UNIVERSITY OF LIVERPOOL | Management School

Learning to make a difference from an enterprising and vibrant world city of culture.

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R *Research*

Contents

Welcome to this first edition of ***Research***, showcasing original and innovative research from across the University of Liverpool Management School. In this first edition we showcase the ground-breaking thinking of colleagues in their respective areas of expertise and how they are driving positive, impactful change outside of the School.

Professor Julia Balogun
Dean, University of Liverpool Management School and
The Brett Chair in Management

The impact that our research makes to wider society lies at the heart of the School's vision, where we strive to be "a globally connected Management School advancing influential knowledge leadership through our transformative research and teaching to better business and society." Making significant contributions to the economy and society regionally, nationally and globally is fundamental to the School, as it is to the University of Liverpool with its commitment to its civic responsibility as the original UK redbrick university.

Because undertaking impactful research is so 'built into' the school, and has been for many years, I am fortunate to be able to say that our work extends well beyond my colleagues who are showcasing their work in this publication, with numerous more researchers in the School engaging with external organisations and policy makers to build collaborative partnerships which enrich individual lives, business and society.

Much of my work is making sure that structures are in place to enable all types of research to thrive throughout the School, building and maintaining an inclusive research culture for all our staff, from early career doctoral researchers just beginning their research career, to ensuring we have an engaged community of Professors leading in their respective fields. I am delighted that this is recognised externally.

The School is amongst an elite group of business schools world-wide to hold the gold standard 'triple-crown' of accreditations (EQUIS, AACSB and AMBA). We also hold accreditations that demonstrate our work in the community, notably the Small Business Charter. In addition, in December 2020 we became only the third UK business school to receive the Athena SWAN silver award, indicating our commitment to gender equality and diversity. In practice what this means is that we ensure an inclusive environment is embraced by implementing a framework across all areas of staff recruitment and development.

No business school can, or should, act in isolation so it is particularly pleasing that many of the authors showcasing their research in this edition of Research conducted their research as part of a national or international team. A globally connected and recognised research community is core to the School's collegiate and collaborative research culture supporting academics at all career stages. This collaborative culture is fostered within the School through interdisciplinary Research Clusters and Centres that bring together faculty and disciplinary expertise from our six Subject Groups to facilitate internal and external research partnerships, around common cross-cutting research themes and projects. We showcase one of the centres, The Centre for Supply Chain Research, in this edition.

I am delighted to lead such a progressive and forward-looking School and I trust you will enjoy reading this edition of Research.

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>
> **Professor Julia Balogun**

MODERN SLAVERY

The Global Slavery Index (2018) estimated that the G20 countries collectively source $354bn of products per year that are at risk of having forced labour in their supply chains, with the UK representing £14bn. Organisations that do not procure high-risk products, or source from high-risk countries, can get false reassurances that modern slavery is something that happens 'someplace else'. Yet it is a domestic issue, affecting services as well as manufacturing, and while quantification remains problematic, there are an estimated 16m people exploited through forced labour in the private economy worldwide, and 13,000 victims in the UK alone. Jo Meehan and Bruce Pinnington have a programme of research working with government agencies, organisations, and NGOs, which seeks to move beyond 'box ticking', and to reframe perceptions of risk from a reputational issue for firms, to a consideration of risk for people subjected to modern slavery.

Dr Jo Meehan is a Senior Lecturer in *Strategic Procurement*

Dr Bruce Pinnington is a Lecturer in *Operations Management*

ESTIMATES SUGGEST G20 COUNTRIES COLLECTIVELY SOURCE

$354bn

OF PRODUCTS PER YEAR THAT ARE AT RISK OF HAVING FORCED LABOUR IN THEIR SUPPLY CHAINS.

In their research, Jo and Bruce both draw on their extensive professional backgrounds in procurement and commercial management working for global organisations. Since 2018, Jo and Bruce have been working closely with the Crown Commercial Service (CCS), the UK's largest public procurement organisation. CCS bring together policy, advice, and procurement services for UK central government and over 18,000 organisations in the wider public sector. CCS wanted to explore how their key suppliers were responding to the UK Government's Modern Slavery Act that came into force in 2015. The Act's (Section 54) Transparency in Supply Chains (TISC) provision places an annual public reporting obligation on firms with a turnover of over £36m to report either the steps taken to ensure slavery is not taking place in their operations and supply chains, or to confirm that no action has been taken.

Modern slavery in supply chains is a relatively new area of academic study, and given the recency of the legislation, much of the existing work focused on firms' technical compliance to the TISC provision.

By examining firms' TISC statements however, Jo and Bruce saw a new opportunity to contribute to this emerging field. They identified that the TISC Statements of many firms just appeared to 'tick the box'. Although these firms were technically compliant, what was of interest was not just what the companies said they were doing to guard against modern slavery but, more importantly, what they were not saying. In parallel, Jo and Bruce were analysing the raft of policy guidance, parliamentary debates on the passing of the Modern Slavery Act, and official independent reviews of the Act, to get a deeper understanding of the policy intent behind TISC statements. The research, which has been recently published in the International Journal of Operations and Production Management (February 2021), revealed how the use of ambiguity in TISC statements can reduce firms' accountability and delay action on addressing modern slavery in corporate supply chains. While this might reduce a firms' reputational risk, it provides an explanation for the slow pace of change, and crucially can have profound negative consequences for people in forced labour.

The work on ambiguity led to collaborative research and wider dialogue not only with the CCS, but also the Home Office's Modern Slavery Unit and the Cabinet Office, who are responsible for setting policy and commercial standards, and the Ethical Trading Initiative (ETI). TISC statements are commonly used by researchers, and procurement decision makers, as a proxy for action. Using their commercial knowledge, Jo and Bruce recognised the complexity of identifying and tackling modern slavery in supply chains, particularly beyond direct tier-one suppliers, and have sought to explore what organisations were doing differently in their day-to-day procurement practice, beyond their published statements, to ensure due diligence in their supply chains.

Continued Over...

A human issue not a supply chain issue

In the summer of 2019, Jo, Bruce, and Nathan Davies, a PhD student working with the team, conducted extensive research with three construction companies, all of which were suppliers to the UK government. The construction sector commonly has fragmented supply chains, a high use of subcontracting that obscures transparency, transient and low-skilled labour, and a high use of extracted raw materials; all factors that increase workers' vulnerability to modern slavery. The three companies were all actively working on policies and practices to identify and eradicate modern slavery, and the team interviewed a range of decision makers spanning procurement, operations, finance, and human relations.

In addition to revealing the operational challenges of tackling modern slavery in complex, opaque, supply chains, analysis of the data revealed insights into potential mechanisms for transformational change in the level of engagement and prioritisation of modern slavery. The research uncovered how and why some had become advocates for driving industry-wide change. In the commercial process of procurement and supply chain there is often little, if any, human connection or interaction with workers in the supply chain.

BECAUSE OF THE STRUCTURAL COMPLEXITY OF CORPORATE SUPPLY CHAINS, ORGANISATIONS ARE STILL LEARNING HOW TO SEE THEPROBLEM OF MODERN SLAVERY.

Corporate training programmes that went beyond outlining legal duties and also involved hearing the stories of victims of modern slavery, shifted peoples' view and it became not just a contractual issue but a human issue – they understood how that person's life had been affected and they had an emotional response to the impact of modern slavery.

The results from the construction project supported those from a piece of work by Jo and Olly Kennedy, another PhD student in the team, exploring the role of 'place' in the modern slavery policy agenda. The project engaged a range of public, private, and third sector organisations from the Liverpool City Region (LCR), to assess the potential for regional policy to support national legislation and industry-focused collaboration in eradicating modern slavery in supply chains. The evidence emerging from this research also identified the importance, and often absence, of moral triggers in the procurement process, and interestingly what the research team terms 'the boundaries of care'. For example, people cared about their businesses, their workers, and their region, but these boundaries are arguably paradoxical to the unbounded nature of modern slavery.

It was clear from both the construction and the LCR research that what people see, and what people do, are inextricably linked. The TISC legislation focuses on transparency, yet because of the structural complexity of corporate supply chains, organisations are still learning how to see the problem of modern slavery, and where to look for it. The issue here centres largely on the lack of supply chain visibility, or perhaps more importantly, the lack of visibility of workers in the supply chain processes.

Building the understanding

Policies which implement change across supply chains are underdeveloped in this area, something Jo, Bruce, and the team, are keen to change. They have secured funding from various research councils, and are working with the Modern Slavery Policy and Evidence Committee, as well as an international network of policy makers, NGOs, businesses, and academics to build a critical mass of impactful research activity. The next phase of Jo and Bruce's research is looking at how the 'boundary of care' can be extended to reach further down the supply chain, both at company and individual levels. They are working with industry and policy makers to develop methods to humanise the supply chain process in order to reframe risk beyond corporate reputation, and to consider risks of vulnerable workers. Part of the solution is likely to be found in challenging the artificial boundaries of our systems, whether that be economic, health, environmental, or supply chain systems. Working at the intersections of systems forces us to take account of non-commercial issues and recalibrate concepts of risk and responsibility. To bridge the 'seeing' and 'doing' gap, the team is exploring opportunities to work with colleagues across the faculty to see how literature and art can be used to encourage us all, organisations and consumers, to rethink our sourcing decisions and humanise our supply chains.

MANAGEMENT SCHOOL SUPPORTS LIVERPOOL CITY REGION BUSINESSES DURING COVID-19

During these difficult times, many small businesses across the Liverpool City Region are struggling to cope. With additional financial strain and an uncertain future, business owners are relying on support measures to survive.

The Management School is helping to ease the burden on a number of local, small businesses through its Growth Catalyst network.

Established in 2014, the £1.6million European funded (ERDF) Growth Catalyst Programme has successfully developed the leadership of over 150 small firms in the Liverpool City Region area, building up a network of almost 200 entrepreneurs.

Over the last few weeks, the Growth Catalyst team has been circulating relevant information (including HMG and City-Region guidance) to the network via WhatsApp groups and mailing lists. The team is also hosting weekly Zoom sessions to allow business owners to connect and share their experiences of things like accessing government support, dealing with banks and sourcing information.

As well as providing practical information, these sessions are also helping to minimise isolation by presenting an opportunity for like-minded people to share advice on issues such as managing stress, keeping in touch with their staff and planning for the end of lockdown.

Dr Benito Giordano, Programme Director, commented "The level of engagement has been positive with sessions proving to be beneficial, however, it is sobering to hear the many challenges businesses are facing. Over the coming months, we will continue to provide whatever support we can to try and make a difference in these difficult circumstances."

MANAGEMENT SCHOOL TO LAUNCH BRETT CENTRE FOR ENTREPRENEURSHIP

The Management School is pleased to announce the establishment of its new Brett Centre for Entrepreneurship.

The Brett Centre, which will be formally launched in the Autumn, is funded by a £1.25 million donation by Paul Brett as well as additional support from the University. It will have three main pillars – research, enterprise education and engagement/impact – and will draw upon the expertise across the School. The Centre will recruit entrepreneurs in residence and a centre administrator, to support its work in education and engagement, and a number of additional PhD students.

Paul Brett said "I am pleased to support the creation of the Brett Centre for Entrepreneurship, allowing the Management School to strengthen the cutting-edge research it already carries out in this area.

The Liverpool City Region has a thriving SME community which significantly contributes to regional prosperity and growth. I look forward to seeing the impact the Centre's research will bring to both local and global entrepreneurial ecosystems."

Professor Blackburn, the newly appointed Director of the Brett Centre, said: "I am delighted to lead on this initiative and build upon the excellent research, engagement and impact undertaken by scholars and practitioners of ULMS.

"The funding from Paul Brett gives us a fantastic opportunity to boost our research and practitioner capabilities, instilling entrepreneurship education into the programmes of the University, as well as enabling us to reach further into the Liverpool City region with our expertise. The vision of the Centre is to become sustainable and internationally recognised within five years."

Paul Brett, University of Liverpool alumnus (BA Hons Geography 1965, Hon LLD 2017), spent most of his career in the travel industry. He is a long-time supporter of the University of Liverpool having previously made generous donations to the Yoko Ono Lennon Centre and The Brett Building (the Management School's dedicated MBA suite).

David Forrest
Professor of Economics

Ian McHale
Professor of Sports Analytics

Problem gambling is estimated to affect 400,000 people in Britain, representing a public health issue associated with serious social harms. How can the Government, the regulator, and gambling companies help problem gamblers whilst maintaining what is an enjoyable social activity for the majority who only place the occasional bet? And what steps can the industry take to identify those at risk of becoming a problem gambler in the future? Ian and David have used their respective expertise to study datasets enabling the sector to understand the behavioural patterns of gamblers and to implement change.

MAKING GAMBLING SAFER

> *We are pleased to say that as a result of the research by Ian and David, and Ian's subsequent tailoring of an algorithm for our operation, we feel we now offer a safer gaming environment.*
>
> Simon Thomas
> Chief Executive
> *The Hippodrome*

The gambling industry is heavily regulated with a number of key stakeholders exerting influence and informing regulatory change. Having worked in partnership with the sector for many years Ian and David were able to source datasets from major gambling organisations, enabling them to analyze data detailing individual gamblers account information. Amongst the datasets they sourced were those tracking gamblers through the use of loyalty cards both online as well as those visiting physical venues, e.g. casinos and bookmaker shops. They were able to ascertain patterns of behaviour such as typical amounts spent, time spent and when during the day bets were placed, and also changes in these patterns of play providing insight into different betting contexts.

> *Research conducted by Ian and David in the last three years has made an impact on regulatory thinking and decision-taking.*
>
> Tim Livesey
> Head of the Safer Gambling Team
> *Gambling Commission*

Fixed Odds Betting Terminals

The Department for Digital, Culture, Media and Sport (DCMS) is the UK Government department with responsibility for gambling. During its triennial review of the limits placed on stakes, prizes, and provision of gaming machines it considered reducing the maximum stake of £100 allowed on Fixed Odds Betting Terminals in bookmaker shops, as many across the sector felt the stake was too high. The suggestion was to reduce the maximum stake to £50. DCMS commissioned Ian and David to examine data from the terminals to ascertain whether limiting the maximum stake to £50 would reduce the harm caused to problem gamblers. Their research suggested it would not have the desired effect, suggesting that gamblers spent much longer on the machines when the stake was halved but ultimately spent just as much money as they had done before. The Gambling Commission used their findings to inform its decision to lobby the Government for stronger protections for gamblers using these machines, with the Government subsequently significantly reducing the maximum stake to £2.

Casinos

The Gambling Commission is charged with ongoing modification of the Licence Conditions imposed on operators to make gambling safer. The Commission used research by Ian and David to argue for increased levels of player protection for those using gaming machines in casinos. The Commission wanted to understand whether player protection tools that are in place for one type of machine ("B1" are a category of gaming machines with a £5 maximum stake and £10,000 maximum prize limit) should be extended to another type of machine ("B2" machines have a £2 maximum stake and a £500 maximum prize limit). Ian and David's research findings suggested the protections should be extended with their findings acted upon by the Commission leading to closer monitoring of machine play in casinos with appropriate interventions by the operator where problematic play was detected.

The country's busiest casino, The Hippodrome, asked how their research and knowledge could be used to enable it to identify loss-chasing among its customers. Chasing losses is regarded as a major signal that an individual may be suffering gambling harm. Ian helped The Hippodrome design algorithms now used to identify loss-chasers amongst its loyalty card customers, using it as an identification trigger to encourage safer play.

Chasing losses

Ian and David's body of research prompted a number of gambling companies to seek guidance as to how they could employ algorithms to make their gambling environments safer. This included Skybet, a leading online betting operator which specializes in football betting whose customer base includes a high proportion of young males. Responding to research findings which showed an exceptionally high incidence of new-onset problem gambling between ages 18 and 20, it has introduced lower thresholds for actively intervening when flagged cases of possible harm relate to the youngest age group in its customer base. Ian and David helped Skybet identify players chasing losses, setting up 'triggers' in the system where interventions will encourage safer play. The algorithms are detecting gamblers who return to gambling sooner, or increase stake sizes, in response to losing. The algorithms also identify patterns of time and money spent. For example, the analysis indicated that those who are betting late at night spend at a much faster rate than they do during daytime sessions.

Targeted approach

The evidence from all Ian and David's research demonstrates the benefits of targeting interventions at those likely to be experiencing harm. Identifying individual customers exhibiting signs of problematic play allows them to benefit directly from targeted intervention in real time. Not only is this effective but it removes universally applied restrictions that would affect the consumer satisfaction of recreational gamblers. As Ian says, "ultimately, the end beneficiaries are individual customers, both those who play safely and those who are vulnerable to harm".

> *The research of Ian and David has directly influenced how we approach our processes for responsible gambling.*
>
> Ben Wright
> Head of Safer Gambling
> *Skybet*

MANAGEMENT SCHOOL ACHIEVES ATHENA SWAN SILVER AWARD

The University of Liverpool Management School has achieved the Athena SWAN silver award, indicating its commitment to gender equality and diversity.

Athena SWAN was established in 2005 and is a framework used across the globe. It encourages and recognises good practices in higher education and research institutions towards the advancement of equality and diversity.

Professor Julia Balogun, Dean of the Management School, commented "The Management School is incredibly proud of this achievement, particularly as we are only the third business School in the UK to achieve the silver award.

Thank you to everyone who contributed to this award and we look forward to continuing to support and advance the progression of all staff and students within the ULMS community."

In order to qualify for the silver award, institutions must demonstrate how equality and diversity is well embedded. They must also show strong leadership in promoting the principles of the charter and evidence of impactful Athena SWAN activities.

Rachael Lucas, Head of Operations at the Management School, and Professor Liz Parsons, Athena SWAN Academic Lead, commented "The Athena SWAN charter has allowed us to implement some really positive changes in the School. It is great to see that these efforts have been acknowledged and we will continue to develop more opportunities for our staff and students."

Recent policy developments include the introduction of a "reintegration allowance" for individuals returning from maternity/shared parental/adoption leave. The School has also implemented initiatives to improve gender balance on some of our programmes, for example, the creation of Women in Football scholarships for applicants to the Football Industries MBA programme.

Athena SWAN Silver Award
GENDER CHARTER

MANAGEMENT SCHOOL LAUNCHES NEW MASTER'S PROGRAMME IN FINANCIAL TECHNOLOGY

The University of Liverpool Management School has developed a new MSc Financial Technology programme to add to its suite of postgraduate courses.

Financial Technology, or FinTech, is widely regarded as the future of finance. Technology such as blockchain and cryptocurrencies may be making the headlines but, according to the UK's Department for International Trade, FinTech also has the potential to increase transparency and efficiency in the financial sector and give the most vulnerable in society access to financial services.

The new MSc Financial Technology programme at Liverpool will provide students with expert global knowledge on both the academic and commercial aspects of this evolving area of finance. Graduates from the programme are likely to pursue a career in financial or legal sectors particularly in the specialisms of financial markets, risk, trading, Python, banking, LawTech, payments and settlements, cryptocurrencies, regulations, entrepreneurship, research, government agencies, international financial agencies and higher education.

Gavin Brown, Director of Studies for the MSc Financial Technology, said that: "Financial services are undergoing the fastest pace of change in human history enabled by multifaceted technological changes. Our new programme in MSc Financial Technology ensures that University of Liverpool graduates understand the commercialisation of these changes and are ready for the future of finance and the opportunities that this brings."

More information regarding the programme can be found on the MSc Financial Technology study page.

MANAGEMENT SCHOOL CLIMBS IN THE ECONOMIST WHICH MBA? RANKINGS

The Management School has improved its position by 20 places in The Economist Which MBA? global rankings.

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The 2021 ranking includes 90 full-time MBA programmes from around the world – only ten of which are based in the UK. The position of each programme is determined by a number of factors including graduate salaries, networking opportunities, personal development, educational experience and career opportunities.

The Management School scored particularly well in terms of the percentage of students gaining employment within 3 months of graduating, student diversity and student quality.

Professor Stephen Woods, Associate Dean MBA, said "As a programme team, we are thrilled to again appear in the Economist rankings, and to have improved our position. Along with our recent accreditation by AMBA, it marks a year of achievements for the MBA programmes, in challenging circumstances."

"It was especially pleasing to see recognition of our excellent student diversity and record of student employment within three months of graduating.

MATCH-FIXING RED BUTTON APP TO GO GLOBAL FOLLOWING STUDY

FIFPro, the worldwide representative organisation for 65,000 professional footballers, is distributing a smartphone app to combat match-fixing after University of Liverpool research recommended its use.

The Red Button app enables players to anonymously report match-fixing approaches. It is being made available by FIFPro and its member player unions for professional footballers. Reports will be sent to a local authority, such as a law-enforcement agency or police. As part of a collaboration agreement, FIFPro can send reports to FIFA to investigate.

The app is being endorsed following an assessment by Dr Babatunde Buraimo and Professor David Forrest, in the University of Liverpool's Management School.

Describing the app as "effective" and "very straightforward to use", Professor Forrest said: "I can assure players that the app is safe.

"If you want your report to be anonymous, you can make that choice and be sure that the technology prevents anyone from finding out who made the report. Even if your phone is lost or stolen, there will be no trace of you having used the app."

The University led assessment identified several key features of the app prior to recommendation. It notes that Interpol validated the Red Button app after its experts were unable to hack into it and obtain information about users; that it is easy to use; that is only used by players so should improve the quality of information shared; and that reports are filtered through a third party independent of the sport. Crucially, the app is being distributed by FIFPro's affiliated player unions.

Professor Forrest said: "I urge all players to make sure to keep the app installed on their phone.

"If you ever have concerns to pass on, it will be there as a resource to be used to protect your own career and to make a contribution to safeguarding sport. Reporting your suspicions is something you owe to football and to the fans, but is vital also for protecting your own career and reputation."

Players are also now able to upload images and audio and video recordings when they report, following a recommendation in the University report.

Under FIFA rules, players are obliged to report any match-fixing approach or potentially face a multi-year ban. FIFPro's collaboration with FIFA means that if a player uses the Red Button app, FIFA considers the report to be valid.

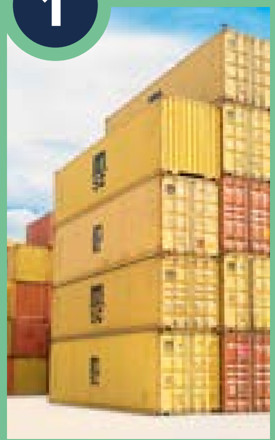
A FOCUS ON...

THE CENTRE FOR SUPPLY CHAIN RESEARCH

The Centre for Supply Chain Research is comprised of 22 members and 20 PhD students. Centre members have research published in some of the top journals in the field including Management Science, Journal of Operations Management, Transportation Research Part B, International Journal of Operations & Production Management, European Journal of Operational Research, and the Journal of Service Research, and also work closely with business and the public sector in impactful action research and knowledge exchange, typically funded by national and international funding bodies such as Innovate UK, NERC, BEIS, Leverhulme and H2020.

The Centre has five major research themes:

1



Transport and Logistics

Modelling and optimisation of problems in the design, planning and operation of transportation networks for the distribution of freight; container shipping, empty container/vehicle positioning and ship loading; vehicle routing problems in road transportation; multi-commodity network design, service network design and facility location.

2

Supply Chain Technologies, Analytics and Risk

Digital strategies and ICT adoption in operations and supply chain management; uncertainty and risk mitigation; mathematical programming, stochastic dynamic programming and meta-heuristic optimisation of supply chains; development of models and algorithms to support supply chain network design; understanding big data analytics in operations and supply chain management; last-mile solutions; capacity analyses of rail networks and railway timetabling.

3

Sustainable Supply Chains

Green supply chain management; carbon footprinting of logistics systems; environmental policies and operations and supply chain design; integrating sustainable practices with operations and supply chain performance; sustainable procurement; modern slavery and supply chain ethics.

4

Agri-Food Supply Chains

Food waste reduction; integrating local and global food production systems; inventory and pricing strategies for perishable food supply chains; decision support systems in food supply chains.

5

Agile Operations

Organisational agility; management practices and the performance and productivity of small firms; sustainable growth of SMEs.

DETAILS OF THE CENTRE CAN BE FOUND AT
liverpool.ac.uk/management/research/centres/cscr/

Recent Funded Projects

NERC Recycled plastics – Understanding the quality-performance linkage for packaging
Andy Lyons and Gopal Narayanamurthy are Co-I's on a Natural Environment Research Council (NERC) award of £975,000. The project, led by UoL's Department of Chemistry, is a three-year, Smart Sustainable Plastic Packaging study, aiming to understand how changes in chemistry control the properties of plastic packaging. The research will provide: a robust understanding of the relationships between the chemistry and properties of recycled plastics; an evaluation of the effect of additive use in recycled plastics on packaging performance; and, recommendations for preventing recycling degradation through additive and formulation changes. Based on these outcomes, ULMS staff are responsible for creating a profiling framework in order to collect data and analyse the performance of using different configurations of recycled plastic and by modelling the interplay across the financial, social and environmental dimensions of different supply and demand scenarios, thereby assisting in the understanding of the economics of using additives, and better understanding and targeting the market for recycled plastics.

Innovate
Tolga Bektas is the University Lead on an InnovateUK funded project SCALE. Soft Computing to Accelerate fulfilment & Logistics Efficiency is designed to address the challenges introduced by e-commerce, particularly for SME retailers who are under pressure due to increasing demand for fast and free delivery, low margins associated with e-commerce and complex/fragmented logistics systems. The project aims to significantly improve last-mile logistics efficiency and productivity that will include novel forms of delivery, in order to increase delivery speed, whilst reducing cost and emissions. Led by Darwin Evolution Technologies (trading under the brand name "Bezos"), and with the University of Liverpool's Management School providing academic input on logistics network optimisation, the total value of the project is just under £950K.

Leverhulme
The 12-month Leverhulme Research Fellowship enables Hugo Lam to investigate how the introduction of the Modern Slavery Act in 2015 changed investors' perception of and reaction to slavery issues occurring in firms' supply chains. Such investigation helps advance our understanding of the interplay among public policy, supply chain management, and financial market. The Fellowship also supports Hugo to visit the Georgia Institute of Technology in the United States for research collaborations.

ERDF
Andy Lyons, Hossein Sharifi, Dongping Song, Tolga Bektas, Jorge Hernandez Hormazabal, Daniel Xing and Cagatay Iris have been awarded £433,950 by the Department for Communities and Local Government. The LCR Holistic project funds 2 RAs over 3 years and will support a wide range of industrial SMEs in the Liverpool City Region in their efforts to specify and adopt new working practices and digital technologies, enabling the SMEs to adapt their businesses to become more resilient, and more productive contributors to building integrated, digitally-enabled supply chains.

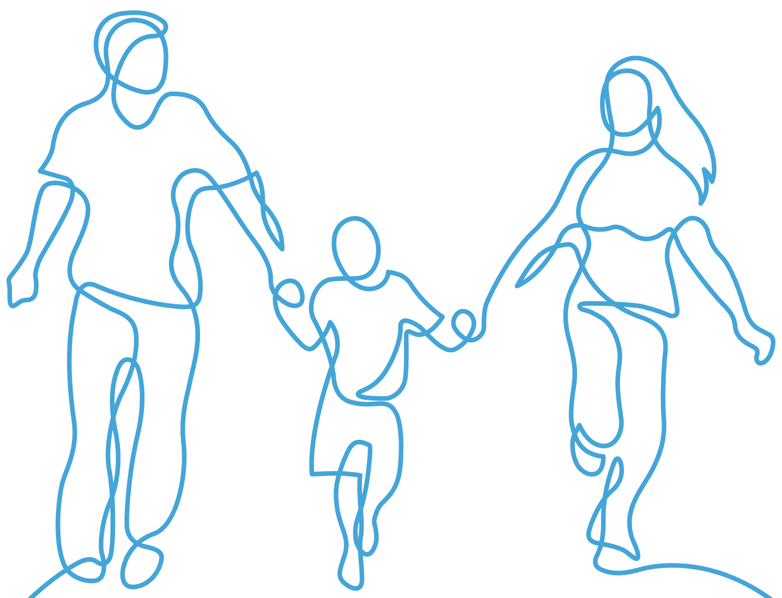
FAMILY-FRIENDLY POLICIES IN THE WORKPLACE

Dr Laura Radcliffe
Senior Lecturer in *Organisational Behaviour*

Professor Caroline Gatrell
Professor *Organisation Studies*

Research has increasingly shown a clear link between the diversity of a company's workforce and its productivity. In recent years, many organisations have examined, and strengthened, their family-friendly work policies in line with both societal and statutory expectations. Despite these positive changes UK uptake of family-friendly policies remains unequal, with flexible working mostly benefiting mothers, not fathers. Caroline and Laura's research explores this issue.

Caroline and Laura's research has explored the unequal uptake of family-friendly policies among parents, revealing reasons why flexible working opportunities are gendered with mothers more likely than fathers to access these. They have explored the effect of family friendly policies using a range of methods, including in-depth interviews, surveys and diaries. Through this research they have provided recommendations that, when adopted by organizations, are shown to improve equality of access among mothers and fathers.



This research has advanced organizational attitudes towards flexible working leading to targeted family friendly education by prominent family and gender-oriented charities and consultancies. These education programmes have reached over 150+ organisations, resulting in changed behaviours among managers and employees.

A number of research projects have contributed to the findings and recommendations:

- Laura studied couples' everyday work-family decision-making practices using daily diaries, and found that inequality persisted among couples when women accessed family-friendly policies but men did not, with women taking on most care-giving tasks and managing daily conflicts alone, leading to stress and reduced engagement at work. Thus she identified that encouraging men in heterosexual couples to access flexible working can be key to resolving work-family conflicts in a gender egalitarian manner, reducing stress, promoting gender equality, and aiding work-family balance within couples.
- Insights from a survey by Laura of over 10,000 working parents provided evidence of specific barriers preventing male access, as well as enablers that can support uptake. The research showed that while men feel 'entitled' to seek promotion and advancement at work, they are less confident in requesting flexible working for family reasons. Barriers include line manager attitudes, a lack of transparency about the options available and that flexible working options tended to be targeted to women. Enablers include greater transparency about family-friendly options and ensuring that organisational and managerial presentation of such options are aimed at men as well as women.
- Caroline identified a mismatch between maternity and breastfeeding advice aimed at mothers, and what organisations do in practice to enable mothers to adhere to this advice, meaning new mothers struggle to meet health guidance whilst also proving themselves at work. In a study of new mothers' work experiences she found that organisations often treat the 'maternal' body with suspicion rather than support. Just as assumptions are made about men not being responsible for caregiving, assumptions are made about returning mothers being less committed, contributing to the under-representation of women at senior levels in management. She found that women returning to work after maternity leave, often struggled to follow health guidance around breastfeeding, for example, whilst also demonstrating they were effective and present in performing their jobs.

Taken together, these insights highlight the need for organisational action and culture change that goes beyond development of policies, to actions that encourage and support men to take up policies, while concurrently improving support for women post-maternity. Using this research Caroline and Laura have worked with charities and consultancies who influence and educate corporate employers to effect change through encouraging a focus long-term on changing attitudes towards gender and family-related policies. The charities and consultancies they have worked with include WOMBA (Work, Me and the Baby), Avenir [leadership] Consulting, Working Mums (the #1 job and community site for working mums in the UK), and Business in the Community (BITC - the largest business-led membership organisation dedicated to responsible business).

Caroline's research is also cited extensively in policy documents. In relation to fathers these include: the (2015) Scottish Government report: Fathers in the early years: How do they balance their work and family life? Family Friendly Working Scotland and also the Fatherhood Institute Report by Burgess, A., and Davies, J., (2017) Cash or Carry? Fathers Combining work and care in the UK, Marlborough, Fatherhood Institute www.fatherhoodinstitute.org/wp-content/uploads/2017/12/Cash-and-carry-Full-Report-PDF.pdf. In relation to mothers, these include a 2014 report commissioned by the International Labour Organization: Lewis, S., Stumbitz, B., Miles, L., & Rouse, J.(2014). Maternity protection in SMEs: An international review. International Labour Organization. www.ilo.org/global/publications/ilo-bookstore/order-online/books/WCMS_312783/lang--en/index.htm. The International Labour organization reviews key international literatures on maternity protection in SMEs for the purpose of generating positive outcomes for business and society in relation to policy and practice. In addition, Caroline was Academic Advisor for BIS (2015) research paper #235, Pregnancy and Maternity Related Discrimination and Disadvantage. Equality and Human Rights commission, First findings, surveys of employers and mothers.

Through follow-up with organisations, Caroline and Laura have identified that organisations have since enhanced their policies, increased access to and transparency of these policies and promoted them better to men (ensuring representation of men in family-friendly campaigns for example) to encourage more uptake. In some cases, there has indeed been more uptake from employees with families and more 'acceptance' by others of those employees who choose to do so. Men have welcomed the opportunity to discuss flexible-working with managers, with some organisation developing specific improvements in paternity policies. This, in turn, has helped women advance in their careers where equal uptake of flexible working opportunities has supported more equal distribution of care-giving within the household.

Ongoing research projects conducted by Caroline and Laura explore the experiences of more diverse family types. Findings from research conducted by Laura, focusing on single mothers, for example, indicate the negative impact that organizational ideal worker norms, with limited flexibility options, can have on single parents.

Laura and Caroline's recommendations for organisations when developing family-friendly policies:

Improve accessibility and transparency of policies by publishing details on websites, including parental leave and pay policies, taking care to avoid targeting such policies at women specifically.

Enhance shared parental leave policies, offer leave for carers and encourage flexible working for all, but especially for men.

Train line managers so they are better equipped to support carers and enhance managers' awareness that caregiving differs from person to person so support should be inclusive.

Showcase positive male and female role models and encourage leaders to be open about their own experiences.

THE DATA SHOWED THAT FOR VERY SMALL FIRMS (WITH LESS THAN 5 EMPLOYEES) INCREASING IT CAPITAL BY 1% PUSHED THE FIRM'S VALUE ADDED UP BY 0.08% ON AVERAGE.

THE BENEFITS OF INVESTING IN IT

Joep Konings
Professor of Economics

Do all companies benefit from investing in IT or do some profit more than others? And how does any benefit secured feed into the wider productivity puzzle felt throughout OECD countries?
Joep Konings research explores these questions.

The financial crisis of 2008 triggered a collapse in productivity growth, which has not caught up with the previous underlying trend since. This seems at odds with the proliferation of information technology, artificial intelligence, and automation of the last couple of decades and the presumption by many that these technologies would lead to higher productivity. This productivity puzzle has been widespread in OECD countries and more recently has also been seen in emerging economies. Why have increasingly powerful and economically viable IT solutions not led to higher national productivity levels?

The study

Joep, working collaboratively with colleagues, was able to dissect an exceptional data set of all Belgian business-to-business IT purchases to analyze the financial return companies received from spending on IT. Data was analyzed by year (the data set was from 2002-2013), by different industry sectors, and by company size. The data showed that on average a company who invested €1 in IT saw a return of €1.35.

Large or small?

The data showed that for very small firms (with less than 5 employees) increasing IT capital by 1% pushed the firm's value added up by 0.08% on average. For firms with more than 250 employees, the impact is more than twice as high with an average increase in value added of 0.17%.

Put another way, investing €1 more on IT in a very small company will result in €0.92 increase in value added. The same investment in businesses with more than 250 employees has a €2.55 return. From this, it would seem logical to expect large firms to invest a larger share of their revenues in IT than small firms. However, it turns out that large firms have invested relatively less than small ones in new IT. This suggests that there is an untapped potential for productivity growth through investment in IT, especially in large companies, where typically a large proportion of the working population throughout the OECD are employed. Joep therefore argues that greater investments in IT by large firms will very likely boost wider productivity growth.

Industry sectors

Unsurprisingly the most IT-intensive industries gain the most from continuing to invest in IT – such as information/communication, and financial/insurance. Whilst they may not be major employers globally, the data also shows that industry sectors which typically invest less in IT such as manufacturing/wholesale, transportation/storage, and retail, all see a return of about €1.50 of added value for every €1 of extra investment in IT. Since in Belgium these industry sectors alone employ 35% of the workforce, and there are similar levels of employment in these sectors across the OECD, Joep's research suggests that these industries would realize substantial productivity gains by investing in IT.

Of course, not all firms in the same industry sector are equally productive; there are large differences in production efficiency between companies. However, the research shows a clear link between the amount of IT invested (per employee) and higher levels of productivity when mapped by industry sector and percentile. For example, average IT investments per employee are about five times as high for a firm in the 90th percentile compared to a firm in the 10th percentile when mapped by productivity.

2008

Through the data Joep can identify a clear correlation between IT investment and national GDP and productivity growth across the Belgian economy. This changes quite clearly in 2008 when it seems that the financial crash and subsequent recession resulted in firms forgoing investment in IT. Given the relationship between investing in IT and improved productivity it is clear that post-recession underinvestment in IT had a scarring effect on the Belgian economy and is contributing to the lack of GDP growth seen since then. Based on the research, Joep argues that although the data set he and his colleagues scrutinized contained detailed information on only Belgian IT expenditure, given the similarities between its economy and many other OECD nations, the link between IT spend and productivity could answer many nations' challenges around flat-lining economic growth.

TAKEAWAYS FROM JOEP'S RESEARCH

It is clear that ***investments in IT*** and ***the productivity of firms*** are very closely related.

While all firms ***benefit from IT***, it is the ***largest firms that benefit most***.

The returns from investing in IT are relatively high, with ***€1.50 added value*** for ***€1 of extra investment*** even in industries which are traditionally associated with relatively low-productivity.

For regional, national and international policy makers IT investment has the potential to ***act as a key stimulus*** with the potential to help to ***reinvigorate productivity growth***, suggesting the ***importance of taking a granular approach*** to ***macroeconomic challenges***.

A COMPANY WHO INVESTED €1 IN IT SAW A RETURN OF €1.35.

BUILDING ON HIS RESEARCH, CHRIS HAS JUST BEEN NAMED AS THE PRINCIPAL INVESTIGATOR ON A DIGITAL ENHANCED ADVANCED SERVICES NETWORK PLUS SCHEME TO INVESTIGATE THE ROLE OF FINANCE PROVIDERS AND INNOVATIVE FINANCIAL SOLUTIONS ACROSS DIGITAL SERVICE INNOVATIONS.

CREATING A FRAMEWORK TO UNDERSTAND DIGITAL SERVICE INNOVATION

Dr Chris Raddats
Senior Lecturer in *Marketing*

Product manufacturers have long sought to gain competitive advantage through the use of services to support their physical value chain (often termed 'servitisation'). Whilst the proliferation of digital technolgies (the Internet of Things, cloud computing, block-chain, AI etc.) has provided these manufacturers with the technical opportunity to create an end-to-end value chain through interoperability (often termed digitalisation). Much is already understood about both but research from Chris Raddats is adding to what we know about the intersection of servitisation and digitalisation known as digital service innovation. How are digital technologies and the Internet of Things helping manufacturers with the service elements of their business? And is there more commercial advantage to be gained from incremental or radical digital service innovations?

> *A business's perspective of what is radical may not necessary be the same as their customer.*
>
> Dr Chris Raddats

DEVELOPING A FRAMEWORK

FROM THE RESEARCH CHRIS WAS ABLE TO IDENTIFY FIVE BOARD CATEGORIES OF DIGITAL SERVICE INNOVATION. THE FIVE CATEGORIES ARE:

REMOTE MAINTENANCE

Remote maintenance such as fault diagnostics and equipment repair which can be undertaken without a service engineer to visiting the customers' site.

REMOTE MONITORING

Remote monitoring to capture and evaluate information on the performance of customers' equipment without needing to visit the site.

CUSTOMER APP/ WEB PORTAL

Customised app or web portal solutions which provide customers with real-time visibility of their products' performance and other matters, e.g. stock levels.

PERFORMANCE ADVISORY

Performance advice leading to operational enhancements of a customers' business.

PREDICTIVE MAINTENANCE

Predictive maintenance through the use of algorithms and AI enabling the manufacturer to anticipate and pre-emptively react to customers' equipment failures.

Chris and his academic colleagues, have engaged directly with product manufacturing companies to accurately represent the challenges and opportunities they perceived from digital technologies. He interviewed senior managers from 20 manufacturers of varying sizes from four distinct sectors whose companies were involved in digital service innovations.

By taking the five criteria and applying an innovation perspective to digital servitisation, Chris has developed a framework (*see Figure 1*) which enables manufacturers to evaluate and prioritise their digital service innovations. This framework uses two dimensions identified from Chris' research as significant for all manufacturers when considering digital service innovations;

- the level of innovation (from incremental to radical), and
- the impact of the innovation (and who benefits most, the manufacturer or their customer).

Using the framework

This framework for digital servitisation has important implications for manufacturing companies, demonstrating that they need to consider both how innovative the change is but also the impact it might have, both to their organisation as well their customers. A digital service innovation can be radical for the manufacturer in terms of the capabilities needed to develop and deliver it, yet incremental for the customer in terms of its impact. Innovations that are perceived to be of incremental importance for the manufacturer (such as the example of a customer app or web portal given in the framework) can still have a profound impact on the customer. Such an innovation can help to provide visibility of how a product is performing, which can provide a customer with greater confidence in a manufacturer's ability to deliver the contracted services. This could lead to the customer inviting the manufacturer to provide higher value service offerings, such as availability or outcome-based advanced services. Conversely, the adoption of algorithms to predict equipment failure is a more radical form of innovation for the manufacturer, since this requires major investment to implement.

However, although this innovation may bring benefits to the manufacturer, the framework highlights that this may not be perceived in the same way by the customer, since preventive maintenance is already something provided by experienced service engineers, in terms of their ability to predict likely product failures.

Applying the framework

By using the innovation perspective of this framework, it is possible to better qualify the cost-benefit of digital service innovations for both manufacturers and their customers. Manufacturers using this framework can identify where the real customer value lies and prioritise their innovation activities accordingly.

Figure 1

IMPACT OF INNOVATION	Incremental	Intermediate	Radical
Customers Business	Customer app/ web portal	Performance advisory	
Hybrid	Remote maintenance		Predictive maintenance
Manufacturer's Business		Remote monotoring	

INNOVATION LEVEL (MODE)

INFLUENCING PATENT PRACTICES & POLICIES GLOBALLY

Professor Nick Papageorgiadis is a *Chair of International Business*

Legally the exclusive right granted to a patentee prevents others from making use of the claimed invention, but in practice the enforcement of this is far from straight forward. Professor Nick Papageorgiadis has been researching the international use of patents and the difficulties of their enforcement for many years now, and recently published a Patent Enforcement Index (PEI) which is positively impacting on corporate patent filing management practices, and the decisions of policy makers, around the globe. *Here he explains more.*

According to the World Intellectual Property Organisation (WIPO) a patent is an exclusive right granted for an invention, which is a product or a process that provides, in general, a new way of doing something, or offers a new technical solution to a problem. In 2019 there were in excess of 3.2 million patent filings worldwide. The company who filed the most applications in 2019 was Huawei who filed over 4,000 applications around the world. Retaining, enforcing and maximizing the return of the innovation advantage secured through these filings is clearly vital given the huge sums invested in the research, development and administration of these patents.

IN 2019 THERE WERE IN EXCESS OF

3.2m

PATENT FILINGS WORLDWIDE.

The rights patents provide are territorial, meaning patent applications are only valid in one country, the country where they are filed. If a patent granted in the UK is not filed in another country within two years, then everybody can use the technology as long as they do not sell into the UK. Whilst every company would want each of its patents to be valid in all 193 countries in the world, this would be prohibitively expensive - no company can achieve this. As a result, organisations are required to think strategically about in which countries to file their patents, often a complex decision making process involving assessing the strategic importance of a patent, competitor filing, and importantly how any breech is enforced in the country in which it was filed. Nick realised that throughout the sector there was a reliance on personal opinion or anecdotal evidence surrounding patent enforcement, and that objective data would be very valuable.

NICK BELIEVES THAT CONTRARY TO ANECDOTAL EVIDENCE AND ESTABLISHED ASSUMPTIONS, PEI INDICATES THAT COMPANIES NEED TO CUSTOMIZE THEIR PATENT FILING STRATEGIES IN DIFFERENT COUNTRIES SO THAT THEY CAN MITIGATE RISK AND CONTROL UNCERTAINTY FROM VARIATIONS IN ENFORCEMENT, AND POLICYMAKERS NEED TO CONSIDER THEIR COUNTRIES' ENFORCEMENT PERFORMANCE DISTINCTLY FROM OTHER ASPECTS OF THE PATENT SYSTEM AND DEVELOP SPECIFIC ENFORCEMENT POLICYMAKING ACTIONS.

Academic analysis of the index

As an academic researcher Nick is also fascinated by what PEI tells us about the relative merits of patent enforcement globally. He discovered that the index reveals that the strength of patent enforcement varies significantly between countries and showcases previously uncaptured volatility in enforcement within and between countries. This was not understood before PEI but the theoretical framework of its calculations led to that discovery.

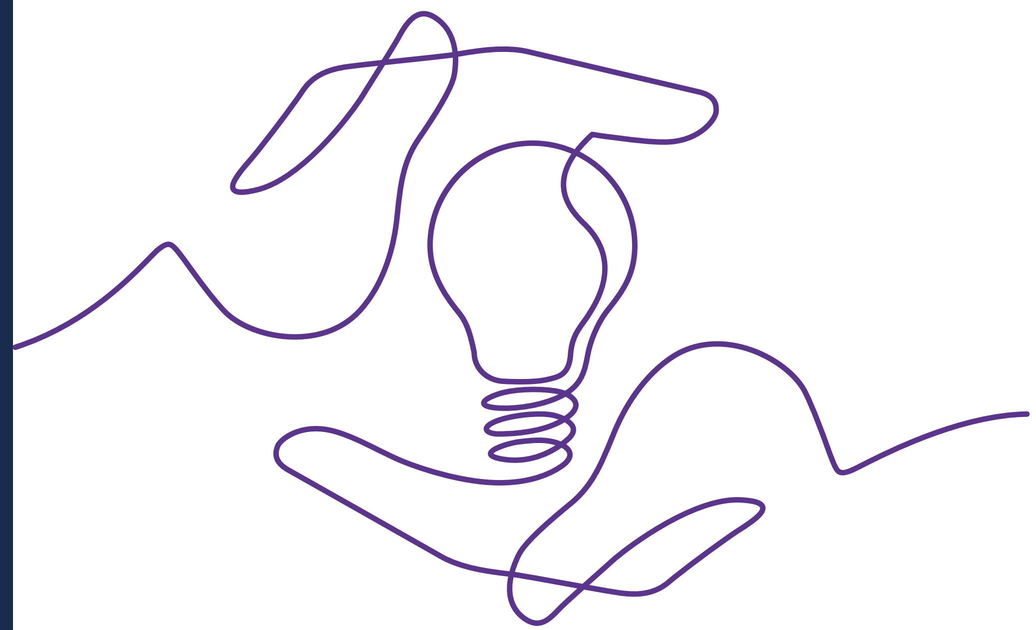
Nick also found that strength of patent enforcement levels have:

1. A U-shaped effect on innovation activity...

2. A positive effect on attracting Chinese and US FDI...

3. A varied effect on the entry mode choice of firms from BRICS countries into Europe...

4. A positive effect on economic growth.



Creating a PEI

In his research Nick identified three types of the transaction costs a patent owning firm could expect to incur when engaging with and enforcing their rights in a country:

- **Servicing costs** – This measures the transaction costs that patent owners face will vary depending on the quality of the patent administration in a country.
- **Property rights protection costs** – Measures the effectiveness of the judiciary, police forces, customs officials and other government agencies when undertaking patent enforcement-related activities.
- **Monitoring costs** – Measures the level of transaction costs that firms face for monitoring infringement by competitors and for constraining opportunistic actions.

Having identified the costs incurred when enforcing a patent breech Nick modeled these costs enabling him to define and map them, leading to the creation of the PEI – the first of its kind. The PEI enables users to clearly understand the relative volatility and differences of patent enforcement across 51 countries, for the years 1998-2017.

The most important patents are usually strategically filed in 5 to 10 countries. Pharmaceutical patents are sometimes filed in more than 40 countries.

Professor Nick Papageorgiadis

Using the index in practice

The PEI has become influential with all the stakeholders working throughout the sector, largely thanks to its reliability and impartiality.

- Patent practitioners can assess trends, evolution and trajectory of patent enforcement strength in a country, thanks to its 20 year coverage. Given patent filing decision making for each patent can last for 20 years, being able to understand these trends is important.
- PEI allows policy makers to assess their performance across time and also to include the index in their policymaking studies (such studies need reliable longitudinal data). It also helps them understand their performance compared to other countries and whether their level of enforcement strength is good for their economy. (Nick's academic research shows that patent enforcement can be used to help a country attract FDI.)
- Legal firms use PEI scores to advise clients on where to file their patents, including convincing foreign clients to file their patents in their country.
- Nick has assisted a number of global and multinational organisations with their patent planning and filings strategies.

Nick's Patent Enforcement Index is freely available to use at:

liverpool.ac.uk/management/research/projects/patent-systems/

Nick believes this accessibility has been critical to its adoption by parties to patent management and policy making at firm, industry and national levels.

MANAGEMENT SCHOOL LAUNCHES NEW EXECUTIVE DBA FOR WORKING PROFESSIONALS

The Management School is set to launch an Executive Doctorate of Business Administration (DBA) aimed at working professionals.

Starting in January 2022, the Executive DBA takes a practical approach to allow the integration of knowledge and critical thinking skills into work contexts. The programme will enable individuals, in a range of leadership positions, to enhance how they practice management by engaging in an in-depth programme of work-relevant research.

Although equivalent in status to a PhD, the Executive DBA provides a more suitable option for those wishing to develop their professional career rather than pursuing an academic route. The programme will run over a minimum of four and a half years. The first two years consist of four modules focused on the principles and practice of doctoral research, including research methods and research design. Teaching will involve online delivery and face-to-face workshops, with classes scheduled over weekends. The second part of the programme is the doctoral (thesis) stage, which requires students to work on an individual research project relating to a workplace problem or issue, and culminates in a 60,000 word thesis.

Dr John Byrom, Director of Studies for the Executive DBA, said: "We are very much looking forward to launching the School's new Executive DBA in the next academic year. The aim is to recruit a focused cohort, consisting of a maximum of 20 students per annum, drawn from across the globe. Professionals looking to improve their practice and further develop their careers are strongly encouraged to apply."

AMBA ACCREDITATION CONFIRMS MANAGEMENT SCHOOL'S PLACE AMONG GLOBAL ELITE

The University of Liverpool's Management School confirmed its place among the global elite by officially receiving accreditation from the internationally regarded Association of MBAs (AMBA).

Members of AMBA's accreditation panel, representing senior management at AMBA-accredited Business Schools globally, commended the Management School's strong connection to industry, especially with companies in the football and horseracing industries. The panel commented on the range of activities with which corporate partners engage, including curriculum development, research projects, alumni activities, and student scholarships. The panel also noted that there was a strong and collegiate culture at the Management School, with the staff demonstrably engaged with initiatives. The School was seen to be very supportive of its academic faculty.Additionally, The School's rapid response to the Covid-19 pandemic was commended by the panel.

Welcoming the official accreditation, Management School Dean, Professor Julia Balogun, said: "The University of Liverpool Management School is delighted to be joining the group of globally elite Management Schools carrying the triple crown accreditation of EQUIS, AACSB and AMBA. The AMBA accreditation covers not just the full-time Liverpool MBA Programme, ranked in The Economist WhichMBA? top 100 Global Ranking, but also our unique Football Industries and Thoroughbred Horseracing Industries MBAs, supported by our Research Centre in Sports Business."

The University's Management School was established in 2002 and has a strong reputation for teaching, research, and student experience. AMBA accredits the Liverpool MBA, the Football Industries MBA, and the Thoroughbred Horseracing Industries MBA.

Andrew Main Wilson, Chief Executive of the Association of MBAs and Business Graduates Association (BGA) said: "I am delighted that the University of Liverpool Management School has been accredited by the Association of MBAs.

"The School is world renowned for its excellence. AMBA only accredits the top 2% of Business Schools globally and it is therefore fitting that this School has been accredited.

"I would like to congratulate everyone at the School who worked towards this accreditation and I am looking forward to working with the School in the future."

AMBA accreditation represents the highest standard of achievement in post-graduate business education. Its rigorous assessment criteria ensure that only the highest-calibre programmes, demonstrating the best standards in teaching, curriculum, and student interaction achieve AMBA accreditation. AMBA accreditation is international in scope and reach, and AMBA works under the belief that accredited programmes should be of the highest standard and reflect changing trends and innovation in post-graduate management education. Its accreditation process reflects this commitment to fostering innovation, and demanding Business Schools perform at the highest level continually.

Upon receiving AMBA accreditation, all current MBA students and recent MBA alumni of The University of Liverpool Management School are invited to join AMBA's global member community of more than 55,000 students and alumni in more than 150 countries on a free basis, for networking, thought leadership, career development, and a variety of benefits.

MANAGEMENT SCHOOL STUDENTS TAKE PART IN CULTURAL EXCHANGE WITH LIVERPOOL FC

Standard Chartered invited Management School students to take part in a cultural exchange with Liverpool Football Club to mark the Lunar New Year.

Lunar New Year is the festival that celebrates the beginning of a new year on the traditional lunisolar Chinese calendar. This year it fell on Friday 12 February and marked the beginning of the Year of the Ox.

Restrictions at the time means that students were unable to travel home to celebrate with their families so Standard Chartered helped them mark the occasion by organising a special online event.

Yiheng Xu (BSc Economics), Jincheng Yang (Football Industries MBA), Qiqi Luo (MSc Sports Business and Management), Xiaofan Qian (Department of Mathematical Sciences) and Sze Yu Li (School of Engineering) were selected to take part in a zoom call with first team players Nat Phillips, Alex Oxlade-Chamberlain and Gini Wijnaldum. The students talked about how they normally celebrate, traditional customs, what the Year of the Ox means and even taught the players some common Lunar New Year phrases.

Yiheng Xu said "I was honored to be part of my own country's New Year's celebration with my favourite football club. Meeting the players was exciting and it was very interesting to introduce the customs of my country. I am so glad that they are interested in Chinese culture, the event meant a lot to me."

Jincheng Yang said "The experience was fantastic. Being engaged in this project was an opportunity for me to meet (on zoom) football players from Liverpool FC, as well as to witness how people can co-ordinate virtual projects during lockdown. It's brilliant that the Management School can provide such incredible opportunities to students."

The Management School holds close links with Liverpool Football Club with a number of alumni going on to work there after graduation. Members of the club's executive management have also delivered guest speaker sessions, most recently Peter Moore (former Liverpool Football Club CEO). As Liverpool FC's main sponsor, Standard Chartered works with the club to create unique, money-can't-buy experiences for clients, communities and supporters around the world.

THE MANAGEMENT SCHOOL HOLDS CLOSE LINKS WITH LIVERPOOL FOOTBALL CLUB WITH A NUMBER OF ALUMNI GOING ON TO WORK THERE AFTER GRADUATION.

MANAGEMENT SCHOOL AWARDED FUNDING TO HELP TRANSFORM LIVERPOOL CITY REGION

The University of Liverpool Management School has been awarded £50,000 of UK Government funding to deliver a Made Smarter programme.

MADE SMARTER

The funding will allow the Management School to deliver a four-month pilot programme, designed to encourage the digital transformation of small manufacturing businesses in the Liverpool City-Region.

Led by Dr Benito Giordano, and supported by the School's Growth Catalyst team, the pilot will begin on Wednesday 4 November. Participating business will benefit from an interactive programme of learning, consisting of an overnight leadership residential, a series of workshops, two site visits as well as various projects and learning forums.

Dr Giordano commented, "We are very pleased to be involved in delivering this 'pilot' for the Made Smarter programme along with colleagues from Lancaster, Manchester Metropolitan University and the Manchester Growth Company.

This is a great opportunity for us to work closely with a cohort of innovative local small businesses to help them deliver digital transformation to drive further growth."

Made Smarter is leading the UK's ambitious plans to grow manufacturing through digital technologies, innovations and skills. The initiative was created following an industry-led review of how UK manufacturing industries can prosper through digital tools and innovation. This independent review was commissioned by UK Government and led by Professor Juergen Maier CBE, Chair of Made Smarter UK.

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