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Centre for Transportation and Logistics

INDIAN INSTITUTE of MANAGEMENT AHMEDABAD

ANNUAL REPORT 2024-25

Centre for Transportation and Logistics
INDIAN INSTITUTE of MANAGEMENT AHMEDABAD
विद्याविनियोगाद्विकास:

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Message from Co-Chairs

Dr. Debjit Roy
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Building on the strong research culture of the Indian Institute of Management Ahmedabad (IIMA), the Centre for Transportation and Logistics (CTL) continues to take strides in advancing research, practical application, and academia within the field of logistics and transportation. The centre's activities focus on the broad areas within the logistics, supply chain, and transportation sectors, which includes topics such as facility location, routing, warehousing, intralogistics, agri-logistics, optimization techniques, e-commerce, mitigating environmental impact, urban freight, last-mile connectivity, public transportation planning and management, sustainable mobility, and policy-making.

This year, CTL organized a range of seminars, webinars and panel discussions, which delved into some critical and emerging discussions within the domain of transportation and logistics. These sessions explored several key topics of supply chain management, such as the adoption of machine learning and data science, analyzing the market behaviour, product quality, the use of automated tracking system in unlocking maritime data, and the role of digitalization in improving trucking operations. While other sessions centered on the theme of passenger and urban mobility by covering topics such as incorporation of service reliability into multi-depot vehicle scheduling, and adoption of telemedicine with broader implications in land-use transportation. The sessions were delivered by expert academicians and industry practitioners from globally renowned academic institutions and organizations.

In August 2024, the centre hosted a five-session online 'Capacity-Building Workshop on Advanced Methods for Transportation and Logistics Research and Practice,'conducted on a weekly basis, with each session led by the CTL faculty members. The workshop received an overwhelming response of nearly 300 registrations, of which 147 participants were shortlisted by the workshop faculty. The participants consisted of faculty members, researchers, doctoral students from prestigious institutions and professionals working across various sectors of transportation and logistics. The workshop equipped the participants with the knowledge of the latest research methods and tools, along with their application in various areas of transportation, logistics, and supply chain management.

IIMA organized its inaugural edition of the 'India Management Research Conference (IMRC)' in December 2024, featuring 11 research tracks. CTL hosted 'Track 06: Transportation and Logistics,' which facilitated around 40 research presentations across domains such as supply chain and optimization, managing supply chain performance, smart mobility, policy, and sustainability. Major events, including keynotes, research workshops, and tutorials, were delivered by some of the most eminent academicians in the field. Throughout all three days, the track witnessed a strong turnout, with active engagement from the conference attendees.

The centre supported student-led projects and also conducted workshops for the doctoral students to provide them with exposure to the latest research practices. CTL faculty members continued to make noteworthy contributions in the transportation and logistics sector through research publications, white papers, opinion pieces, research and consulting projects, and so on. These faculty engagements have led to identifying key gaps and opportunities within the transportation and logistics landscape. In association with the faculty members, our CTL research team were consistently engaged in a range of research projects all through the year, leading to several case studies, research papers and articles.

In the coming year, the centre will continue to conduct quality research, contributing to policy and practice, while also supporting student-led projects, faculty engagement, and research initiatives pertinent to the transportation, logistics, and allied sectors. Through its various projects, events, and other research outputs, the centre will continue to uphold its objective of addressing critical shortfalls and developing strategies for the long-term betterment of the transportation and logistics industry.

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Message from the Centre AGM

Mr. Subodh Patrikar

It gives me great pleasure to present the annual report of the Centre for Transportation and Logistics (CTL) for the academic year 2024–25. This report encapsulates the Centre's multi-faceted contributions to research, teaching, policy engagement, and capacity building in the fields of transportation & logistics in the bygone year. Building on the foundational strengths of the Indian Institute of Management Ahmedabad (IIMA), CTL has continued to evolve as a dynamic platform where academic rigor, industry relevance, and policy discourse converge.

Advancing Research and Thought Leadership

This year, the Centre made significant strides in addressing complex issues in passenger and freight transportation systems, logistics network optimization, and sustainable mobility. Through an interdisciplinary approach, our research has tackled challenges ranging from facility location and intralogistics to urban freight policy, sustainable transportation, last-mile delivery, and e-commerce logistics.

In 2024–25, CTL hosted Ten (10) cutting-edge research seminars and webinars featuring distinguished speakers from leading global institutions. Topics ranged from Machine Learning and Data Science in Transportation & Logistics and Multi-Depot Vehicle scheduling to Demand Estimation and Product Quality in marketplaces. Our speakers included academicians and research scholars from the University of Texas, Temple University, ISB, University of Edinburgh, and UT Dallas, among others. These sessions not only broadened our academic horizons but also deepened our understanding of emerging methodologies and practical applications.

Capacity Building and Skill Development

A major highlight of the year was the Online Capacity-Building Workshop on Advanced Methods for Transportation and Logistics Research and Practice, held in August 2024. This five-part workshop attracted over 300 registrations, with 147 participants shortlisted. The sessions, led by CTL faculty, covered diverse areas such as Intralogistics Performance Assessment, Inventory-Routing problems, Machine Learning Applications, and Experimental methods for Policymaking. Participants included doctoral students, researchers, and professionals from premier Indian and global institutions. The workshop significantly contributed to enhancing participants' methodological competencies and research capabilities.

We also conducted doctoral workshops on econometric theory testing and game-theoretic modeling for supply chain problems, fostering advanced research skills in emerging scholars. These sessions were instrumental in exposing doctoral students to contemporary tools for empirical validation and strategic modeling.

Engagement with Policy and Practice

CTL continued its engagement with industry practitioners through targeted events. The practitioner webinar on "Methodological Framework for Unlocking Maritime Insights using AIS Data" by a senior statistician from the Asian Development Bank provided actionable insights into maritime logistics using real-time data. Similarly, our panel discussion on the "Role of Digital Technologies in Improving Trucking Operations" brought together industry leaders from Mahindra, Tata Motors, VE Commercial Vehicles, and Avanteum Advisors to discuss the transformative potential of digitization in the Indian trucking ecosystem. Furthermore, the Centre supported several sponsored projects that addressed real-world challenges in logistics and transportation. These included projects on warehouse automation for Marico, EV policy development, logistics cost estimation in FMCG, and technology adoption in dry bulk terminals. Such projects not only inform academic work but also provide industry and policy stakeholders with data-driven solutions and strategic roadmaps.

India Management Research Conference (IMRC) 2024

Another landmark achievement was CTL's leadership in organizing Transportation and Logistics Track during the inaugural edition of the India Management Research Conference (IMRC) held in December 2024. This track hosted around 40 paper presentations & 11 poster presentations, showcasing academic work that bridged theory and practice across domains such as optimization, sustainability, and smart mobility. Keynote sessions, tutorials, and journal interactions added rich dimensions to the academic experience, furthering the Centre's vision of becoming a thought leader in this domain.

Student and Faculty Engagement

Our faculty members published research papers in top-tier journals and led impactful research on topics such as warehouse automation, vehicle routing, and sustainability in logistics. This underscores the Centre's commitment to producing scholarship that is both academically robust and practically relevant.

CTL Snippets and Publications

Through the CTL Snippets series, we continued to disseminate concise, research-backed insights on trending topics such as free shipping policies, AI in logistics, and supply chain disruptions. Additionally, opinion articles authored by CTL members examined themes like fleet digitalization and India's strategic trade positioning, further extending the Centre's influence in public discourse.

Looking Ahead

As we move forward, we aim to deepen our engagement with government agencies, industry leaders, and academic institutions globally. By fostering a vibrant research ecosystem and nurturing the next generation of transportation and logistics scholars, CTL remains committed to shaping the future of mobility and supply chains in India and beyond.

Acknowledgments

I would like to thank our Chairpersons, Prof. Debjit Roy, Prof. Sandip Chakrabarti, and all faculty members associated with the Centre for their scholarly contributions and collaborative spirit. I extend my gratitude to our student researchers who continue to bring fresh perspectives and enthusiasm. In closing, I invite all stakeholders—academic, industrial, and policy-oriented—to collaborate with us in our mission to create impactful research and actionable insights for the betterment of transportation and logistics sector.

Centre Vision and Research Themes

Vision

To facilitate cutting-edge research in transportation, logistics and allied areas, and thereby contribute to scholarship, practice, and policymaking in India and abroad.

Centre Overview

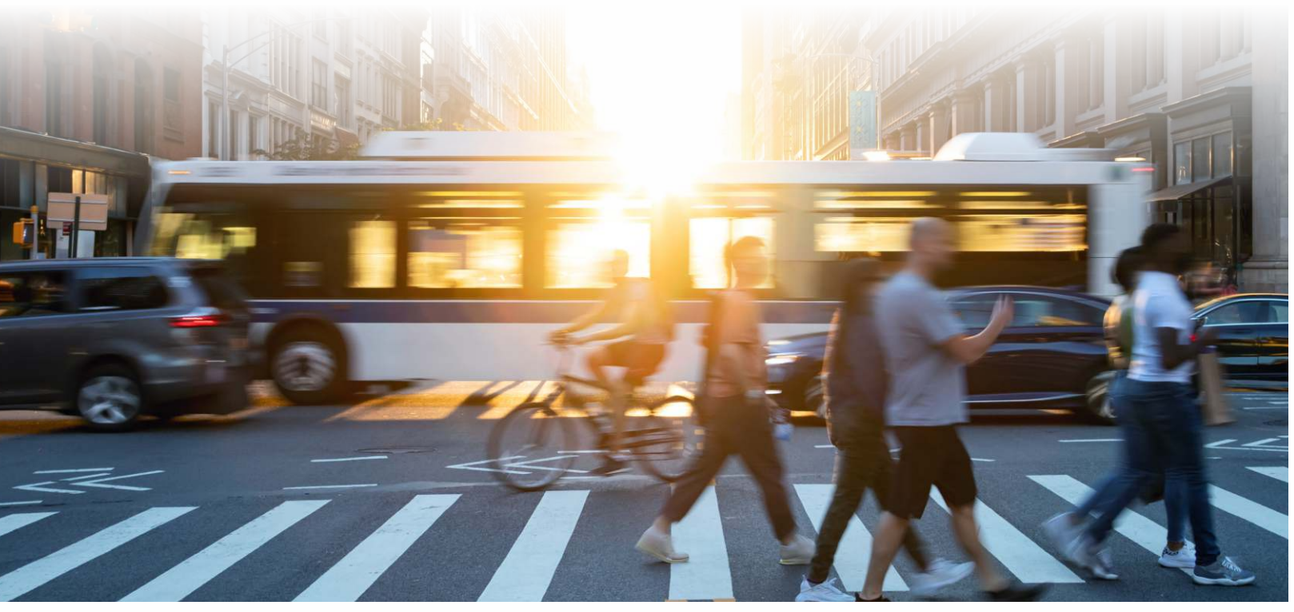
The IIMA Centre for Transportation and Logistics (CTL) will address critical passenger and freight transportation, and logistics challenges in India through an integrated, multidisciplinary program of research, post-graduate and executive education, technology transfer, and policy advice for enhancing the mobility of people and goods. CTL's objective is to contribute to improving the efficiency of multi-modal transportation systems and supply chain logistics, thereby promoting economic growth and fostering sustainable development.

Research Themes

The following strategic themes will constitute priority research areas for CTL. The themes have been identified based on current trends in research, innovations in practice, and policy priorities in India and across the world. Priority themes will be reviewed and updated periodically as the transportation and logistics industry/environment evolves.

Passenger Transportation and Sustainable Urban Mobility

Freight Transportation and Logistics



Passenger Transportation and Sustainable Urban Mobility

• Leveraging technology for improving urban and regional mobility

This theme focuses on examining emerging technologies such as intelligent route guidance systems, dynamic road pricing, smart parking, integrated transit fare systems, app-based shared transportation services, high-speed rail, etc., and their potential for improving passenger mobility and accessibility within and between cities. The impact of connected and autonomous vehicles in increasing safety and capacity utilization, enhancing system reliability, influencing travel behavior, and altering location choices of households and firms will be analyzed. Innovative ways of collecting and applying big data in transportation for evidence-based planning and improved real-time operations of multi-modal systems will be explored. The role of government and public policy for better leveraging technology will be considered.

• Reducing environmental impacts and enhancing resilience of transportation systems

This theme focuses on exploring ways to reduce environmental impacts of transportation while meeting or improving mobility. Research areas include: a) Ways to reduce carbon footprint of transport infrastructure (e.g., roads, airports, ports, public transit systems, etc.) construction, maintenance, and operation; b) New fuel and vehicle technologies across modes, including plug-in hybrids and battery electric vehicles, that significantly reduce lifecycle emissions, and c) Government actions, including pricing policies as well as mandates or restrictions, to promote supply and demand of low-carbon transportation systems. Research analysing and suggesting improvements to the multi-modal transportation system's preparedness for short-notice (e.g., earthquake, terrorist attack, etc.) or planned (e.g., cyclone, virus outbreak, etc.) evacuation or system management at various geographic scales, and research exploring ways to develop systems that are resilient (with respect to damages and disruptions) to both short-notice events and long-term climatic changes will be covered under this theme.

• Promoting sustainable and safe urban transportation

This theme focuses on research involving strategies to promote shared (e.g., public transit, car- and ride-sharing arrangements, etc.), non-motorised/active (i.e., walking and bicycling), and low-carbon (e.g., electric vehicles) transportation in India's megacities and high-growth regions. Strategies can range from private sector initiatives/innovations in the provision and management of sustainable transportation modes and systems, to government policies (i.e., land use planning, supply-side investments, and demand management initiatives) to influence activity-travel decisions. Methods can span across disciplines, from travel behaviour analysis using revealed preference or stated-choice surveys, to experimental approaches of evaluating the impacts of specific interventions. Issues of equitable access to jobs and other urban amenities, particularly for the transportation disadvantaged, will be addressed. Research exploring ways to make urban travel safer will also be covered under this theme. This theme is aligned with global initiatives including India's policy priority of promoting sustainable urban development, and the creation of healthy and liveable cities.

Freight Transportation and Logistics

• Optimizing logistics networks

This theme covers research for identifying optimal locations of facilities within a network and allocating customer orders to each location, which is an important decision area for all retailers including e-commerce players. For last mile delivery, optimal vehicle routing and minimising customer misses is key to business profitability. Also, during disruptions, the optimal order fulfilment policies such as the choice of the warehouse location for fulfilling a customer order with due date constraints is critical. With recent growth in electric vehicles, designing and optimising charging networks for transportation is another potential research area. Other areas of optimisation include identifying optimal transportation mode, route, and time choice. The methods used in optimising networks include integer programs, queuing theory, game theory and simulation.

• Managing terminal and warehouse operations

Managing the performance of logistics facilities such as warehouses or container terminals is critical for achieving high customer service levels. Many facilities are robotised today, and we expect more warehouses to be robotised in the future. Likewise, container terminals are undergoing automation. Performance analysis of such facilities using analytical and simulation models is a key step in the design conceptualisation process. While traditional optimization and simulation methods are used to analyse decision problems in container terminals such as quay crane assignment problem, berth allocation problem, yard crane assignment problem, analytical models are also useful for long-term technology investment decisions in the terminals. Also, applications of IoT in intra-logistics will be investigated. Related research will be covered under this theme.

• Sustainable urban freight and last-mile connectivity

This theme will cover research aimed at improving the efficiency and reducing the negative environmental impacts of freight activity within cities. Strategies involving technological (e.g., low-carbon or non-motorised vehicles), land use (e.g., urban consolidation centres), analytics (e.g., optimised routing), and policy (e.g., taxes or restrictions) interventions will be evaluated. Research under this theme is significant given changes in consumer demand and preferences, and concurrent innovations in logistics and supply-chains.

• Improving eco-efficiency and safety of goods transportation

In India, commercial vehicles are a dominant source of CO_2 emissions. Old vehicles not only add to the emissions but also cause driver attrition. While the government is implementing the vehicle scrappage policies to eliminate polluting vehicles (over 15 years old) from the road, the implications of the scrappage policies on the vehicle demand estimation, overall CO_2 emissions, and driver productivity and safety is still unknown. This centre would research policies to improve driver safety and retention. A project that attempts to link driving behaviour with fuel efficiency and road safety has already been initiated.

CTL Faculty Members

The core research areas of the CTL faculty members :

Dr. Debjit Roy

Logistics and service systems including container terminals, automated warehouses, vehicle rental, trucking, dine-in restaurants | Stochastic processes | Queuing theory Optimization | Simulation | Empirical

Dr. Sandip Chakrabarti

Transport policy analysis | Transportation demand analysis and modeling
Land use-transportation interactions | Travel behavior/choice analysis
Public transit planning and policy | Active travel | Parking
Multi-modal system performance measurement and monitoring
Impact analysis of new transportation investments
Applications of big data in transportation

Dr. Prashant Das

Commercial real estate (Private Equity, REIT, CMBS, Sustainability, Hotels)
Sentiments | Valuation | Real estate in India

Dr. Amit Garg

Blockchain based peer-to-peer energy sharing and trading platform
Water-energy-agriculture-climate change nexus
Green infrastructure, energy policy and energy modeling | Green corporates
Green products and services | Adaptation policy for climate change impacts
Uncertainty assessment and risk management for corporates due to climate change
Carbon finance | Climate change mitigation policy | Solar agriculture pumps
Development, energy and climate change | Emission inventory assessment
Demand side management | New and renewable energy technology policy

Dr. Diptesh Ghosh

Metaheuristics | Evolutionary algorithms | Layout problems

Dr. Sachin Jayaswal

Facility location | Large-scale optimization | Stochastic optimization
Operations - marketing interface: pricing, lead time and capacity decisions
Product differentiation/price discrimination | Supply chain management.
Facility Location Problems with Stochastic Demand and Congestion
Network Design/Flow | Large Scale Optimization (Decomposition Techniques)
Stochastic Optimization | Game Theoretic Models in Operations/Marketing
Operations-Marketing Interface: Pricing, Leadtime, Capacity Decisions

Dr. Sunil Maheshwari

Turnaround management | HRM in healthcare management | Leadership

Dr. Sundaravalli Narayanaswami

Transport and operation (particularly railway and urban transport) education
Pricing and revenue management | Contingency and emergency management
Automation of operation and knowledge

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Dr. Sriram Sankaranarayanan

Game theory | Optimization problem | Climate change | Energy market policies

Dr. Chetan Soman

Food supply chains | Advanced planning & scheduling in process industries
Application of simulation for decision making

Dr. Anish Sugathan

Governance | Environmental policy | Energy policy | Strategy
Sustainable development

Dr. Rama Mohana R Turaga

Public policy analysis and management | Environmental economics and policy
Corporate sustainability and corporate social responsibility
Pro-environmental behavior

Dr. Poornima Varma

International trade | Trade and agriculture | Issues of food security and food safety
Sustainable agricultural practices | Food security issues | Agricultural supply response
SPS and TBT in international trade | Price formation in agricultural markets
Agrarian transformation in India | Intra industry trade | Public distribution system
Pricing to market behavior of Indian exporters
Adoption of sustainable agricultural practices | Agricultural exports and food security
Crop diversification and agricultural growth | WTO related issues, trade and environment

Dr. Prahalad Venkateshan

Vehicle Routing | Facility Location | Network Design | Mathematical Programming

Dr. Sanjay Verma

E-governance | Knowledge management | Measurement of business performance
Use of Information Technology in Government | Strategies for improving Rail-Port Interface
Knowledge Management in Indian Organizations
Preemptive Resource Constrained Project Scheduling Problems
Multiple resource constrained project scheduling problems

Dr. Samrat Roy

Causal Inference and Observational Studies
High Dimensional Statistics – Tensor models | Advanced Time Series Models
Statistical Machine Learning – Advanced penalized estimation framework

Research Seminars & Webinars

The Centre organized ten research seminars & webinars across the year on various thematic areas

Topic	Speaker	Date	No. of Attendees
Machine Learning and Data Science Applications in Transportation and Logistics	**Prof. Samrat Roy** Assistant Professor Operations and Decision Sciences Area, IIMA	June 05, 2024	28 in-person & 91 online participants
Towards Advancing Diversity, Equity and Inclusion in Operations and Supply Chain Management	**Prof. Dwaipayan (Dwai) Roy** Assistant Professor, Darden School of Business University of Virginia, USA	July 05, 2024	51 online participants
Supplier and Customer on the Board: Their Impact on Environmental Performance Under Supply Chain Upstream, Downstream, and Financial Pressures	**Prof. Saurabh Ambulkar** Assistant Professor Information Systems and Operations Management The University of Texas at Arlington	July 10, 2024	24 in-person & 33 online participants
Collaborative New Product Development: Co-creating with a Shared Supplier in the Presence of a Competitor	**Prof. Abhishek Roy** Assistant Professor, Temple University	July 22, 2024	24 in-person & 38 online participants
Incorporating Service Reliability in Multi-depot Vehicle Scheduling: A Chance-Constrained Approach	**Prof. Merve Bodur** Associate Professor, School of Mathematics University of Edinburgh	August 13, 2024	70 online participants
System Dynamics in OM/SCM Research	**Prof. Rogelio Oliva** Professor, Mays Business School - Texas A&M University	October 18, 2024	75 online participants
High-Dimensional Correlation using Subordinated Markov Chains: Modelling and Applications	**Prof. Vishwakant Malladi** Assistant Professor, Indian School of Business Hyderabad	November 11, 2024	20 in-person & 46 online participants
Nonparametric Demand Estimation in the Presence of Unobserved Factors	**Prof. Ashwin Venkataraman** Assistant Professor, Operations Management Naveen Jindal School of Management University of Texas at Dallas (UTD)	November 18, 2024	70 online participants
The Role of Product Quality in Marketplaces	**Prof. Aditya Jain** Professor of Operations and Decision Analytics, Zicklin School of Business, Baruch College, CUNY	December 23, 2024	22 in-person & 44 online participants
A Study on Telemedicine Adoption, with Implications for Healthcare, Telecommunications and Land use-Transportation Planning	**Prof. Chandra R. Bhat** Ph.D., P.E., Director US DOT National University Transportation Center on Travel Behavior and Demand University Distinguished Teaching Professor Joe J. King Endowed Chair Professor in Engineering Department of Civil, Architectural and Environmental Engineering Department of Economics (Courtesy Appointment) The University of Texas at Austin	January 20, 2025	25 in-person & 80 online participants

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1. Machine Learning and Data Science Applications in Transportation and Logistics

'Machine Learning and Data Science Applications in Transportation and Logistics', a Research Seminar by Prof. Samrat Roy, Assistant Professor, Operations and Decision Sciences, Indian Institute of Management Ahmedabad, was hosted on June 05, 2024.

Research Theme: Passenger transportation and sustainable urban mobility / Freight transportation and logistics
No. of attendees: 28 in-person, 91 online
Moderated by: Prof. Debjit Roy

Prof. Samrat Roy is a faculty member at IIM Ahmedabad in the Operations and Decision Sciences Area. Prior to this position, he worked as a postdoctoral researcher at the Wharton School (Department of Statistics and Data Science) in the University of Pennsylvania. He completed his M.STAT. from Indian Statistical Institute and received his Ph.D. in Statistics from the University of Florida (UF). Before starting his journey as a doctoral student at the UF, he worked at Ernst & Young and Credit Suisse as a credit risk model developer. His research includes High-dimensional Statistics, Tensor Models, Causal Inference, Observational Studies and Time Series Models.

Talk Summary

Prof. Samrat Roy commenced the seminar by highlighting that although AI systems, such as ChatGPT, are proficient at providing solutions, the primary duty of researchers and practitioners lies in discerning the objectives(what), timing(when), and rationale(why) behind their actions. The methodology of implementation should be considered only after these fundamental questions are addressed.

Machine learning, data science, and other statistical techniques can be applied to various optimization and prediction techniques. The seminar primarily focused on arrival time prediction and demand forecasting in transportation and logistics.

Prof. Samrat Roy discussed the method of Classification and Regression Tree (CART) used for arrival time prediction. Additionally, he explored the various variables that can predict the arrival time of containers using multimodal freight transportation, applying ML methods. Subsequently, Prof. Samrat elaborated on several notable machine-learning methodologies, including bagging, random forest, extremely randomised trees, adaptive boosting, gradient boosting, and support vector regression.

He highlighted how random forest is a theoretically improved version of bagging since random forest involves multiple decision trees, thereby reducing the chances of an error. Prof. Samrat explained that extremely randomized trees improve upon random forest by selecting random cut-off points rather than optimal ones. He emphasized that boosting is akin to bagging but differs in its approach. He also discussed gradient boosting, where models are added sequentially. However, Prof. Samrat cautioned against the use of complex techniques for arrival time prediction since simpler methods like linear or logistic regression can often perform better.

He further discussed research involving advanced machine learning techniques like discrete wavelet transform and artificial neural networks to forecast demand, where the focus lies on temporal dependence. He also briefed on the application of time series forecasting techniques like SARIMA and GMDH. He concluded the seminar by discussing regularized methods, spatiotemporal demand structures, and multidimensional data in transportation and logistics.

Prof. Samrat Roy delivering a seminar on 'Machine Learning and Data Science Applications in Transportation and Logistics'

To Watch

Visit:
https://youtu.be/HgOh1jJDMzQ
or Scan

2. Towards Advancing Diversity, Equity and Inclusion in Operations and Supply Chain Management

'Towards Advancing Diversity, Equity and Inclusion in Operations and Supply Chain Management', a Research Webinar by Prof. Dwaipayan (Dwai) Roy, Assistant Professor, University of Virginia Darden School of Business, USA, was hosted on July 05, 2024

Research Theme: Freight transportation and logistics
No. of attendees: 51
Moderated by: Prof. Debjit Roy

Prof. Dwaipayan (Dwai) Roy is an assistant professor of business administration at the Darden School of Business, University of Virginia, USA. At Darden, Dr. Roy teaches operations management in the first year core MBA program and a second year elective on strategic sourcing. Prior to joining Darden, Dr. Roy earned his PhD in supply chain and operations management from The Carlson School of Management, University of Minnesota, USA. In his research, Dr. Roy studies socially responsible operations with a strong emphasis on examining the issues of diversity and inclusion in operations and supply chain management. This interest is deeply rooted in his personal experiences as a member of a marginalized community in both his home country, India, and his adopted country, USA. This background has resulted in two research streams: (a) investigating supplier diversity initiatives within public procurement settings, and (b) analyzing the influence of inclusive leadership on supply chain outcomes. Dr. Roy's research is inherently inter-disciplinary in nature, and it integrates perspectives and contributes to research across operations, public policy and human resources. He regularly engages with industry professionals and policy makers, including those from the US federal government, which underscores the managerial relevance of his research endeavors. His research has been published (or is forthcoming) in peer-reviewed academic journals such as Manufacturing and Service Operations Management, Production and Operations Management, and Data and Policy, and in practitioner outlets like Harvard Business Review.

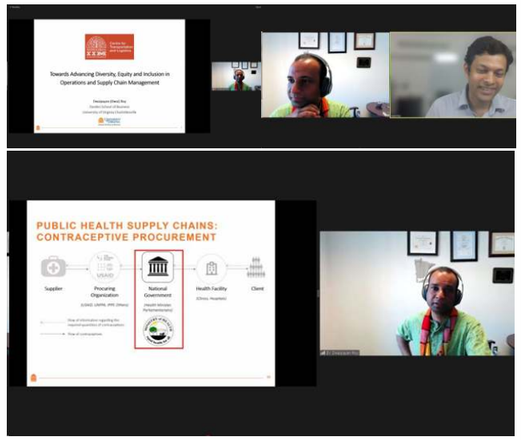
Talk Summary

Prof. Dwai began the discussion by highlighting the gender and racial disparity in leadership positions in India and the US. In that context, he introduced his broad areas of research, which focuses on exploring different ways of making supply chains more community focused, particularly historically marginalized communities. In the talk, Prof. Dwai discussed DEI in the context of contract performance and supplier diversity in national health supply chains.

In the first part of the talk, Prof. Dwai discussed the public procurement programme of the US federal government. Public procurement of the US government amounts to ~$637 bn and at least 23% of the contracting should be awarded exclusively to small businesses. In his study, Prof. Dwai explored set side contract performance against open competition contract awards. Data of 1.5mn contracts from 58 different agencies between 2019-21 was used for the study. Also, interviews were conducted with top procurement executives from four federal agencies. The results revealed that set aside contracts perform better than open competition contracts since it increased competition among small businesses to bag and perform contracts. Further, set aside contracts perform better with different agencies due to knowledge sharing of best practices. Set aside contracts also performed better when awarded earlier in the fiscal year. His findings highlighted that black and hispanic owned businesses are particularly underrepresented in contracts with high STEM intensity.

In the second part of the talk, he explored the impact of inclusive leadership in mitigating health disparities by undertaking a study on contraceptive procurement in lower middle income countries. He looked at the impact of increased representation of female decision makers in national governments of LMICs on contraceptive procurement. The findings of the study revealed that a female health minister is associated with an average 66% increase in government contraceptive procurement compared to male health minister. Further, an increase in the proportion of female parliamentarians by 10% along with a female health minister resulted in an average 6% increase in contraceptive procurement.

The webinar concluded with a call for operations management scholars to consider the subjective aspects that influence supply chain and bring DEI into mainstream discourse.



Prof. Dwaipayan (Dwai) Roy delivering a webinar on 'Towards Advancing Diversity, Equity and Inclusion in Operations and Supply Chain Management'

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3. Supplier and Customer on the Board: Their Impact on Environmental Performance Under Supply Chain Upstream, Downstream, and Financial Pressures

'Supplier and Customer on the Board: Their Impact on Environmental Performance Under Supply Chain Upstream, Downstream, and Financial Pressures', a Research Seminar by Prof. Saurabh Ambulkar, Assistant Professor, The University of Texas at Arlington, USA, was hosted on July 10, 2024.

Research Theme: Freight transportation and logistics
No. of attendees: 24 in-person, 33 online
Moderated by: Prof. Debjit Roy

Prof. Saurabh Ambulkar's research focuses on resilient and responsible supply chains. He received his PhD from Iowa State University and has published his work in prominent journals such as the Production and Operations Management Journal, Journal of Operations Management, International Journal of Production Research, International Journal of Physical Distribution and Logistics Management and Journal of Purchasing and Supply Management. He serves on the editorial review boards of the Journal of Operations Management and Decision Sciences Journal. Dr. Ambulkar's research has been cited over 1,400 times and has earned him an honorable mention for the Ambassador Award by the Journal of Operations Management. Before joining UT Arlington, he held assistant professor positions at Northeastern University and the University of Dayton. Alongside his academic career, Dr. Ambulkar has industry experience, having worked in supply chain roles at Mahindra and Mahindra Ltd. and Frost and Sullivan.

Talk Summary

Prof. Ambulkar started the discussion by explaining the influence that suppliers and customers on board have on a firm's environmental and financial performance. He stressed the increased willingness of consumers and stakeholders of firms to become environmentally conscious. He further added that this necessitated the incorporation of sustainability by firms, which could bring them a competitive advantage. Professor Ambulkar highlighted that environmental performance could serve as a unique selling proposition, differentiating firms from their competitors. However, he argued that incorporating environmental performance would be difficult when it came to getting suppliers on board to work on environmental initiatives. He further mentioned that traceability within the upstream supply chain could also become difficult and that increasing environmental performance came at the expense of a short-term rise in operational costs.

His study, grounded in stakeholder theory, investigated the impact of suppliers and customers on a firm's board on its environmental performance. He used panel data (2007-13) of 306 B2B firms listed on the S&P 900 index. His findings revealed that the presence of a customer on board (COTB) had a positive impact on environmental performance, whereas the presence of a supplier on board (SOTB) had a negative one. Additionally, supply chain pressures amplified the positive influence of COTB on environmental performance and the negative influence of SOTB on environmental performance. Further, his findings elucidated that financial pressure coupled with downstream market pressure enhanced the positive influence of COTB on environmental performance. Additionally, diversification increased the supply chain pressure, which further amplified the negative influence of SOTB on environmental performance.

Prof. Saurabh Ambulkar delivering a seminar on 'Supplier and Customer on the Board: Their Impact on Environmental Performance under supply chain upstream, downstream, and financial pressures'

To Watch

Visit:
https://youtu.be/lrbzm6toNDg
or Scan

4. Collaborative New Product Development: Co-creating with a Shared Supplier in the Presence of a Competitor

'Collaborative New Product Development: Co-creating with a Shared Supplier in the Presence of a Competitor', a Research Seminar by Prof. Abhishek Roy, Assistant Professor, Fox School of Business, Temple University, was hosted on July 22, 2024.

Research Theme: Freight transportation and logistics
No. of attendees: 24 in-person, 38 online
Moderated by: Prof. Debjit Roy

Prof. Abhishek Roy is an Assistant Professor in the Department of Marketing and Supply Chain Management. He joined the Fox School following the successful defense of his doctoral dissertation at the University of Texas at Austin. Dr. Roy's research interests include supply chain and operations management and multi-sided markets and platforms. More specifically, he explores applications of economic models and game theory to studying strategic interactions among firms and consumers, in supply chain management and in platform economics. Dr. Roy earned a PhD and his Master of Science degrees in Supply Chain and Operations Management at the University of Texas at Austin. He received a Master of Business Administration from the Indian Institute of Management Ahmedabad, and a Bachelor of Engineering in Production Engineering from India's Jadavpur University.

Talk Summary

Prof. Abhishek Roy began the discussion by explaining co-creation, an economic strategy connecting multiple parties to jointly produce a valuable output. In an environment where an actor collaborates with multiple competitors of the co-creators, a flow of collaborative knowledge to other partners of the co-creators is possible. Such a common creator may supply a core component to multiple competitors. In his study, Prof. Abhishek explored the impact of co-creation on product quality, the firm's willingness to co-create and the impact of monetary incentives on the pace of co-creation.

His model construct consisted of two competing firms selling partially differentiated products with both firms utilizing core components sourced from a common supplier. Further, the quality/functionality of the component is assumed to affect the consumer demand. The study considered three co-creation arrangements: a joint collaboration effort of the two competing firms and the common supplier, joint collaboration effort of a firm and a supplier, and the sole product development effort by a supplier. Costs of exerting effort, verification of efforts and monitoring and coordination costs were incorporated in the model as costs of co-creation.

The results revealed that the quality of the common component increases in each of the co-creation arrangements when customers attach more value to the quality of the shared component. However, co-creation may cause losses when customers do not attach value to the shared component's quality. An increase in the competitor's cost of exerting effort is found to be detrimental to a firm's profit. Further, assuming all other factors remain constant, in each of the three co-creation environments, all firms benefit more as the competition intensifies.

Assessing a firm's preference for co-creation, the study revealed that non-participating firms can benefit from the spillover, prompting non-participating competing firms to join the co-creating process when customers highly value the component quality. While the supplier can induce firms to participate in the co-creating process through payment incentives, firms are willing to collaborate even without monetary incentive if customers highly value the shared component's quality.

Prof. Abhishek Roy delivering a seminar on 'Collaborative New Product Development: Co-creating with a Shared Supplier in the Presence of a Competitor'

To Watch

Visit:
https://youtu.be/ZHoutp4dF9Q
or Scan

5. Incorporating Service Reliability in Multi-depot Vehicle Scheduling: A Chance-Constrained Approach

'Incorporating Service Reliability in Multi-depot Vehicle Scheduling: A Chance-Constrained Approach', a Research Webinar by Prof. Merve Bodur, Associate Professor, School of Mathematics, The University of Edinburgh, was hosted on August 13, 2024.

Research Theme: Passenger transportation and sustainable urban mobility
No. of attendees: 70
Moderated by: Prof. Debjit Roy

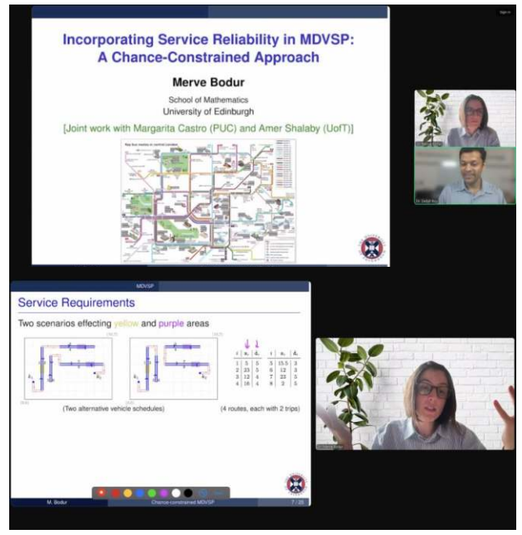
Prof. Merve Bodur is an Associate Professor in the School of Mathematics at the University of Edinburgh. She obtained her Ph.D. from the University of Wisconsin-Madison, her B.S. in Industrial Engineering and her B.A. in Mathematics from Bogazici University, Turkey. Her main research area is optimization under uncertainty, primarily for discrete optimization problems, with applications in a variety of areas such as scheduling, transportation, healthcare, telecommunications, and power systems. She serves on the editorial boards of Operations Research Letters, Omega, and INFOR. She is currently the Vice Chair/Chair-Elect of the INFORMS Computing Society, serves on the Committee on Stochastic Programming, and is a former Vice Chair of the INFORMS Optimization Society.

Talk Summary

Prof. Bodur began the discussion by introducing the audience to the multi-depot vehicle scheduling problem (MDVSP), which involves finding a vehicle schedule that minimizes the total cost given by the deployed fleet size and the operational cost associated with deadhead trips. Transit agencies face challenges in vehicle scheduling due to multiple depots with limited capacities. Existing deterministic approach, which uses average travel time and over estimates including possible delays results in higher costs and no guarantee on service quality or reliability. On-time performance (OTP) is a widely used measure for reliability by public transit agencies across the world. Prof. Bodur's study employs a novel stochastic MDVSP variant that aims to build a cost efficient vehicle schedule with guaranteed OTP for most days while ensuring fairness over routes.

The study proposed a novel chance-constrained MDVSP (CC-MDVSP) which modeled the problem as a chance-constrained programming (CCP) model, enforcing the service requirements up to a certain probability threshold. Two optimization methods were employed in the study. The first method used a branch-and-cut procedure to create a cost-effective vehicle schedule that assessed service issues in various travel time scenarios. Theoretical qualities of several cut generating algorithms based on problem characteristics were analyzed. Their greedy algorithm further solved subproblems in polynomial time, enabling iterative identification of minimal infeasible subsystems (MISs) and stronger cuts (constraint-based MIS cuts) compared to traditional alternatives. However, this method was useful only for scheduling a small number of trips. Therefore, a heuristic method based on Lagrangian decomposition was used to find low-cost vehicle schedules for large-scale instances.

The findings demonstrated CC-MDVSP's effectiveness in achieving reliable OTP. While the B&C method helped improve computational efficiency and solution quality, the heuristic method based on Lagrangian decomposition helped prepare vehicle schedules for large-scale instances. The study holds significance for public transit agencies since it can help them provide reliable and fast transport services in an equitable manner.



Prof. Merve Bodur delivering a webinar on 'Incorporating Service Reliability in Multi-depot Vehicle Scheduling: A Chance-Constrained Approach'

To Watch

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6. System Dynamics in OM/SCM Research

'System Dynamics in OM/SCM Research', a Research Webinar by Prof. Rogelio Oliva, Professor at the Mays Business School - Texas A&M University, was hosted on October 18, 2024.

Research Theme: Freight transportation and logistics
No. of attendees: 75
Moderated by: Prof. Debjit Roy

Prof. Rogelio Oliva is the Robyn L. '89 and Alan B. Roberts '78 Chair in Business in the Department of Information and Operations Management at Mays Business School, and Research Affiliate at MIT Sloan System Dynamics Group. His research explores how behavioural and social aspects of an organization interact with its technical components to determine the firm's operational performance. His current research interests include behavioural operations management, retail and service operations, and the transition that product manufacturers are making to become service providers. His research work has been published in several academic journals, among them: Management Science, Organization Science, Journal of Operations Management, Manufacturing & Service Operations Management, Production and Operations Management, and California Management Review. He is the recipient of the 2019 Jay W. Forrester Award for the best written contribution to the System Dynamics field in the preceding five years. Dr. Oliva teaches courses in operations management, supply chain management, and management information systems for the MBA and Executive MBA programs. He has received multiple teaching awards including the Production and Operations Management Society's Skinner Teaching Achievement Award (2014) and the Association of Former Students of Texas A&M University Distinguished Achievement Award at the College (2009) and University (2013) levels. A native of Cd. Valles, Mexico, he holds a B.E. in Industrial and Systems Engineering from the Monterrey Institute of Technology (Mexico), an M.A. in Systems in Management from Lancaster University (UK), and a Ph.D. in Operations Management and System Dynamics from the Massachusetts Institute of Technology. Prior to joining the Mays faculty, Professor Oliva served in the faculty of the Harvard Business School, Universidad Adolfo Ibañez in Chile, and Monterrey Tec in Mexico. He has worked for small manufacturing businesses in Mexico and consults on improvement of service and manufacturing operations, organizational change initiatives, and the development of system dynamics models. He currently serves as Editor-in-Chief of the Journal of Operations Management.

Talk Summary

Prof. Oliva introduced the concept of system dynamics by explaining the fundamentals behind it: managers transform information flows into decisions that control organizational activity. However, he emphasized that decision-making is non-linear, noisy, and hindered by perceptual and cognitive limitations. It is possible to capture the structural elements of decision-making processes by identifying the guiding policies behind those decisions. Prof. Oliva highlighted that it is crucial to comprehend the work of managers in system dynamics. He stressed that a social system includes a stream of decisions that guides operational functions. He further added that these decisions follow a pattern, making them non-linear. The concept of stocks and flows in system dynamics was further discussed. Stocks capture the state of the system (resources, memory, inertia), whereas flows capture the decision-making (control) effects. Moreover, Prof. Oliva asserted that the structure drives behavior, explaining why a system is doing what it is doing. Thus, it becomes necessary to have an endogenous explanation of behavior. Concurrently, he explained how interactions between feedback influence specific behaviors or decisions.

He discussed the methodological guidelines of system dynamics, including the structural representation of systems, the focus on disequilibrium, adopting broad model boundaries, and developing models through grounded methods. Prof. Oliva highlighted that while system dynamics models are not analytically tractable, they are easy to simulate. It involves a formal integration of operational and behavioral aspects of the system. Prof. Oliva illustrated the concept using the example of service quality erosion. The analysis showed that increased work pressure raises work intensity, prompting employees to work harder and fulfill more orders. In contrast, employees can cut corners by spending less time per order/customer since they have more orders/work to fulfill. This enhances the focus on more orders. However, if too much time is spent cutting corners, service quality declines, which may eventually lead firms to hire more employees to uphold service standards. Prof. Oliva explained the same through graphical analysis depicting when to stop cutting corners to avoid deteriorating service quality standards.

Further, Prof. Oliva concluded the session by explaining the difference between variance theories and process theories. He highlighted that the process theories are more nuanced and that the erosion of the service quality model is an example of the same.

Prof. Rogelio Oliva delivering a webinar on 'System Dynamics in OM/SCM Research'

7. High-Dimensional Correlation using Subordinated Markov Chains: Modelling and Applications

'High-Dimensional Correlation using Subordinated Markov Chains: Modelling and Applications', a Research Seminar by Prof. Vishwakant Malladi, Assistant Professor at the Indian School of Business, Hyderabad, was hosted on November 11, 2024.

Research Theme: Freight transportation and logistics
No. of attendees: 20 in-person, 46 online
Moderated by: Prof. Debjit Roy

Prof. Malladi Vishwakant obtained his PhD in Risk and Operations Management from the McCombs School of Business, UT Austin. His research primarily focuses on risk in an operations management context and can be broadly divided into two areas. First, he works on parsimonious modelling of risk in high dimensional systems using Levy processes. Second, he studies the impact of risk and risk correlation in operations management problems like inventory theory, reliability and the facility location problem. Before his doctoral studies, Professor Malladi worked as a Statistical Analyst for Fractal Analytics and as an Equity Research Analyst for Centrum Capital. He completed his B. Tech in Mechanical Engineering from IIT Bombay and has an MBA from IIM Ahmedabad.

Talk Summary

Prof. Malladi commenced the seminar by discussing disruptive events and their impact on operations and explained the same through examples. He highlighted that disruptive events can catalyze disruption over an extended period. Thus, modelling correlation among these events would have far-reaching benefits.

However, modelling correlation is difficult in high dimensions since the correlation coefficient is applicable only in 2 dimensions. Thus, a parsimonious framework is required, and a subordinated Markov Chain is an example of the same. He further explained the role of a subordinator in subordinated Markov Chains and elaborated more on modelling dependence in continuous-time Markov Chains (CTMCs). However, his model employed partially subordinated Markov Chains, which used subordinators only for disruptions, giving an infinitesimal generator. Common shocks in the subordinator affect multiple Markov Chains at the same time.

Prof. Malladi's model addressed the facility location problem with disruptions, leading to clients being serviced by other non-disrupted locations. This required considering the correlation between disruptions, using a subordinated Markov Chain to model correlation. He highlighted that for N locations, there are N Markov Chains. The model introduced subordinators K (common time shocks), which affect multiple locations, reducing the parameter size from 2^n to N (for N Markov Chains) + K (subordinators). The Disruption model thus used (N + K) parameters to model correlation in the N dimensions.

Further, the subordinate Markov Chain parameter should be calibrated using a metric that minimizes the probability of disruptions of two locations at a time. The solution should be optimized using the Precise Cut Algorithm, reducing the number of iterations for the next stage. The method was tested on a standard date set with 49 locations and multiple sets for disruptions with solutions consistently resulting in lower costs in quicker times.

He concluded the session by discussing Inter-temporal correlation in CTMCs through the example of modelling propagation in airline networks. He defined 2 CTMCs as a system of time-lagged partially subordinated Markov Chains (TLPSMCs). He employed the CTMC theory to estimate the closed forms for the intertemporal correlation. Further, the nature of the intertemporal correlation could be changed by varying the lag and the intensity. Moreover, joint probability curves could be approximated using TLPSMCs. The model detected correlation across airports and overperformed compared to the traditional route-based approach.

Prof. Vishwakant Malladi delivering a seminar on 'High-Dimensional Correlation using Subordinated Markov Chains: Modelling and Applications'

8. Nonparametric Demand Estimation in the Presence of Unobserved Factors

'Nonparametric Demand Estimation in the Presence of Unobserved Factors', a Research Webinar by Prof. Ashwin Venkataraman, Assistant Professor, Naveen Jindal School of Management, UT Dallas, was hosted on Nov 18, 2024.

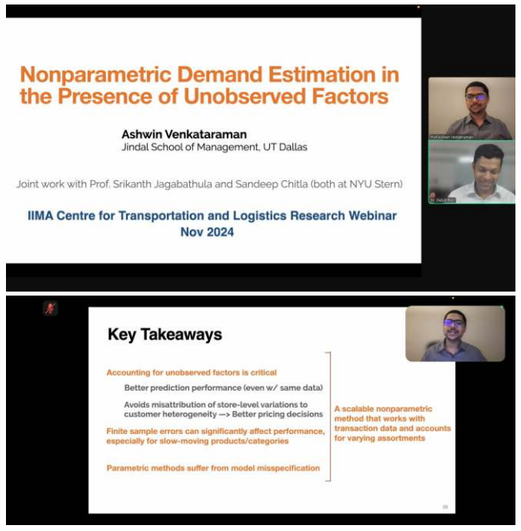
Research Theme: Freight transportation and logistics
No. of attendees: 70
Moderated by: Prof. Debjit Roy

Prof. Ashwin Venkataraman is an Assistant Professor of Operations Management at the Naveen Jindal School of Management, University of Texas at Dallas (UTD). His research centers on revenue management and pricing, with a particular emphasis on developing innovative models and methodologies that utilize the extensive data available to firms today. His work has been published in leading journals, including Operations Research, Management Science, and M&SOM. Ashwin holds an MS and PhD in Computer Science from the Courant Institute of Mathematical Sciences at New York University, where his doctoral thesis received an Honorable Mention (joint second-place) in the INFORMS Dantzig Dissertation Award. He also earned a B.Tech in Computer Science and Engineering from IIT Delhi.

Talk Summary

Prof. Venkataraman began the webinar with an overview of the demand forecasting process using sales transactions and product availability data. For estimation, choice models, that describe how customers make purchase decisions, are widely used. Factors affecting demand can be classified into observed (product specific data) and unobserved factors (shelf positioning, brand awareness and local events). For observed factors (OF), sophisticated models and estimation methods exist. However, scholars have to make strong parametric assumptions to account for UFs.

Prof. Venkataraman's study involved creating a scalable non-parametric method to deal with UFs. Their method is applicable for large scale transaction data, varying product assortment and imperfect market share estimates. The dataset used for the study had details of products, their features (in terms of price, quantity, quality etc.) and sales count for different stores. The study fit random utility maximization (RUM) principle based choice model to aggregated sales count data. In the RUM model, it is assumed that customers choose products that provide them with the maximum utility. The goal of the study was to predict demand for a product/change in assortment for the data. It was observed that the data rarely included all UF factors driving demand, and hence, a scalar UF assumption is standard in literature. However, the UFs make the model over parameterized because of high dimensionality of UFs. To counter this, their study used Instrumental Variables with an exclusion restriction to constrain UFs. The exclusion restriction implied lack of correlation between UFs and IVs. Consequently, the study proposed a constrained optimization based estimator which found best fit distribution and UFs subject to moment conditions, enforced via generalized methods of moment constraint. Their estimation algorithm used alternating minimization/descent framework which is used extensively in ML for improving solutions involving large scale optimization. BLP parametric models also suffer from misspecification. Further, finite sample errors could significantly affect performance. The model prescribed by the study was used on weekly sales transaction data for CPG in 30 products from IRI Academic Dataset. The results indicated a 63% improvement in prediction accuracy. Their method is useful for improving demand forecasting and undertake better pricing decisions.



Prof. Venkataraman delivering a webinar on 'Nonparametric Demand Estimation in the Presence of Unobserved Factors'

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9. The Role of Product Quality in Marketplaces

'The Role of Product Quality in Marketplaces', a Research Seminar by Prof. Aditya Jain, Professor of Operations and Decision Analytics, Zicklin School of Business, Baruch College, CUNY, was hosted on December 23, 2024.

Research Theme: Freight transportation and logistics
No. of attendees: 22 in-person, 44 online
Moderated by: Prof. Debjit Roy

Prof. Aditya Jain is professor of Operations and Decision Analytics at the Zicklin School in Baruch College CUNY. His research areas are supply chain management, retail operations, and healthcare operations, with a focus on leveraging analytics to address complex operational challenges. Prior to his current role, he served as a faculty at Indian School of Business and Kellogg School of Management. Prof. Jain has been actively involved in start-ups in the space of supply chain analytics and is currently focused on the digital transformation of supply chains, exploring how emerging technologies like Generative AI can optimize supply chains.

Talk Summary

Prof. Aditya Jain's session focused on contractual agreements between retailers and suppliers, emphasizing the heterogeneity of suppliers in marketplaces. He discussed the challenges of designing contracts for scenarios where suppliers' products are listed online, with ownership remaining with the suppliers while retailers earn a commission. Prof. Jain highlighted that retailers often adopt a hybrid approach, continuing to sell their products alongside those sourced from third-party sellers. However, he noted that products sold via marketplaces frequently suffer from quality problems and are often perceived as inferior. His study aimed to examine a retailer's contracting strategy in the presence of heterogeneity in suppliers' product quality and evaluated whether a hybrid contract is optimal.

Prof. Jain's study considered different demand models and contract selection modes. The demand models included loyal demand and competition, while contract selection included scenarios where the supplier self-selected or the retailer made the decision.

The first model, focusing on loyal demand and supplier self-selection, was discussed in detail. In the context of homogeneous quality under a pure wholesale contract, the analysis revealed that decisions and profits were impacted by a double marginalization problem. Retailers' profits were adversely affected, while suppliers earned higher profits due to their first-mover advantage. In the case of homogeneous quality under a pure marketplace contract, it was discussed that suppliers might choose not to transact if commission rates were sufficiently high. In the context of heterogeneous quality under a pure marketplace contract, Prof. Jain revealed that suppliers' tolerance for commission rates varied based on their quality levels and associated costs. He observed that retailers preferred to exclude high-quality suppliers and contract only with low-quality suppliers when the difference in supplier quality was sufficiently large and the probability of high quality was not too high. Lastly, under a hybrid contract with heterogeneous quality, the study found that retailers adjusted commission rates strategically, allowing high-quality suppliers to opt for wholesale pricing if commission rates were too high. The empirical verification supported the hybrid contract model, revealing that the marketplace mode was correlated with low-quality products.

Prof. Jain concluded the session with a brief discussion of models addressing loyal demand and retailer selecting contract, competition with supplier self-selection, and competition with retailer selecting contract.

Prof. Jain delivering a seminar on 'The Role of Product Quality in Marketplaces'

To Watch

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https://youtu.be/m9Y71Xg61aE
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10. A Study on Telemedicine Adoption, with Implications for Healthcare, Telecommunications and Land use-Transportation Planning

'A Study on Telemedicine Adoption, with Implications for Healthcare, Telecommunications and Land use-Transportation Planning', a Research Seminar by Prof. Chandra R. Bhat, Ph.D., P.E., Director, US DOT National University Transportation Center on Travel Behavior and Demand, University Distinguished Teaching Professor, Joe J. King Endowed Chair Professor in Engineering, Department of Civil, Architectural and Environmental Engineering, Department of Economics (Courtesy Appointment), The University of Texas at Austin, was hosted on January 20, 2025.

Research Theme: Passenger transportation and sustainable urban mobility
No. of attendees: 25 in-person, 80 online
Moderated by: Prof. Sandip Chakrabarti

Prof. Chandra R. Bhat has been a pioneer in the formulation and use of statistical and econometric methods to analyze human choice behavior for transportation and urban policy design. He is a recipient of many awards, including the 2017 Council of University Transportation Centers (CUTC) Lifetime Achievement Award, the 2015 American Society of Civil Engineers (ASCE) Frank M. Masters Award, and the 2013 German Humboldt Award. He was listed in 2017 as one of the top ten transportation thought leaders in academia by the Eno Foundation. He received the 2022 Theodore Matson Memorial Award from the Institute of Transportation Engineers (ITE). More recently, he was awarded the 2024 W.N. Carey, Jr., Distinguished Service Award "for leadership and distinguished service to the Transportation Research Board (TRB)". Prof. Chandra also has been ranked in the top three scientists globally in the subject area of transport and logistics. Dr. Bhat currently serves as the Editor-in-Chief of Transportation Research – Part B. He is the immediate past-President of the ASCE Transportation and Development Institute (T&DI).

Talk Summary

Prof. Bhat began the discussion by underlining the rapid growth of virtual participation in sectors like work, shopping and dining. This growth has been particularly accelerated by COVID-19. Relaxed regulations, incentives offered by insurance companies, increase in telework and growth of platforms have emerged as major drivers of telemedicine. The study aimed to trace the evolution patterns of telemedicine adoption and investigate shifts in the effect of factors influencing telemedicine adoption before and after the pandemic. His study lies at the intersection of economics, transportation, land use and health.

The data was derived from COVID Future Panel Survey. The study employed a multivariate binary probit model to analyze adoption trends. Individual characteristics, household socio demographics, employment, personal traits, COVID perception and built environment attributes were used as exogenous variables to model telemedicine adoption. Convenience, minimized waiting period and health safety assurance emerged as significant reasons encouraging telemedicine use. On-site tests and procedures, greater convenience of on-site interaction and privacy acted as deterring reasons in telemedicine usage. Prof. Bhat also provided a detailed analysis of how different groups get influenced by each reason identified in the study. For instance, women, households with children, and teleworkers identified comfort, privacy, and accessibility as key drivers of telemedicine adoption.

Prof. Bhat concluded the seminar with several key policy recommendations. Among them, it was suggested that policymakers should increase the telemedicine workforce, focusing on specialists in women's and children's health. Additionally, a hybrid model could be developed to enhance quality and build patient confidence. For child specialists, additional training is essential to effectively interpret non-verbal cues in virtual settings. Furthermore, for low-income neighborhoods, investing in improved internet accessibility is crucial.

Prof. Bhat delivering a seminar on 'A Study on Telemedicine Adoption, with Implications for Healthcare, Telecommunications and Land use-Transportation Planning'

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Practitioner Webinar

Methodological Framework for Unlocking Maritime Insights using Automatic Identification System Data

'Methodological Framework for Unlocking Maritime Insights using Automatic Identification System Data', a Practitioner Webinar by Mr. Mahinthan Joseph Mariasingham, Senior Statistician, Asian Development Bank (ADB), was hosted on July 30, 2024.

Research Theme: Passenger transportation and sustainable urban mobility
No. of attendees: 117
Moderated by: Prof. Debjit Roy

Mr. Mahinthan Joseph Mariasingham leads data development and statistical capacity building initiatives in the System of National Accounts (SNA), global value chains and statistical business registers. He started his career at Statistics Canada in 1999 has specialized in SNA and input-output economics. Mr. Joseph has considerable experience in producing critical data and analysis for evidence-based policymaking.

Talk Summary

Mr. Mariasingham began the webinar with an introduction of Automatic Identification System Data, an automated tracking system designed to help sea vessels navigate & avoid collisions. The data covers numerous static (IMO number, ship name & type), dynamic (lat-long, speed, navigation status) & voyage(ETA, draught) variables, that can be availed from the UN Global Platform. Despite huge data, it does not provide explicit information on port activities, highlighting the need to develop techniques that help derive information from raw data.

Moving forward, Mr. Mariasingham explained the conceptual framework for analyzing AIS data. EOIs are specific maritime incidents or activities that are relevant to a target indicator. AOIs, meanwhile, are the geographic locations where such events occur. For investigating a port, their study identifies three primary approaches. In the manual approach, boundaries of the port are defined manually, involving personal judgment and hence require expert input for accuracy. For distance-based approach, the boundaries of a port are set at a predefined distance from the centre. While quickly scalable, it can lead to data inaccuracies in certain cases. The cluster based approach employs algorithmic technique to set AOIs of ports, wherein the boundaries are inferred based on the identification of clusters in AIS messages using Uber's H3 grid system. Stationary vessels are critical EOI in a port, explaining the activity of a vessel in a port.

Subsequently, investigation of passageways through AIS data was discussed. Passageways can be of two types, namely straits & canals. Mr. Mariasingham explained how AIS can be used to study passageways & can be supplemented with port indicators. There are two approaches to define AOI of a passageway. First one involves fixing two AOIs, one for each opening of the passageway. The second approach fixes a single AOI at the narrowest part of the passageway for simplicity. AIS indicators for passageways include count of unique vessels, count of transits and transit time.

Finally, Mr. Mariasingham demonstrated some results from their 2023 KI Supplement study. He displayed crucial results from the port of Shanghai, Suez Canal, Black Sea ports & the port of Nuku'alofa, wherein AIS data analysis could accurately capture the immediate effects of major global and local disruptive activities. Their study revealed the utility of AIS data in supplementing official maritime activities.

Mr. Mahinthan Joseph Mariasingham delivering a webinar on 'Methodological Framework for Unlocking Maritime Insights using Automatic Identification System Data'

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Panel Discussion

Role of Digital Technologies in Improving Trucking Operations

The Centre for Transportation and Logistics, IIMA, organized an online panel discussion on 'Role of Digital Technologies in Improving Trucking Operations' on March 27, 2025.

Discussion Theme: Freight transportation and logistics
No. of attendees: 165
Moderated by: Prof. Debjit Roy

Panelists:

Mr. Ravi Agrawal
Head – Marketing, Digitization and Telematics for Mahindra and Mahindra Limited [Automotive and Farm Equipment Business] – Commercial Vehicle division

Mr. Bhagwan Bindiganavile
Executive Vice President responsible for Strategic Planning, Brand & Communications for VE Commercial Vehicles Ltd.

Mr. Bharat Bhushan
Senior General Manager, Digital Business, Commercial Vehicle at Tata Motors Limited

Mr. V G Ramakrishnan
Founder and Managing Partner of Avanteum Advisors LLP

Talk Summary

Prof. Roy began the discussion with an introduction of the esteemed panelists. He provided an overview of the heavy commercial vehicle (HCV) supply chain participants & the challenges faced by stakeholders. Building on this foundation, the panel explored how digital solutions could address these challenges & drive efficiency in the trucking industry.

Mr Bhagwan Bindiganavile (VE Commercial Vehicles Ltd.) emphasized the use of digital tools to maximize truck uptime. He demonstrated how digital platforms unite the aftermarket ecosystem with connected services to provide instant solutions to fleet operators (FOs). He stressed the need for developing IT-driven solutions tailored to industry stakeholders & outlined key challenges hindering the adoption of digital technology at the FO level.

Mr Ravi Agrawal (Mahindra and Mahindra Limited [Automotive and Farm Equipment Business]) discussed the shift from cowl to fully built trucks & the growing focus on customer-centric solutions like uptime & mileage guarantees. He underscored the significance of integrating DMS with IoT to address dealer challenges, highlighting how real-time vehicle diagnostics & predictive maintenance could enhance service efficiency. Additionally, the seamless flow of telematics data between OEMs & dealers ensures better decision-making, leading to improved customer satisfaction & higher operational transparency.

Mr Bharat Bhushan (Tata Motors) advocated for adopting an ecosystem-driven approach for the digital transformation of the trucking industry. He underscored that it extends beyond products to the entire supply chain, with fleet & trip management key to improving fleet operator profitability. He described AI-ML as an anchor of digitalization, with GenAI & AgenticAI becoming key pillars to provide customer-centric solutions.

Mr V G Ramakrishnan (Avanteum Advisors LLP) highlighted the convergence of multiple factors driving digitalization in trucking, including OEM-led initiatives, rollout of 4G, & regulatory shifts like BS VI. He stressed the need to develop interoperable systems for FOs operating trucks of different companies.

Afterwards, the discussion moved toward challenges & opportunities in adopting digital technologies across the trucking ecosystem, & covered the following points:

1. Improving demand management through AI
2. Enabling customized, personalized digital solutions for all stakeholders.
3. Suboptimal use of digital technologies at the FO level
4. Different use cases for digital tools
5. Emerging areas for research in digital transformation in the trucking industry

Prof. Debjit Roy joined by the distinguished panelists for the online panel discussion on 'Role of Digital Technologies in Improving Trucking Operations'

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Doctoral Workshops

1. Econometric Methods for Theory Testing

The Centre for Transportation and Logistics, IIMA, hosted a doctoral workshop on 'Econometric Methods for Theory Testing' by Prof. Saurabh Ambulkar, Assistant Professor, The University of Texas at Arlington, USA, on July 10, 2024.

Prof. Saurabh Ambulkar with Prof. Debjit Roy, and the IIMA doctoral students present at the workshop

The workshop by Professor Ambulkar displayed the application of econometric methods through his study that navigated the dual imperatives of sustainability and vulnerability management in technology firms. Firms are increasingly facing sustainability pressures from consumers, employees, and stakeholders. Growing customer willingness for sustainable goods along with depleting natural resources has led to supply chain pressures from both, supply and demand side. However, technology firms also face the dual responsibility of managing product vulnerabilities, which are recognized as significant security risks that can affect user trust and financial outcomes.

Product vulnerabilities like data breaches, hacks and bugs weaken product offerings of technology firms. These rising complexities in technology firms and constant push for innovation has relegated environmental issues to the back for the management teams of firms. Prof. Ambulkar's study investigated the impact of product vulnerability on the sustainability performance of technology firms through the theoretical lens of the Attention-Based View (ABV). He highlighted that attention was a function of the decision-maker in the organization. In this context, he measured cognitive diversity through gender, educational qualification, and nationality. He mentioned that higher diversity in cognitive diversity could balance both product vulnerability and sustainable related compensation. The study used a unique panel dataset of 487 firm-year observations. The findings revealed that higher product vulnerability negatively impacts sustainability performance.

The workshop intensively focused on the research methodologies and their application, some of which included regression, mediation analysis, Heckman Correction, Coarsened exact matching, tests for managing endogeneity, post hoc analysis, and tests to check reverse causality. Prof Saurabh explained the usage of panel data and cross-sectional data and how methodologies differed in the case of the two. He explained the usefulness of mediation analysis in ascertaining the mediating role of sustainability-related compensation between attention-seeking behavior and performance. Further, Heckman correction was used for selection bias since the study included only technology firms that faced vulnerability. He stressed on the need to check data distribution and the critical need to manage endogeneity due to omitted variables.

2. Analytical models for analyzing business problems using game theory

The Centre for Transportation and Logistics, IIMA, hosted a doctoral workshop on 'Analytical models for analyzing business problems using game theory' by Prof. Abhishek Roy, Assistant Professor, Fox School of Business at Temple University, on July 23, 2024.

Prof. Abhishek Roy, with the IIMA doctoral students present at the workshop

Professor Abhishek Roy began the workshop by highlighting key elements of an impactful research article, which are interest, contribution, rigor in methodology, and exposition. To evoke the interest of the reader, scholars must develop their research questions from contemporary business challenges. The second element, contribution to the literature is extremely crucial in getting a research article published. While contribution can be theoretical or practical, Prof. Abhishek emphasized on developing studies that contribute to practice, in part or whole. Further, he emphasized the role of rigor in making a research study more robust and acceptable. Finally, he highlighted the critical role of exposition since a carefully written research paper is essential in communicating the knowledge created by the study.

Further, he steered the class towards an interactive game-theory model-building activity for buyer-supplier co-creation. The model explored the relationship between market demand, retail prices, component quality improvement costs and co-creation. He developed a demand function and profit equations for supplier and buyer in co-creation and no co-creation scenarios with the key variable being the supplier's component quality. He further discussed profit maximizing conditions and evaluated the impact of quality on the supplier's ability to increase wholesale prices and the buyer's ability to increase retail prices due to an increase in wholesale prices and component quality. The model was tweaked to incorporate transfer payments from buyer to supplier for quality improvement.

The following findings emerged from the exercise:

1) Consumers make decisions based on retail price and quality, which define the market demand.

2) An increase in quality would lead to an increase in demand, price of the product, and the profit margins of the firms.

3) In case of collaboration, there would be an attempt to increase quality, enhancing the manufacturer's ability to increase the wholesale prices. In such a scenario, the buyer and customer would also be willing to pay a higher price.

4) In case of no collaboration, the supplier analyzes the ideal quality based on which the seller decides the wholesale price. This aids in determining the market price and market demand.

The workshop ended with a discussion on an ongoing project of Prof. Abhishek that analyzed the feasibility of holding inventory for a buyer in the presence and absence of inventory holding costs.

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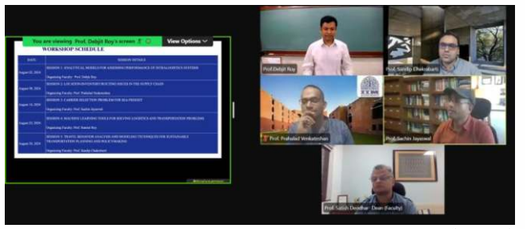
Online Capacity-Building Workshop on Advanced Methods for Transportation and Logistics Research and Practice

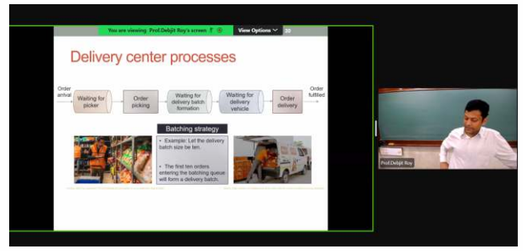
The Centre for Transportation and Logistics (CTL), IIMA, organized a five-session online 'Capacity-Building Workshop on Advanced Methods for Transportation and Logistics Research and Practice' in the month of August 2024. The workshop sessions were led by the distinguished faculty members of CTL IIMA, on every Friday during the month.

The workshop focused on cutting-edge skills and knowledge of advanced research methods with broad applications in transportation, logistics, and supply chain management. It offered practical experience in designing and conducting travel behavior surveys and experiments, while also building expertise in choice modeling, analytical methods, and optimization techniques.



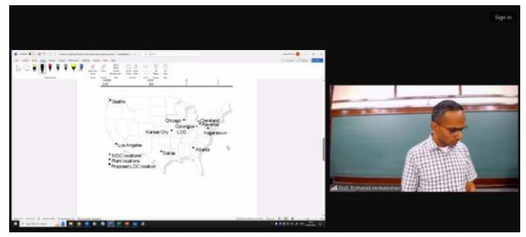
Inauguration of the workshop by Prof. Satish Deodhar, Dean (Faculty) of IIMA, along with the workshop faculty members

Professor Debjit Roy commenced the inaugural session on August 02, 2024, presenting on 'Analytical Models for Assessing Performance of Intralogistics Systems'. He highlighted that warehouses, terminals, and EV charging facilities are gaining prominence in logistics and transportation. Concurrently, measuring the performance of intralogistics systems is thus gaining significance. He focused on analytical models for evaluating intralogistics system performance and emphasized their need in transportation and logistics. Professor Roy demonstrated the model-building process through practical examples and scenarios, highlighting common challenges and potential solutions. The session discussed how to model facilities as nodes in the supply chain and assess performance. Further, Professor Roy illustrated the ways in which simulation can be helpful in analyzing the performance of large-scale systems. Moreover, the queuing cost trade-offs were discussed, with the session culminating in exploring the process behind stochastic modeling for integrated order fulfillment, particularly emphasizing delivery time commitments in the quick commerce sector.



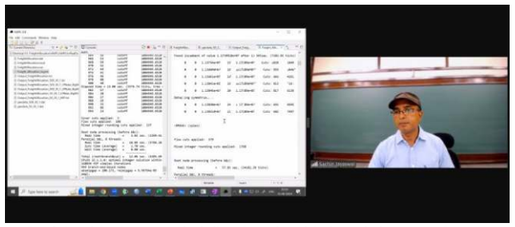
Prof. Debjit Roy delivering the first workshop session on 'Analytical Models for Assessing Performance of Intralogistics Systems'

The second session was delivered by Professor Prahalad Venkateshan on 9th August 2024 on 'Location/Inventory/Routing Issues in the Supply Chain.' Professor Venkateshan commenced the session by focusing on the interplay between inventory management, location, and routing optimization. Through practical case studies, he elucidated the evolving landscape of warehouse placement decisions. He discussed the Central Sales Tax role and the accompanying state-specific tax considerations that influenced warehouse location. However, this constraint was lifted after the Goods and Services Tax, allowing businesses to prioritize overall logistics efficiency. This shift enabled companies to conduct comprehensive analyses of various logistics cost components. Professor Venkateshan provided insights into methodologies for quantifying the total logistics cost, including inventory holding costs, inbound and outbound logistics, and transportation costs. He utilized real-world datasets to illustrate these concepts. The session further touched upon the Economic Order Quantity (EOQ) concept, demonstrating its application across different MRP softwares. Additionally, the importance of forecast accuracy in supply chain management was discussed.



Prof. Prahalad Venkateshan delivering the second workshop session on 'Location/Inventory/Routing Issues in the Supply Chain'

Professor Sachin Jayaswal conducted the third session on 16th August 2024 on 'Carrier Selection Problem for Sea Freight.' In the session, Professor Jayaswal used real-world logistics data to help participants build an optimization model with the given set of constraints. He also explained how the problem could be solved using specialized optimization software. For the session, Professor Jayaswal used a large dataset containing details of 500 shipping lanes, the required shipper capacity for each lane, bid prices from 40 carriers, and their minimum quantity commitments. To make the problem easier to solve, Professor Jayaswal developed a miniature version of the problem. He explained the different steps involved in building the optimization model to solve the problem. After developing the model, he demonstrated the solution to the miniature problem in Excel. This problem was later scaled to solve the initial problem of carrier selection for 500 lanes. To solve the problem, Professor Jayaswal used AMPL Optimization software, a specialized software used for solving real-life large-scale optimization problems.

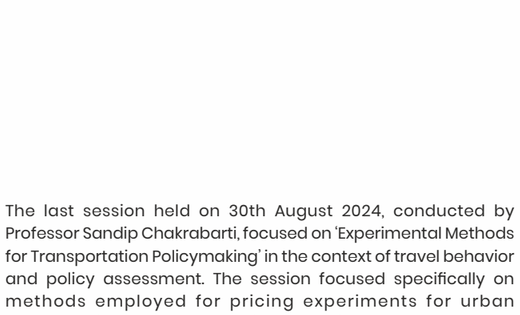


Prof. Sachin Jayaswal delivering the third workshop session on 'Carrier Selection Problem for Sea Freight'

Professor Samrat Roy's session on August 24th, 2024, focusing on 'Machine Learning Tools for Solving Logistics and Transportation Problems', addressed critical challenges in transportation and logistics where machine learning techniques have been applied. The session explored various applications: arrival time estimation, demand prediction, industrial process enhancement, traffic pattern analysis, location forecasting, vehicle routing optimization, and anomaly identification. The lecture concentrated on diverse machine learning methods used for arrival time prediction, including Classification and Regression Trees (CART), Support Vector Regression, Extremely Randomized Trees, Adaptive Boosting, Gradient Boosting, XGBoost, Bagging, and Random Forest algorithms. He elaborated on methodologies for assessing the accuracy of these machine-learning models. Practical implementation of these techniques using R software was demonstrated during the session. Additionally, the lecture touched upon the theoretical foundations of demand forecasting methodologies employed within the transportation and logistics sector.

Prof. Samrat Roy delivering the fourth workshop session on 'Machine Learning Tools for Solving Logistics and Transportation Problems'

The last session held on 30th August 2024, conducted by Professor Sandip Chakrabarti, focused on 'Experimental Methods for Transportation Policymaking' in the context of travel behavior and policy assessment. The session focused specifically on methods employed for pricing experiments for urban transportation demand analysis. By creating a problem around pricing parking spots, Prof. Chakrabarti discussed the different ways a car owner's willingness to pay (WTP) can be gauged. He discussed two survey types that are used for estimating price elasticity of demand, namely revealed preference survey studies and stated preference survey studies. Revealed preference surveys are used to identify how respondents respond to different modes of transportation when subjected to different costs and prices. In contrast, respondents are provided with hypothetical scenarios in stated preference surveys to understand their behavior. The discussion moved to auction experiments. Prof. Chakrabarti discussed Vickrey's auction, wherein the highest bidder gets the award at the second highest bid. He demonstrated how this sealed bid auction method is superior in determining the buyer's actual WTP. The Becker-DeGroot-Marschak method, which is an extension of Vickrey's method, was also discussed. In this auction, a random number is generated. If the bid amount is lower than the random number, the bidder receives the item at the quoted bid. These methods help understand the actual WTP of the bidders/customers. Prof. Chakrabarti concluded the session with a vote of thanks to the participants.



Prof. Sandip Chakrabarti delivering the fifth and final workshop session on 'Experimental Methods for Transportation Policymaking'

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India Management Research Conference (IMRC) 2024 - Track 06: Transportation and Logistics
December 07-09, 2024

Background

The Indian Institute of Management Ahmedabad hosted a three-day academic conference, India Management Research Conference 2024, from December 07 to 09, 2024. The conference, centered around the theme of 'Confluence of Growth, Sustainability, and Resilience', featured 11 distinct thematic tracks, each hosted by the Institute's Research Centres. The Centre for Transportation and Logistics (CTL) hosted Track 06, focusing on the research theme of Transportation and Logistics. The track facilitated approximately 40 research presentations, encompassing domains such as supply chain and optimization, managing supply chain performance, smart mobility, policy, and sustainability. Papers employed emerging data and methodologies to analyze or solve critical contemporary and futuristic transportation and logistics problems faced by industry and government. The papers contributed to scholarship, practice, and policymaking in India and globally. Moreover, the studies generated novel ideas and stimulated productive discussions. The track further added to academia-industry and academia-government knowledge exchange, improving the efficiency of multi-modal transportation systems and supply chain logistics, promoting economic growth, and fostering sustainable development.

Additionally, the event had an exclusive Keynote session by Prof. Vinod Singhal, Charles W. Brady Chair Professor of Operations Management at Georgia Institute of Technology's Scheller College of Business, discussing the 'Financial Consequences of Supply Chain Risks and Strategies for Building Resilient Supply Chains.' The track also had a 'Tutorial on Deterministic to Distributionally Ambiguous Optimization Tools for Transportation and Logistics Problems' by Prof. Manish Bansal, Associate Professor, Virginia Tech, USA. Additionally, an interactive session was conducted by the Journal of Business Logistics editors, Prof. Robert Glenn Richey Jr., Harbert Eminent Scholar, and Prof. Shashank Rao, Jim W. Thompson Professor, both from Auburn University. The event continued with an engaging session led by Prof. Debjit Roy, Associate Editor of Transportation Science.

The conference brought together various scholarly contributors and industry professionals from multiple academic and research institutions. Furthermore, the track had about five poster presentations aligning with the track's theme at the conference.

Keynote Session

'Financial Consequences of Supply Chain Risks and Strategies for Building Resilient Supply Chains'

Professor Vinod Singhal

Charles W. Brady Chair Professor of Operations Management at Georgia Institute of Technology's Scheller College of Business

Professor Singhal discussed the empirical research framework that explores a firm's actions, their impact on financial and non-financial performance, and the moderating factors influencing these relationships, grounded in theory and observations. He addressed various supply chain disruptions and their impact on financial performance. He stressed that the economic implications of supply chain risks on a firm are observed through changes in stock returns, increased stock price volatility as a measure of risk, and alterations in profitability, including shifts in operating income, sales, and costs. Further, he compared the performance effects of three supply chain risks: supply chain disruptions, product introduction delays, and excess inventory. Moreover, he discussed the potential strategies firms could use to build resilience in supply chains.

Prof. Vinod Singhal delivering his keynote address

The second half of the session pivoted to discussing the estimation of the stock market reaction. He asserted that the stock market's response is typically referred to as an 'Abnormal Return,' which should be estimated around the time of the announcement. He further stated that abnormal returns are the difference between the actual returns, including the effect of the announcement, and the expected returns, representing the standard returns without the announcement. After calculating the same, the results should be tested for statistical significance. Professor Singhal illustrated the impact of average stock returns on demand-supply mismatch announcements. He explained the impact of these abnormal returns in the context of excess inventory, product introduction delays, and supply chain disruptions. He elucidated the same through the change in return on assets and return on sales. Moreover, he discussed the stock market reaction to corporate events like operational, marketing, information technology, and financial events.

Professor Singhal outlined that supply chain risks were more detrimental to smaller firms and those with high growth potential. Disruptions were found to have greater negative impacts on firms that were less vertically integrated, had limited slack, and were more geographically diversified. Additionally, excess inventory was observed to have more adverse effects when customers also held excess inventory. Finally, product introduction delays were identified as more harmful in highly competitive industries.

Professor Singhal concluded the session by highlighting that supply chain risks have become more frequent and severe and can cause significant financial damage. However, firms do not quickly recover from these disruptions and pay a heavy sum for the same. Decisions on the design and operations of supply chains affect the exposure to supply chain risks and their impact. Thus, mitigating and managing supply chain risks has become very critical.

Prof. Vinod Singhal interacting with the attendees during his keynote session

Speaker Session 1

'Meet the Journal of Business Logistics and International Journal of Physical Distribution and Logistics Management Editors'

Professor Shashank Rao
Jim W. Thompson Professor of Supply Chain Management, Auburn University

Professor Robert Glenn Richey, Jr.
Harbert Eminent Scholar in Supply Chain Management, Auburn University's Harbert College of Business

Prof. Shashank Rao guided the students behind the process of a paper's publication procedure in the International Journal of Physical Distribution and Logistics Management (IJPDLM). He highlighted that the papers aiming to be published in IJPDLM would have to rely on a rigorous empirical methodology with a strong theoretical basis and contributions. He added that quantitatively oriented mathematical and modeling research papers would not be suitable for IJPDLM. However, a quantitative model could be included in an empirical study, action research, or design science paper.

Prof. Rao stated that IJPDLM aims to foster the global exchange of knowledge among stakeholders while serving as a platform for novel insights into issues and methodologies across all aspects of supply chain management. He further highlighted the journal's most popular topics and methods, in addition to the journal's acceptance rate, impact factor, and other statistical insights. Moreover, Prof. Rao discussed the review process of a paper in detail. He focused on the 'Special Issue: Innovators & Transformers section' wherein he highlighted that the section focused on emerging problems, challenges, and innovations in logistics and supply chain management that were identified to have transformative potential and offered significant future research opportunities.

Prof. Shashank Rao presenting at the 'Meet the Journal Editors' session

Prof. Glenn Richey Jr., Co-Editor Chief of the Journal of Business Logistics, chaired the second half of the section. Prof. Glenn gave the audience detailed guidance on the journal's publication procedure. The topics focused on by the journal and the type of studies it seeks to publish were outlined. Prof. Glenn further highlighted that JBL preferred papers featuring tightly integrated empirical tests rather than those primarily based on literature reviews. The audience was also informed about the recommended word length for submissions and the review process involved in the journal's acceptance of papers.

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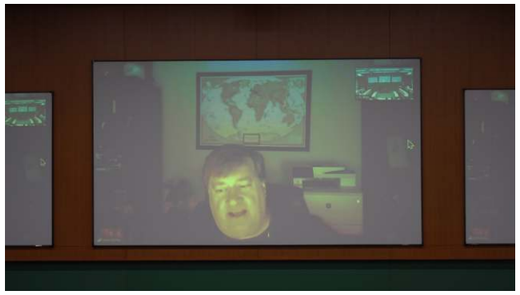

Prof. Glenn Richey Jr. delivering his talk online at the 'Meet the Journal Editors' session

Interaction session with the session attendees

Speaker Session 2

'Meet the Transportation Science Associate Editor'

Professor Debjit Roy
Professor, Operations and Decision Sciences, & Co-Chair, Centre for Transportation and Logistics, Indian Institute of Management, Ahmedabad

As the Associate Editor of Transportation Science, Prof. Debjit Roy provided participants with detailed insights into the journal's publication process. The review timelines, editorial structure, and expected quality standards for submissions were outlined. Additionally, preferred research topics and methodologies for future publications were highlighted.

Prof. Roy elaborated on the journal's editorial framework, emphasizing recent changes to the editorial board's decision-making process and review procedures. Methodological approaches and analytical tools were comprehensively outlined, with the introduction of the double-blind review process in 2024 being a notable highlight. Factors influencing a paper's acceptance were explained through elaborative examples, providing clarity on the publication criteria. He emphasized that papers addressing new problems with innovative solutions and offering rigorous theoretical results and insights had a higher likelihood of acceptance. Contextually, examples of existing papers showcasing novel solutions and innovations were discussed to illustrate these points.

Prof. Debjit Roy gave the attendees an insight into the editorial framework of the 'Transportation Science' journal

Speaker Session 3

'A Tutorial on Deterministic to Distributionally Ambiguous Optimization Tools for Transportation and Logistics Problems'

Professor Manish Bansal
Associate Professor, Virginia Tech, USA

Prof. Manish Bansal commenced the session by discussing deterministic integer optimization. He explained a few optimization problems with deterministic data through elaboratory examples from transportation and inventory control. The session continued with exploring a few examples depicting the application of mixed integer linear programs. He explained the theoretical foundations of linear programming and integer linear programming. Furthermore, he elaborated on identifying the LP solution space in linear programming and the IP solution space in integer linear programming. Additionally, the session focused on Single echelon MCLS and Two echelon MCLS while discussing serial supply chain systems. Prof. Manish further illustrated the Two-Echelon Lot-Sizing Problem: 2ELS-PCTC, 2ELS-PC2TC, 2ELS-2PCTC, and 2ELS-PCTC-O.

Prof. Manish Bansal conducted 'A Tutorial on Deterministic to Distributionally Ambiguous Optimization Tools for Transportation and Logistics Problems'

The session progressed with a discussion on the applications of integer programs in aerospace structures, focusing on deterministic capacitated lot-sizing problems and stochastic capacitated lot-sizing problems. Further, Prof. Manish discussed the two-stage stochastic mixed integer and linear programs and explained the same through a detailed example. Conclusively, the session engaged heavily in risk-neutral and distributionally ambiguous models, focusing on their application in production planning and inventory management, transportation, and facility location. While discussing the same, Prof. Manish focused on cutting plane-based methods, decomposition algorithms, and dynamic programming methods.

Research Workshop

'Solving Contemporary Problems in Transportation and Logistics'

Professor Debjit Roy
Professor, Operations and Decision Sciences Area, IIMA

Prof. Roy's discussion focused on e-commerce order fulfillment, addressing key problems such as node design through performance evaluation models, fulfillment center and sortation center optimization, and network design using information flow models. He explained the distribution of the number of line items per order in a grocery store through examples and highlighted the similarity of the same in retail store orders/omnichannel. He added that there is high volatility in customer orders during festive seasons, making it crucial for the e-commerce portals to deliver the orders in due time during such peaks. Prof. Roy underscored the expectations of customers when it comes to e-commerce shopping experiences. He stated that customers prioritize fast delivery, low shipping costs, flexible return and replacement options, and the availability of high-quality products, making Service Level Agreement (SLA) crucial. He explained the supply chain process in the e-commerce industry, starting from the first mile, middle, and the last mile, highlighting the importance of 3PL and order fulfillment time. He explored the typical challenges witnessed in the end-to-end supply chain, including the variabilities in processing and travel time across the various legs and preventing damages and loss to our shipments. Moreover, with the complex logistics network, arriving at a network of routes and rules for consolidation and sortation is essential, which becomes a critical problem to optimize.

Prof. Debjit Roy delivering his session during the Research Workshop

While explaining the performance at a node in the context of Quick Commerce, Prof. Roy explained the entire fulfillment process in a magnified manner through detailed examples. His session focused on delivery time estimation, wherein he described the analytical model of the delivery center process and gave solutions to the problems arising from the same.

He further elaborated on the warehouse processes and explained the functioning of a parcel sortation center. Contextually, he touched on the queuing network and Markov decision processes. Moreover, the robotic sortation system was discussed, along with key challenges in the domain and their corresponding solutions.

Lastly, he explained the flow in a fulfillment network, discussing the process from the supplier's procurement to the final consumption of goods by the customers. Moreover, Prof. Roy highlighted that an increase in inventory pile-up in low-performing markets and a concurrent decrease in sales in key markets due to product stock-outs are worrisome, thus emphasizing the importance of digitally transforming the supply chain. Further, he elaborated on the congestion at each hub using queues in the context of the fulfillment centers and discussed the integration of fulfillment centers, sortation centers, and delivery hubs. Moreover, Prof. Roy explained how to control congestion at these nodes.

Conclusively, he touched upon the synchronization process, including matching, Fork-Join, and Semaphore. He asserted that dynamic data could be modeled into real-time decisions.

Professor Sandip Chakrabarti
Associate Professor, Public Systems Group, IIMA

Prof. Chakrabarti's session involved an interactive discussion with the participants, focusing on upcoming challenges in public transportation and sustainable mobility. Some of the prominent challenges elaborated upon included the pricing of public transit, increasing the throughput of freight trains with an emphasis on the redistribution of empty rakes, and investment incentives for autonomous vehicles (AVs) in relation to automation levels and safety. The session also highlighted the supply chain of medical products, addressing delivery time optimization, drone deliveries, and make-to-market time (MMT). Further discussions revolved around logistics optimization through failure mode and effect analysis (FMEA) and intralogistics, challenges in last-mile drone delivery, such as adoption barriers and policies, and the role of network design in ensuring road safety.

Prof. Sandip Chakrabarti delivering his session during the Research Workshop

Professor Samrat Roy
Assistant Professor, Operations and Decision Sciences Area, IIMA

Prof. Samrat's session focused on the recent machine learning and data science applications in transportation and logistics, including last-mile delivery optimization, warehouse management, workforce planning, quality control, real-time tracking, self-driving vehicles, supplier relationship management, dynamic pricing, and fleet management. He highlighted that the application of AI/ML tools has yielded a 27% increase in route efficiency and a 19% decrease in fuel consumption. He asserted that the same is achieved through arrival time prediction, demand forecasting, industrial process optimization, traffic flow and location prediction, vehicle routing problems, and anomaly detection. Methods like ML, DL, Bagging, Boosting, statistical, and genetic algorithms have proven beneficial.

He explained the decision tree process, bagging, and boosting in a magnified manner through elaborative examples. He stated that bagging is to run the decision trees for multiple random subsets of the original data and make decisions based on all the trees, further adding that random forest is an extension of bagging. He asserted that random forest is a theoretically improved version of bagging since random forest involves multiple decision trees, thereby reducing the chance of errors.

He also discussed the difference between bagging and boosting. Prof. Roy highlighted that although AI systems are proficient at providing solutions, the primary duty is to discern the objectives and the rationale behind their implementation. He further cautioned against using complex techniques since simpler linear and logistic regression methods often perform better.

Prof. Samrat Roy delivering his session during the Research Workshop

Oral Presentations

Sub Track-1 : Supply Chain and Optimization

Session Chair: Prof. Manish Bansal, Prof. Govind Kumawat, Prof. Alok Raj, Prof. Tarun Rambha

Presenter	Title
Rajshri Patil	Low Carbon Green Supply Chain Routes for Sustainable Construction: A Case Study of Mumbai Region
Rito Brata Nath, Tarun Rambha	Charge Schedule Optimization For Solar-Integrated Electric Bus Transit Systems
Shantanu Bagchi	Solving the capacity optimization problem in the semiconductor industry: the implementation dilemma
Md Shahrukh Anjum	Cardinality-based Disaggregated formulation and cutset inequalities for the Steiner Tree Problem
Faizul Haque	Retail Effort Paradox: Does More Effort Always Deter Supplier Encroachment?
Sumit Kunnumkal	Network Revenue Management with Pooling
Aman Hadap	Optimizing Logistics Efficiency: A Comprehensive Approach through Milk Run Enhancement with FMEA and Intralogistics Precision using Kanban Cards
Faizul Haque	Eye on Logistics and Engagement: How Shopping Goals Influence Livestream Selling
Murari Srinivasa	Building Last-Mile Connectivity to Urban Public Transit Systems – Designing Optimal Fixed-Route Feeder Networks

Sub Track-2 : Managing Supply Chain Performance

Session Chair: Prof. Samrat Roy, Prof. Vinod Singhal, Prof. Ankit Sharma

Presenter	Title
Lalbabu Nishad	Value Of Carbon Credit Markets To Farmers: Impact On Consumer And Social Welfare
Sagnik Sarkar	Responsible Menu Choice Design to Reduce Food Waste and Improve Access forLow-Income Customers- A Step Towards Sustainable Food Supply Chains
Prakshal Jain, Arijit Goswami	Inventory Management Of Deteriorating Complementary Goods With Demand Dependent On Price, Promotional Efforts And Trade Credit
Shreya Saraf, Sudhanshu Shekhar	Optimizing Supply Chain Management Using Process Mining
Bhavya Maloo	Hygiene Factor for Reducing Operational Logistics Cost in Distribution - Case of Cement Industry in India
Mahdi Ghorashi Khalilabadi	Swarm Versus System-Directed. Analysis of Human-Robot Collaborative Policies in Order Pick Systems
Ravichandran N, Venkataramanaiah Saddikuti	Identification And Resolution Of Supply Chain Management Challenges In A Social Organization
Rashika Gupta	Order mixing and routing strategies for human-robot collaborative warehouses
Ashish Kumar	Fairness and Equilibrium Pricing Strategies in the Online Food Delivery Market: A Game Theory and Mechanism Design Approach
Vinay Reddy Venumuddala	A framework to compare real-world contracts between suppliers and long-distance logistics service providers in a cold-chain context

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Sub Track-3 : Smart Mobility

Session Chair: Prof. Sundaravalli Naryanaswami, Prof. Sumit Kunnumkal

Presenter	Title
Anjum Mirza	Performance Evaluation Of Integrated Transportation System
Srikanth Krishnaprasad	On-Demand Ride Services Using Dual Capacities: Competing Under Non-Discriminatory Regulations
Prateek Agarwal, Tarun Rambha	Improving Operational Efficiency Of Public Transit Systems
Shamik Pushkar	Analyzing The Impact Of No-Fly Zone Restriction On Drone Delivery

Sub Track-4 : Policy and Sustainability

Session Chair: Prof. Samrat Roy, Prof. Venkataramanaiah Saddikuti, Prof. G. Raghuram, Prof. Sandip Chakrabarti, Prof. Sanjay Verma, Prof. Ranjan Kumar, Prof. Amit Garg, Prof. Srikanth Krishnaprasad

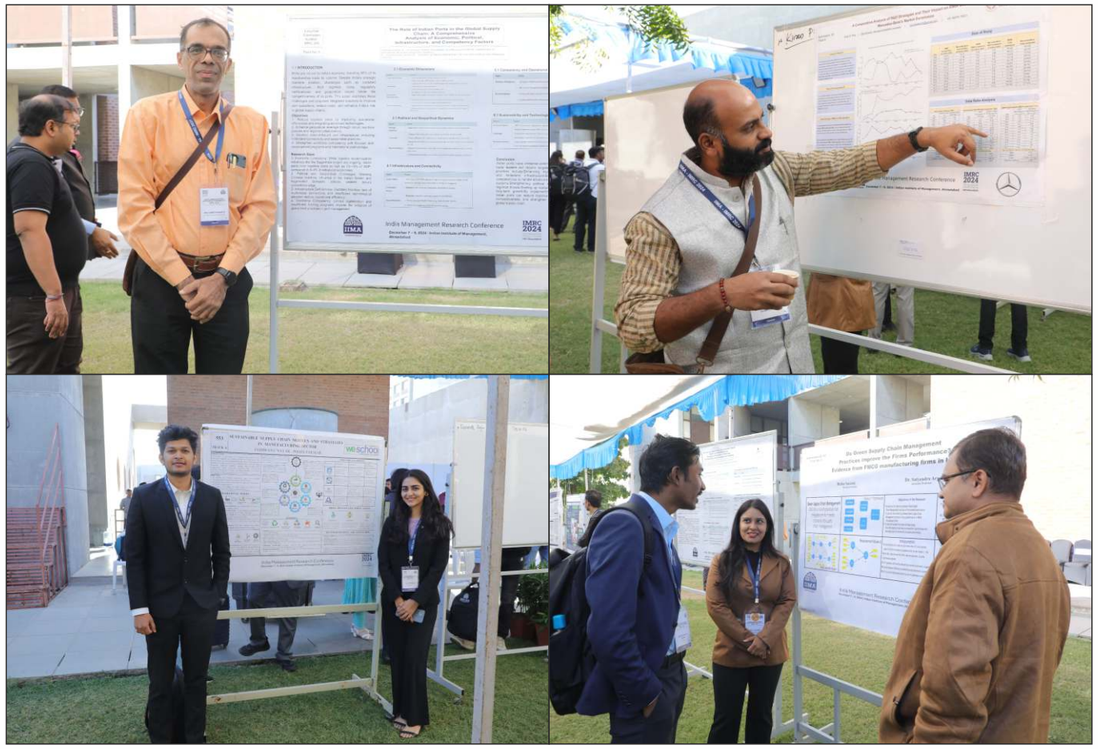
Presenter	Title
Himanshu Arha	A Structural Analysis of Freight Delays in the Indian Railway Network
Ranit Saha	Designing a New Sustainable Product and Government Subsidies: The Role of Social Learning
Sagar Verma	Parking Infrastructure and Challenges in Indian Cities: Insights from Twitter Data Analysis
Mahendra Parihar	Electric Truck – Possible Future of Trucking Industry in India for Economic Efficiency
Abhinav Tiwari	Automated Decision-Making for EITV Charging in Container Terminals
Pushpam T Davis	Assessing Drivers' Switching and Continued Usage Intention: The Transition to Electric Autorickshaws in Public Transport
Tridib Guha	Analyses of Business Models Pertaining to the Electric Vehicle Industry
Vinayak Vishwakarma	AI-Enabled Logistic Nudging for Sustainable Consumption
Ila Garg, Sabyasachi Roy	Benchmarking the Historic Efficiencies of the Indian Railways: Some Policy Perspectives
Ankit Sharma	Are vehicle scrappage policies effective? An evidence from India
Modish Kumar	Risk Management for Road Projects in Mountainous Terrain – A Case study of learnings from the Himalayan Belt
Naga Siva Gayatri Dittakavi, Nachiket Gosavi	Commute Distance and Residential Characteristics: Weathering the Storm
Jayanth Kumar Narsim	Resilient Transportation Systems for Older Adults: A Global Review with Policy Recommendations for India
Nandan Kumar Singh	Beyond Electric Vehicle Adoption: Should Government Support Battery Management System Development for Battery Lifecycle Management
Paras Rajyaguru	Mapping Research Trends with Factorial Analysis in Adoption of Green Vehicles
M Muskan	Does telecommuting promote long-distance weekend travel?

Glimpses from the Oral Presentations across the various sub-tracks

Poster Presentations

Session Chair: Prof. Debjit Roy, Prof. Sandip Chakrabarti

Presenter	Title
Pratheep Kumar R and Dr Gopalaswamy Seladurai	The Role of Indian Ports in the Global Supply Chain: An EPIC (Economic, Political, Infrastructure, Competency) Model Perspective
Ranit Saha and Sumanta Basu	Is Compatibility Always Better? – Electric Vehicle Manufacturers' Strategies With Fast Chargers
Kiran Pillai	A Comparative Analysis of R&D Strategies and Their Impact on BMW and Mercedes-Benz's Market Dominance
Richa Saxena and Satyendra Arya	Do Green Supply Chain Management Practices improve the Firms Performance? Evidence from FMCG manufacturing firms in India
Jashwant Nayak and Pooja Parmar	Sustainable Supply Chain Models and Strategies in the Manufacturing Sector



Poster Presentations of IMRC- Track 06: Transportation and Logistics

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Poster Presentations of IMRC- Track 06: Transportation and Logistics

This synopsis was prepared by :

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Research Associate
Centre for Transportation and Logistics,
Indian Institute of Management Ahmedabad

Scan here to read the detailed proceedings of the workshop

or
visit : : https://www01.iima.ac.in/ctl/

CTL Snippets

'CTL Snippets' is an initiative by the Centre to continue its rich tradition of thought leadership. The interview series focuses on showcasing insightful conversations with leading academicians and practitioners of the transportation and logistics sector. The series aims to provide the audience with insightful discussions exploring topical issues, developing research problems, and finding innovative solutions within the realm of transportation and logistics.

CTL Snippets E7: Designing Contingent Free Shipping policy to maximize profits and minimize returns

Interaction with:

Prof. Ashish Kabra
Assistant Professor
University of Maryland -
Robert H. Smith School of Business

Key Highlights:

Prof. Ashish Kabra discusses the role of the returns environment in designing Contingent Free Shipping (CFS) policies for e-commerce players. He begins the discussion by explaining the importance of a shipping policy for e-commerce retailers and how it affects consumer demand and seller's profitability. The discussion moves to the different types of shipping policies, like free shipping, CFS and subscription-based shipping policies among others. A contingent free shipping (CFS) policy offers free shipment of an order only if it satisfies a pre-specified threshold amount. Customer behavior should drive the design of an optimal CFS policy. The threshold amount should be carefully determined since a high threshold may deter customers from purchasing while a low threshold may make it unable to recoup shipping costs. He also highlights the importance of analyzing bubble purchases, return process and returns hassle in designing a CFS policy. The primary challenges in designing optimal CFS remain determining the right amount of threshold and fee amount. He recommends formulating lenient CFS terms when the return process is convenient, while stringent CFS terms should be applied when the return process is inconvenient.

To watch, visit:

https://www.linkedin.com/feed/update/urn:li:ugcPost:7212317105046622209/

or Scan

CTL Snippets E8: Application and Usage of AI and ML in the domain of Transportation and Logistics

Interaction with:

Prof. Samrat Roy
Assistant Professor
Indian Institute of Management Ahmedabad

Key Highlights:

Prof. Samrat Roy begins by highlighting that advanced statistical models help companies make their logistics and freight systems more efficient, thus assisting in decision-making. He categorizes the transportation and logistics domain into 6 categories, wherein AI and ML have been extensively used. The areas include arrival time prediction, demand forecasting, industrial process optimization, traffic flow prediction, vehicle routing problems, and anomaly detection. He further discusses various statistical methods like linear regression, logistic regression, Bayesian methods, and machine-learning methods like traditional decision tree-making processes, boosting, random forest, and bagging techniques employed in the field of transportation and logistics. Prof. Roy accentuates that no one best approach can be replicated in all scenarios. Each problem requires a different approach and, thereby, a different methodology. Moreover, he states that variables or factors that affect the accuracy of the prediction of arrival times for goods in transportation vary contextually. While elaborating on the challenges companies encounter while applying AI and ML methods, he highlights the importance of quality and quantity of data, followed by refined pre-processing methods before commencing analysis. He adds that identifying the appropriate variables and factors becomes necessary for the prediction model. Lastly, Prof. Roy elaborates on the importance of focusing on what is appropriate for their model rather than relying on fanciful methods. He mentions that the primary objective lies in discerning the objective, timing, and rationale behind their methods.

To watch, visit:

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CTL Snippets E9: Navigating Supply Chain Disruptions

Interaction with:

Prof. Saurabh Ambulkar
Assistant Professor
Information Systems and Operations Management
at the University of Texas at Arlington

Key Highlights:

Prof. Saurabh Ambulkar discussed supply chain disruptions, categorizing them based on the kind of triggering events and their impact. He elaborated on the consequences of such disruptions on a firm's performance, addressing financial and humanitarian implications. He explored a few strategies that could help mitigate these disruptions, including redundancy and flexibility. He asserted that building redundancy under the supply chain would involve having safety stock or multiple suppliers as options, and building flexibility would include strategies to restart operations employing existing capabilities within the system. Prof. Ambulkar continued by addressing the strategies that mitigate financial losses arising from supply chain disruptions. These include having risk management infrastructure in place to be better prepared for low-impact disruptions. However, during unanticipated disruptions, flexibility in the supply chain could assist in reconfiguring the resource base. Prof. Ambulkar concluded by discussing the emerging research areas in supply chain disruptions. Some of them include the use of blockchain and AI to predict and recover from disruptions and examining the role of decision-makers within a firm to deal with the same.

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CTL Snippets E10: Co-Creation in Supply Chain

Interaction with:

Prof. Abhishek Roy
Assistant Professor
Fox School of Business, Temple University

Key Highlights:

Prof. Abhishek Roy explains the concept of co-creation in supply chain: an economic strategy connecting multiple parties to jointly produce a valuable output. He underlines the need for buyers and suppliers in co-creation to improve the product/service. To measure the contribution of each party in co-creation, companies can either audit each party's contribution in a transparent manner, or design incentives based on the final outcome. He explains the concept of multi-vendor co-creation, and how it is different from single-vendor co-creation. The discussion then moves towards the introduction of a secondary vendor in the co-creation project, and its impact on the primary vendor. Finally, he discusses the role of co-creation in making supply chains more sustainable and resilient.

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CTL Sponsored Research & Student Projects

1. Case study on "Marico Limited: Warehouse Automation and Technology Selection"


Prof. Debjit Roy


Mr. Bipin Yadu

Prof. Debjit Roy, along with CTL Research Associate **Mr. Bipin Yadu,** carried out a case study on "Marico Limited: Warehouse Automation and Technology Selection"

Abstract:

The case demonstrates how warehousing automation projects are pitched, initiated and executed when the management is sceptical of the success of new technologies. In FY 2020–2021, Marico achieved a record-high turnover of USD 1.3 billion. The company's future looked bright, and sales were expected to increase. The situation on the shop floor was challenging. After analysing the potential challenges associated with an expected increase in demand and considering the prevailing situation at the existing company sites, Vaibhav Kulkarni, Works Head, and Chirag Ojha, Projects and Supply Chain Manager, were convinced that the existing sites of Marico had many operational issues that could no longer be ignored. They pitched the idea of a greenfield project with automated technologies. Although the management was ready for expansion, a greenfield project with high-tech robotic systems seemed considerably aspirational for the company. What alternative technology options were available in the market? What was the cost to the company for the different options? What parameters needed to be considered? How could the options be assessed fairly? How would the new technology affect the daily operations and morale of the company?

Visit to know more: https://cases.iima.ac.in/index.php/marico-limited-warehouse-automation-and-technology-selection.html

2. Queuing Models for Analyzing Integrated Dry Bulk Terminal Operations


Prof. Debjit Roy


Dr. Mitrabarun Ghosh

Dr. Mitrabarun Ghosh, Post Doctoral Fellow at Centre for Transportation and Logistics (CTL), presented a progress report on a research paper titled 'Queuing models for analyzing integrated dry bulk terminal operations', which is being written with **Prof. Debjit Roy.**

Abstract:

With a global increase in the demand for bulk commodities especially iron ore and coal, dry bulk shipping market is witnessing a steady growth. The market valued at USD 162.6 billion in 2023 is estimated to register a CAGR of over 4% between 2024 and 2032. However, a significant hurdle to growth is long dwell times experienced by the dry bulk vessels at the terminals. A 2019 UNCTAD report suggests that the average port turnaround time of a dry bulk vessel is 2.05 days in comparison to 0.7 day dwell time observed by a container vessel. While container or bulk liquid handling operations can be largely automated, dry bulk handling operations experience delays due to manual processes, variations in cargo type, cargo quantity-dependent crane handling speed, among others. Further, the discharge processes are quite complex with significant resource coordination among cranes, loaders, transport vehicles (trucks). In addition, variations in the cargo storage layout, buffer space for interim cargo storage, cargo-quantity, and number of resources affect the overall throughput of the terminal.

To analyze the terminal performance, we capture the process flow of cargo from discharge to heap storage using an integrated closed queuing network with finite buffer at the process interfaces and load-dependent cargo discharge rates. The model is scalable and can be adopted to analyze various crane–loader combinations and different stockyard layout configurations. Detailed simulations with realistic layout and process inputs from a dry bulk cargo terminal reveal that the network performance estimates are quite reliable. The queuing network models with finite buffers are analyzed using the aggregation disaggregation method and closed-form expressions are obtained for throughput estimates. Using this modelling framework, the throughput performance of alternate stockyard layout combinations are analyzed. The efficiency of square and rectangular stockyards with the same number of stockpiles is also computed. The throughput estimates provide the optimal dimensions of a dry-bulk stockyard layout and further allow to size the number of circulating trucks to prevent network blocking.

Centre for Transportation and Logistics
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विद्याविनियोगाद्विकास:

3. How Can Foreign Commercial Vehicle Manufacturers Succeed in India?


Prof. Debjit Roy


Mr. Shubham Siwach

A magazine article titled 'How Can Foreign Commercial Vehicle Manufacturers Succeed in India?' authored by **Prof. Debjit Roy,** along with CTL Research Associate **Mr. Shubham Siwach,** was published in the Singapore Management University's (SMU) magazine, Asian Management Insights (Volume 12, Issue 1), on 28 March 2025.

Abstract:

The Indian automotive industry plays a significant role in the Indian economy, comprising half of manufacturing GDP and more than 7% of the total GDP. Continuing with the 1991 economic reforms, India opened its automobile market for foreign players with the Auto Policy of 2002 that allowed 100% automatic FDI for automotive manufacturing. This resulted in an influx of many foreign firms in both, passenger and commercial vehicle (CV) segments. Numerous foreign players entered the Indian market between 2002 - 2015, starting with German automaker MAN Motors in 2003. The Indian CV market grew at a compounded annual growth rate of 12.7% between 2000 - 2010. However, the next decade (2011 - 2020) witnessed a slowdown wherein the industry grew at a CAGR of just 3%. Most of the foreign players exited the market by 2020, giving India the moniker of the 'graveyard' of global automotive players.

In this article, we explore the reasons behind the exit of foreign original equipment manufacturers and the persistent challenges hindering their success. We derive insights from numerous field visits, interactions with fleet operators and top executives from original equipment manufacturers and a primary survey on truck buying behavior. Three most critical challenges emerge: the duopolistic grip of existing market leaders, low margins and difficulty in expanding service network. The top two players in the Indian M&HCV market have occupied almost 80% of the dominant share. Their market dominance allows them to provide deep discounts, prompting new firms to match the low prices by reducing their margins despite facing the constraints of higher costs and limited scale. Data suggests that profit margins for CV makers are among the lowest in India. The pressure on the profit margins of new firms is exacerbated by the demands of an expansive service network by the Indian fleet operators.

We present a seven-step market entry strategy for foreign entrants to achieve success in the Indian CV segment after gathering insights from top OEM executives, including foreign OEMs who have achieved success in the Indian CV market. Development of India-centric truck variants is a prerequisite for any foreign OEM to find a foothold in the Indian market. Significant investments in design, development, manufacturing and testing facilities are required. A careful study of the Indian market can help foreign OEMs identify the unserved segments (like heavy duty mining and construction) for market expansion. However, the size of the Indian market is still not comparable to the American or European markets and hence, demand stability remains a concern. An export-centric business model is critical to achieve scale and associated cost benefits. To reduce the uncertainties of the market demand on the company's profitability, new entrants must focus on gathering accurate demand signals through the use of technology. Localization is an important strategy for foreign OEMs to control sourcing costs, build a reliable supplier base and gradually introduce modularity in their Indian manufacturing plants. Additionally, new players need to leverage technology to offset any loss in sales due to a small service network. However, such solutions need to be affordable and should not divert them from establishing an expansive service network. Finally, a display of a long-term commitment to the Indian market is essential to build customer trust and generate market demand.

To read the complete article, visit: https://cmp.smu.edu.sg/ami/issues/volume-12-issue-1/insights/how-can-foreign-commercial-vehicle-manufacturers-succeed


SMU Singapore Management University
Home / Asian Management Insights / Issues / Insights
How Can Foreign Commercial Vehicle Manufacturers Succeed in India?
Seven steps to achieve market entry based on lessons from recent market exits.
1. New entrants need to tailor their trucks for India's geography, infrastructure, and conditions to improve acceptability and market share.
2. Boost demand by building an export-driven business model in India to counter the threat from inadequate and stagnant domestic demand.
3. Align service offerings with customer expectations to gain greater vehicle acceptability.
In 2023, the Indian automotive industry accounted for half of the country's manufacturing GDP and more than seven percent of its total GDP, making it one of the top contributors to the nation's economy.[1] Furthermore, the industry provides employment to over 30.7 million people.[2] India is also a manufacturing powerhouse in commercial vehicles (CV), emerging as the world's largest manufacturer of buses, and third largest manufacturer of trucks globally in the year 2023.[3] Besides, India became the third largest
How Can Foreign Commercial Vehicle Manufacturers Succeed in India?
Volume 12 Issue 1
Published on 28 Mar 2025
Section:
Insights
By:
Debjit Roy, Shubham

4. Shaping India's EV Future: FAME 3, a Strategic Roadmap for Sustainable Mobility

Authored by-

Anant Taraniya
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Sadik R Syed
2nd Year, PGP Student

The global shift towards electric vehicles (EVs) has been a crucial step in addressing the pressing challenges of climate change and environmental degradation. India, with its commitment to achieving net-zero emissions by 2070, has been proactive in introducing EV-friendly policies. Yet, despite government efforts like the Faster Adoption and Manufacturing of Electric Vehicles (FAME) 1 and 2, the EV market in India still faces significant hurdles. The upcoming FAME 3 policy seeks to address these challenges comprehensively, pushing India towards its ambitious targets for EV adoption.

1. FAME 1 and FAME 2: The Foundation

FAME 1, launched in 2015, was the first measure to incentivize the adoption of EVs and hybrid cars, both through incentives in terms of subsidies and creation of charging infrastructure. The plan had envisioned selling as many as 6-7 million EVs a year by 2020. Since the EV market was still in its infancy stage and infrastructural shortcomings were plentiful at that time, the impact of this program was understandably not satisfactory. By the time FAME 2 was rolled out in 2019, the Indian government had exponentially built on its efforts. It set a budget of ₹10,000 crores toward the agenda. Electric mobility promotion took place in the form of widespread subsidies on electric buses, two-wheelers, and three-wheeler units, along with investments in public charging infrastructure.

Despite these measures, India's EV penetration remains modest, with electric vehicles comprising only around 5% of total vehicle sales. The market continues to struggle with barriers such as high upfront costs, limited charging infrastructure, and range anxiety among consumers. Furthermore, the growth in EV adoption has been skewed towards commercial fleets and two- and three-wheelers, while private car adoption lags.

As one Tata Motors employee noted, "FAME 1 didn't make much of a difference as it was introduced too early and lacked support for personal EVs, which would have accelerated the market growth." However, FAME 2 brought more traction, especially for commercial fleets, where Tata Motors leveraged incentives to grow its EV ecosystem.

2. The Need for FAME 3

As the Indian government prepares for the launch of FAME 3, it is clear that the new policy must address the gaps left by its predecessors. FAME 3 should envision a wholesome approach that not only serves for the adoption of EVs but also for the entire ecosystem to be sustainable and inclusive. This dependency on the Indian EV market calls for a policy to stimulate long-term market stability rather than fiscal incentives. According to Ather Energy, FAME 2 helped boost sales substantially, but the company still saw challenges, especially with a lack of clarity around charger inclusion. "The policy helped increase sales but the lacuna in charger infrastructure made range anxiety an issue for many consumers," said a representative from Ather. The same was echoed by industry players, who emphasized the need for more extensive charging networks and government support for localization efforts.

3. Key Pillars for FAME 3

3.1. Building a Sustainable Demand Model

One of the most pressing challenges for FAME 3 will be creating a demand structure that sustains itself beyond government subsidies. While FAME 2 incentivized the purchase of electric vehicles, the market has not yet matured to the point where EVs are competitive with internal combustion engine (ICE) vehicles without financial support. FAME 3 must focus on reducing the total cost of ownership (TCO) of EVs. This includes continuing to drive down the cost of batteries, which account for a large portion of the overall vehicle cost and promoting innovative financing options like leasing and pay-per-use models to make EVs more accessible. Additionally, the policy must promote consumer education and awareness campaigns that highlight the long-term financial benefits of EVs, such as lower fuel and maintenance costs, to incentivize their purchase.

3.2. Accelerating Charging Infrastructure Development

One of the key learnings from the FAME 2 launch is that the public charging infrastructure growth has been nowhere close to the EVs' growth pace. That as of 2024, India will have about only 2,700 public charging stations, which is an unacceptably low number to support mass transition to electric mobility. The phenomenon of "range anxiety" among prospective buyers of four-wheelers has been caused due to the lack of enough and widespread charging infrastructure.

FAME 3 should ensure that charging infrastructure is ubiquitous across the country. Installing fast-charging stations at urban centres, highways, and even in rural regions will require mutual efforts from both the government and private players. Installation of incentives for home-based charging units and standardization of charging ports across all manufacturers to have interoperability should be encouraged. Battery swapping also could be an important part of the charging infrastructure for commercial fleets, thereby minimizing downtime and maximizing the operating efficiency of electric buses, taxis, and last-mile delivery vehicles.

In one of our interviews, an executive from Tata Motors emphasized the importance of charging infrastructure in making EVs more viable: "Charging infrastructure is key to higher market penetration. We've seen the potential in expanding this network, but much more needs to be done, especially in creating home and community charging options."

3.3. Indigenization and Reducing Import Dependency

India's EV ecosystem is currently heavily reliant on imports for critical components like lithium-ion batteries and electric drivetrains. To ensure long-term sustainability and reduce vulnerability to global supply chain disruptions, FAME 3 must prioritize local manufacturing through schemes like the Production Linked Incentive (PLI) for advanced battery manufacturing and the creation of EV-specific industrial clusters.

Moreover, the policy should encourage research and development in battery recycling technologies to build a circular economy around EVs. This would not only reduce dependency on new raw materials but also help mitigate the environmental impact of battery disposal. Promoting alternatives to lithium-ion, such as solid-state batteries, could also be a key focus area for research and innovation.

An executive from ETRNL, a cell manufacturer, added, "The upstream segment of the EV supply chain needs to be strengthened. Localization of battery production is crucial to reducing costs and improving the availability of components for manufacturers."

3.4. Creating a Holistic Regulatory Environment

A significant challenge for the EV market in India is the absence of a cohesive regulatory framework that governs everything from safety standards to emission norms and battery disposal regulations. FAME 3 must include clear guidelines for EV manufacturers regarding safety protocols, emissions testing, and recycling practices. It should also include provisions for implementing real-time monitoring systems for emissions from hybrid vehicles and introduce stringent compliance measures for manufacturers to adhere to localization requirements.

Collaborating with international bodies and adopting best practices from countries like Norway, China, and the U.S., where EV adoption has surged, will also be critical in shaping India's regulatory environment.

3.5. Incentivizing Public and Private Transport Electrification

While much of the focus of FAME 2 was on public transport, FAME 3 must also encourage the electrification of private transport, particularly for two-wheelers and four-wheelers. Offering additional incentives for private buyers, such as tax rebates, reduced registration fees, and insurance subsidies, could make EVs more attractive to individual consumers. For commercial fleets, continuing to provide incentives for the procurement of electric buses, trucks, and other public transport vehicles will be essential in reducing urban pollution levels.

Ather Energy highlighted the importance of localized manufacturing and R&D: "FAME 3 needs to continue supporting local manufacturing and research initiatives to drive down costs and improve the viability of EVs for a broader consumer base."

4. Global Lessons and Future Directions

India is not alone in its quest for sustainable mobility. Countries like Norway, China, and the U.S. have successfully implemented policies that have resulted in widespread EV adoption. Norway, for example, offers a mix of aggressive financial incentives and extensive charging infrastructure that has made it a global leader in EV adoption. China's emphasis on domestic battery production and the U.S.'s focus on creating long-term emission reduction targets through policies like the Zero Emission Vehicle (ZEV) program are valuable lessons for India.

FAME 3 should not only learn from these examples but adapt them to suit the Indian context, where challenges such as income disparity, infrastructural constraints, and the vast geographic spread make the transition to EVs more complex. However, with careful planning and execution, FAME 3 can position India as a global leader in electric mobility, driving both environmental and economic benefits.

5. Conclusion

The success of FAME 3 will largely depend on how a self-sustaining ecosystem for EVs is created. In the long term, if such an infrastructure exists, the short-term interventions of the government through incentives and subsidies will not be as necessary. Long-term vision will include further cost reduction, establishment of solid infrastructure, and technological and policy innovation. Dealing with issues of consumer adoption, charging infrastructure, and the sector of domestic manufacturing, FAME 3 could perhaps finally look the real game changer for the electric vehicle's landscape in India and propel the country towards a brighter, greener future

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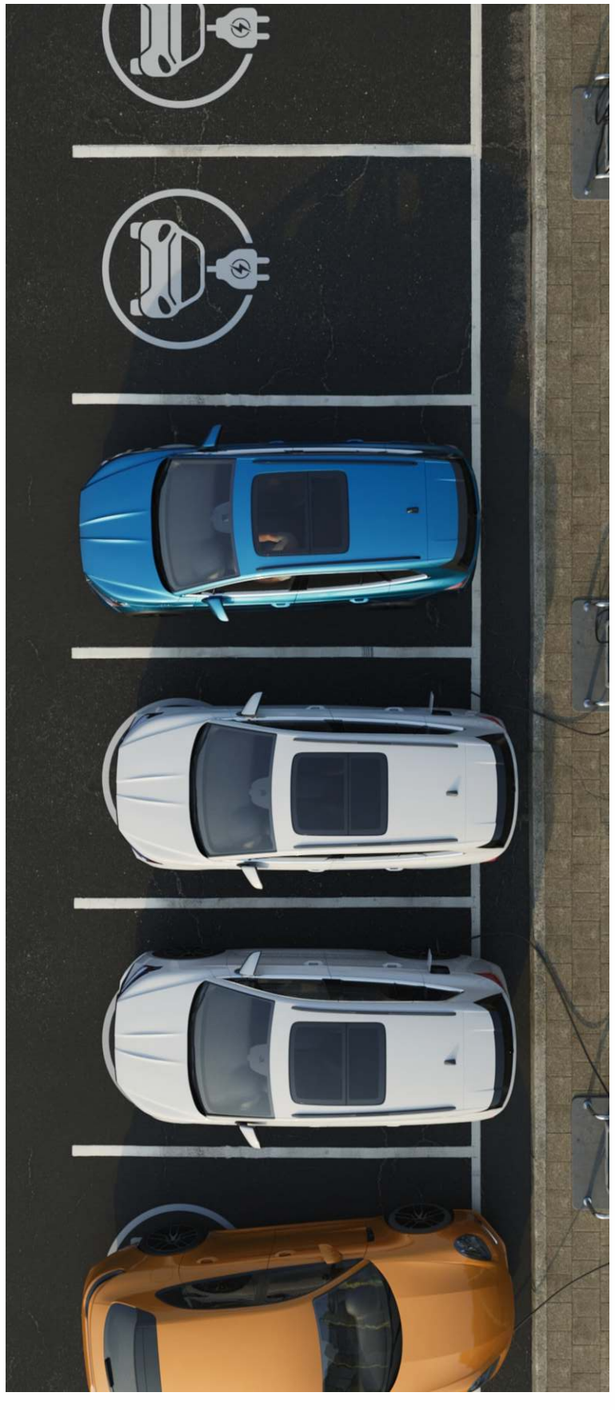


5. Logistics Cost Estimation in FMCG Sector

Authored by-

Anish Mandal
2nd Year, PGP Student

Akhil Chowhan Korra
2nd Year, PGP Student

A company's product's pricing is determined by the total cost incurred during production, including several variable and fixed components. However, logistics component of the cost remains unknown for almost all of the products, leading to inaccuracies in overall cost analysis. Factors influencing logistics cost include globalization, fuel price fluctuations, technological advancements or even company's strategic decisions. To ensure accurate cost analysis and pricing strategies, companies must understand all cost components involved in the production process and make informed decisions to optimize production and maximize profitability.

Aim and objective:

Our primary objective was to gain better understanding of the FMCG sector, especially in terms of logistics, where we will find out the different components of the same as well as find out the percentage share of different components of logistics

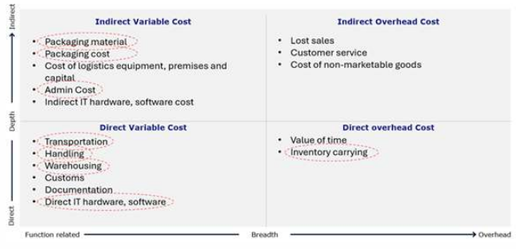
Methods used:

The study employed a 3-level approach, using a combination of secondary research (literature review), company financial analysis and primary research, which includes interviews with company officials using a questionnaire.

The primary focus was to gather major information via interview with industry experts to gather special insights. But due to limited contact, focused on gathering information from the company financial statement as well by validating our approach by the professor.

Secondary research findings:

The FMCG market in India is projected to reach 220 billion US dollars by 2025 and 615.87 billion dollars by 2027, driven by factors such as lifestyle changes, consumption patterns, and earnings which makes it important to have a better understanding of the sector especially regarding costs. We came to know about different components of logistics cost and in a research paper, found out that it can be segregated in following 4 divisions:



On top of that, we also got to know about the possible supply chain of FMCG sector. One important thing to note, in our study, we gave an immense amount of importance towards landing cost and all our analysis and hypothesis was based on landing cost approach. The total landing cost, which includes raw materials, freight, customs, and warehousing, is used to calculate the total cost accrued by the end customer, just like how a small snowball gathers snow to grow bigger and bigger. The main objective was to find logistics cost as a percentage of the total landing cost, rather than total revenue, as it takes into account all costs experienced throughout the product's journey to customers.

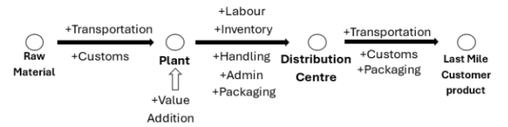
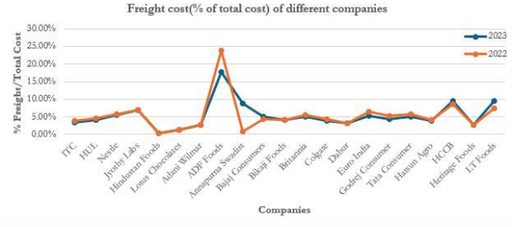


Figure: Cost addition at every point of supply chain

Company financial analysis findings:

We did study of 20-25 Indian FMCG companies operating in various sub-divisions looked at their financial reports to identify logistics cost components. According to the study, the majority of companies report outward freight costs, warehouse costs, and customs expenditure as common components. However, no other common component was discovered, nor were any other strong components identified for analysis. The KPI of freight cost as a percentage of total cost (Revenue-PBT) was developed, and it was discovered that most businesses have a 5-10% ratio of outward freight to total expenses. These trends differ depending on the sub-section or sub-division of the GMCG sector. Most businesses record outward goods as other costs, but inward goods are also incurred. Large FMCG companies include both raw material and transportation costs in their COGS and finding the proportion of COGS that accounts solely for logistics is critical and difficult. Moreover, for other components also, we didn't find much data to analyse.



Primary Research findings:

1. Talking to Mr Krishnan Saharan from ITC Limited, we got to know the company's warehouse strategy includes a last-mile approach, which aims to reach customers as close to them as possible without using transportation. They have numerous manufacturing plants spread across India and build distribution centres around them to reduce transportation and logistics costs. Factors such as altitude, wind zone, seismic zone, and geography also impact the cost. And ITC along with other FMCG companies are considering a semi-automated approach for new warehouses to reduce costs, reduce errors and damage, reduce production disruptions, achieve a lean structure, and use renewable energy sources for automation and sustainability.

2. While interviewing Mr. B N Sarkar, associate VP at HCCB, he divided logistics into two phases: before and after, with a focus on raw materials and packaging. He also emphasises the differences in transportation costs between various FMCG sectors, including food, cigarettes, and beverages, so how directly comparing them can give misleading results. Specially focused that how beverage products need more scaling due to their low profitability per KG sold.

3. He also added the inefficiency of the product and the need for perfect trucks make it difficult for FMCG companies to fit products into perfect trucks, resulting in increased lead time and lower customer satisfaction.

4. Warehousing is another area where cost increases. Mr Sarkar suggests two main ways to reduce costs via warehousing: design changes and reducing inefficiencies. Design changes involve increasing truck size or operating it with full capacity, while inefficiencies involve increasing warehouses to reach closer to customers.

5. Sanjay Gupta, Adani Group's Joint President and Chief Procurement Officer, shared valuable insights into FMCG logistics costs, particularly in terms of transportation. He discussed various modes of transportation, such as ship, marine, sail, road, rail-road, and reverse logistics. He emphasised the importance of factoring in last mile delivery when calculating transportation costs, which can lead to errors. To reduce these errors, Adani Group uses a single PTPK (per tonne per kilometre) convention to compare transportation costs across verticals and measure cost reduction.

A rough estimate given by him regarding components of transport cost is shown below:

Sub-divisions	Percentages
Fuel	38%
Tyre cost (per KM)	8%
Workforce	15%
Maintenance	7%
Road consumables	5%
Insurance	4%
Road tax	4%
Toll tax	3%
Office + Admin	4%
Police (Misc)	2%
Profit	10%
Total	100%

Conclusion:

To summarise, we found through company financial analysis that for FMCG companies on average 5-6% of the total cost goes towards transportation. And while taking interview and literature reviews, we came to know that around 30-40% of total logistics cost consist of transportation cost. That being said, we can tell that around 12-16% of the total cost that is incurred by products comes due to different logistics components on an average.

After the primary & secondary research, we came to the conclusion that, if we want to calculate logistics cost in the FMCG sector, we have to consider a few factors as follows,

- The volume of the unit
- Weight of the unit
- Value of the unit
- The shelf life of the unit
- Number of labourers hired.
- Volume and mileage of the vehicle operated
- The business model of the organisation.

The above are some of the attributes we have identified; if this is further examined, then we may get more attributes with which we can get accurate estimates.

Way forward:

The above study was conducted with many limitations, such as time and capital. With the facility we had, we were able to connect with a few industry experts and were able to get a path with which we can get the estimation, but if this area is further studied, there could be many things that would unwrap. Thus, this study of ours can be used as a stepping stone to further examination and clarification, one cannot completely depend on this and start estimation for accurate answers, rather we could suggest to further examining the possible attributes and then working on the calculations.

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6. Fabric to Freight: The Real Costs of Apparel Logistics

Authored by-

Aanchal Goel
2nd Year, PGP Student

Anjali Chandel
2nd Year, PGP Student

The apparel industry's logistics network is highly important in the transfer of raw materials, semi-finished products, and finished goods at various stages. Efficiency in logistics is the main reason behind maintaining competitiveness because companies have to ensure rapid order fulfillment and seamless distribution across geographies. A crucial goal that the government of India wishes to achieve for all industries is a reduction in logistics costs. This requires mapping and estimating the logistics cost effectively and properly for managing costs, but mapping logistics costs for the Indian apparel sector is somewhat challenging in view of the supply chain's fragmented structure and inadequate documentation at the local level with a heavy dependence on local transport. Our research reveals the logistics percentage as part of the selling price of the garment in the apparel industry, which is 2-3%, a number that is quite insignificant in contrast to other industries.

The reason behind this is that goods movement for apparel nature is relatively high volume; therefore, per unit cost is low. This may vary with the nature of the product and its movement pattern; hence, for example, the e-commerce or FMCG industries may vary from 10% to 20%. Reasons for other industries include high-value low-weight items, last-mile delivery, or direct-to-consumer models, which incur higher transportation and warehousing costs.

1. Case Study: Raymond Ltd.

The case of Raymond's Vapi plant made it easy for us to reveal the issues related to an integrated supply chain, wherein logistics is more than merely the movement of finished goods.

At Raymond plant, 71% of the logistics cost was comprised of transportation of raw materials, half-finished fabrics, and finished products. While most other manufacturers handle only their outbound logistics, Raymond handles end-to-end stock movement between its many plants, like Chindwara and Jalgaon. This adds significantly to transportation costs.

Raymond's logistics policy is largely dependent on the corporate decisions from the Thane headquarters for demand forecasting. Demand forecasting, though centralized does not respond promptly to the regional fluctuations and this can have significant cost implications. Another major bottleneck is the capacity restriction caused by the spinning center.

1.1. Breakdown of Logistics Costs

Logistics cost of Raymond is allocated towards the major subheads:

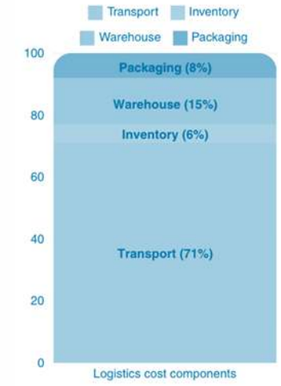
1. Transport (71%): Transportation of raw material polyester and wool inside and outside the plant. Other transport includes interplant movement between the production units. The reason for such heavy dependence on transport is that Raymond's production is highly integrated vertically.

2. Warehouse (7%): The warehouse costs are due to the fact that both raw materials and finished goods are held in these facility structures, which are built to accommodate very large capacities.

3. Packaging (3%): As minuscule as these packaging costs are, they vary with collections and the packaging material used.

4. Inventory (6%): Stored in 20 ft. containers and tiers with segregated segregation but further controlled within the four walls to reduce the amount of outside handling.

The total logistics cost is ₹7 per meter, which is the sum cost of all the elements. The shipping and carrier costs of wool and fabric are the same for all product lines, so these are some sources of variation for the logistics cost-to-price ratio. Fabrics with the finest wool mixes command the lowest logistics shares, which are 0.023%, while low-value products may be at 2.3%.



2. Case Study: RK Garments

RK Garments is a small-scale apparel retailer that operates one store in Ahmedabad, Gujarat. The company buys its fabrics from large supplier houses such as Reliance, Arvind Mills, and Raymond. It manufactures its products in-house for customization purposes. Again, since RK Garments is a small-scale firm, its logistics cost is low around 1%. It makes use of local courier services and tempos to transmit goods. There would be no cost for outbound logistics of finished goods since all the sales will happen from this store.

3. Challenges in the Apparel Industry Supply Chain

The supply chain of the apparels industry is fundamentally non-integrated and complex. It comprises various stages such as raw material procurement followed by dyeing, weaving, and final distribution. Variability increases with sub-contractors and reliance on outside suppliers in the supply chain. Some of the challenges identified at the Raymond's Vapi plant are as follows:

1. Ineffective transportation and scarcity of trucks

2. Inefficiencies at critical processing units like spinning unit, which does not allow scale up production

3. Centralized Demand Forecasting at Head office in Thane reduces regional response

4. Strategies for Logistics Optimization

To optimize logistics efficiency, solutions can be found under the following headings:

1. Automation: In transportation scheduling and warehousing, automation will help cut down lead times and improve productivity.

2. Route Optimization: The approach will allow Raymond to cut down fuel consumption and arrive at deliveries on time.

3. Supplier Relationship Management: Supplier collaboration based on long term relationships rather than "best in bid" will minimize the risks in supply chain.

4. Decentralization of Forecasting: Allowing plants to forecast will improve demand responsiveness as well as minimize stockouts or excess inventory.

5.Industry-Wide Comparison and Insights

In a more general view of clothing manufacture, logistics costs would usually stand between 2-3% due to shipping in massive quantities in such an industry which, in turn benefits from economies of scale based on streamlined warehousing and transport. Compared to most industries, this would be one of the lowest percentages

- FMCG: Smaller shipments usually cause higher logistics costs, along with frequent delivery runs and high return rates.

- Heavy industries and construction: The cost is relatively higher because the goods are bulky, complex in transportation, and significant in handling costs.

On these considerable logistics requirements of Raymond, the cost factors are within the acceptable range of industry standards mainly owing to bulk transportation, central warehousing, and a well-functioning supply chain inside the organization. Additional automation and route planning will decrease the cost further.

6. Conclusion

This cost-based logistics analysis shows that transportation forms the largest head in the cost structure of Raymond, because of end-to-end stock movement. Transportation inefficiencies and production center bottlenecks form the basis of the need for better demand forecasting and supplier coordination. In the case of Raymond, strategic logistics must keep pace with product value, since products of higher values automatically dilute the percentage logistics cost. While the apparel logistics remains under manageable control compared to other sectors, process optimisation will be the only way through which margins can be maintained in a highly competitive and dynamic market. The insights obtained from Raymond's Vapi plant will thus be valuable for other Indian textile companies like Arvind Ltd, Welspun, etc. (which operate at similar scales like Raymond) to benchmark and optimize their logistics operations.

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CTL Thought Articles

The Centre for Transportation and Logistics (CTL) releases thought articles in our quarterly newsletters. The articles circumscribe around the centre's key themes across logistics, supply chain, transportation and allied areas. This year's articles focused on sustainable mobility, mitigation of road traffic noise, digitization in logistics and supply chain operations, and tapped a few unseen factors impacting reverse logistics in e-commerce.

1. Mobility and Employment: Insights from India

Employment and high-paying jobs are crucial for women to become primary users of household vehicles. In the case of India, higher-paying jobs do not necessarily make women the primary users of household vehicles. Men are found using personal vehicles, whereas women with higher incomes tend to use faster modes of transportation like taxis or cabs and bear a higher commute cost. Meanwhile, women with lower income levels endured lengthy and inconvenient commutes due to their dependency on public transportation. The article attempts to explore the reasons behind these behavioural attributes surrounding women when it comes to access to household vehicles. Moreover, with the higher dependency of women on public transport systems, the article further highlights the importance of efficient and cost-effective public transport systems in India. Conclusively, the article accentuates that inequitable access to personal vehicles and public transportation poses significant barriers to women seeking high-paying employment opportunities.

Read the complete article at: https://www.iima.ac.in/sites/default/files/2024-09/CTL%20Newsletter%20April-June%202024%20%281%29_0.pdf

2. Road Traffic Noise in India: Impact and Mitigation Strategies

The article attempts to underscore the accelerating levels of road traffic noise, with major Indian cities often exceeding permissible limits, particularly in areas with heavy traffic congestion. Prolonged exposure to excessive noise levels has had detrimental impacts on health, including hearing loss. Moreover, the burgeoning population has further accelerated transportation and vehicular demands, exacerbating road congestion and amplifying traffic noise pollution. This article highlights a few plausible solutions, such as effective policy measures, to mitigate the escalating noise levels. These include honking restrictions in sensitive zones, employing electric vehicles and low-noise infrastructure, receiving acoustic benefits of speed restrictions, restricting vehicle ownership to mitigate traffic noise, the role of congestion charges on road noise reduction, integrating green buffer zones for effective traffic noise control and enhancing acoustic impact reduction through effective noise barriers.

Read the complete article at: https://www.iima.ac.in/sites/default/files/2024-11/CTL%20Newsletter%20July-Sept%202024.pdf

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3. Digitizing Logistics and Supply Chain Operations: Prominent Use Cases

Digitization of logistics and supply chain operations has emerged as a fundamental element for businesses aiming to enhance efficiency, transparency, and resilience. Digital innovations are reshaping the way goods are produced, moved, and managed with the aim of eliminating legacy systems, automating manual processes, and enhancing service quality. Moreover, they mitigate the errors, labor costs, delays, and losses associated with manual processes, resulting in improved efficiency, expedited delivery, and increased reliability in goods management. This article accentuates a few prominent use cases of these cutting-edge technologies, illustrating how they are revolutionising traditional supply chain practices and paving the way for a more agile future. These include harnessing robotics and drones to optimize supply chain operations, integration of AR/VR Technologies to elevate logistics performance, use of AI and ML methods in supply chain, the role of digital twins in supply chain innovation, IoT-driven innovations in supply chain management and employing blockchain methods to enhance transparency and security in supply chain management.

Read the complete article at: https://www.iima.ac.in/sites/default/files/2025-02/CTL%20Newsletter%20Oct-Dec%202024.pdf

4. The Unseen Factors Behind E-commerce Returns: Strategies for Prevention

The expanding global e-commerce market has been contributing to a sharp rise in product returns, posing a financial and logistical burden, encompassing repackaging costs, re-handling costs, strain on last-mile delivery personnel, increased urban congestion due to delivery vehicles, and potential losses from damaged or unsaleable items that are often overlooked. Moreover, unlike outbound logistics, which can be planned using sales forecasts, the volume of returns is comparatively less predictable. This uncertainty further complicates resource allocation, often leading to inefficiencies and increased operational costs. Contextually, this article talks about a few significant contributing factors for the increased returns that yet go unnoticed, including bubble purchases, return of damaged/poor quality products, consumers ordering multiple variations of a product, and failed first-attempt deliveries. Concurrently, the article further elaborates on several potential strategies that can be implemented to mitigate this mounting issue. A few of them highlighted in the article include a subscription fee model, customizing pricing of returns, encouraging store credits over cashback through platform/convenience fees, focusing on brand reviews and ratings, and promoting product exchanges over product returns.

Read the complete article at: https://www.iima.ac.in/sites/default/files/2025-05/CTL-Newsletter-Jan-March-2025.pdf

The articles were authored by:

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CTL eBook: A Compilation of Term Papers from the Logistics Management Course (PGPX Elective 2024-2025)

CTL released an e-book titled 'A Compilation of Term Papers from the Logistics Management Course (PGPX Elective - 2024-2025)', which is a collection of term papers authored by the 2024-25 batch of PGPX students at the Indian Institute of Management, Ahmedabad (IIMA), as a part of their elective course in Logistics Management. The papers explore the major role of logistics in business operations, analyzing the synergy of logistics strategies with overall corporate goals and their contribution to the growth of leading corporations, both within and outside of India. As part of the course requirement, each student selected a company where logistics plays a central role in its operations, with an enhanced focus on one of its signature products or product categories.

The students were guided by **Professor Debjit Roy**, Professor in Operations and Decision Sciences area at the Indian Institute of Management Ahmedabad (IIMA).

To access the eBook, visit - https://www01.iima.ac.in/ctl or scan

Views from Select CTL Faculty Members

Value on the Move: Logistics Infrastructure and Real Estate Finance

Prof. Prashant Das
Associate Professor,
Finance and Accounting

1. How can real estate investors incorporate logistics infrastructure, such as warehouses and distribution centers, into their portfolios to enhance returns and mitigate risks? Do you foresee potential for REITs to diversify into transportation-related assets, such as toll roads or airports?

Warehouses and distribution centers capture the interest of both the logistics sector and real estate professionals. Recent government policies classify these assets as infrastructure, making them appealing to the supply side from a financing perspective. This has sparked a growing enthusiasm among real estate developers for such projects, which offer affordable land parcels but require careful consideration of location.

The same team at SEBI that regulates and promotes Real Estate Investment Trusts (REITs) has also introduced Infrastructure Investment Trusts (InvITs). India currently has over 20 InvITs, many of which are focused on roads and warehouses.

Airports present another intriguing asset class. While terminals can be classified as real estate, runways and most other facilities fall under infrastructure. For instance, GMR operates as a publicly listed company rather than as an InvIT.

2. How do major transportation projects, like new metro lines or highways, influence surrounding real estate values? Can these changes be accurately predicted to inform investment decisions?

There is a symbiotic relationship between transportation and real estate. Numerous studies from around the globe show that the introduction of transportation lines—whether through roads, trains, airports, or metro systems—significantly boosts real estate values. However, transportation also requires real estate at both its origins and destinations. Academic research has documented clear, measurable increases in real estate values resulting from enhanced transportation infrastructure. For instance, in Canada, a $1 billion investment in infrastructure can lead to a $3 billion increase in suburban home values. Conversely, infrastructure can sometimes lead to oversupply; for example, in India, a 1% expansion of a city's highway can increase the capitalization rate by 0.1%.

3. Can hybrid financial models, like public-private partnerships (PPPs) with land monetization, bridge funding gaps in logistics and urban transport systems?

Public-Private Partnerships (PPP) in infrastructure have undoubtedly achieved remarkable success. A prime example is the Tejas Express, which is operated by the private entity IRCTC while ownership remains with Indian Railways. This collaboration improves service quality and passenger experience, supported by private investment in amenities and a revenue-sharing model.

Similarly, the Delhi International Airport Limited (DIAL) is another PPP initiative where a consortium of private sector entities, including GMR Group, Airports Authority of India (AAI), Germany's Fraport AG, and other investors, operates and manages the airport. Meanwhile, the government retains ownership of the land and infrastructure.

In real estate, too, Public-Private Partnerships (PPP) have proven to be an effective strategy for governments to monetize land while addressing public needs. A notable example is the Dharavi redevelopment project, where the government provides land development rights at favorable rates to private developers. This approach not only facilitates urban renewal but also encourages private investment in the revitalization of the area

4. Do you see a financial premium emerging for logistics and transport-linked assets that prioritize green certifications or carbon neutrality?

Logistics and transport-linked assets that emphasize green designs are increasingly attracting financial premiums. For instance, Prologis warehouses that bear LEED certification experience higher rental rates and lower vacancy rates, driven by tenant demand for sustainable practices. Implementing green infrastructure not only enhances rental income and occupancy rates but also improves valuation. Additionally, it leads to reductions in operating and financing costs, as well as lower capitalization rates

5. How are ESG (Environmental, Social, and Governance) considerations influencing capital allocation in real estate projects related to transportation infrastructure?

The financial advantages of environmental interventions, as previously discussed, are substantial. Furthermore, blue-chip tenants and users of infrastructure often have Environmental, Social, and Governance (ESG) mandates, which they expect infrastructure providers to uphold. This alignment encourages infrastructure developers to prioritize sustainable practices, further enhancing the appeal and marketability of their assets.

6. How do you see the convergence of sustainability, asset securitization, and transportation infrastructure creating new research avenues in finance and real estate?

Mortgage securitization has become a prominent topic in India, particularly with the launch of RMBS Development Company Limited (RDCL), which offers a framework for securitizing various cash flow streams. Infrastructure finance is likely to reap the benefits of securitization in the coming years. As noted earlier, sustainability mandates are becoming a permanent fixture, despite occasional political debates, ensuring ongoing demand for such assets from investors, consumers, and regulators alike. Additionally, international agencies like the International Finance Corporation (IFC) are already playing a role in subsidizing green financing initiatives.

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Thought Leadership Articles

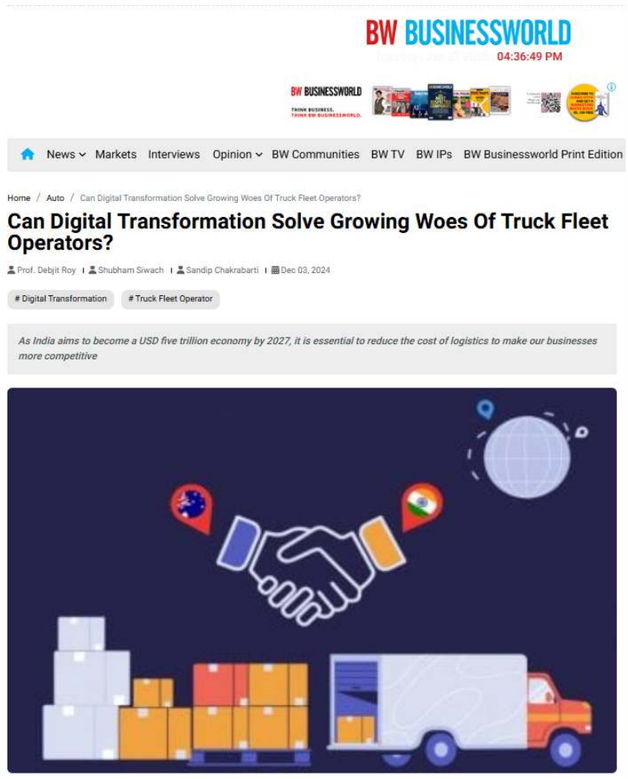
1. Can Digital Transformation Solve Growing Woes Of Truck Fleet Operators?

Prof. Debjit Roy

Prof. Sandip Chakrabarti

Mr. Shubham Siwach

An opinion article titled '**Can Digital Transformation Solve Growing Woes Of Truck Fleet Operators?**' authored by **Prof. Debjit Roy** and **Prof. Sandip Chakrabarti**, along with CTL Research Associate **Mr. Shubham Siwach**, was published in BW Business World on December 03, 2024.



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Home / Auto / Can Digital Transformation Solve Growing Woes Of Truck Fleet Operators?

Can Digital Transformation Solve Growing Woes Of Truck Fleet Operators?

Prof. Debjit Roy | Shubham Siwach | Sandip Chakrabarti | Dec 03, 2024

Digital Transformation # Truck Fleet Operator

As India aims to become a USD five trillion economy by 2027, it is essential to reduce the cost of logistics to make our businesses more competitive

To read the complete article, visit: https://www.businessworld.in/article/can-digital-transformation-solve-growing-woes-of-truck-fleet-operators-540996

2. Beyond mangoes and motorcycles: Can India Gain from the US COMPACT?

Prof. Poornima Varma

An opinion article titled '**Beyond mangoes and motorcycles: Can India Gain from the US COMPACT?**' authored by **Prof. Poornima Varma**, along with Indrajit Banerjee, was published in The Indian Express on 19 February 2025.

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Beyond mangoes and motorcycles: Can India Gain from the US COMPACT?

As tariff reductions could hurt India's domestic market, policymakers must ensure trade liberalisation is balanced

Feb 19, 2025 18:02 IST

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Recently, during PM Modi's visit to US, Trump had unveiled his plan to hit the whole world with "reciprocal tariffs". (Photo: X/@narendramodi)

Written by Indrajit Banerjee and Poornima Varma

To read the complete article, visit: https://indianexpress.com/article/opinion/columns/mangoes-motorcycles-india-gain-us-compact-9844598/

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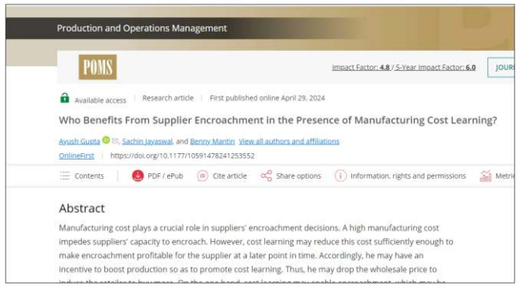
CTL Faculty Research Accomplishments

1. Who Benefits From Supplier Encroachment in the Presence of Manufacturing Cost Learning?

Prof. Sachin Jayaswal, along with Prof. Benny Mantin & IIMA doctoral student Mr. Ayush Gupta, published a research article titled '**Who Benefits From Supplier Encroachment in the Presence of Manufacturing Cost Learning?**'.



Production and Operations Management

POMS

Impact Factor: 4.8 / 5-Year Impact Factor: 6.0

Available access | Research article | First published online April 29, 2024

Who Benefits From Supplier Encroachment in the Presence of Manufacturing Cost Learning?

Ayush Gupta, Sachin Jayaswal, and Benny Mantin View all authors and affiliations

OnlineFirst | https://doi.org/10.1177/10591478241253552

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Abstract

Manufacturing cost plays a crucial role in suppliers' encroachment decisions. A high manufacturing cost impedes suppliers' capacity to encroach. However, cost learning may reduce this cost sufficiently enough to make encroachment profitable for the supplier at a later point in time. Accordingly, he may have an incentive to boost production so as to promote cost learning. Thus, he may drop the wholesale price to

Abstract:

Manufacturing cost plays a crucial role in suppliers' encroachment decisions. A high manufacturing cost impedes suppliers' capacity to encroach. However, cost learning may reduce this cost sufficiently enough to make encroachment profitable for the supplier at a later point in time. Accordingly, he may have an incentive to boost production so as to promote cost learning. Thus, he may drop the wholesale price to induce the retailer to buy more. On the one hand, cost learning may enable encroachment, which may be detrimental to the retailer. On the other hand, cost learning results in a lower manufacturing cost which may translate into a lower future wholesale price, benefiting the retailer. Therefore, the retailer faces a dilemma: should she increase her order quantity to advance cost learning or not? As the retailer may order fewer units in the initial period to limit future direct channel sales, the supplier faces a challenge: should he, instead of dropping his initial wholesale price, raise it to signal his intention of not encroaching so as to induce the retailer to sell a higher quantity in the first period? We model the supplier–retailer interaction as a two-period Stackelberg game to address the retailer's dilemma and to identify the optimal supplier response. We uncover a new outcome, which arises in the presence of cost learning, where the supplier encroaches but decides not to sell anything through the direct channel. In addition, we find that supplier encroachment may reduce or eliminate the retailer's incentive to advance cost learning. This results in lower sales by the retailer, which impedes cost learning, leading to a higher future manufacturing cost (compared to the no encroachment setting). As a result, encroachment, which is typically viewed as advantageous for the supplier, may become detrimental to him. Surprisingly, the supplier continues to encroach and sell directly unless he can credibly assure the retailer that he will not encroach in the future.

To read the complete research paper, visit: https://doi.org/10.1177/10591478241253552

2. In the driver's seat: the role of transformational leadership in safe and productive truck cargo transport

Prof. Debjit Roy, along with Prof. René de Koster, Prof. Jelle de Vries & Mr. Alexandros Pasparakis, published a research paper titled '**In the driver's seat: the role of transformational leadership in safe and productive truck cargo transport**'.

Home > Flexible Services and Manufacturing Journal > Article

In the driver's seat: the role of transformational leadership in safe and productive truck cargo transport

Published: 09 May 2024

(2024) Cite this article

Download PDF

Access provided by Vikram Sarabhai Library, Indian Institute of Management Ahmedabad.

Alexandros Pasparakis, Jelle de Vries, René de Koster & Debjit Roy

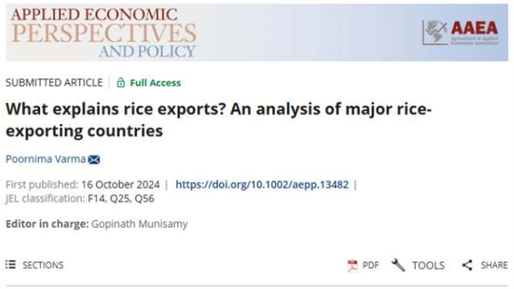
Abstract:

This study investigates the effect of safety-specific transformational leadership (SSTL) on the performance outcomes of safe driving and driving productivity in both long and short-haul truck cargo transport. We conduct our study in the context of a hazardous material (HAZMAT) Indian transport company using a sample of 1,196 trips across 104 unique routes, and driven by 71 truck drivers over a 30-month span. We establish that SSTL is beneficial for truck driving productivity as it positively influences driving productivity in long-haul trips. There is no conclusive evidence of a negative effect on the productivity in short-haul trips. Furthermore, our results show that more experienced drivers are also more likely to indulge in risky driving behavior. Our findings have immediate practical applications for transport companies that wish to promote operational safety, while safeguarding and even improving operational productivity.

To read the complete research paper, visit: https://link.springer.com/article/10.1007/s10696-024-09539-9

3.What Explains Rice Exports? An Analysis of Major Rice-Exporting Countries

Prof. Poornima Varma published a research article titled '**What Explains Rice Exports? An Analysis of Major Rice-Exporting Countries**'.


APPLIED ECONOMIC PERSPECTIVES AND POLICY

AAEA

SUBMITTED ARTICLE | Full Access

What explains rice exports? An analysis of major rice-exporting countries

Poornima Varma

First published: 16 October 2024 | https://doi.org/10.1002/aepp.13482 |
JEL classification: F14, Q25, Q56

Editor in charge: Gopinath Munisamy

SECTIONS PDF TOOLS SHARE

Abstract:

This study examines the drivers of rice trade. The analysis uses the standard comparative advantage model, the Heckscher–Ohlin–Vanek (HOV) framework, supplemented with a gravity-type equation. Using the Poisson pseudo-maximum likelihood (PPML) estimation for data from 2002 to 2020, the analysis broadly confirms HOV model predictions. Results indicate that arable land, along with GDP, distance, precipitation and crop season temperature, significantly influences rice trade dynamics. The results showed that the precipitation play a key role in influencing the rice trade rather than the blue water availability. However, agricultural water stress discouraged exports and encouraged imports.

To read the complete research paper, visit:
https://doi.org/10.1002/aepp.13482

4. An exact method for trilevel hub location problem with interdiction

Prof. Sachin Jayaswal, along with Prof. Ankur Sinha, Prof. Prasanna Ramamoorthy, and Prof. Navneet Vidyarthi, published a research article titled '**An exact method for trilevel hub location problem with interdiction'.**


ELSEVIER

European Journal of Operational Research

Volume 319, Issue 3, 16 December 2024, Pages 696-710

Discrete optimization

An exact method for trilevel hub location problem with interdiction

Prasanna Ramamoorthy [a], Sachin Jayaswal [b], Ankur Sinha [b], Navneet Vidyarthi [c]

Abstract:

In this paper, we study the problem of designing a hub network that is robust against deliberate attacks (interdictions). The problem is modeled as a three-level, two-player Stackelberg game, in which the network designer (defender) acts first to locate hubs to route a set of flows through the network. The attacker (interdictor) acts next to interdict a subset of the located hubs in the designer's network, followed again by the defender who routes the flows through the remaining hubs in the network. We model the defender's problem as a trilevel optimization problem, wherein the attacker's response is modeled as a bilevel hub interdiction problem. We study such a trilevel problem on three variants of hub location problems studied in the literature namely: -hub median problem, -hub center, and -hub maximal covering problems. We present a cutting plane based exact method to solve the problem. The cutting plane method uses supervalid inequalities, which is obtained from the solution of the lower level interdiction problem. To solve the lower level hub interdiction problem efficiently, we propose a penalty-based reformulation of the problem. Using the reformulation, we present a branch-and-cut based exact approach to solve the problem efficiently. We conduct experiments to show the computational advantages of the above algorithm. To the best of our knowledge, the cutting plane approach proposed in this paper is among the first exact method to solve trilevel location–interdiction problems. Our computational results show interesting implications of incorporating interdiction risks in the hub location problem.

To read the complete research paper, visit:https://doi.org/10.1016/j.ejor.2024.07.013

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5. Research: Warehouse and Logistics Automation Works Better with Human Partners

Prof. Debjit Roy, along with Prof. René de Koster, published a research article in the Harvard Business Review titled '**Research: Warehouse and Logistics Automation Works Better with Human Partners'.**


Automation

Research: Warehouse and Logistics Automation Works Better with Human Partners

by René de Koster and Debjit Roy

June 21, 2024

Wara Rodsawang/Getty Images

Abstract:

A study of automation usage in warehouse and logistics companies around the world suggests that blending human labor with robotics leads to greater efficiency than full automation alone. While scalable robotic systems can handle up to 1,000 tasks per hour, they often face limitations where additional robots don't improve performance. Human-robot collaboration, employed by companies like DHL and CEVA, enhances productivity, reduces worker fatigue, and increases job satisfaction. The incremental approach of integrating human roles with automated systems not only keeps operations cost effective but also leverages human adaptability for continuous improvements.

To read the complete article, visit:
https://hbr.org/2024/06/research-warehouse-and-logistics-automation-works-better-with-human-partners

6. EXPRESS: A Machine Learning Approach to Solve the E-commerce Box-Sizing Problem

Prof. Debjit Roy, along with Shanthan Kandula and Prof. Kerem Akartunali, published a research article titled '**EXPRESS: A Machine Learning Approach to Solve the E-commerce Box-Sizing Problem'.**


POMS

Impact Factor: 4.8 / 5-Year Impact Factor: 6.0

Journal Homepage

Available access | Research article | First published online September 1, 2024

EXPRESS: A Machine Learning Approach to Solve the E-commerce Box-Sizing Problem

Shanthan Kandula, Debjit Roy and Kerem Akartunali View all authors and affiliations

Accepted Manuscripts | https://doi.org/10.1177/10591478241282249

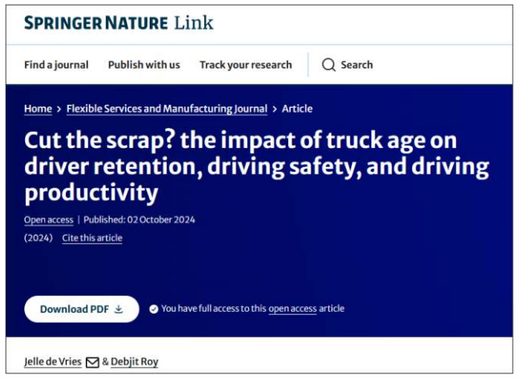
Abstract:

E-commerce packages are notorious for their inefficient usage of space. More than one-quarter volume of a typical e-commerce package comprises air and filler material. The inefficient usage of space significantly reduces the transportation and distribution capacity increasing the operational costs. Therefore, designing an optimal set of packaging box sizes is crucial for improving efficiency. We present the first learning-based framework to determine the optimal packaging box sizes. In particular, we propose a three-stage optimization framework that combines unsupervised learning, reinforcement learning, and tree search to design box sizes. The package optimization problem is formulated into a sequential decision-making task called the box-sizing game. A neural network agent is then designed to play the game and learn heuristic rules to solve the problem. In addition, a tree-search operator is developed to improve the performance of the learned networks. When benchmarked with company-based optimization formulation and two alternate optimization models, we find that our ML-based approach can effectively solve large-scale problems within a stipulated time. We evaluated our model on real-world datasets supplied by a large e-commerce platform. The framework is currently adopted by a large e-commerce company across its 28 fulfillment centers, which is estimated to save the company about 7.1 million USD annually. In addition, it is estimated that paper consumption will be reduced by 2080 metric tons and greenhouse gas emissions by 1960 metric tons annually. The presented optimization framework serves as a decision support tool for designing packaging boxes at large e-commerce warehouses.

To read the complete article, visit:
https://journals.sagepub.com/doi/abs/10.1177/10591478241282249

7. Cut the Scrap? The Impact of Truck Age on Driver Retention, Driving Safety, and Driving Productivity

Prof. Debjit Roy, along with Prof. Jelle de Vries, published a research article titled **'Cut the Scrap? The Impact of Truck Age on Driver Retention, Driving Safety, and Driving Productivity'.**



Abstract:

In many countries, vehicle replacement policies are implemented to reduce the average age of the vehicles on the road. Through these policies, policymakers typically aim to reduce emissions and to stimulate demand for automobiles through vehicle renewal. Not much is known however, about the more detailed operational consequences of vehicle age in truck transportation. In this study, we empirically address this issue by analyzing data obtained from 27 thousand trips made by 916 drivers in 355 unique trucks, over a period of 346 days. Using this data, we test the relationship between truck age and driver retention, productivity, and unsafe driving behavior. Our results demonstrate that truck age significantly impacts driver turnover, with every additional year of truck age relating to an approximate 5% higher risk of leaving the job at a given point in time. Contrarily, drivers with older trucks drove significantly less volatile, which suggests that they drive more safely. The results illustrate that vehicle age influences a broader spectrum of outcome measures than typically considered when assessing the expected impact of replacement policies. Policymakers and trucking companies can use these results to make more informed decisions about vehicle replacement, thereby also addressing the widespread issue of driver shortage.

To read the complete article, visit:
https://link.springer.com/article/10.1007/s10696-024-09569-3

8. Stochastic Vehicle Routing With Delivery Choice

Prof. Prahalad Venkateshan, along with Prof. Kamlesh Mathur, published a research article titled **'Stochastic Vehicle Routing With Delivery Choice'.**

Abstract:

We consider the problem of designing delivery routes for vehicles where the vendor has the choice of how much of the demand from a customer to fulfill. The customer demand is known a priori only as a probability distribution. Exact customer demand is known only after visiting the customer. Different customers are able to negotiate different prices for each unit of product with the vendor. Given a route, the objective is to decide at each customer location, how much demand to satisfy so as to maximize expected profit taking into account a linear penalty cost for unfulfilled demand and the vehicle routing costs. In this article, we develop several new structural results for this problem. We illustrate how these structural results can be embedded in different heuristic frameworks commonly used for deterministic vehicle routing problems. This helps develop efficient routes for a single vehicle as well as a multiple vehicle scenario for this stochastic variant. For small-sized problems that allow for exhaustive enumeration, we demonstrate the effectiveness of the illustrated heuristic. For larger problem instances, based on structural results, we develop methods that allow the heuristic to run more efficiently than otherwise. Results are reported on instances based on benchmark instances drawn from literature for upward of 100 customers and vehicle capacity up to 600 units. Computational times needed to heuristically solve such problems are within 1100s.

To read the complete article, visit:
https://doi.org/10.1002/nav.22234

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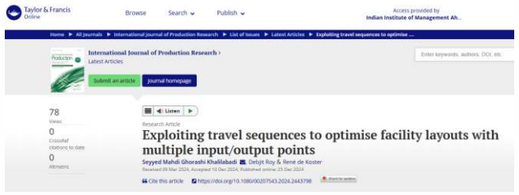
9. Exploiting travel sequences to optimise facility layouts with multiple input/output points

Prof. Debjit Roy, along with Prof. René de Koster and Mr. Seyyed Mahdi Ghorashi Khalilabadi, published a research article titled **'Exploiting travel sequences to optimise facility layouts with multiple input/output points'.**



Abstract:

The facility layout problem (FLP) involves arranging departments on a shop floor to optimise specific objectives, traditionally focussing on pairwise flows between departments. However, these methods often underestimate total travel distances, especially when flows involve multiple input/output points and visits to more than two departments. To address this, connected movements – actual routes taken by transporters – must be considered. This study uses data captured from an Internet of Things (IoT) network and stored on cloud servers to analyze worker movements and accurately calculate travel distances. A mixed-integer programming model is proposed to minimise total travel distance using connected movements as input. Due to the problem's complexity, a biased random key genetic algorithm is employed to find optimal layouts. A case study at a fertiliser production company demonstrates the effectiveness of the approach, achieving a 15% reduction in travel distance compared to layouts generated by traditional methods. The IoT-enabled method also minimises productivity losses by optimising worker movements. While the study focuses on fertiliser manufacturing, the findings are applicable to other settings, such as warehousing, where complex movement sequences and multiple IO points are common in processes like picking, packing, and shipping.

To read the complete article, visit:
https://doi.org/10.1080/00207543.2024.2443798

10. Dynamic Robot Routing and Destination Assignment Policies for Robotic Sorting Systems

Prof. Debjit Roy, along with Dr. Yuan Fang, Prof. René De Koster, Prof. Yugang Yu, published a research article in the Transportation Science Journal titled **'Dynamic Robot Routing and Destination Assignment Policies for Robotic Sorting Systems'.**

Abstract:

Robotic sorting systems (RSSs) use mobile robots to sort items by destination. An RSS pairs high accuracy and flexible capacity sorting with the advantages of a flexible layout. This is why several express parcel and e-commerce retail companies, who face heavy demand fluctuations, have implemented these systems. To cope with fluctuating demand, temporal robot congestion, and high sorting speed requirements, workload balancing strategies such as dynamic robot routing and destination reassignment may be of benefit. We investigate the effect of a dynamic robot routing policy using a Markov decision process (MDP) model and dynamic destination assignment using a mixed integer programming (MIP) model. To obtain the MDP model parameters, we first model the system as a semiopen queuing network (SOQN) that accounts for robot movement dynamics and network congestion. Then, we construct the MIP model to find a destination reassignment scheme that minimizes the workload imbalance. With inputs from the SOQN and MIP models, the Markov decision process minimizes parcel waiting and postponement costs and helps to find a good heuristic robot routing policy to reduce congestion. We show that the heuristic dynamic routing policy is near optimal in small-scale systems and outperforms benchmark policies in large-scale realistic scenarios. Dynamic destination reassignment also has positive effects on the throughput capacity in highly loaded systems. Together, in our case company, they improve the throughput capacity by 35%. Simultaneously, the effect of dynamic routing exceeds that of dynamic destination reassignment, suggesting that managers should focus more on dynamic robot routing than dynamic destination reassignment to mitigate temporal congestion.

To read the complete article, visit:
https://doi.org/10.1287/trsc.2023.0458

CTL Research Team

Current Members

Dr. Mitrabarun Ghosh	Post Doctoral Fellow
Dr. Aishwarya Jaiswal	Post Doctoral Fellow
Shubham	Research Associate
Jesal Tejwani	Research Associate
Bipin Yadu	Research Associate
Gurpreet Kaur	Research Associate
Jayanth Kumar Narsim	Research Associate

Past Members

Dr. Satyajit Mondal	Post Doctoral Fellow
Muskan	Research Associate
Muskan Verma	Research Associate
Niranjana Anand Unnithan	Research Associate
Angshuman Pal	Research Associate
Shrija Banerjee	Research Associate
Pooja Shrivastava	Research Associate
Gyanesh Raj	Research Associate
Paramita Saha	Research Associate
Apurva Shrey	Research Associate

CTL Planned Activities for 2025-26

1. Industry-Focused Research Projects

Initiate collaborative research with key industry partners (logistics firms, e-commerce, 3PL, government bodies, industry associations) on themes like sustainable transportation & logistics, last-mile delivery, and supply chain resilience, digitalization in logistics sector, route fare normalization etc.

2. Monthly Research / Industry related seminars / webinars

Host regular virtual or on-campus seminars / webinars with experts from logistics, transport, railways, and port authorities to discuss emerging issues and opportunities.

3. Project Partnerships

Integrate CTL with IIMA's PGP/PGPX student's projects by inviting companies to provide insights for students and arrange challenges for student teams.

4. Alumni Engagement in Logistics Sector

Create a CTL-alumni network with IIMA graduates working in logistics and supply chain roles to foster mentorship, speaker sessions, and collaborations.

5. Annual Capacity Building Workshops

Arranging Capacity-Building Workshop on Transportation and Logistics sector for the mix of academia, practitioners and student community, fostering academic discussion.

6.Industry Consulting Assignments

CTL will reach out to industry in a need of scientific management practices to optimize the existing operations for the purpose of betterment

7. Executive Education and Certificate Programs

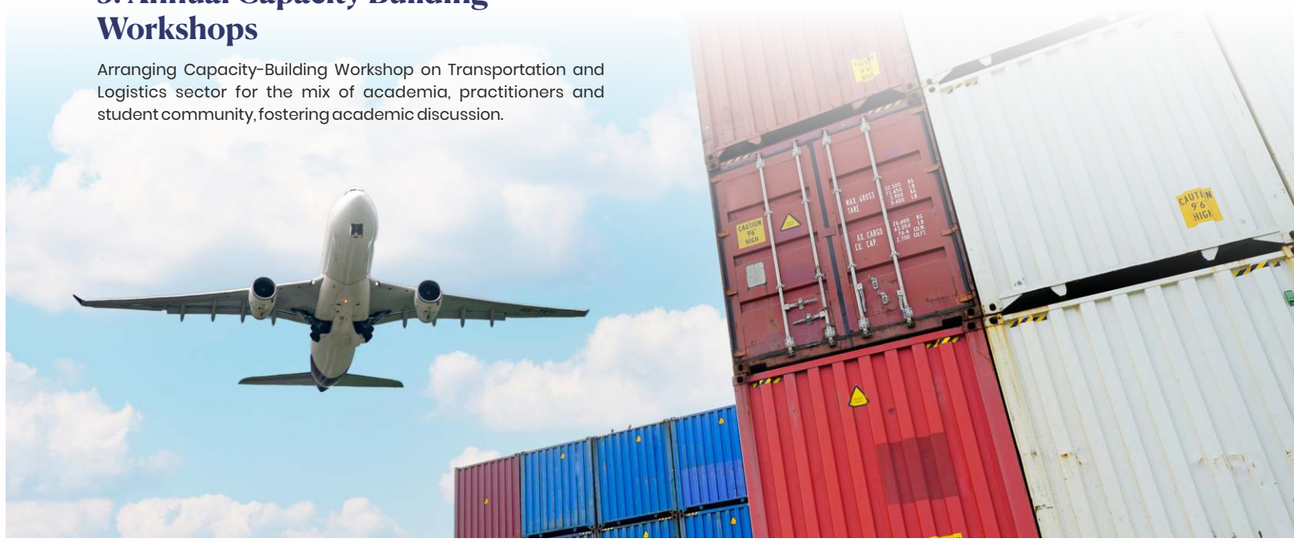
Launch short-term and online programs for working professionals in areas like supply chain analytics, multimodal transport strategy, and logistics infrastructure development.

8. Alumni Engagement in Logistics Sector

Create a CTL-alumni network with IIMA graduates working in logistics and supply chain roles to foster mentorship, speaker sessions, and collaborations.

9. Social Media and Outreach Strategy

Strengthen CTL's online presence with regular updates, blog posts, and infographics to share research highlights and event announcements.



Appendices

A. Reconstitution of the CTL Executive Committee for 2024-2026

The Executive Committee of the Centre for Transportation and Logistics (CTL) has been reconstituted for the 2024-2026 term. We extend our gratitude to the Executive Committee members for their contributions and support to the centre.

Prof. Debjit Roy
Institute Chair Professor in
Operations and Decision Sciences, IIMA

Prof. Sandip Chakrabarti
JSW Chair in Innovation and Public Policy,
Associate Professor in Public Systems, IIMA

Prof. Amit Garg
NIIF Chair in ESG
Professor in Public Systems, IIMA

Prof. Poornima Varma
Assistant Professor
Centre for Management in Agriculture, IIMA

Prof. Sachin Jayaswal
Professor
Operations and Decision Sciences, IIMA

Prof. Samrat Roy
Assistant Professor
Operations and Decision Sciences, IIMA

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B. CTL Faculty Highlights

Prof. Amit Garg has been appointed as a Member of the Board of Advisory Council in NTPC Green Energy Ltd. for the year 2024-25. He has also been elected as a Member of the Scientific Advisory Board for Renault Group for the year 2024-25.

Prof. Sundaravalli Narayanaswami received commendation and was acknowledged as one of the first 264 cohorts as a Senior INFORMS member from the global community of 12,000 OR Professionals. This Senior Member distinction is conferred upon individuals who demonstrate exceptional commitment to the community.

To know more: https://doi.org/10.1287/orms.2024.01.25n

Prof. Debjit Roy has been designated as the new member of the Council of Scientific Advisors (CSA) for the Global Cold Chain Alliance (GCCA). The CSA is committed to providing advanced research and insights to cold chain industry stakeholders.

To know more: https://www.gcca.org/news-announcements/the-global-cold-chain-foundation-announces-two-new-csa-members/

Prof. Sachin Jayaswal was part of the fourth edition of the Large Scale Optimization (LSO) Summer School and Conference, held at the Indian Institute of Technology Roorkee, from May 18-26, 2024.

Prof. Debjit Roy was one of the trainers for Module 3 of the Masterclass on Supply Chain Digitization at the 11th Supply Chain Management & Logistics Summit-2024, which took place in New Delhi on June 28th, 2024.

A report titled 'Synchronizing Energy Transitions Toward Possible Net Zero for India: Affordable and Clean Energy for All,' prepared by IIM Ahmedabad, with **Prof. Amit Garg** of the Public Systems Group Area leading the project team, has been cited in the Economic Survey of India 2024. This report was developed with support from the Office of the Principal Scientific Adviser to the Government of India and the Nuclear Power Corporation of India Ltd.

To know more: https://psa.gov.in/CMS/web/sites/default/files/publication/ESN%20Report-2024_New-21032024.pdf

Prof. Debjit Roy has been recognised in Stanford University and Elsevier's prestigious 'Top 2% Scientists List' for 2024. This list identifies the achievements of the world's leading researchers, representing approximately 2% of all scientists worldwide. It encompasses standardised data on citations, h-index, and a wide range of bibliometric indicators.

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Prof. Debjit Roy presented a Research talk titled 'The Need for Speed: Decoding Linkages Between Fulfilment Time & Customer Satisfaction to Improve Online Food Delivery Performance' at Michigan State University - Eli Broad College of Business, Department of Supply Chain Management, as part of their Fall 2024 Research Seminar Series. He shared valuable insights from his research on online food delivery platforms such as cloud kitchens, and consumer preferences on key service attributes of these platforms, including trucking, supplier capabilities, last-mile, pricing, optimization, and more.

Prof. Sachin Jayaswal was invited to conduct a session on Large-Scale Optimization at the Analytics Workshop organized by SJSOM, IITB on December 15, 2024.

Prof. Debjit Roy, Institute Chair Professor and Co-Chair of the Centre for Transportation and Logistics, IIMA, was one of the esteemed jury members for The Unified Logistics Interface Platform (ULIP) Logistics Hackathon 2.0, which was officially launched on September 24, 2024 and concluded with its grand finale event on December 20, 2024 in New Delhi.
Read more: https://www.linkedin.com/feed/update/urn:li:activity:7276228701367812096

Prof. Debjit Roy was a part of several notable year-end academic conferences, as listed below:
1. Prof. Roy delivered a keynote address on "Digitizing E-commerce Order Fulfillment Processes: Technology, Data, Models, and New Research Areas" at the International Conference on Next-Gen Supply Chain organized by IIM Jammu on November 22–23, 2024.
2. On December 4, 2024, he co-chaired the doctoral colloquium at the 'POMS India International Conference 2024' at IIM Ranchi.
3. Prof. Roy delivered a plenary talk on "Data-driven Restaurant Operations: New Business Models and Research Opportunities" at the XXVII Annual International Conference of the Society of Operations Management, hosted by the IMT Ghaziabad from December 19–21, 2024.

Prof. Poornima Varma has been appointed as a member of the Programme Committee for the International Agricultural Trade Research Consortium (IATRC), an international association of agricultural trade researchers and policy practitioners.

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Prof. Debjit Roy delivered a talk on "Data Strategies for AI Adoption" at the Statistics conclave organized by St. Xavier's College, Ahmedabad. He explained how technology, data, and AI together can solve several pressing problems in the supply chain. He demonstrated the use cases from production, distribution, and transportation.

Prof. Sundaravalli Narayanaswami delivered insightful sessions on 'Public Private Partnerships (PPP)' at the ITEC course held at Gati Shakti Vishwavidyalaya.

Prof. Debjit Roy presented a keynote address at the International Conference on Advances in Theory, Research & Practices in Management (GLSU-ATRPM 2025), organized by the Faculty of Management, GLS University, Ahmedabad, on March 15, 2025. In his address, he shared his insights on the future of Industry 5.0, critical industry challenges and emerging opportunities.

IIMA

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https://www.iima.ac.in/faculty-research/centers/Centre-for-Transportation-and-Logistics

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