



## The Logistics and Operations Management Section at Cardiff Business School

## Introduction and Overview

LOM is a vibrant, inter-disciplinary group of academic staff based in Cardiff Business School. We are highly active in terms of research output, postgraduate teaching and research, as well as undergraduate teaching. Our research touches on different domains, including, operations management, shipping and transport, operations research, and supply chain management. In our activities we engage closely with external organisations, and the purpose of this document is to untangle the complicated web of engagement activities that a large university department undertakes. In doing so, we hope it demonstrates the broader impact of our activities to society at large. It explains different areas of engagement shown in the diagram at the start of this document.

## 1. In the Media

LOM academics are prominent in the media, commenting on current issues that are relevant to our work. For example:

- Prof Peter Wells and Dr Paul Nieuwenhuis have contributed widely to radio, TV, as well as mainstream media and specialist automotive media outlets. They have informed debates related to the VW testing scandal, electric vehicles, as well as the business models of automotive companies, such as Tesla.
- Professor Anthony Beresford has contributed to public coverage relating to the economic impact of the M4 relief road
- Dr Andrew Potter has contributed to media coverage of train manufacturing and rail electrification in South Wales, as well as debate on the impact of Brexit on ports.

## 2. Engaging with Industry

The LOM section has developed formalized mechanisms to embed deep engagement with industry to inform both teaching and research. Some examples of this are:

- Through our advisory board, made up of representatives of a wide range of business and government organizations, we discuss our strategic priorities.
- LOM has two distinguished visiting fellows from industry. Derek Beevor and Steve Spall have been industry leaders in their respective fields and have contributed to a wide range of research projects and papers as part of their long term collaboration.
- Our staff regularly give keynotes at high profile practitioner conferences, across a range of sectors. Some examples include:
  - **Food.** Barry Evans—"Navigating turbulence in the produce supply chain and beyond" at The Worshipful Company of Fruiterers Guild Conference.
  - **Construction.** Dr Jon Gosling—"Principles of Appropriate Contracting" at The Lean Construction Institute's Lean Summit
  - **Automotive.** Prof Peter Wells- "The future of Automotive Materials: a three car scenario". Lightweight Automotive Material Conference, Berlin.
  - **Forecasting.** Prof Aris Syntetos "How to simplify and improve your methodology to control your service levels:" Service Logistics Summit, Schiphol Airport, The Netherlands
  - **Supply Chain Dynamics.** Prof Stephen Disney "The bullwhip effect in supply chains", The Supply Chain Forum, Whittlebury.

### 3. Creating Impact through Funded Projects and Centres

**ASTUTE 2020:** LOM are part of the ASTUTE 2020 project, which is a large, collaborative Research and Development operation involving 4 Welsh Universities (Aberystwyth, Cardiff, Swansea, the lead partner and UWTSU) with a total value of £14.7m over 5 years. This follows an earlier £27m consortium. The operation is part-funded by the European Regional Development Fund through the Welsh Government's Welsh European Funding Office (WEFO) and the participating Higher Education Institutions. It supports manufacturing firms throughout West Wales and the Welsh Valleys, enhancing their sustainability through collaborative projects aimed at developing enhanced technological capabilities and improved business processes (LOM lead: Professor Mohamed Naim).

**CAMSAC:** An interdisciplinary research centre set up to build directly on Cardiff University's existing strong reputation for internationally leading manufacturing related research. Bridging both the engineering and business disciplines, CAMSAC takes an holistic, interdisciplinary approach, working closely with industry partners, towards the study and development of new concepts in Advanced Manufacturing Systems via an extensive, complementary portfolio of research, knowledge transfer, engagement and teaching activities (LOM lead: Professor Mohamed Naim).

**The Panalpina Centre for Manufacturing and Logistics Research:** a joint industry-University initiative that aims to achieve world-class relevant and impactful research in the fields of logistics and manufacturing management. The Centre, based at Cardiff Business School, is co-funded by Panalpina and is led by Professor Aris Syntetos. The Centre's portfolio of activities is further funded from a wide range of external sources including the EPSRC, Innovate UK and industrial associations such as the Efficient Consumer Response (ECR, Europe). Academics from Cardiff Business School and Cardiff University School of Engineering work closely with operational practitioners from Panalpina to tackle important contemporary problems in logistics and manufacturing management and shape the medium-long term future of the logistics industry. This has led to smaller funded projects, for example: Linking technology with social and business models: An investigation of the last-mile delivery (£3,000; 2017 with Dr Emrah Demir and Dr Irina Harris)

**Collaborative research with Highways England:** Since 2014 LOM academics have been working with Highways England as part of their Lean Collaborative Research programme. Projects have been undertaken in relation to contracts and governance for large infrastructure projects (£34,000), accelerating the adoption of Building Information Modelling among smaller tier 2 and 3 suppliers (£62,000), transitioning 'from construction to production' (£7000) and memory capture and mobilisation in infrastructure schemes (£36000) (LOM lead: Dr Jon Gosling).

**Collaborative research with Yeo Valley.** LOM academics are working closely with Yeo Valley to develop their supply chain capabilities. The project will employ a research associate based at Yeo Valley's premises (£140000 over 2 years). The LOM leads are Dr Laura Purvis and Prof Stephen Disney.

**EPSRC Projects:** LOM have participated in two EPSRC Re-distributed Manufacturing research networks totalling £976k, with awards held by Prof Mo Naim (Re-distributed Manufacturing for Resilient Sustainable Cities (RDM | RSC) - £69,250 to CARBS) and Dr Laura Purvis (The Local Nexus Network (LNN)- £10,682 to CARBS). The focus of the RDM | RSC network is on the move to smaller-scale and local manufacturing for a Bristol and Cardiff Capital region. The LNN focuses on the development of local nexuses of food manufacturing with energy and water supply. LOM academics have also been successful in a £412000 project 'Resilient Manufacturing Networks: Forecasting informatics and holons' (Profs Mohamed Naim and Aris Syntetos).

**Applied Studentships with Olympus UK Ltd':** Projects include 'Innovative work Behaviour for sustaining Continuous Improvement' (£80000, Dr. Maneesh Kumar and Prof. Annie Pye), as well as 'Integrated Data Mining System for Process Control and Quality Improvement under Industry 4.0 (£35281, Dr. Ying Liu and Dr. Maneesh Kumar).

#### 4. Leading Executive Education Programmes

We lead and contribute to a range of executive programmes tailored to suite the needs of our clients. Examples include:

- Dr. Jane Lynch has run “Collaborate for the Well-Being of Future Generations” courses for Senior Welsh Government officials.
- Dr Maneesh Kumar delivered Lean Six Sigma programmes for a wide range of organizations, as well as contributing to the Leadership and Business Administration programme for Cardiff University’s Student Union.
- Sarah Lethbridge delivered Lean related training for Cardiff Council, Legal and General and NHS Blood and Transplant.
- Dr Maneesh Kumar, Prof Steve Disney and Sarah Lethbridge developed an Operational Excellence Masterclass for the Automotive Component Manufacturers Association of India (ACMA).

#### 5. Active in Knowledge Transfer Partnerships (KTPs)

KTPs are a UK-wide initiative managed by Innovate UK to bring together universities and businesses to identify innovative solutions to problems. LOM academics have been active in leading and supervising KTPs with a range of organizations.

- KTP with Brickfab Ltd “to develop and embed a product development capability - and associated business integrated business systems - to deliver sustainable and diversified future growth through new and reconfigured products”. £127000 from 2015-2017. This KTP integrated approaches from operations management and marketing/innovation to develop a new innovation system within the company. It was featured on BBC radio ‘business of the week’ programme (Prof Luigi de Luca and Dr Jon Gosling).
- KTP with QIOPTIC “to develop and apply a novel inventory control decision support system for closed loop supply chains found in the remanufacturing environment” £142000 from 2016-2018 (Prof Aris Syntetos)
- KTP with Panalpina “to combine advanced supply chain solutions with 3dp expertise” £285967 from 2016-2018 (Prof Aris Syntetos)
- KTP with Reid Lifting. LOM investigators worked with Reid Lifting Ltd, a leading designer and manufacturer of portable lifting systems on a project aimed at optimising their business systems to support their continued growth and facilitate new service-based revenue streams. The project team worked with Reid Lifting to establish a Knowledge Transfer Partnership with the aim of exploring and implementing systems to support a servitized business model. £123000, 2012-2014 (Dr Daniel Evers & Prof. Stephen Disney)
- KTP with Panalpina. LOM worked with Panalpina World Transport Ltd, a global leader in logistics and freight forwarding, to improve the firm’s ability to forecast inventory demand and facilitate inventory reduction for their customers. 2013-2015 (Prof Aris Syntetos)

## 6. Working with Associations, Institutions & Bodies

Our academics work closely with learned institutions, trade association and bodies. Some examples of this close working are:

- Dr Andrew Potter is the Chair of the Chartered Institute for Logistics and Transport (CILT) Cymru Wales, which is one of the nations/regions within the UK branch of the CILT.
- Dr Jane Lynch is Senior Associate of Institute for Collaborative Working, Wales , and Facilitator for ISO 44001.
- Dr Dan Eyers is a Professional Registration Advisor and committee member for the Institution of Engineering and Technology ( IET—South East Wales).
- Dr. Maneesh Kumar acts as a mentor and advisor to Automotive Component Manufacturer Association of India (ACMA).
- Dr Jon Gosling is committee member for Constructing Excellence South East Wales.

## 7. Writing Guides, Articles and Books to Support Practitioners

The section has produced a range of practitioner facing outputs. These include:

- 'The Lean Supply Chain: Managing the Challenge at Tesco', published by Kogan Page, by Dr Robert Mason and Barry Evans.
- 'Principles for appropriate contracting', a guide for Highways England and their supply chain, written by Dr Jon Gosling.
- 'International Freight Transport: Cases, Structures and Prospects', published by Kogan Page, Edited by Prof Anthony Beresford and Dr Stephen Pettit.
- 'The Global Automotive Industry', published by Wiley, Edited by Paul Nieuwenhuis and Peter Wells.

## 8. Public Outreach

The 'PUBLIC uni' is an initiative whereby Cardiff University academics present their most exciting research in short 10-minute chunks without slides to a general public audience (at Chapter Arts Centre). Our LOM academics have contributed as follows:

- Ford, the colour black, and the real history of the automotive industry (Prof Peter Wells).
- The Dark Side of Variation and Metrics (Dr Maneesh Kumar).
- The bullwhip effect in supply chains (Prof Stephen Disney).

LOM academics have written numerous articles in 'The Conversation', which aims to bring academic analysis to a wider audience. Some highlights from 2017 include:

- Wells, P. and Touboulic, A. (2017) Rich and famous lifestyles are damaging the environment in untold ways.
- Nieuwenhuis, P. (2017) Humans strive for efficiency but could learn so much from nature's resilience.

## 9. Linking Research, Teaching and Practice

**Live Projects.** LOM are very active in 'Live Projects': summer dissertation projects undertaken by students in close collaboration with an organization. Since 2014, we have conducted over 30 of such projects with partners including Brickfab, BT, Cardiff Airport, Fiddlehead, Panalpina, Ford, Ocado, Panalpina, GM, Olympus, and Yusun, delivering improvements for our partners (see for example, project led by Dr Vasco Sanchez Rodriquez: <http://business.cardiff.ac.uk/news/research-collaboration-generates-results>)

**Summer Placements.** The Cardiff Undergraduate Research Opportunities Programme (CUROP), funded through a central university scheme, offers students the opportunity for paid employment whilst contributing to ongoing research. Examples of successful LOM projects include:

Analysing the performance of a construction supply chain (2015 and 2016 with Dr Jon Gosling and Dr Wessam Abouarghoub), Building a big-dataset for the energy transport sector to improve decision making under uncertainty and risk (2016, Dr Wessam Abouarghoub), An investigation of the current status and the future prospects for the UK same day delivery: A data mining application using big data analytics (2017, Dr Emrah Demir Dr Wessam Abouarghoub), Organizational Learning and Three Dimensions of Service Recovery- Process, Employee and Customer' (Dr Maneesh Kuma and Dr Kate Daunt,)

**Industrial Visits and Guest Speakers.** LOM are very active in terms of field visits for our students, which have included trips to Proxima, Amazon, Morgan Cars, Mini BMW and Lloyds of London. Our seminar series has included a wide range of world renowned speakers.

## 10. Winning Awards

- A project, led by Prof Aris Syntetos, that helps businesses predict demand for products has been crowned the 'People's Choice' at Cardiff University's Innovation and Impact Awards.
- Cardiff Business School academics, Dr Robert Mason and Mr Barry Evans, have won the Prix des Associations at the Les Plumes des Achats for their book, The Lean Supply Chain: Managing the challenge at Tesco.
- The prize for Outstanding Contribution to Innovation and Engagement was awarded to the Advanced Sustainable Manufacturing Technologies (ASTUTE) programme team.

## 11. Hosting Events

### Breakfast Briefings

- Building a 21st Century Transport System in South Wales – Profs Calvin Jones and Anthony Beresford
- The 2.8 Billion Pound Question – Dr Andrew Potter and David Bowles, Operations Director of Royal Mint for Chartered Institute of Logistics and Transport.
- Procurement Choices and Contracting Processes—Dr Jon Gosling for Constructing Excellence Wales.

### Workshops and Conferences

- The innovation Lean Effective Green Operations (iLEGO) workshop, 30<sup>th</sup> March 2017 (Dr. Maneesh Kumar & Dr. Vasco Sanchez Rodriques) in partnership with Panalpina Research Centre the event attracted more than 40 delegates with speakers from Airbus, Ocado, Panalpina, Accolade Wines, Skanska, and North Wales Fire Services.
- Co-growth Welsh Drinks workshop with WRAP Cymru (16 September 2016, Dr. Vasco Sanchez Rodriguez, Dr. Maneesh Kumar, Dr. Irina Harris, and Dr. Martin Chorley)
- Wales Food Poverty Alliance Workshop - Welsh Government tackling food poverty and health inequality issues—Dr Yingli Wang

## 12. Informing Policy, Public Sector and Government

### House of Lords Select Committees

- Wells, P. (2016) Written Evidence (FTG0013) House of Lords: Future Trade Evidence, Automotive sector in: <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/eu-external-affairs-subcommittee/brexit-future-trade-between-the-uk-and-the-eu-in-goods/written/43333.html> (25th November 2016).

### Government Reports and Advisory Activities

- Kollamthodi, S.; Kay, D.; Wells, P.; Skinner, I.; Dun, C. and Hausberger, S. (2015) The potential for mass reduction of passenger cars and light commercial vehicles in relation to future CO2 regulatory requirements. Report for the European Commission – DG Climate Action, Ref. CLIMA.C.2/FRA/2013/0006/SR1
- Prof Anthony Beresford and Dr Potter gave evidence to an inquiry by the External Affairs and Additional Legislation Committee of the Welsh Assembly on the impact of Brexit on Welsh Ports, providing a written report and oral evidence on 12<sup>th</sup> June 2017. <http://senedd.assembly.wales/mgIssueHistoryHome.aspx?lId=19178>