The 2nd International Conference on Modern Management based on Big Data (MMBD2021)

November 8th-11th, 2021 (GMT+8, Beijing Time)

Online Conference (Microsoft Teams)

Conference Program

Hosted and organized by Huaqiao University

HUAQIAO UNIVERSITY

华侨大学

华侨大学工商管理学院

Business School of HuaQiao University

MMBD 2021
CONFERENCE PROGRAM

November 8th-11th, 2021 (GMT+8, Beijing Time)

ONLINE-Microsoft Teams Meeting

For MMBD2021 Academic Exchange Only

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Part I Conference Schedule Summary

Monday, November 8, 2021

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10:00-12:00	MS Teams Online Conference Testing and Ice Breaking
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Tuesday, November 9, 2021

MS Teams: http://www.academicconf.com/teamslink?confname=mmbd2021
Chaired by Prof. Xiaolong Li, Business School of Huaqiao University, China

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MS Teams: http://www.academicconf.com/teamslink?confname=mmbd2021

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12:00-14:00	**BREAK**
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Thursday, November 11, 2021

MS Teams: http://www.academicconf.com/teamslink?confname=mmbd2021

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Part II Opening & Welcoming Remarks

Opening & Welcoming Remarks from Conference General Chair

MMBD2021 General Chair

Prof. Changjun Yi,
Executive Vice-Dean,
Business School of Huaqiao University, China

Biography: Yi Changjun, Executive Associate Dean of Business School of Huaqiao University, Doctor of Management, Professor, Doctoral Supervisor, Visiting Scholar of Cornell University, High-level Talents introduced by "Haina Baichuan" Project of Fujian Province, China, New Century Excellent Talents in Fujian Universities, Executive Director of China Association of International Trade, Executive Director of China Fujian Youth Economic Development Research Association, Chairman of the Business Administration Graduate Training Committee of Huaqiao University; Reviewer of Journal of Finance and Economics, Journal of International Trade , Finance & Trade Economics and other Chinese journals, reviewer of The National Social Science Fund of China, The Ministry of Education Social Science Fund of China, China Yangtze Fund Scholars; mainly engaged in overseas Chinese business management, international business management, digital economy and other research work.

Part III Keynote Speeches

Keynote Speech 1: Applications of Big Data in Manufacturing Industry Supply Chain Management

Prof. Md. Mamun Habib,
School of Business & Entrepreneurship (SBE), Independent University, Bangladesh
Visiting Scientist, University of Texas - Arlington (UTA), USA

Biography: Prof. Dr. Md. Mamun Habib is a Professor at School of Business & Entrepreneurship (SBE), Independent University, Bangladesh (IUB). In addition, Dr. Habib is the Visiting Scientist of University of Texas – Arlington, USA. Prior to that, he was Associate Professor at BRAC Business School, BRAC University, Bangladesh; Asia Graduate School of Business (AGSB) at UNITAR International University, Malaysia; Dept. of Operations Research/Decision Sciences, Universiti Utara Malaysia (UUM), Malaysia and Dept. of Operations Management, American International University-Bangladesh (AIUB). He is the Editor-in-Chief in International Journal of Supply Chain Management (IJSCM), London, UK (SCOPUS Indexed). He accomplished his Ph.D. and M.S. with outstanding performance in Computer & Engineering Management (CEM) under the Graduate School of Business (GSB) from Assumption University, Thailand. His Ph.D. research was in the field of Supply Chain Management.

He has more than 18 years' experience in the field of teaching as well as in training, workshops, consultancy and research. At present, he is supervising some Ph.D. students at locally and internationally. Furthermore, he has several Ph.D. involvements with UUM, UNIRAZAK, AIMST, UNITAR, Asia e University (AeU), Malaysia; Assumption University of Thailand; Institute for Technology and Management (ITM) – University and Birla Institute of Technology (BIT)–Deemed University, India, National Institute of Technology (NIT), India, SOA University, India; University of the Assumption, Philippines. He also involved with online learning programme at University of Roehampton (UoR), London, UK. He is actively involved with national and international research grant projects.

As a researcher, Prof. Habib published about 150+ research papers, including Conference Proceedings, Journal articles, and book chapters/books. He serves as the Editor-in-Chief/Lead Guest Editor/Editor/Editorial Board Member/Reviewer of more than 20 journals, particularly Elsevier (Scopus) and Thomson Reuters (Web of Science) Indexed Journals. Also, he delivers lecture as Keynote Speaker at 50+ international conferences, at various countries, particularly Taiwan, USA, China, Indonesia, Malaysia, Thailand, Singapore, Turkey, Korea, India, UK, Greece, Bulgaria, Australia, Italy, etc. He also serves as General Chair, Program Chair, Technical Chair, Organizing Committee Member, Technical Committee Member, Track Chair, Session Chair as well as Reviewer of numerous international conferences. He received Best Track Chair Award at IEOM'2012 Conference.

Finally, Prof. Habib is an active member of different professional organizations, including IEEE (Senior Member), IEOM (President, SCM Technical Division), IETI (Senior Member and Board of

Director), IRED (Fellow), GRDS (Vice-President), IEB, AIMS, INFOMS, just to name a few. He is involved with QS World University Ranking and Times Higher Education Ranking as an academician.

Research Interests: supply chain management, production & operations management, operations research, research methodology, engineering management, technology management, and educational management.

Abstract: Big Data is defined as exceptionally large data sets, potentially numbering into billions of rows and parameters. In manufacturing, big data can include data collected at every stage of production, including data from machines, devices, and operators. With big data analytics in manufacturing, manufacturers can discover new information and identify patterns that enable them to improve processes, increase supply chain efficiency and identify variables that affect production.

Big Data Analytics in manufacturing is about using a common data model to combine structured business system data like inventory transactions and financial transactions with structured operational system data like alarms, process parameters, and quality events, with unstructured internal and external data. Improving efficiency across the business helps a manufacturing company control costs, increase productivity, and boost margins. Automated production lines are already standard practice for many, but manufacturing big data can exponentially improve line speed and quality.

Big data combined a set of data usually referred as large and complex datasets; enables the company to review real-time data flows. Digitized supply chains have the potential to dramatically lower costs, reduce lead time and increase product availability. Digitization makes the supply chain more effective, agile and responsive by sharing knowledge and collaborating complex supplier networks. As a result, this research contributes the practitioners to identify the current situation of their business and it will help them to take timely, fast and better decision.

Keywords: Big Data, Supply Chain, Manufacturing Industry

Keynote Speech 2: Big Data Analytics and Optimization using Evolutionary Intelligence

Prof. Amir H. Gandomi,
Faculty of Engineering & Information Technology, University of Technology Sydney, Australia

Biography: Amir H. Gandomi is a Professor of Data Science and an ARC DECRA Fellow at the Faculty of Engineering & Information Technology, University of Technology Sydney. Prior to joining UTS, Prof. Gandomi was an Assistant Professor at Stevens Institute of Technology, USA and a distinguished research fellow in BEACON center, Michigan State University, USA. Prof. Gandomi has published over two hundred journal papers and seven books which collectively have been cited 23,000+ times (H-index = 70). He has been named as one of the most influential scientific minds and Highly Cited Researcher (top 1% publications and 0.1% researchers) for four consecutive years, 2017 to 2020. He also ranked 18th in GP bibliography among more than 12,000 researchers. He has served as associate editor, editor and guest editor in several prestigious journals such as AE of IEEE TBD and IEEE IoTJ. Prof Gandomi is active in delivering keynotes and invited talks. His research interests are global optimisation and (big) data analytics using machine learning and evolutionary computations in particular.

Abstract: Evolutionary Computation (EC) has been widely used during the last two decades and has remained a highly-researched topic, especially for complex engineering problems. The EC techniques are a subset of artificial intelligence, but they are slightly different from the classical methods in the sense that the intelligence of EC comes from biological systems or nature in general. The efficiency of EC is due to their significant ability to imitate the best features of nature which have evolved by natural selection over millions of years. The central theme of this presentation is about EC techniques and their application to complex smart cities and infrastructures problems. On this basis, first I will talk about an evolutionary approach called genetic programming for data mining. Applied evolutionary computing will be presented, and then their new advances will be mentioned such as big data mining. Here, some of my studies on big data mining and modelling using EC and genetic programming, in particular, will be presented. Case studies' topics include forward design, and inverse design. In the second section, the evolutionary optimization algorithms and their key applications in the design optimization of complex and nonlinear engineering systems will be discussed. It will also be explained how such algorithms have been adopted to engineering problems and how their advantages over the classical optimization problems are used in action. Optimization results of large-scale engineering systems and many-objective problems will be presented which show the applicability of EC. Some heuristics will be explained which are adaptable with EC and they can significantly improve the optimization results.

Keynote Speech 3: The Data Sharing Economy and Open Governance of Big Data as Public Good

Prof. Jung Wan Lee,
School of International Economics and Trade, Anhui University of Finance and Economics, China

Biography: Professor Lee, Professor of Anhui University of Finance and Economics, has extensive international teaching experience in International Business and Economics, Marketing, and Electronic Commerce. He has been at Soongsil University in South Korea for three years, Kazakh British Technical University in Kazakhstan for five years, and Boston University in the United States for recent ten years. Professor Lee has published over fifty research papers and authored three books on entrepreneurship, small business, and venture business management. He also has served as Editor-in-Chief for the Journal of Asian Finance, Economics and Business and the Journal of Distribution Science.

Abstract: The data sharing economy depends on access to data as a resource for products and services. Since the quality of information that can be drawn from data increases with the available amount and quality of the data, businesses involved in the data economy have a great interest in accessing data from other market players and sharing data with other stakeholders. Despite the growing need for access to data and evidence of the economic and social benefits, data access and sharing remains below its potential. Individuals, businesses, and governments often face barriers to data access and sharing, which may be compounded by reluctance to share, including within organizations and across sectors. To address these challenges, this paper focuses on finding possible solutions for the better data sharing economy. This paper 1) discusses opportunities and challenges of open data and the data sharing economy; limitations of private sector data and issues with government data open; arguments for “big data as a public good” ; and 2) introduces various open government data initiatives; open data ecosystems; open governance networks initiatives; and 3) suggest possible solutions for the data sharing economy, including the governance and management, the legal and policy frameworks, and the technical standards for open data with proposing an open data governance model for the data sharing economy. With understanding the model of open data governance aspects as a starting point, this model may surface how open data governance becomes salient for governments, private sectors, and all stakeholders as well.

Keywords: Big Data, Open Data, Public Good, Open Government, Open Data Governance, Data Sharing Economy

Keynote Speech 4: Big data Analysis of Consumers' Busket, Address Marketing and Measures Preventing Customers to Leave a Retail Network

Prof. Fuad Aleskerov,
Higher School of Economics, National Research University; Institute of Control Sciences, Russian Academy of Sciences, Russia

Biography: Prof. Fuad Aleskerov got his Ph.D. in Control in Socio--Economic Systems in 1981. He is now head of Department of Mathematics for Economics, head of International Centre of Decision Analysis and Choice, both at the National Research University Higher School of Economics, and head of Laboratory of Choice Theory and Decision Analysis, Institute of Control Sciences, Russian Academy of Sciences, Russia.

So far, Prof. Fuad Aleskerov has published 10 books, more than 200 articles in 30 different fields of science, more than 100 in peer-reviewed journals and volumes, and he also has 6 copyright certificates for patents. He is a member of Editorial Board for many journals, including the International Journal of Information Technologies and Decision Making (indexed by SCIE) and Annals of Data Analysis and he is vice-editor-in-chief of Journal of New Economic Association (in Russian). He is the member of Academia Eurepaea, the Society for Social Choice and Welfare; International Economic Association; American Mathematical Society; New Economic Association, Russia.

Besides, he was invited speaker for more than 150 conferences and workshops and invited expert for many companies and governmental organizations, such as AEG “Metro” (Germany) and Administration of the President of Russia Federation.

Research Interests: Data Analysis, Risk Management, Decision Making in Banks, Operations Research, Marketing and Measures

Abstract: The work is based on the analysis of annual data of purchases of more than 1.4 M customers of 200 thousand of goods during more than one year in one European retail network. New methods of data analysis were developed and applied. Many new insights have been observed on customers' behavior.

Keynote Speech 5: Envisioning Big Data

Prof. Luiz Moutinho,

Visiting Professor of Marketing at Suffolk Business School, Faculty of Arts, Business and Applied Social Science, University of Suffolk, Ipswich, England, UK

Biography: In 2020 Luiz Moutinho was elected as the member of The Academia Europaea.

In 2017 Luiz Moutinho received a degree of Professor Honoris Causa from the University of Tourism and Management Skopje, North Macedonia.

He completed his PhD at the University of Sheffield in 1982.

He has been a full professor for 32 years and held posts in UK and USA; he has held visiting professorship positions at 27 universities, 17 of them in EU countries.

During 2015 - 2017 he was professor of BioMarketing and Futures Research at the DCU Business School, Dublin City University, Ireland (the first chair in the world on both domains - BioMarketing and Futures Research). Previously, and for 20 years, he had been appointed as the Foundation Chair of Marketing at the Adam Smith Business School, University of Glasgow, Scotland, UK.

He was the director of the doctoral programs at Confederation of Scottish Business Schools (1987 – 1989), Cardiff Business School (1993 – 1996) and University of Glasgow (Doc. Program in Management, 1996 – 2004).

Professor Moutinho is the founding editor-in-chief of the Journal of Modelling in Management (JM2) and co-editor-in-chief of the Innovative Marketing Journal. He has 5 associate editorships as well as being in editorial boards of 50 int'l academic journals.

His areas of research interest encompass futures research and marketing and management futurecast, biometrics and neuroscience in marketing, artificial intelligence, algorithmic self, wearable devices detecting human emotions, evolutionary algorithms, human-computer interaction, artificial neural networks in marketing and modelling consumer behaviour.

He has developed a number of conceptual models in areas such as tourism destination decision processes, automated banking, supermarket patronage, etc. The testing of these research models has been based on the application of different statistical, computer and mathematical modelling techniques.

Professor Moutinho has over 155 articles published in refereed academic journals, 34 books and 16,115 academic citations, the h-index of 57 and the i10-index of 216 (Google Scholar, 4th Feb. 2020).

Abstract: The presentation starts by mentioning the amount of data produced in the world and the increasingly quantified enterprise. People analytics and programmed species are covered. The worth and value of big data are analysed. The issues of dark data, data agility and predictive analytics are then presented. The area of computation is addressed by introducing serverless computing and Cloud Based Cognitive Quantum Computing. Important issues related to consumers´ big data, like data deluge, privacy, personal data and data vulnerabilities are dissected next. Data virtualisation and visualisation are then discussed. The new concept of LI-FI, the transmission of data through light is introduced. Algorithms, machine learning deep learning and artificial neural networks are then covered. Finally, the presentation ends by introducing autonomous data machines and the concept of data for good.

Keynote Speech 6: Creating Risk Measures Using Vast Amounts of Text

Dr. Christopher Rauh,
University of Cambridge and Trinity College Cambridge, UK

Biography: Christopher is a Lecturer at the University of Cambridge, a Fellow of Trinity College Cambridge, and a Research Affiliate at CEPR. Before joining the University of Cambridge, he was an Assistant Professor at the University of Montreal. He is also an Associate Editor of the Economic Journal.

Christopher studies policy-relevant questions related to the labor market and political economy. He has designed many survey modules and collected primary data. He also works with complex datasets and applied methodologies, including machine learning and structural modelling.

He has published in top Economics and Political Science journals, such as American Political Science Review, Journal of European Economic Association, and Journal of Public Economics. His work has been featured widely across the media including The Guardian, China Global Television Network, Washington Post, the Economist, the BBC, and Der Spiegel. He is listed amongst the top 3% of Economists in terms of research output in the last ten years.

Abstract: We predict the risk of political violence using a newspaper-text corpus of more than 5 million articles. We derive topics from text through unsupervised machine learning and then integrate these topics into a supervised machine learning framework to forecast risk.

Part IV Poster Presentation

Poster Presentation Preparation

- There is no size constraint for the e-poster, if you have difficult to decide one, then A1 size (594mm×841mm) is recommended.
- Please send the poster at **.PDF** format. The Poster would be updated on the conference website after pre-review and confirmation.
- The Poster could design as you like with requirements as below:
  - ✧ The conference logo should be clearly shown in the header
  - ✧ Title, presenter, and affiliation information should be well indicated;
- Signed and stamped electronic presentation certificate would be issued via e-mail after the conference.

List of Posters

Please Click http://www.academicconf.com/poster?confname=mmbd2021 to Access the Poster Presentations.

If you have any questions to ask the presenters, you can leave your questions at the webpage of related poster listed via the same link mentioned above. The presenters will answer your questions as soon as possible via the same webpages.

17:00-17:30, Tuesday, Nov. 9, 2021 (GMT+8, Beijing Time)

MMBD1164	Studies on Platform-type Organization Design Based on Leadership Promotion *Ms. Yanting Tan, Customer Service Center of the State Grid Corporation of China*
MMBD1172	A Comparative Evidence of Income Levels Reflecting Gen Z's Digital Payments Intention and Usage *Ms. Khwanjira Ponsree, Khon Kaen University, Thailand*
MMBD1178	Adding Relations between the Top and Two Members of the Same Level in a Complete Binary Linking Pin Organization Structure *Prof. Kiyoshi Sawada, University of Marketing and Distribution Sciences, Japan*
MMBD1184	Intellectual Capital: Another Brief State-of-the-Art *Dr. Oscar Ramada, Atlântico Business School, Portugal*
MMBD1186	Detection for All Zero Coefficient Blocks in HEVC Based on Uniform Quantizer *Dr. Nana Shan, Tainshan University, China*
MMBD1193	Research about User stickiness in the Social Q&A Community from the Perspective of Interactivity: A Case Study on Zhihu Website *Ms. Jiaxin Chen, Guilin University of Electronic Technology, China*

Abstracts of Posters

MMBD1164 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

MMBD1172 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

MMBD1178 Adding Relations between the Top and Two Members of the Same Level in a Complete Binary Linking Pin Organization Structure

Kiyoshi Sawada
University of Marketing and Distribution Sciences, Japan

Abstract. A linking pin organization is a structure in which relations between members of the same section are added to a pyramid organization where there exist only relations between each superior and his direct subordinates. This study proposes a model of adding relations between the top and two members of the same level in a linking pin organization structure. When two edges are added between the root and two nodes with the same depth N (N = 2, 3, ..., H) in a complete binary linking pin organization structure where edges are added between every pair of nodes which have the same parent in a complete binary tree of height H (H = 2, 3, ...), the total shortening distance which is the sum of shortening lengths of shortest paths between every pair of all nodes by adding edges is formulated and an optimal depth N^* is obtained by maximizing the total shortening distance.

Keywords: linking pin organization, complete binary tree, optimization modelling

MMBD1184 Adding Relations between the Top and Two Members of the Same Level in a Complete Binary Linking Pin Organization Structure

Oscar Ramada
Atlântico Business School, Portugal

Abstract. The goal of this research is to present a brief, most recent state-of-the-art, covering the years 2020 (9 authors) and 2021 (1 author), with regard to the intellectual capital. This topic deserves scientific election, as, in general terms, it has gained increasing importance, because it is related to knowledge, but not for that reason its directions have allowed to broaden scientific knowledge. Indeed, the selected authors refer to the intellectual capital inserted in financial distress in the Italian banking sector, in business learning practices and in the relationship with the performance of innovation, in a critical accounting perspective, in a context of SMEs, in the relations with the brand and social capital, framed in luxury hotels in China, in the performance of workers, their job satisfaction and its impacts on business performance, in their value in Indonesian secondary schools, in the flexibility of human resources practices and their effects on innovation, in addition to inserting it in the context of the cost-based management concept, to end in the influence it has on performance in the case of family businesses. Its foundations, materialized in the triad, definition-measurement-value, has not deserved an evolution that substantiates a consensus on its purpose within the scientific community. Still following it, the application to the business reality, appears unfeasible or impossible to use, which is why it (still) does not allow us to know the value of the intellectual capital as if it were any other product or service – the ultimate goal.

Keywords: intellectual capital, performance, innovation, competitive advantages

MMBD1186 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

MMBD1193 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

Part V Oral Presentation

Oral Presentation Guidelines

- The oral presentations include the forms of pre-recorded video presentation and oral presentation on live via **Microsoft Teams (MS Teams)** meeting.
- For oral presentation on live, please refer to the official instructions on how to share content via MS Teams before the conference.
- The pre-recorded video should be uploaded to MMBD2021 online submission system **before October 10, 2021** in the format of **.mp4** and time duration should be 15-20 mins.
- Visit ***Here*** to know How to record a video with PowerPoint
- The PPT either for pre-recorded video presentation or oral presentation on live could design as you like with requirements as below:
  - ✓ The conference logo should be added to each PPT slide
  - ✓ Title, presenter and affiliation information should be indicated in the first slide
  - ✓ Each slide should be concise, uncluttered and readable from a distance
  - ✓ Include only key words and phrases for visual reinforcement
- Signed and stamped electronic oral presentation certificate would be issued via e-mail after the conference

Best Oral Presentations Selection

Four best oral presentations will be selected based both on the "**Votes**" received on the website and the performances on live.

Selection Criteria

A best presentation will be selected based on the following items:

- ✓ Research Quality
- ✓ Presentation Performance
- ✓ Presentation Language
- ✓ PowerPoint Design

Selection Procedure

- Each session will select one Best Oral Presentation, please ensure your Paper ID (MMBD****) is shown correctly on the first or last page at your presentation data.
- The best presenter of each session will be awarded with free registration for the next MMBD conference.

Best Oral Presentations Award

This award consists of a certificate and the privilege of free registration fee to attend MMBD2022.

Oral Session 1: Modern Management based on Big Data (1)

Wednesday, Nov. 10, 2021 (GMT+8, Beijing Time)

Session Chair:

Assoc. Prof. Valliappan Raju, Limkokwing University of Creative Technology, Malaysia

Please Click http://www.academicconf.com/teamslink?confname=mmbd2021 to enter the conference meeting room.

Please Click http://www.academicconf.com/video?confname=mmbd2021 to Access the Video Presentations.

8:30-8:50	**MMBD1079** (Invited) (video)	An Optimized Byzantine Fault Tolerance Algorithm For Consortium Blockchain *Assoc. Prof.Zhihan Lv, Qingdao University, China*
8:50-9:05	**MMBD1128** (video)	Bibliometric Studies on Multi-Criteria Decision Analysis (MCDA) Applied in Personnel Selection *Mr. Igor Pinheiro de Araújo Costa, Federal Fluminense University (UFF), Brazil*
9:05-9:25	**MMBD1165** (Invited) (video)	Mapping Cloud-to-Ground Lightning with Big Data *Dr. Ashraf Dewan, Curtin University, Australia*
9:25-9:40	**MMBD1152** (video)	Managing Restaurant Customers' Trust during Covid-19 Crisis: the Role of Perceived Risk *Dr. Yoon Jung Jang, Woosong University, South Korea*
9:40-9:55	**MMBD1158** (video)	Role of Big Data Analytics in Belt and Road Initiative (Bri): Multivariate Analysis With Gaussian Distribution of Data *Assoc. Prof. Valliappan Raju, Limkokwing University of Creative Technology, Malaysia*
9:55-10:05	**MMBD1136** (video)	Control Design for One Class of Uncertain Metzler-Takagi-Sugeno Time-delay Systems *Mr. Sérgio Mitihiro do Nascimento Maêda, Federal Fluminense University (UFF), Brazil*
10:05-10:20		**BREAK**
10:20-10:35	**MMBD1171** (video)	Traffic Congestion Model in India by Shock Wave Theory *Dr. Tsutomu Tsuboi, New Creative Business Div. Nagoya Electric Works Co., Ltd., Japan*
10:35-10:45	**MMBD1151** (video)	Multicriteria Analysis in Additive Manufacturing: an ELECTRE-MOr Based Approach *Ms. Paula Drumond, Military Institute of Engineering, Brazil*
10:45-11:00	**MMBD1142** (live)	Developing Open Eco-innovation in Small and Medium-sized Enterprises (SMEs): The Role of Public Policy Innovation *Dr. Phaninee Naruetharadhol, Khon Kaen University, Thailand*
11:00-11:15	**MMBD1156** (live)	Comprehending the Pricing Decision of Online Car-Hailing services in China: Price Regulation Vs Entry Limitation *Dr. Jie Yang, Tsinghua University, China*

11:15-11:30	**MMBD1176** (live)	Mitigating Construction Deficiencies: An Impact Analysis for Low-Cost Housing Developments Utilizing Artificial Neural Network *Mr.Ramene U. Lim, Mapúa University, Philippines*
11:30-11:45	**MMBD1188** (live)	The Moderating Effect of Symbols on Text Content: Implications from Crowdfunding Projects *Mr. Yongyong Zhao, Huaqiao University, China*
11:45-12:00	**MMBD1169** (live)	GAN based Motion Imitation *Dr. Priyanka Nandal, Maharaja Surajmal Institute of Technology, GGSIP University, India*

Abstracts of Oral Session 1

MMBD1079 An Optimized Byzantine Fault Tolerance Algorithm For Consortium Blockchain

Zhihan Lv, Liang Qiao and Yuxi Li
Qingdao University, China

Abstract. According to different application scenarios of blockchain system, it is generally divided into public chain, private chain and consortium chain. Consortium chain is a typical multi-center blockchain, because it has better landing, it is supported by more and more enterprises and governments. This paper analyzes the advantages and problems of Practical Byzantine Fault Tolerance (PBFT) algorithm for the application scenarios of the consortium chain. In order to be more suitable for consortium chains, this paper proposes a new optimized consensus algorithm based on PBFT. Aiming at the shortcomings of PBFT, such as the inability to dynamically join nodes, low multi-node consensus efficiency, and primary master node selection, our optimized algorithm has designed a hierarchical structure to increase scalability and improve consensus efficiency. The simulation results show that compared with PBFT and RAFT, our new consensus algorithm increases the data throughput while supporting more nodes, and effectively reducing the consensus delay and the number of communication times between nodes.

Keywords: blockchain, PBFT, consensus algorithm, consortium blockchain

MMBD1128 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

MMBD1165 Mapping Cloud-to-Ground Lightning with Big Data

KM Ashraful Islam[1], Tanzim R Fariha[2], MSG Adnan[1], M Rafiuddin[3] and Ashraf Dewan[4]
[1] *Chittagong University of Engineering & Technology, Bangladesh*
[2] *University of Dhaka, Bangladesh*
[3] *Bangladesh University of Engineering & Technology, Bangladesh*
[4] *Curtin University, Australia*

Abstract. Bangladesh is one of the most lightning-prone countries of the world. A clear understanding of lightning incidence of the country will be useful given perceived increase of lightning-related deaths in recent years. In this work, spatiotemporal distribution of lightning activity over Bangladesh for a six-year period (2015-2020) was examined by utilizing Global Lightning Dataset (popularly called, GLD360). Annual, monthly and diurnal stroke frequency was analysed.

More than fifty million (50,481,181) lightning flashes were recorded in the Bangladesh territory during 2015-2020. Analysis of this big data showed that number of lightning was highest (10,144,601) in 2016. Thunder events occur more in the hot summer months than in the monsoon season as around three-fifth of the total lightning activity occurred in summer season (March-May) as opposed to monsoon (June-September) when lightning activity was 35.6%. Lightning events are more common in the late night and early morning. The ~50 million data points were aggregated to 1,962 square grids, utilising a 10 × 10 km grid size, to depict spatial patterning. Results revealed that north-western Sylhet region experienced extreme lightning and southern Bangladesh had low lightning activity. Sylhet, Sunamganj, and Manikganj districts had stroke density of 60 or higher. In Bandarban, Rangamati, Cox's Bazaar, Meherpur, Chuadanga, Satkhira, and Bagerhat, the density was fewer than 30. It is believed that the findings of this study would help to raise awareness about lightning and avoid casualties.

Keywords: GLD360, lightning activity, stroke density, Bangladesh

MMBD1152 Managing Restaurant Customers' Trust during Covid-19 Crisis: the Role of Perceived Risk

Yoon Jung Jang

Woosong University, South Korea

Abstract. The restaurant industry has been affected by the Covid-19 crisis, experiencing significant losses in revenue since the pandemic. In pursuing sustainable businesses during Covid-19 crisis, managing customers' trust became more vital in the restaurant industry than before. This study investigates the impacts of value similarity and preventive measures on restaurant customers' trust. It also examines the impact of customer trust on customers' subsequent behavior. This study further clarifies the moderating role of customers' perceived risk between study constructs.

A web-based survey was administered to U.S. restaurant customers. Among the 240 surveys obtained, 218 usable responses remained for final analysis. Hierarchical regression analyses were conducted to test research hypotheses. The findings of the study indicated that two antecedents-value similarity and preventive measures- were significant predictors in understanding customer trust in restaurants during Covid-19 crisis. Restaurants' preventive measures were a stronger determinant than value similarity in predicting customer trust, which significantly influenced customer subsequent behavior. Hierarchical regression analysis also confirmed the significant moderating role of perceived risk in the relationship between preventive measures and customer trust. The effect of preventive measures on customer trust was stronger in customers with a high level of perceived risk than those with a low level of perceived risk. The findings offer meaningful implications for restaurant operators who try to overcome the Covid-19 crisis and pursue sustainable growth.

Keywords: restaurant customer, trust, Covid-19 crisis, perceived risk, sustainable business

MMBD1158 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

MMBD1136 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

MMBD1171 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

MMBD1151 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

MMBD1142 Developing Open Eco-innovation in Small and Medium-sized Enterprises (SMEs): The Role of Public Policy Innovation

Phaninee Naruetharadhol[1,2], Helen McGuirk[2], and Aisling Conway Lenihan[2]

[1] *Khon Kaen University, Thailand*

[2] *Munster Technological University, Ireland*

Abstract. The establishment of an enabling environment for SMEs to address difficult environmental problems is the focus of many governments' policies around the world. The development of eco-innovations using open innovation, so called open eco-innovation, requires attention from a stakeholder network and public support. The innovation side of the environmental policy mix plays a role in underpinning the open eco-innovation concept. This current research aims to examine the level of government intervention in support of open eco-innovation in Thailand, Asia, and European countries. This research presents a policy exploration to illustrate whether the role of public policies can potentially support open eco-innovation. We first analyse how public interventions/programmes focusing on developing innovation in SMEs impacted on environmentally focused businesses. The findings from the current research provide evidence that policy makers and firms should look beyond the environmental element of innovation to enhance environmental impact. Furthermore, evidence of product, process, and service eco-innovations, as well as innovation creation for new environmental practices, was identified, especially in European countries. The research proposes an agenda which is a contribution of the findings from the current research for a context-orientated comparative policy analysis of eco-innovation. The logic model was applied to provide significant policy implications, particularly for Thailand, Asia, and European countries that frequently face socioeconomic, comparable structural, and demographic challenges that necessitate innovation solutions.

Keywords: eco-innovation; open eco-innovation; public policy innovation

MMBD1156 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

MMBD1176 Mitigating Construction Deficiencies: An Impact Analysis for Low-Cost Housing Developments Utilizing Artificial Neural Network

Ramene U. Lim, Dante L. Silva, and Kevin Lawrence M. De Jesus

Mapúa University, Philippines

Abstract. The aim of this study is to be able to come up with a supplemental project management policy guidelines and computational tool that will address the two major concerns in construction of low-cost housing, construction delays and workmanship defects. Through assessment of previous studies, factors causing delays and defects from the two major stakeholders involved in housing development projects were identified. With the use of the five-point Likert Scale in survey forms distributed to 60 professionals involved in housing development projects, factors were classified and identified according to its degree of impact on the overall construction efficiency. The statistics of these factors were organized and used to develop an Artificial Neural Network Model. The relative importance of the factors was measured using Garson's Algorithm. The derived equations from the developed ANN Model were used in formulating the computational tool and supplemental policy guidelines that can now be used to evaluate the workmanship defects and delay ratings of different

housing developments. The computational tool was tested by 10 experts with their current projects and was able to receive a 4.6 out of 5 rubric evaluation rating, showing the tool's effectiveness in identifying and assessing the probability and impact of construction deficiencies on their projects.
Keywords: artificial neural network, construction delays, construction management program, mass housing developments, workmanship defects

MMBD1188 The Moderating Effect of Symbols on Text Content: Implications from Crowdfunding Projects

Wei Wang, Yongyong Zhao
Huaqiao University, China

Abstract. The crowdfunding market has the problem of low success rate of financing. Project description and reply are the main ways to show project information to supporters, and the research on the description content is helpful to improve the financing performance. Previous studies only focused on the text content of description, but did not consider the influence of symbol content on the text content. Based on the abstracts and 15,232 replies of 675 crowdfunding projects of Modian, this paper discusses the influence of text content (text emotion) and symbol content (question mark, exclamation mark, emoticon) on the number of supporters and the moderating effect of symbol content on text content.
Keywords: symbol content, text content, crowdfunding, financing performance

MMBD1169 GAN based Motion Imitation

Priyanka Nandal
Maharaja Surajmal Institute of Technology, GGSIP University, India

Abstract. A simple motion transfer method is shown in which a source video of a subject (human) performing some movements or in motion is transferred to an amateur target (human) in a different motion. The target achieves the same motion as the source human in the manufactured video. This translation is performed using the pose as an intermediary depiction. To transfer the motion of the source subject to the target subject, the source subject's pose is extracted, and the target subject is created using the learnt pose to-appearance mapping. The video is seen as a collection of images containing all of the frames in order to conduct this translation. The motion is transferred from the source subject to the target subject using GANs (generative adversarial networks). GANs are a field of deep learning that is still developing.
Keywords: deep learning, human motion imitation, GAN

Oral Session 2: Modern Management based on Big Data (2)

Wednesday, Nov. 10, 2021 (GMT+8, Beijing Time)

Session Chair:

Dr.Mohammad Bahrani, Queen Mary University of London, UK

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Please Click http://www.academicconf.com/video?confname=mmbd2021 to Access the Video Presentations.

14:00-14:10	**MMBD1076** (video)	Retailers, All Omni-Shoppers Are Not the Same *Dr. Nuria Viejo-Fernández, University of Oviedo, Spain*
14:10-14:25	**MMBD1111** (video)	Krylov Subspace Methods for Big Data Analysis of Large Computational Electromagnetics Applications *Dr. Bruno Carpentieri, Free University of Bolzano, Italy*
14:25-14:35	**MMBD1149** (video)	Strategic Analysis for the Installation of Field Hospitals for COVID-19 Control: An Approach Based on P-median Model *Mr. Miguel Ângelo Lellis Moreira, Federal Fluminense University (UFF), Brazil*
14:35-14:50	**MMBD1173** (live)	Supply Chain with Customer-Based Two-Level Credit Policies under an Imperfect Quality Environment *Dr. Aakanksha Kishore, Asian School of Business, A Unit of Asian Education Group, Noida, (Delhi NCR) India*
14:50-15:10	**MMBD1089** (video) (Invited)	Sustainability Management of Agri-Food Smallholders with Mobile Applications *Assoc. Prof. Laura Piedra-Muñoz, P University of Almería, Spain*
15:10-15:25	**MMBD1137** (video)	The Evolution of Supply Chain Research Topics *Dr. Yuliia Bulhakova, Poznań University of Economics and Business, Poland*
15:25-15:40		**BREAK**
15:40-16:00	**MMBD1114** (video) (Invited)	Education Metamorphosis: Rewiring the Use of Learning Analytics *Dr. Nuria Recuero Virto, Universidad Complutense de Madrid, Spain*
16:00-16:15	**MMBD1086** (live)	COVID-19 Spreading in Financial Networks: A Semiparametric Matrix Regression Model *Prof. Monica Billio, Università Ca' Foscari Venezia, Italy*
16:15-16:30	**MMBD1109** (live)	Blockchain Digital Test Certificates for COVID-19 *Dr. Ioannis Karamitsos, Rochester Institute of Technology-Dubai Campus, United Arab Emirates*
16:30-16:45	**MMBD1145** (video)	Assessment of National Cybersecurity Capacity for Countries in a Transitional Phase: the Spring Land Case Study *Mr. Mohamed Ben Naseir, Bournemouth University, UK*
16:45-17:00	**MMBD1088** (live)	Opinion-Aware Retrieval Models based on Sentiment and Intensity of Lexical Features *Dr. Mohammad Bahrani, Queen Mary University of London, UK*
17:00-17:15	**MMBD1139** (live)	Relations Between Corporate Economic Performance, Environmental Disclosure and Greenhouse Gas Emissions: New Insights *Dr. Omaima Hassan, Robert Gordon University, UK*

17:15-17:30	**MMBD1153** (live)	Machine Learning Approach in Analyzing Ocean-Atmosphere Oscillations *Dr.Swarnali Majumder, Indian National Centre for Ocean Information Services, India*

Abstracts of Oral Session 2

MMBD1076 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

MMBD1111 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

MMBD1149 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

MMBD1173 Supply Chain with Customer-Based Two-Level Credit Policies under an Imperfect Quality Environment

Aditi Khanna[1], Aakanksha Kishore[2], Biswajit Sarkar[3], and Chandra K. Jaggi[1]

[1] *University of Delhi, India*

[2] *A Unit of Asian Education Group, India.*

[3]*Hanyang University, South Korea*

Abstract. The present model develops a three-echelon supply chain, in which the manufacturer offers full permissible delay to the whole seller, while the latter, in turn, adopts distinct trade credit policies for his subsequent downstream retailers. The type of credit policy being offered to the retailers is decided on the basis of their past profiles. Hence, the whole seller puts forth full and partial permissible delays to his old and new retailers respectively. This study considers bad debts from the portion of new retailers who fail to make up for the delayed part of the partial payment. The analysis shows that it is beneficial for the whole seller to make shorter contracts, particularly with new retailers, along with the fetching of a higher fraction of initial purchase cost from them. In addition to the above-described scenario, the lot received by the whole seller from the manufacturer is not perfect, and it contains some defects for which he employs an inspection process before selling the items to the retailers. To make the study more realistic, Type-I, as well as Type-II misclassification errors, and the case of out-of-stock are considered. The impact of Type-I error has been found to be crucial in the study. The present paper determines the optimal policy for the whole seller by maximizing the expected total profit per unit time. For the optimality of the solution, theoretical results are provided. Finally, a numerical example and a sensitivity analysis are done to validate the model

Keywords: inventory; defectives; inspection errors; full trade credit; partial trade credit

MMBD1089 Sustainability Management of Agri-Food Smallholders with Mobile Applications

Laura Piedra-Muñoz

University of Almerí, Spain

Abstract. Sustainable Assessment Tools (SATs) are generally designed for medium and large enterprises with structured and available information, while small producers are generally excluded

from the evaluation process. The present work fills this gap by analysing how new technologies, such as SATs developed using mobile applications (apps), can promote the sustainability management of small agri-producers in Ecuador. In this regard, the SAFA (Sustainability Assessment of Food and Agriculture) App is the first SAT specifically designed to evaluate sustainability for small and micro-producers. To operationalise the process, it implements a one hundred-item questionnaire. To answer the questions, the interviewee does not need to review documents. Considering that interviews may be held in areas with no internet service, the answers are processed using an offline mobile application that registers the data immediately. The results show that the good governance is the dimension that achieves the best result and associations are key drivers for the development of sustainable practices. Additionally, this study highlights that SAFA App is useful in catching the specific features of small producers. However, this SAT should be improved in terms of its versatility and the depth of its analysis in order to be taken as a benchmark for sustainability policies.
Keywords: small producers, sustainable development, natural resource management systems, SAFA App, agriculture, rural

MMBD1137 The Evolution of Supply Chain Research Topics

Yuliia Bulhakova

Poznań University of Economics and Business, Poland

Abstract. The research aims to diagnose which thematic areas of the supply chain have dominated in the last three decades, i.e. since 2019, and therefore in which direction the diffusion of knowledge has developed. In total, almost 80,000 literary items were generated from SCOPUS. The author's program was used for some research stages. As a result of the research, it was found, among other things, that in the initial stage of development of management sciences most of the works were published in the field of inventory management, with time the focus was on the costs of supply chain management, and nowadays the topics related to the sustainable supply chain are dominant. At the same time, the topics that are constantly in the spotlight have been identified as well as topics where knowledge diffusion is growing rapidly. In the future, by adopting a very short analysis time series, it is possible to identify likely new dynamic research foci such as supply chain 4.0.
Keywords: supply chain, knowledge diffusion, industry 4.0

MMBD1114 Education Metamorphosis: Rewiring the Use of Learning Analytics

Nuria Recuero Virto

Universidad Complutense de Madrid, Spain

Abstract. Lockdown measures due to the pandemic have caused unprecedented disruption to the worldwide education system. In view of COVID-19 spread, many educational institutions have been determining what procedures to adopt so as to fulfill sanitary protocol, which has meant on many occasions the limit of face-to-face contacts. The social media role has gained popularity during these breakouts, not just because of its significance as an entertainment tool but rather due to its socializing function. Twitter has been identified as the most popular microblog platform and a reliable source for examining and studying society's behavior. It is yet unknown how the use of User-Generated Content (UGC) will impact the design and performance of future educational programs. The main goal of this research is to explore the future of data-driven decision-making, based on UGC and the students' performance presented in their learning analytics.
Keywords: education metamorphosis, learning analytics

MMBD1086 COVID-19 Spreading in Financial Networks: A Semiparametric Matrix

Regression Model

Monica Billio

Università Ca' Foscari Venezia, Italy

Abstract. Network models represent a useful tool to describe the complex set of financial relationships among heterogeneous firms in the system. In this paper, we propose a new semiparametric model for temporal multilayer causal networks with both intraand inter-layer connectivity. A Bayesian model with a hierarchical mixture prior distribution is assumed to capture heterogeneity in the response of the network edges to a set of risk factors including the European COVID-19 cases. We measure the financial connectedness arising from the interactions between two layers defined by stock returns and volatilities. In the empirical analysis, we study the topology of the network before and after the spreading of the COVID19 disease.

Keywords: multilayer networks, financial markets, COVID-19

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MMBD1145 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

MMBD1088 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

MMBD1139 Relations Between Corporate Economic Performance, Environmental Disclosure and Greenhouse Gas Emissions: New Insights

Omaima Hassan

Robert Gordon University, UK

Abstract. This study examines the associations and causations between corporate economic performance, environmental disclosure and greenhouse gas emissions, utilizing a large, longitudinal, multicountry dataset disaggregated between developed and developing countries. The methodology uses a simultaneous equation model with system estimation to deal with endogeneity between the variables, and Granger causality tests to indicate their direction of causation. A robust result is that lower emissions are strongly associated with better economic performance. After pretesting for stationarity, we find evidence of a one-way causation from emissions and environmental disclosure to economic performance, but no evidence of reverse causation. We also find strong evidence of a one-way causation from emissions to disclosure, but no evidence of reverse causation. The overarching policy implication is that environmental performance, as measured by greenhouse gas emissions, plays a crucial role in the formulation of business strategy at the firm level and government environmental policy at national and international levels.

Keywords: disclosure, economic, environmental, environmental policy, greenhouse gases, performance

MMBD1153 Machine Learning Approach in Analyzing Ocean-Atmosphere Oscillations

Swarnali Majumder and T.M. Balakrishnan Nair

Indian National Centre for Ocean Information Services, India

Abstract. El- Niño Southrn Oscillation (ENSO) and Indian Ocean Dipole (IOD) are significant ocean-atmosphere oscillations, which have impact on global weather system. ENSO involves

prolonged warming in the equatorial Pacific Ocean sea surface temperature, compared to the average value. IOD is another interesting phenomenon in which the Western part of the Indian Ocean becomes alternately warmer and cooler than the Eastern part. It has been observed that ENSO is one of the main triggers of IOD events. This leads to the question whether IOD is really a separate climate pattern or not. However, an extreme IOD was observed in 2019, whereas the preceding El-Niño in 2018-2019 was weak. So the interrelation between ENSO and IOD is a debatable topic. In this study, time series of El- Niño, IOD and sea surface temperature of the Indian Ocean are analyzed to explore the association between these two ocean-atmosphere oscillations. We propose a technique to deconstruct a time series into periodic and nonlinear components. Any empirical time series is a mixture of periodic, nonlinear and noisy components. This issue is important as it is concerned with the predictability of the time series. Our proposed method is based on singular spectral analysis and phase space reconstruction. This method is applied to show the teleconnection between ENSO and Indian Ocean climate. Finally we show that the inherent structure of ENSO and IOD time series are completely different.

Keywords: phase space reconstruction, singular spectral analysis, machine learning, El-Nino Southern Oscillation, Indian Ocean Dipole

Oral Session 3: Modern Management based on Big Data (3)

Thursday, Nov. 11, 2021 (GMT+8, Beijing Time)

Session Chair:

Assis. Prof. Ricardo Vicente, BYUH - Brigham Young University, Hawaii, USA

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8:30-8:50	**MMBD1094** (invited) (live)	The Impact of Marketing Time on Housing Prices: A Control Function Approach *Assoc. Prof. Omid M. Ardakani, Georgia Southern University, USA*
8:50-9:05	**MMBD1196** (live)	Investigating the Impact of Carbon Subsidy Policy on The Decision-making of Remanufacturing Supply Chain *Dr.Yu Zhang, Chang'an University, China*
9:05-9:20	**MMBD1182** (video)	Automotive SPICE: 0-60 in No Time Flat *Mr. Charles Murphy, Intel Corporation, USA*
9:20-9:35	**MMBD1191** (live)	Toward a Sociotechnical View of ERM *Assis. Prof. Ricardo Vicente, Brigham Young University, Hawaii, USA*
9:35-9:50	**MMBD1175** (video)	Innovation Leadership: Leverage the Real Potential of Your Team *Prof. Leslie P Martinich, Competitive Focus, USA*
9:50-10:05	**MMBD1092** (live)	Financial Flexibility During the Pre- and Post-Global Financial Crisis Periods *Assoc. Prof. Weihan Cui, Nagoya University of Economics, Japan*

10:05-10:20		**BREAK**
10:20-10:35	**MMBD1148** (video)	Ordering of Warships for the Brazilian Navy using the New Method: AHP-Gaussian with Pearson's Correlation *Dr. Marcus Vinicius Gonçalves Rodrigues, Federal Fluminense University (UFF), Brazil*
10:35-10:50	**MMBD1125** (live)	Business Innovations of Cruise Ship in the Pandemic *Dr. Yui Yip Joseph Lau, The Hong Kong Polytechnic University, Hong Kong, China*
10:50-11:05	**MMBD1183** (live)	The Function of Response Strategy in Crowdfunding: Content and Format *Ms.Yuting Xu, Huaqiao University, China*
11:05-11:20	**MMBD1177** (live)	Interdisciplinary Framework: A Building Information Modeling using Structural Equation Analysis in Lean Construction Project Management *Dr. Dante L. Silva, Mapúa University, Philippines*
11:20-11:35	**MMBD1150** (video)	Algorithm Selection for Machine Learning Classification: an Application of the MELCHIOR Multicriteria Method *Mr. Carlos Francisco Simões Gomes, Federal Fluminense University (UFF), Brazil*
11:35-11:55	**MMBD1110** (video)	Effective Retention Strategies Preferred by commercial pilots in Indian Aviation Industry: An Empirical Study *Prof. Meera Shanker, Women's University, India*

Abstracts of Oral Session 3

MMBD1094 The Impact of Marketing Time on Housing Prices: A Control Function Approach

Omid M. Ardakani[1], Jason S. Beck[1], Suyong Song[2]

[1] *Georgia Southern University, Savannah, USA*

[2] *University of Iowa, Iowa City, USA*

Abstract. Hedonic modeling can be used to examine the impacts of housing characteristics on selling prices. This paper estimates a hedonic price function for single-family houses in Savannah, GA, for the period 2007–2016. Digressing from conventional approaches of modeling a reduced-form hedonic price function, we estimate a structural function whereby the house sale price is directly affected by the usual house attributes and marketing time. Both the home sale price and time on the market, however, are endogenously determined. To account for endogeneity, we estimate the structural hedonic function using a control function approach. The control-function estimator utilizes conditional heteroskedasticity of structural errors in the triangular model. Using this approach, we identify the relationship between the house price and its time on the market solely based on nonlinearities in the control function without looking for excludable instrumental variables for the latter endogenous variable. Our findings suggest that housing prices increase with marketing time.

Keywords: control function, endogeneity, hedonic pricing, marketing time

MMBD1196 Investigating The Impact of Carbon Subsidy Policy on The Decision-making of Remanufacturing Supply Chain

Yu Zhang[1], Syed Abdul Rehman Khan[2], Tianshan Ma[1]
[1]*Chang'an University, China*
[2]*Xuzhou University of Technology, China*

Abstract. This research is to investigate the decision making of the members of remanufacturing supply chain under the government involvement. Different scenarios are analyzed in this research, and it is found that the subsidy for carbon emission reduction can increase the WPs (waste products) reusing. When the recycler participates in remanufacturing supply chain, the cost of remanufacturer will be shared and through centralizing the decision making, the carbon emission reduction will be enhanced and the whole supply chain's profit will decrease. So it is suggested that the government need to adjust the subsidy for carbon emission reduction in terms of the quality level of WPs and the cooperation between recycler and remanufacturer is suggested, especially in the high-value waste remanufacturing supply chain.

Keywords: carbon emission, decision making, remanufacturing supply chain

MMBD1182 Automotive SPICE: 0-60 in No Time Flat

Charles Murphy
Intel Corporation, USA

Abstract. Automotive SPICE (ASPICE) is a framework that provides a set of rules and guidelines to improve software management methodologies for the automotive market. Many automotive OEMs require vendors to follow ASPICE guidelines for software deliveries, although some will accept CMMI rather than ASPICE. This article intends to give a high-level understanding of the ASPICE framework and discuss some of the requirements. The article was first published in the IEEE Engineering Management Review vol47no2.

Keywords: automotive, ASPICE, software, project management, program management, CMMI

MMBD1191 Toward a Sociotechnical View of ERM

Ricardo Vicente[1], Joachim Jean-Jules[2]
[1] *Brigham Young University – Hawaii – BYUH, USA*
[2] *Canadian Institute for Entrepreneurship and Management – CIEM, Canada*

Abstract. Today's business environment is characterized by volatile technological factors, shrinking life cycles, labor market liberalization, and financial crises. To meet these challenges, organizations are increasingly deploying complex strategies that, in turn, broaden the range of risks they face.

ERM is currently the risk management approach that enables organizations to evaluate, embrace, and manage effectively the myriad of risks that they may face. As a result, ERM has been embraced by a number of large and medium-sized organizations worldwide. However, many of those companies, while they still believe in the concept of ERM, are frustrated by implementation issues that have impeded the expected benefits of ERM. Years of involvement with the industry along with a close examination of ERM research publications make us understand that implementation issues would derive mainly from a too narrow conception focused on Finance paradigm.

In reality, ERM implementation is inherently a complex and difficult process that involves an organization's technical and social systems. Accordingly, we developed a conceptualization of ERM implementation that draws on three theoretical perspectives: the sociotechnical, the mutual adaptation and the dynamic capability perspective. Our conceptualization casts light on the role of

particular socio-technical factors that influence the successful implementation of ERM, extends our understanding of ERM beyond its current narrow financial view, and relates ERM implementation more closely to the challenges of management practice.

Keywords: enterprise risk management, innovation implementation, sociotechnical perspectives, dynamic capabilities, mutual adaptation.

MMBD1175 Innovation Leadership: Leverage the Real Potential of Your Team

Leslie P Martinich

Competitive Focus, USA

Abstract. Exceptionally talented team members are tremendously significant in a company's ability to achieve the innovations necessary for success. In this talk, innovation expert Leslie Martinich describes what leaders can do to enlist their stars in the company's goals.

Keywords: innovation, management, leadership, productivity, engagement

MMBD1092 Financial Flexibility During the Pre- and Post-Global Financial Crisis Periods

Weihan Cui

Nagoya University of Economics, Japan

Abstract. This paper investigates the determinants of financial flexibility of Japanese firms before and after the global financial crisis. In the pre-crisis period, growth opportunity has a positive effect on financial flexibility, but in the post-crisis period, this effect turns to negative and is especially strong for financially constrained firms. These results indicate that in normal time, the Japanese firms pursue financial flexibility for investment demand as argued in previous literature. During difficult time, investment environment deteriorates and investment declines, therefore the firms with less growth opportunity accelerate to accumulate financial flexibility, especially for financially constrained firms as they suffer more than others in such a period. Enhancing the investment environment can improve the efficiency of corporate capital and financial support from banking system may ease the stress of financially constrained firms in post-crisis period.

Keywords: financial flexibility, debt conservatism, global financial crisis

MMBD1148 Ordering of Warships for the Brazilian Navy using the New Method: AHP-Gaussian with Pearson's Correlation

Carlos Francisco Simões Gomes[1] , Marcus Vinícius Gonçalves Rodrigues [1], Igor Pinheiro De Araújo Costa [1] and Marcos Dos Santos[2]

[1] *Federal Fluminense University, Brazil*

[2] *Military Engineering Institute, Brazil*

Abstract. This paper aims to support the selection decision of a medium-sized warship (between 2,000 and 3,000 tons), to be built in Brazil, presenting the alternatives in a hierarchical manner. Among the various multicriteria decision analysis (MCDA) methods, we used the analytic hierarchy process (AHP) as a basis. Throughout the study, we will propose some adjustments to the AHP in order to make the decision more robust (such as the use of the Gaussian factor and Pearson's correlation). The criteria were listed and their respective weights were assigned in light of the National Defense Strategy, the Navy's Strategic Program and interviews carried out with Brazilian navy officers with more than twenty years of career. To list the criteria, we adopted the critical incident technique. The use of the adapted AHP method in choosing the unit to be built can be

considered as a transparent way, with a clearly scientific bias, for the Brazilian society to have the perception that the best option was made among the three models of warships presented.
Keywords: multicriteria decision analysis, analytic hierarchy process (AHP), warship, Brazil's navy

MMBD1125 Business Innovations of Cruise Ship in the Pandemic

Yui-yip Lau and Tsz Leung Yip
The Hong Kong Polytechnic University, Hong Kong, China

Abstract. The world's largest-ever pandemic is taking place since 2020. Cruise tourism is seriously suffering from COVID-19 pandemic. Isolation and social distancing are mandate to avoid COVID-19 pandemic onboard. It makes cruise tourism nearly impossible and unpleasant. Cruise tourists are favourable as they spend time close together onboard cruise ships. Demand Princess and Grand Princess incidents provided unforgettable impacts for cruise lines, cruise terminals, policy makers, tourism associations, travel agents, engineers, and government bodies to innovate new norms of cruise tourism. In the forthcoming months, cruise lines will introduce new, innovative short cruise resembles staycations in which tourists stay in cruise. To this end, our research study aims to propose reengineering cruise ship design ranging from embarkation and disembarkation areas, passenger cabins, dining areas, theatres, swimming pools, and medical facilities with different levels of innovations. We will conduct semi-structured and in-depth interviews with travel agents, tourism associations, cruise lines, cruise terminals, and government bodies to get more insight on how to innovate cruise ship design in order to create specific themes of cruise ships and improve the health and safety conditions in resuming a wide range of cruise tourism. COVID-19 have reformed the cruise tourism. It is urgently demand for innovating cruise ship design to revitalize cruise industry during the COVID-19 and beyond.
Keywords: COVID-19 pandemic, cruise tourism, business innovation, cruise ship design, staycations, revitalize

MMBD1183 The Function of Response Strategy in Crowdfunding: Content and Format

Wei Wang, Yuting Xu
Huaqiao University, China

Abstract. The problem of low investment rate in crowdfunding has bothered fundraisers for a long time. To figure out factors influencing investment, scholars have carried out various explorations. However, they ignored the value of response text generated by fundraiser. Inspired by response strategy research in tourism management, this paper divided 1639 fundraiser responses into three categories: informational, transformationl and emotional response strategies. On this basis, observe the investment decision of the response receiver. Besides, response specificity was chosen as a moderator to test the border of fundraiser response strategies' function. Our findings reveal that informational and transformational response strategies contribute more to investment than emotional ones, and high level of specificity can magnify the advantage of informational response strategy.
Keywords: crowdfunding, response strategy, information specificity

MMBD1177 Interdisciplinary Framework: A Building Information Modeling using Structural Equation Analysis in Lean Construction Project Management

Dante Silva, Kevin Lawrence De Jesus, Bernard Villaverde, Andrea Isabelle Enciso, Amanda Nicole Mecija, Justin Owen Mendoza
Mapúa University, Philippines

Abstract. The construction process and construction management are highly reliant on the interaction between the triple constraints of project management of quality: scope, time, and cost. The industry has incorporated certain principles and technology, such as lean-based construction principles and Building Information Modeling (BIM), to maximize the time, quality, and cost-efficiency of various construction projects. Analysis and assessment of the factors and functionalities are needed to show their synergic relationships and determine their significant impact on the construction project using Structural Equation Modeling (SEM). To gather information, a survey was conducted on the different construction companies in the Philippines. The results generated a model interrelating the triple constraints of project management and how they are affected by incorporating BIM and lean construction principles. The models created established a significant relationship towards all the tripe constraints considering both individual and combined functionalities and factors. An interdisciplinary framework incorporating both BIM and lean principles is conformed to optimize construction stages based on the triple constraints of project management.
Keywords: building information modeling (BIM), lean construction principles, triple constraints of project management, structural equation modeling (SEM), interdisciplinary framework

MMBD1150 Algorithm Selection for Machine Learning Classification: an Application of the MELCHIOR Multicriteria Method

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Abstract. This paper aims to select an algorithm for the Machine Learning (ML) classification task. For the proposed analysis, the Multi-criteria Decision Aid (MCDA) *Méthode d'ELimination et de CHoix Includent les relations d'ORdre* (MELCHIOR) method was applied. The experiment considered the following criteria as relevant: Accuracy, sensitivity, and processing time of the algorithms. The data used refers to the intention of buying on the Internet and the purpose is to predict whether the customer will finalize a particular purchase. Among various MCDA techniques available, MELCHIOR was chosen to support the decision-making process because this method provides the evaluation of alternatives without the need to elicit the weights of the criteria. As a result, the Gradient Boosting Decision Tree algorithm has been selected as the most suitable for the ML classification task.
Keywords: multi-criteria decision analysis (MCDA), machine learning, outranking, MELCHIOR

MMBD1110 Effective Retention Strategies Preferred by commercial pilots in Indian Aviation Industry: An Empirical Study

Meera Shanker

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Abstract. Over the last few years, Indian Aviation Industry has seen substantial progress at an average rate of 14 percent. However, few airlines were struggling to cope with the rising operational costs, excess capacity and less earnings, yet big domestic market were drivers for a better stance.

There are huge demands for commercial pilots due to big time consolidation on civil sector, which has fuelled attrition to a high level, pilots spot opportunities in growing demand by domestic as well as foreign airlines. Objective of the present study was to find out effective retention strategies to reduce the attrition rate of commercial pilots in Indian Aviation Industry. All together 257 pilots, working with different Indian airlines have participated in this study. A Retention scale was developed to measure the same. Result of factor analysis revealed that there are four major factors preferred by the Indian commercial pilots to stay with airlines. They were: Positive work culture, Opportunities for Individual Growth & Development, Salary Benefit Package, and Opportunity for Self-Achievement. Further, data was analysed using descriptive statistics, alpha reliability and Pearson product moment correlation, which revealed that Commercial pilots prefer to stay with the airlines' who provide them a better opportunity for their personal growth and development, have positive and effective work culture along with desired achievement and financial benefits.
Keywords: retention strategies, preferred, indian aviation industry, commercial pilots, attrition

Oral Session 4: Modern Management based on Big Data (4)

Thursday, Nov. 11, 2021 (GMT+8, Beijing Time)

Session Chair:

Assoc. Prof.Prem Kumar Singh, GITAM University-Visakhapatnam, India

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14:00-14:15	**MMBD1157** (live)	Data Analytics based Risk Management for Students' Performance – A Case Study *Dr. M. Somasundaram, R.M.K. Engineering College, India*
14:15-14:30	**MMBD1140** (video)	The SAPEVO-M-NC Method *Mr. Sérgio Mitihiro do Nascimento Maêda, Federal Fluminense University (UFF), Brazil*
14:30-14:55	**MMBD1123** (video)	Challenges in Innovation Studies *Assoc. Prof. Elżbieta Wojnicka Sycz, University of Gdansk, Poland*
14:55-15:10	**MMBD1168** (video)	A Simple Solution for the Problem of the Will Rogers Phenomenon with Applications to Business Management *Dr. Mark Stander, Global Corporate Strategy, London, AECOM, UK*
15:10-15:30	**MMBD1077** (invited) (live)	Knowledge Processing from the given Unstructured Data Set with its Graphical Visualization *Assoc. Prof. Prem Kumar Singh, GITAM University-Visakhapatnam, India*
15:30-15:45	**MMBD1116** (live)	The Support System for Anomaly Detection with Application in Mainframe Management Process *Ms. Alicja Gerka, Rzeszów University of Technology, Poland*
15:45-16:00		**BREAK**

16:00-16:15	**MMBD1115** (video)	Spirituality at Work as Management Tool Can Help the Modern Management in A "Big Data" World: Qualitative analysis *Dr. Maria Joelle, Polytechnic Institute of Coimbra, Portugal*
16:15-16:30	**MMBD1179** (live)	Does Geographical Diversification Matter in Corporate Real Estate? Evidence from the US Retail Sector *Assoc. Prof. Gianluca Mattarocci, University of Rome Tor Vergata, Italy*
16:30-16:45	**MMBD1192** (live)	How Shifting from In-Person to Virtual-Only Shareholder Meetings Affects Shareholders' Voice *Dr. Miriam Schwartz-Ziv, The Hebrew University of Jerusalem, Israel*
16:45-17:00	**MMBD1189** (live)	Does Stakeholder Engagement Matter in Circular Economy Paradigm? Evidence from Italian Best Practices *Dr. Almici Alex, University of Brescia, Italy*
17:00-17:15	**MMBD1195** (video)	Knowledge to Action Framework for Home Health Monitoring *Ms. Christine Lee, University of British Columbia, Canada*
17:15-17:30	**MMBD1162** (live)	A Covid-19 Crisis Management Information System focused on Digital Transformation and Building Resilience in Global Value Chains *Dr. Jolta Kacani, University of Tirana, Albania*

Abstracts of Oral Session 4

MMBD1157 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

MMBD1140 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

MMBD1123 Challenges in Innovation Studies

Elżbieta Wojnicka Sycz[1,2]
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Abstract. In the speech I will present the evolution of paradigms in science from mechanistic reductionistic paradigm towards postmaterialistic, holistic, interactive systemic approach and intensified value creation based on intangible assets. I will present the manifestations of postmaterializm in the economy as well as the systemic approach in innovation studies that is the concept of innovation system. However, I refer mainly to innovative ecosystem based on natural interactions of innovation agents in sixtuple helix (firms, science, bridging institutions, administration, users/society and environment) not to innovation system indicated on the basis of the impact area of institutions and their policy. I will familiarize listeners with smart specialization concept and policy which aims at stimulating regional development by growth spill over effects from effective innovative ecosystems of industries and technologies indicated as priorities of regional innovation strategies in the European Union. I will also present the newest changes in innovativeness

of enterprises during the COVID-19 Pandemic. The natural disaster of the COVID-19 Pandemic caused economic crisis with which agents dealt by innovativeness, as the first theorist of innovation Joseph Schumpeter envisaged. The innovation activity of firms transformed from adjustments to the new situation to structural changes. These structural changes shall help dealing with global challenges as climate change and other environmental threats one of them being the increased risk of future pandemic caused by high mobility of people. The noticed transformations during the pandemic indicate shift towards sustainable, digitalized and less epidemically risky business models. The pandemic also caused shift towards increased geographical integration of supply chains, facilitated also by Industry 4.0 technologies. Moreover, shift to frugal and responsible innovations, using less resources and aiming not only at productivity but also at social aspects was visible during the pandemic. Hence these changes shall speed up transformation towards the Society 5.0 based on green and digitalized development.

Keywords: scientific paradigms, systemic approach, innovativeness, smart specializations, COVID-19 Pandemic

MMBD1168 A Simple Solution for the Problem of the Will Rogers Phenomenon with Applications to Business Management

Mark Stander[1], Julian Stander[2]

[1] *Global Corporate Strategy, AECOM, UK*

[2] *University of Plymouth, UK*

Abstract. The Will Rogers phenomenon takes place when an increase or decrease in the mean value of each of two sets is achieved by moving an element from one set to the other. This can lead to mistaken conclusions regarding the average changes in the sets from one time to another, when in fact the changes are just artifacts of the element's movements. Incorrect inferences can then be drawn from the data. This is a common problem in multiple business settings across multiple sectors, and also in cancer research where the Will Rogers phenomenon is referred to as stage migration bias. We give an overview of some toy examples of the Will Rogers phenomenon from business management, looking in particular at examples of the phenomenon in a hedge fund portfolio and when looking at the financial performance of individual business units. We then demonstrate a method to correct for this phenomenon. This method involves introducing a transition matrix between the two sets and taking probability weighted expectations. We then demonstrate this simple correction method using examples from business and finance. We discuss estimation uncertainty and some limitations of our method.

Keywords: will rogers phenomenon, zero-time shift, statistical paradoxes

MMBD1077 Knowledge Processing from the given Unstructured Data Set with its Graphical Visualization

Prem Kumar Singh

GITAM University-Visakhapatnam, India

Abstract. Recently, data analysis and its application have given a chance for various researchers to utilize it for decision making process. In this process, most of the researchers addressed the issue of data analysis, its representation as well as graphical structure visualization. Most of the time spent on understanding and categorization of the data in form of static, dynamic, complete, incomplete or uncertain due to its large veracity. Some time it may happen that the given data set is unstructured or semi-structured. Due to that, a problem arises in precise representation of these data and finding some useful information for knowledge processing tasks. Another problem arises with time

complexity evaluation of the given research problem as basic. This talk will be focused on handling large and static data set for knowledge processing tasks. The glimpses will be given on unstructured data representation, its pre-processing and its graphical visualization using one of the algorithms. The step by step demonstration will be shown with an illustrative example. The analysis derived from the given data set is also discussed for decision making process. The comparative study of the obtained results will be also discussed. This talk will be helpful for those scholars who work in data analysis, data visualization, and knowledge processing tasks, decision making or other areas. In addition some useful information will be given for further extension of the research activities.
Keywords: data visualization, knowledge processing data, static data, decision making

MMBD1116 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

MMBD1115 Spirituality at Work as Management Tool Can Help the Modern Management in A "Big Data" World: Qualitative analysis

Maria Joelle
Polytechnic Institute of Coimbra, Portugal

Abstract. Currently, we are facing with changes in the organizational high-tech environment with the global pandemic. Spirituality at work can help the modern management in a "big data" world. By meaning, spirituality at work has a multidimensional and measurable nature, aligned with the three principles of the World health Organization (healthy environment; well-being; service for the whole society), defined by the next five dimensions: deep sense of meaning and purpose in one`s work, sense of community, alignment with organization`s value, emotional balance and inner peace, opportunities for inner life.
Spirituality at work concept is shared between western and eastern scholars, respecting all beliefs and religions systems. We are facing a management tool inclusive aligned with the big data era, where the most valuable resources for any company are people and data. If companies can work much more efficiently by analyzing large amounts of data and making business decisions on that basis, this represents that big data analytics is the current path to establish the connection between profit and purpose. This connection is the central goal for this new approach, including the impacts on environment, on the community and the possibility to contributes to a better world, helping the manager become a spiritual being on a human journey. The manager, by their work, in the big data era, can contribute for this central goal, reflecting on the big issue stated by the psychologist Maslow in the year 1967: "What are the moments of reward which make your work and your life worthwhile?".
Keywords: big data, high-tech environment, spirituality at work, human resources, modern management

MMBD1179 Does Geographical Diversification Matter in Corporate Real Estate? Evidence from the US Retail Sector

Lucia Gibilaro[1], Gianluca Mattarocci[2]
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[2] *University of Rome Tor Vergata, Italy*

Abstract. Real estate represents a key and strategic asset of the firms' balance sheet for all the major corporations worldwide (e.g. Zeckhauser and Silverman, 1983) and nowadays it represents a strategic asset for any type of corporation (Roulac, 2001).

The relevance of the corporate real estate (hereinafter CRE) is significantly affected by the sector of activity (Johnson and Keasler, 1993) and the lower is the standardization of assets used the higher will be impact of an efficient real estate management on the firm's performance (Brounen and Eichholtz, 2005). The value of real estate investment created for a corporation are normally more relevant in the retail sector where revenues are driven by the choice of the selling point location and the cost of renting/leasing the assets is significantly affected by the market trend and the rent perspectives (Ali et al., 2008).

The retail sector represents a unique sector for the evaluation of the CRE strategy because the value of the asset (appraisal value and market price) is significantly driven by the location and the quality/type of other assets available in the same area (e.g. Ownbey, Dabis and Sundel, 1994). Retail firms are characterized by a high investment in real estate due to the high frequency of acquisition of existing selling points and the below the average time necessary for selling real estate units in that sector (Liow 1995). Main retail groups have already developed strategies in order to define their real estate investment strategy for supporting the business and maximize the potential benefits related to the investment planning on the long-term horizon (Gibson and Barkham, 2001). Moreover, the retail sector seems to be one of the most active sectors on CRE due to the reputation advantages expected by an increase of the presence in the main retail locations (Brounen, Colliander and Eichholtz, 2005).

A higher exposure on real estate is normally considered a proxy of higher potential diversification benefits for shareholders (Liow and Nappi-Choulet, 2008) and normally the market accepts to pay a premium for investing in real estate due to the higher expected value of the guarantees provided (Yu and Liow, 2009). Even if it is clear in the literature that the value of real estate owned is affect by the location (e.g. Roulac, 1995), there is no evidence on the impact of the characteristics of the real estate portfolio owned on the firm's value.

The paper collects a unique database on the characteristics of the real estate portfolio owned by retail corporations by considering the size and the number of real estate units by country. The analysis will consider the impact CRE portfolio features on the performance (measured by the Jensen's Alpha) and the default risk (measured by the Z-score index) for all listed retail firms listed in US. The sample considers the time horizon 2005-2017 and includes 265 firms. Results obtained show significant differences in the real estate investment strategy for US retail firms and pointed out that not only the amount of real estate investment matters on the performance and the risk, but also the geographical diversification strategy may affect the market evaluation for the firm. Empirical evidence supports also the hypothesis that the role of real estate investment is changing over time and the market is currently less interested to the CRE strategy adopted by the firm.

Keywords: corporate real estate, location, retail distribution

MMBD1192 How Shifting from In-Person to Virtual-Only Shareholder Meetings Affects Shareholders' Voice

Miriam Schwartz-Ziv

The Hebrew University of Jerusalem, Israel

Abstract. Virtual-only shareholder meetings have become dramatically more common following COVID-19. Analysis of transcripts and recordings of in-person versus virtual-only shareholder meetings show that virtual-only meetings are shorter and dedicate less time to addressing shareholders' concerns. I construct a unique dataset documenting questions shareholders submitted at virtual-only shareholder meetings. Precisely when shareholders vote against management recommendation, indicating contention with management, firms are likely to limit shareholders'

voice: they ignore shareholders' questions and explicitly limit the scope of questions addressed. Such actions are shown to limit the extent of communication at shareholder meetings.

Keywords: shareholder meetings, shareholder votes, shareholder voice, virtual, in-person, COVID-19

MMBD1195 Knowledge to Action Framework for Home Health Monitoring

Christine Lee

University of British Columbia, Canada

Abstract. Chronic disease management is a grand challenge, both to the patients for optimal management and to the overall health system with cost utilization. Emerging research evidence suggests that Home Health Monitoring (HHM) using home-based, remoting monitoring technologies can improve the patients' quality of life, self-management, and achieve cost-effectiveness for the health system. How should HHM be introduced and integrated appropriately into the current healthcare delivery pathways to improve patient care and collect evidence of benefits simultaneously? The Knowledge to Action (KTA) framework is an effective approach in the implementation science literature to methodically guide the translation of evidence-based research findings into practice, putting knowledge into practical use. This article examines the use of the seven-step KTA model to address implementation facilitators and barriers of applying HHM in chronic disease management and then focus on its applicability on chronic obstructive pulmonary disease as an example.

Keywords: home health monitoring, COPD, healthcare tech, aging population, knowledge to action framework

MMBD1162 A Covid-19 Crisis Management Information System focused on Digital Transformation and Building Resilience in Global Value Chains

Jolta Kacani

University of Tirana, Albania

Abstract. This paper examines how enterprises operating in Southeast Europe depend on application of solid management information structures to respond to Covid-19 and similar external shocks. The crisis management business model followed by these firms aims to change growth prospects and build resilience in global value chains. This paper considers a sample of 250 enterprises based on extensive data collection obtained during a period of six months. The proposed crisis management information system model has five components that include technology diffusion, operational efficiency, organizational innovations, financial capabilities and customer centricity.

Our analysis determines that enterprises embrace varying degrees of digital transformation, which are summarized into three categories, depending on progress attained in each of the five components of the crisis management model. In the first category are "drivers" that include enterprises which respond to adversities by accelerating and undertaking simultaneous initiatives towards enterprise digitalization. Enterprises in the second category are labelled as "guardians". These organizations display a small range of digital initiatives, as they carefully look after limited available financial resources. In the third category, enterprises are named as "juniors" whether they have taken one or two digitalization initiatives in innovating their business model while being oriented towards responses that are more traditional when market crisis occur. Finally, this paper suggests short and long-term strategic initiatives in each of the five components of the crisis management business model for digital upgrading and better integration in global value chains.

Keywords: management information systems, crisis management, digital transformation, global value chains, cost management

Part VI Acknowledgements

On behalf of the MMBD2021 Organizing Committee, we would like to take this opportunity to express our sincere gratitude to our participants. Without their support and contributions, we would not be able to hold the conference successfully in this special year. We would also like to express our acknowledgements to the Technical Program Committee members who have given their professional guidance and valuable advice as reviewers.

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Below are the lists of the Technical Program Committee members. For those who contribute to the success of the conference organization without listing the name here, we would love to say thanks as well.

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