

# BEST BUSINESS

## MANUFACTURING AND SUPPLY CHAIN MANAGEMENT

# Moving forward with the chain

As supply chain management is so crucial, enterprises must ensure that they keep up to date with the latest technological advances, writes **Leslie Faughnan**

### The Enterprising University

The Enterprise Research Centre (ERC) at the University of Limerick (UL) is a particularly successful example of the links between our third level institutions and industry today.

"Innovation and ever-smarter systems are what power today's manufacturing sector and will be the platform for the next generation enterprise," said Dr Cathal Heavey, co-director of the ERC and head of the Design and Manufacturing Technology Department.

"UL has an ongoing partnership with industry and we are directly involved with major international enterprises in specific, practical projects as well as research and well-targeted diplomas and degrees.

"Right now, for example, we are working with Intel, Analog Devices and Seagate in applying sophisticated analysis and mathematical modelling techniques to manufacturing control and yield optimisation in semiconductors."

UL has developed relevant programmes and invested in resources with a significant emphasis on manufacturing, including Lean and Six Sigma quality, and supply chain and services management in both full-time degrees and post-experience courses.

"We have undergraduate programmes in product design and technology for eight years," said Heavey. "We have now added a BE degree in Design and Manufacture and a BSc in Technology Management, all aimed firmly at the skill needs of today's global high-tech manufacturing."

The ERC participates in the technology centre at the Irish Centre For Manufacturing Research (ICMR), examining how smart ICT systems can be more widely used to support



**Edward Sweeney, director of learning at the National Institute for Transport and Logistics** JASON CLARKE

advanced manufacturing, with supply chain research being carried out with Infineon in Munich and in services with Dell. Dell Limerick currently employs 1,200 people, including a group which is responsible for after-sales services in EMEA. The services supply chain consists of call centres, inventory pickup and drop-off points (about 250 around Europe), service personnel and a logistics system. In this important business function, Dell sees the need to develop greater analytical capabilities to provide greater predictive capabilities.

"Next generation analytics make it possible to run simulations or models to predict future outcomes rather than to simply provide data about past interactions," Heavey said. "It will be increasingly possible to do these predictions in real-

time to the extent of supporting individual business actions."

UL and the ERC have been collaborating in recent years with corporations such as Bombardier, Boston Scientific, De Puy, Hewlett-Packard, Pfizer and Vistakon.

"Across the board, the research work we do is informed by the needs our industry partners define," said Heavey. "In addition to guidance, our industry partners contribute time and people – including their experts on secondment – as well as funding."

Industry also values UL and its programmes. This is clear from the close staff development relationships with Intel, for example, and a wide range of manufacturers filling the 40-student diploma and MSc course in product design and development.

"We worked with Intel to de-



**Dr. Con Sheahan, Senior Lecturer, Enterprise Performance Modelling, Dr. Ann Ledwith, Assistant Dean, Adult and Continuing Education and Dr. Cathal Heavey, Director, Enterprise Research Centre, all of University of Limerick**

velop a BSc in Engineering Sciences course tailored to the employee skill development needs," said course director Dr Ann Ledwith. "In two years, that has seen 36 Intel graduates. The product development programme is nine years old and very successful."

"Put it this way: the students work in groups, each in a host company, and are challenged to come up with realisable ideas for improvement. A high level of their final reports has resulted in actual implementation of their recommendations; one company even asked us back two years later to help them check on their progress."

These are also blended learning programmes, according to Ledwith.

"The students work with study material and other UL resources over the web," she said. "Email is basic, of course, and students also work with staff supervisors and with each other online and through teleconferences. Collaboration in small virtual project teams is a feature, and students also make live presentations of their projects and research."

Dr Con Sheahan is also involved in a programme for product development from conception or brief right through the production and supply chain processes.

"In essence, we work in applying data analytics and modelling to the challenges involved in today's total integrated supply chain," Sheahan said.

"Take product design. Given a brief, almost any designer can come up with something to sell if the price is no object. But designing to a retail price point like €10 or €99, for example, is the real world challenge."

Component choice is also an important area, according to Sheahan.

"Good industrial design minimises the variations in things like easterners or electric motors and incorporates standard components from product catalogues when it makes no difference to the appearance or performance of the end product," he said. "Then you model the entire process all the way out to delivery to retailers. That is how you ensure the product is commercially viable almost before the first prototype is tested."

### Supply chain rules

Today's manufacturing, new product development and supply chain management (SCM) are characterised by being global and managed using very smart software systems. Contract manufacturing has pushed the boundaries of collaboration between the commissioning of multinational brands, suppliers and many

ecosystems of manufacture and fulfilment.

High levels of automation have been combined with deeper analytical capabilities to improve efficiencies and profitability while reducing friction and costs across supply chains.

*'Customers are becoming more discerning and demanding, so higher levels of service and quality have to be delivered'*

This creates complexity and requires that the professionals who design and manage supply chains are equipped with a matching level of skill and knowledge, according to Edward Sweeney, director of learning at the National Institute for Transport and Logistics (NITL) and a recognised international expert.

"Supply chain configurations have become ever more virtual as a process of vertical disintegration has taken place," Sweeney said. "Manufacturers and retailers and service suppliers focus on their core competencies and out-

source those supply chain activities deemed to be non-core.

"Complex networks of enterprises have evolved and the old Henry Ford logic that 'you have to own it to control it' has been replaced by the logic that you have to manage relationships with key supply chain partners to control it."

In that context, it is all too easy to forget that commerce and supply chains are fundamentally all about people.

"They are the soft wiring, the managers who are technically adept in terms of managing the hard wiring elements of structures, systems and technology," Sweeney said.

"That importance of SCM in differentiating enterprises from their competition and simply doing business better is being recognised. It has certainly permeated Irish industry, although a longitudinal study we are engaged in suggests that best contemporary SCM practice is more common in 'modern' industries like electronics or retail multiples than in traditional sectors."

An NITL horizontal study, which has been ongoing for over a decade, strongly suggests that the biggest single obstacle to excellence can be the failure of senior management to recognise that SCM has become so important.

"It has become much more important than controlling the simple physical transport and storage of goods," said Sweeney. "SCM today is a boardroom priority and not just a loading bay activity. We used

to talk about the 'lean enterprise' and then of 'world class manufacturing'. Those concepts and practices are still valid, but today it is world class SCM that characterises the most successful global brands in all sectors."

There has been a serious proliferation of ICT systems to support the planning and execution of supply chains.

"The management of information flows is a critical success factor in global and virtual supply chains and has facilitated the more efficient and effective management of all aspects of the extended enterprise," Sweeney said.

"ICT is the key enabler of the principal SCM goal of integration between internal and external supply chain processes. It is hard to imagine a contemporary supply chain being managed without a sophisticated ICT platform."

That contemporary complexity is matched by hyper-competitive market places in many sectors.

"Customers are becoming more discerning and demanding, so higher levels of service and quality have to be delivered at more competitive prices," Sweeney said. "In this environment, standing still equals falling behind. Change, improvement and innovation are continuous."

"The supply chain professionals of the 21st century – and we have a strong cohort in Ireland and need even more – have to be competent to manage multi-faceted change pro-

cesses in complex supply chain environments. In fact, supply chain has emerged as a very important professional competence and specialist career."

All of this has implications in terms of how tomorrow's SCM professionals are educated and developed as well as for the continuing success of Ireland's internationally trading enterprises, indigenous and multinational, according to Sweeney.

"They need knowledge and skill across international business in all its facets, especially in relationship management, ICT development and deployment and continuous change management," he said. "This is in addition to the more traditional SCM domains such as shipping, warehousing and physical distribution management."

Progressive enterprises have recognised this and are working in partnership with leading academic institutions such as NITL in the design, development and implementation of innovative SCM development programmes, particularly at postgraduate level.

"Businesses can have the best supply chain technologies, methodologies and analytical techniques in the world but they will never be able to fully exploit these without the right people with the right knowledge, skills and competencies," said Sweeney. "Improving supply chain performance and shareholder value is about that winning combination of people and systems."



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- **MSc in Supply Chain Management Full-time (1 year) (DT351)**
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