of Aveiro, Portugal

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**Best Track Paper - Smart Mobility**

ID 162 Evaluation of an electric go-kart with lithium-ion and nickel-metal hydride batteries

Gustavo Alvarez-Coello, Andrés Idrovo-Pauta, Daniel Cordero-Moreno, and Efrén Fernández-Palomeque

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