

ALLIANCE MANCHESTER BUSINESS SCHOOL MAGAZINE

ISSUE 11



Artificial Intelligence
The opportunity and the risks

BioNTech
The story behind the vaccine

Digital adoption
Lessons from Manchester

Short courses
New programmes for professionals

MANCHESTER
1824

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Front cover illustration: Ollie Hirst



FOREWORD

A TURNING POINT

“As firms implement AI strategies they must also have a strong focus on building trust based on ethical principles and on implementing explainable and transparent algorithms.”

We devote much of this issue to the extraordinary growth in the use of Artificial Intelligence (AI) and how its potential to transform business is only now really beginning to be fully understood.

AI is here to stay, and its use will only accelerate. So, for most organisations pausing or putting on hold AI projects is simply not a feasible option if they wish to remain competitive. While there is a lot of nervousness about, it is humans that will determine how AI is used and, indeed, be a force for good in business and society.

New technologies

There are many issues to consider with the rapid rise of AI. Professor Michelle Carter considers how, as humans, we are still at the stage of internalising new technologies and hardwiring them into our behaviours. She also talks about how the rapid growth of technologies that use AI is already impacting on live debates over personal privacy.

AI brings with it considerable ethical challenges. As the use of AI soars, organisations need to ensure it is explainable, transparent and responsible. According to Professor Erik Beulen, as firms implement AI strategies they must have a strong focus on building trust based on ethical principles and on implementing explainable and transparent algorithms.

What is clear is that although the benefits of AI are huge and exciting, there do remain deep questions that remain unanswered. For instance, how exactly are employees interacting with AI algorithms today? What decisions are being made using AI and how are those decisions made? How exactly should the risks of AI in areas such as privacy, competition and ethics be addressed?

Real world insight

The University of Manchester is certainly a place where these debates are being

researched on a huge scale. As AMBS Professor Richard Allmendinger explains, up to 1,700 researchers are currently working across 30 disciplines in the digital space alone. That is an incredible cluster.

Here at AMBS, our academics, many of whom are also members of the Alan Turing Institute, have actually been looking at the world of AI for many years, long before the subject ever became fashionable.

What is truly exciting today is how academic knowledge around AI is increasingly being sought after by the business community. It is precisely why 'Data and AI for Leaders' is just one of a number of new short business courses (open programmes) in executive education that we launched this spring.

Each of these courses (see page 26) have been curated and developed from the ground up by our academic leads and the delivery team to address the growing need for programmes that bridge world-class research insight with real-world business application.

In today's climate where development and investment in personal development is incredibly pertinent, our new suite of programmes represents a dynamic addition to our portfolio. We are very proud to be contributing to the lifelong learning agenda.

Moving on

Finally, this is my last issue as Head of AMBS. I feel incredibly privileged to have run the School for a decade. I am now moving to a new position as Vice President and Dean of the Faculty of Humanities at The University of Manchester.

I am truly delighted that I will be handing over this summer to Professor Ken McPhail, a previous Deputy Head of School and a former Director of Research here at AMBS. ■

Professor Fiona Devine is Head of Alliance Manchester Business School

CONTENTS

06 The links between academia and business are growing in the field of AI.



08

Digital Adoption



10

Privacy Paradox



12

Ethical Challenge

14 Genetic Knowledge

15 Cyber Security

15 AV Unibrak



16

Achieving Gender Equality



18

Fair Treatment

22 Self-belief



24

Firm Foundations

26

Lifelong Learning



29 New Short Courses

30 Audit Attraction



32

New Governance

34 Research With Impact



36

Sustainable Model

38 Systems Leadership



The links between academia and business are growing in the field of AI.

Richard Allmendinger has been working in the world of Artificial Intelligence (AI) long before it ever became fashionable. Indeed, the Professor of Applied Artificial Intelligence has been developing and customising a broad range of AI algorithms to tackle real world problems for more than a decade.

As he recalls: "Initially I worked with big biopharma companies and suppliers of equipment to manufacture drugs, but when I joined AMBS in 2015 I started to branch out further, working with the NHS to come up with better reimbursement schemes using advanced clustering algorithms. I have also worked in the defence and computing industries on reinforcement learning methods, as well as in more niche areas such as forensics, sport and music, sectors which you would not automatically associate with AI."



“ We have an astonishing 1,700 researchers working across 30 disciplines in the digital space at The University of Manchester. That is a massive pool of talent. So if there is something I don’t know the answer to I’m pretty sure there is someone else in the University who can help. ”



Richard Allmendinger is a Professor of Applied Artificial Intelligence and a Fellow of the Alan Turing Institute.

AI fund

His broad sector knowledge was just one of the reasons why Professor Allmendinger recently joined the advisory board of the North’s first dedicated AI fund. The Enterprise Investment Scheme fund, run by River Capital, focuses on early-stage, high growth AI, machine learning and data science investment opportunities across the north of the UK.

The firm says data science SMEs across the region are underserved by venture capital, despite it containing multiple centres of AI excellence.

As Professor Allmendinger says: “This exciting new fund will tap into the incredible opportunities for growth that we see today in AI companies across this region. The potential of AI to transform businesses is only now beginning to be truly recognised by the wider world, and both AMBS and The University of Manchester have a major role to play in helping to advance the industry here in the North West.”

Role

Professor Allmendinger’s role will specifically involve carrying out due diligence into the algorithms being used or explored by the companies being targeted for investment.

“My particular role is to look at the AI set up of these companies, assessing the algorithms they are using and whether they are being used correctly, and also whether they have the correct infrastructure to scale up. My role is also about looking at the data that is coming in, understanding

what data is being collected, and then how it is collected. For instance, are there any sensitivity issues with the data or any bias issues? Is there scope for improvement?

“I also want to know how employees are interacting with AI algorithms. What decisions are being made using AI and how are those decisions made? At the end of the day AI is a decision support tool and it is the human who has to make a decision as to whether they trust the AI or not. The AI model is also only as good as the data you give it to train so businesses need to make a judgement. Is this a tool I can use, what can I use it for, and what are the risks?”

He will also work closely with colleagues across The University of Manchester. “We have an astonishing 1,700 researchers working across 30 disciplines in the digital space at The University of Manchester. That is a massive pool of talent. So if there is something I don’t know the answer to I’m pretty sure there is someone else in the University who can help.”

He will also work with business engagement colleagues on the potential for matching the targeted business with wider university knowledge exchange and funding programmes.

Superpower of data

River Capital is looking to invest in around 15 AI driven businesses over the next five years, with investments ranging from £500,000 to £2 million.

It expects to invest in two broad categories of AI SMEs. The first comprises businesses seeking capital to accelerate their growth or build out their AI platforms.

The second includes companies with untapped data sets which wish to use AI to create data IP and to go on an AI, machine learning or data science journey.

River Capital Investment Director David Walters said: “Our new fund is driven by the superpower of data and we intend to use that power both to add value to AI businesses and to deliver great returns to investors.

“The AI, machine learning and data science industry presents fantastic investment opportunities and this fund is ideally positioned both to support and benefit from the profound impact on how business is done, and the widespread adoption of these technologies. Given his huge technical knowledge of the industry we are delighted that Richard has joined our advisory board and look forward to working with him.”

Rachel Kenyon, Business Engagement Manager at The University of Manchester, added: “This partnership is an excellent opportunity for The University of Manchester to build early-stage relationships with AI SMEs in the region and support their development.” ■

DIGITAL ADOPTION

To what extent are digital technologies being adopted in Greater Manchester? Researchers from AMBS have been investigating.

Advanced digital technologies such as Artificial Intelligence (AI), big data, cloud computing, 3D printing/additive manufacturing, Internet of Things (IoT) and robotics, are changing the way we work and our daily tasks.

They are also blurring the lines between our physical and digital worlds, so much so that the adoption of digital technologies requires both companies to rethink their activities and workers to reconsider their skills to perform new tasks and jobs.

However, although firms are at the heart of these transformations very little is known about how they actually respond or contribute to the skills transformation process and the extent to which new digital technologies accelerate demand for up-skilled or re-skilled and specialised workers.

This was precisely the driver for a study into the use of digital technologies and the adoption of digital skills across Greater Manchester, which was led by Silvia Massini, Mabel Sanchez Barrioluengo and Xiaoxiao Yu. The authors deliberately chose Manchester as it has been a city at the forefront of efforts to increase digital adoption.



“ Very little is known about how firms actually respond or contribute to the skills transformation process... **”**



Silvia Massini,
Professor of Economics and
Management of Innovation



Dr Mabel Sanchez Barrioluengo,
Presidential Fellow at AMBS



Dr Xiaoxiao Yu,
Research Associate

Findings

The subsequent report on the adoption of digital technologies and skills in Greater Manchester yielded a number of insights:

- > 78% of respondents had adopted at least one digital technology. This adoption occurs mostly in firms in the knowledge-intensive service sector (85%) reflecting the specific industrial context of the Greater Manchester city region.
- > Different digital technologies are at different stages of diffusion. Cloud computing is the most widespread technology (70% have adopted this technology) while other technologies have been adopted only in one out of four firms. Among them, big data and AI are the second most adopted technologies.
- > Digital technologies are complementary. For instance, 43% of respondents had adopted two or more digital technologies, with cloud computing and AI, and cloud computing and big data the most frequent combinations. A potential explanation is that firms wanting to use AI require large datasets to train their algorithms, which can be generated and collected using big data practices and processed and stored on cloud computing services.
- > The main reasons for adopting digital technologies are related to the innovation of processes (67%) followed by the expansion of product or service range (51%), and process or method upgrade (49%).
- > Digital technologies increase both a firm's productivity and employment levels. Some 22% of the adopters had recently increased the number of employees and 41% had increased the number of skilled workers.
- > Lack of access to skills is one of the main barriers to adopting digital technologies (as well as its cost). Some 31% of firms reported these two barriers as significant adverse reasons for technology diffusion, in particular in the case of AI and big data.
- > Adopters of digital technologies tend to rate higher both digital and non-digital skills. But key differences appear for capabilities related to problem-solving (technical problems, identifying needs and technological responses, creativity, identifying competence gaps) in a digital environment, as well as practical traditional skills like numeracy, literacy, IT, reading and writing.

Recommendations

The authors propose three key policy recommendations to maximise the city region's growth in the sector for advanced digital technologies.

- 1** To recognise SMEs in knowledge-intensive industries as a 'vanguard sector' in the adoption of digital technologies.
- 2** To build Greater Manchester's digital strategy around current local technology strengths.
- 3** The adoption of digital technologies should follow a human-centric approach where skills play a key role in the levelling-up agenda.

Added Dr Sanchez Barrioluengo: "We would also like to highlight the important role that higher education providers need to play in the development of the right skillsets to match employers' needs. Understanding lifelong learning opportunities to guarantee base level of skills of the next generations to enter the workforce, and upskilling the 'hidden middle', represent important elements for levelling up the digital economy of the city region." ■

PRIVACY PARADOX

A woman with long dark hair is looking down at her smartphone. The scene is dimly lit with a strong purple and magenta glow, creating a moody atmosphere. The background is dark with some light streaks, suggesting an indoor setting at night or in a low-light environment.

We may need to sacrifice our individual privacy for the collective good, says **Michelle Carter**.



Michelle Carter is a Professor of Management Science.

“The rapid growth of technologies that use AI shows that even when individuals are aware that they present a threat to privacy, they continue to use them.”

To what extent do people ‘identify’ with the technologies they use? Namely, do they readily adopt new technologies and happily identify with them (such as many do with a smartphone), or are they more likely to resist such technologies?

For those in the first camp, and that probably includes many of us, we identify so closely with a particular piece of technology that we actually start taking on the capabilities of the technology as part of ourselves. We try to use as many features of the technology as we can, as often as we can, and are happy to be innovative with it too. By the way, it also means we feel very negative emotions if we are parted from a technology we identify with (such as when we lose our phone).

These issues have strong relevance in the workplace too. If an employee identifies strongly with a new technology that their company or organisation is keen to use then that has potentially beneficial implications for productivity. Conversely, if the employee doesn’t identify with it then there can be more negative consequences.

Sharing information and AI

These questions around technology identity are intertwined with wider debates around the use of AI and concerns that we are sharing too much personal information with technology applications.

Many newer technologies that use AI and machine learning algorithms rely on users’ willingness to give up personal information. Ultimately the more personal information we all share, the more advanced and targeted AI algorithms can become, and the more they can be adapted by companies and organisations to suit their needs. In fact, for AI technologies to deliver on their promise, they need copious amounts of data to identify patterns relevant to making predictions.

However, if people are unwilling to share personal information, or information comes from only a subset of people, then AI performs poorly and makes inaccurate predictions or risky or biased recommendations.

Threat to privacy

If users are concerned about how their information will be used, or if it will be safe, conventional wisdom suggests they should be less willing to share. Yet the rapid growth of technologies that use AI shows that even when individuals are aware that they present a threat to privacy, they continue to use them. What we are touching on here is the so-called privacy paradox where although people are often concerned about their privacy, they are still prepared to give up a lot of personal information online.

The question is, are users who ‘identify’ with technology (or view themselves as more

tech-minded) more willing to give up personal information, even if they think doing so may put them at risk? Does their need to use the technologies they identify with override their concerns around privacy?

A particular piece of research I am carrying out explores this question in the context of dating apps which allow us to shed light on the privacy paradox because one has to give up a lot of personal information in order for the app to work as intended. Dating apps use AI to help people find potential matches, so the success of a romantic match in real life depends heavily on the willingness of users to give up as much personal information as possible.

Into the future

AI will soon be incorporated into everyday work and personal tasks, revolutionizing business, education, and daily life. So in the future we may need to sacrifice our individual privacy for the collective good.

But for that to happen we need to know that AI is trustworthy, yet we’re a long way from having that assurance. The question is what will develop faster, AI’s capabilities or the safeguards needed to harness the full potential of AI for society? ■



ETHICAL CHALLENGE



As the use of AI soars, organisations need to ensure it is explainable, transparent and responsible, says Erik Beulen.

Organisations are increasingly becoming data-driven and the use of AI by business continues to accelerate. For instance, one forecast by KPMG predicts that by 2025 the market size of AI will grow to \$232bn, while another from Gartner says that in just two years' time some three quarters of all organisations will have operationalised AI, driving a five-fold increase in streaming data and analytics infrastructures.

However, this dizzying growth isn't without huge challenges, not least in terms of the need to address the risks of AI in areas such as privacy, competition, ethics, and potential breaches of GDPR and anti-trust laws.

Controlling AI

As a starting point, and to ensure proper control over use of AI, it is essential that the ownership of organisation specific AI algorithms remains with the organisation. By contrast, non-specific AI can be transferred to service providers without jeopardising the strategic and business interests of organisations.

This split, which results in a joint intellectual property framework, helps foster innovation between organisations and their service providers, increases levels of trust between them (supported by experience-driven service levels), and improves overall governance around the use of AI algorithms.

Indeed, my own recent research with co-authors has found that well governed client/service provider relationships positively affect the degree of trust between parties in creating AI solutions, and also encourages a bilateral approach to joint innovation. In fact, this mutual commitment and proactive communication is an essential prerequisite when using AI.

Physiological contract

Legislation deals with privacy and unfair competition. However, this is not sufficient to address ethical considerations. In our paper we also discuss the importance of what we term the 'physiological contract' between the two parties.

This contract supplements the service delivery contract and is an essential element when it comes to governance around AI. In particular it balances the client's interests with the commercial interests of service providers, while it also encourages both sides to address the use of algorithms to avoid ethical issues.

The ethical challenge is to be transparent on the purpose of the data collection and to use the AI algorithm in line with that purpose. Both the organisation and their service provider are therefore bounded to this in a physiological contract.

Another key element of a responsible AI policy is to ensure that employees as well as service providers remain neutral and unbiased, and that no personal preconceptions or opinions interfere with the data collection process. This can be challenging as the complexity and number of employees that use data and algorithms is growing in combination with the growing data volumes.

Pausing not an option

AI is undoubtedly here to stay and its use will only accelerate. That means that pausing or putting on hold AI projects is simply not a feasible option for most organisations if they wish to remain competitive in their markets.

But as they implement AI strategies they must also have a strong focus on building trust based on ethical principles and on implementing explainable and transparent algorithms.

In this regard organisations will also be helped by the regulatory environment

which is finally catching up with these issues. For example, the forthcoming European Union Digital Service Act Package will be significant as it provides an infrastructure for building AI systems.

Specifically, it aims to help organisations leverage the full potential of data and insights, help avoid unfair competition, and simultaneously protect the interests of consumers and their fundamental online rights.

This legislation establishes a powerful transparency and a clear accountability framework for online platforms and is the centrepiece of the European digital strategy. It also stops platforms treating services and products offered by the platform itself more favourably than those offered by third parties on the platform.

Guide rails

AI should not only be lawful, but also explainable, transparent and responsible. And organisations need to use data purposefully too.

As I have argued, this requires (in addition to a service delivery contract) a psychological contract between organisations and their service providers. The hope is that upcoming legislation, such as the Digital Service Act Package, will provide further guide rails for organisations to increase value creation by leveraging data and algorithms, and to help them foster innovation. ■

Erik Beulen is a Professor of Information Management.

GENETIC KNOWLEDGE

Academics from the Manchester Institute of Innovation Research (MIOIR) have begun a study into how personalised treatments can help better tackle cardiovascular diseases.

Funded by the Economic and Social Research Council, a collaboration between The University of Manchester and The University of Liverpool is aiming to identify the critical factors affecting the use of genetic and genomic information in treatments for cardiovascular diseases.

Such diseases are the most common causes of mortality in the UK, and the study will specifically look at the extent to which such genetic knowledge is being used at present across the NHS. Previous studies have shown that while there has been tremendous investment in early-stage research in this whole area, less investment has been given over to the translation and implementation of new knowledge in clinical and health decision-making across the NHS.

The principal investigators into the study are Dr Dimitri Gagliardi and Dr Ronald Ramlogan, both Senior Lecturers at MIOIR. Dr Gagliardi said the specific contribution of MIOIR to the study was to understand the institutional, organisational and innovation management issues driving and/or hindering the translation of advanced genetic information into a personalised approach to heart and circulatory diseases.

"We will seek to understand the socio-technical dimensions of how new routines emerge, how organisations innovate, and how this change process (medical innovation) is managed if the respective genetic knowledge is to be introduced on cardiovascular wards of the NHS."

Personalised medicine

The whole area of personalised medicine based on genetic information has experienced many advances in recent decades and is particularly prominent in oncology. For instance, Herceptin — a drug used in the treatment of breast and stomach cancers — was first approved by the US Food and Drug Administration in 1998 and together with its companion diagnostics effectively kick-started the era of personalised medicine in oncology.

Since then more than 100 new drugs with genetic indications and diagnostics have been introduced for various medical problems, including cardiovascular diseases. Genetic codes



“Our central question will be to ask why the use of such informed treatments for cardiovascular disease have so far been absent in the NHS.**”**

have also been used to adapt therapies such as chemotherapy to reduce adverse reactions and maximise outcomes.

Added Dr Ramlogan: "Our central question will be to ask why the use of such informed treatments for cardiovascular disease have so far been absent in the NHS. We are particularly interested in understanding whether, and what, cardiovascular medicine can learn from oncology where genetic knowledge is already at a relatively advanced stage of implementation in clinical practice."

The project comprises of a strong multi-disciplinary team incorporating medical innovation scholars, pioneers in pharmacogenetic research and its applications in medical practice, as well as oncology and cardiovascular clinicians. Professor Bernard Keavney and Dr Luigi Venetucci from the School of Medical Sciences at The University of Manchester are also co-investigators of the study.

Mapping

The first phase of the project will be to map the knowledge available, after which case studies in oncology and cardiovascular medicines will be developed, followed by a wider comparative analysis. The study will also be conducted within a number of active clinical units in the NHS identified as early adopters in setting up personalised approaches to cardiovascular therapies.

Other individuals central to the project include Professor Sir Munir Pirmohamed, a leading British expert in pharmacogenomics, and Dr Cinzia Dello Russo, both from the Institute of Translational Medicine at the University of Liverpool. Also involved is Dr Anna Olsson-Brown, a consultant medical oncologist at Clatterbridge Cancer Centre NHS Trust, Liverpool. ■



CYBER SECURITY

A MBS has been awarded funding for a major project which will aim to improve the security of computer source code and thereby help reduce cyber security threats.

Currently there is no standardised approach to assessing and preventing vulnerabilities within source code management, and it requires a significant investment in time, money, and support from experienced personnel to review the code manually for defects.

The year-long project, funded by the UK Research and Innovation Impact Acceleration Account and the EPSRC (Engineering and

Physical Sciences Research Council), will aim to help improve the productivity of professional developers. With the help of Artificial Intelligence (AI) and Machine Learning (ML) methods, it will look at how to check and remediate source code defects before exploitation, increasing the overall security of software products used by organisations.

Proof of concept

The team of researchers at AMBS, working with the Computer Science department at The University of Manchester and also with software escrow and cyber security specialist SES Secure, will develop and deliver a proof

of concept that allows an AI programme to evaluate source code and discover weaknesses that could lead to security vulnerabilities.

The team will also investigate ML models that can automatically determine the most suitable algorithm and its parameters for SES's new source code vulnerability detection platform, and for different programmes to increase detection accuracy and verification speed.

Tom Sweet, Head of Technology at SES Secure, said: "The current state of software development and cyber security lends itself heavily to novel technologies such as artificial intelligence and machine learning, which

can be used to identify and remediate weakness within source code even before they reach a production system. Our aim is to prove that this type of solution is not only viable, but an essential step towards safer software development." ■

“The researchers will develop and deliver a proof of concept that allows an AI programme to evaluate source code and discover weaknesses...”

AV UNIBRAK

A MBS alumna Tania Farhat has won a highly prized national award for her work on a KTP (Knowledge Transfer Partnership) project between AMBS and ventilation solutions specialist AV Unibrak.

After graduating with a Masters in data science, Tania took up a position as a KTP Associate at the Bolton-based company four years ago. Now, on completion of the KTP, she has been honoured with the Future Leader Award at the recently held Innovate UK KTP Awards.

The KTP aimed to help AV Unibrak design, develop and embed an Industry 4.0-inspired data-driven business model and management information system to



Tania Farhat (second from right), award winning AMBS alumna

support its continued growth. The business has clients nationwide, working with developers across a range of construction sites on landmark developments.

As Tania explains: "My main task at the outset of the KTP was to extract all the data that the company was receiving from these various construction sites, and then seek to use it to inform better decision-making. One of the main problems was that every site was different from each

other and the processes and installation phases varied from site to site. Another big issue was that the company's data was only being collected by head office on a monthly basis and it was not being updated in real time."

App development

Tania began creating dashboards across the business from the data that was available and from all new data that was being generated from construction sites.

"The central aim was to look at all the data points across the business, assess where the weak points were, and make better use of the software that the company was already using." She also worked with her AMBS academic supervisor Dr Pedro Sampaio on creating an app which workers on site could access via specific QR codes for each building.

Upon completion of the KTP Tania has stayed with the business as a software engineer and business analyst. "For me personally the KTP has been a fantastic journey. I have learnt an awful lot in a short space of time, and I also greatly enjoyed meeting other KTP associates across other companies as part of the programme." ■



ACHIEVING GENDER EQUALITY



Jill Rubery reflects on her 50 years of ground-breaking research on women's employment issues.



“ If we try to achieve gender equality in an increasingly unequal world, progress will be very slow as we are trying to swim against the tide. ”

Professor Jill Rubery is Executive Director of the Work and Equalities Institute.

My interest in women's employment started 50 years ago when, as an undergraduate at Cambridge, I won the Adam Smith essay prize for my entry on women's employment.

As a researcher in the Cambridge Department of Applied Economics from 1978 to 1989 I then went on to undertake a range of research projects for the Department of Employment on problems of low pay and equal pay issues, while in 1982 I co-wrote a book outlining the case for a national minimum wage. I would like to think my work played its own part in stimulating debate on the topic that led eventually to its adoption.

Expert group

While at Cambridge I developed a strong interest in comparative employment research and in 1988 published an edited book on Women and Recession in four countries. This comparative work then became my main focus when between 1991 and 2007 I led an expert group on gender, employment and social inclusion for the European Union.

The group undertook research on women's employment across the EU and provided advice to the European Commission on how to promote gender equality at a time when it came to the forefront of European policy.

The growth of women's employment has since been one of the most sustained and widespread social changes over recent decades. But the role of our network was in part to point to the need for both social policies and employment practices to be updated to accommodate these changing patterns and social norms.

Manchester

Having moved to Manchester to what was then UMIST in 1989, in 1994 I established The European Work and Employment Research Centre at The University of Manchester which undertook a wide range

of comparative European research on many aspects of employment, including specific gender and employment studies.

In 2017 this research centre merged with another to form the Work and Equalities Institute, based here at AMBS. The research centre and Institute have not only contributed to student curriculum and education at Manchester but have also produced many great work and equalities researchers working now as lecturers, professors and policy analysts across the world.

Gender equality

As I reflect on my research over many years on gender equality, my feeling is that significant progress will always be hard to achieve unless we also work towards a more equal society and employment system. If we try to achieve gender equality in an increasingly unequal world, progress will be very slow as we are trying to swim against the tide.

Moreover, if we are only concerned with women's share of top jobs and not with the working conditions and opportunities for those in the bottom half of the labour market, we would only be providing equality for a small share of women.

Indeed, from my early concerns with low pay and the need for a minimum wage I have made the case for higher employment standards at the bottom of the labour market as both a valued cause in its own right, but also as one of the most effective ways to support women.

Policy debates

Meanwhile our work goes on. Whether it's working for instance with the International Labour Organisation on how female frontline workers were treated during Covid, or looking at how we need to combine egalitarian employment policies with gender specific initiatives to make headway on the gender pay gap, there is much still to do and much to lobby for as we seek to get our voice heard. ■



FAIR TREATMENT

The future of work came under the spotlight at the Fairness at Work conference hosted by the Work and Equalities Institute.



“ People talk about more freedoms under self-employment forms of contract, but our research shows that this freedom is lacking. People are free but in fact incapable of making decisions and are not empowered. ”

Business transformation, wage regulation, unpaid and low pay issues at work, precarious work, worker participation, Equality Diversity and Inclusion (EDI) in the workplace... these were just some of the array of workplace issues that were covered during the fifth Fairness at Work conference.

Academics from both home and abroad presented a range of their very latest research findings into workplace issues. For instance, during a session on precarious work Valeria Pulignano, a Professor in Labour Sociology at the University of Leuven, discussed the rise of 'unpaid' labour time which was becoming particularly more prevalent among the self-employed. ▶

Not empowered

She said the concept of precarious work has not changed in that it still refers to insecure work that is unstable and low paid.

However, what is new are the conditions under which people undertake this kind of work. "Changes in state policies and labour markets, new technologies, new forms of worker organisation, and demographic changes all impact in terms of people undertaking more and more work, working much longer, and having more intensified work.

"For self-employed people what we have also noticed is that there is less autonomy and freedom in the prices they can charge. People talk about more freedoms under self-employment forms of contract, but our research shows that this freedom is lacking. People are free but in fact incapable of making decisions and are not empowered."

Workplace health

Kevin Daniels, Professor of Organisational Behaviour at the University of East Anglia, joined a session on why inequalities within workplace health and wellbeing matter.

As he explained: "A lot of the academic literature looks at wellbeing as being an average in the workplace rather than looking at the deviations from that average. There are good reasons for examining what happens at the tail, and what the implications are for the majority in terms of motivation and productivity in the workplace.



"How you treat people at the margins actually tells you quite a lot about how the rest of the people in the organisation are feeling and how productive they might be as well."

He added that on the positive front there was now a large public debate about inequality, which was also intertwined with the wider political debate around levelling up and "where and why that should happen".

"It is important to lay out a strong scientific case for fairness and equality. What businesses and employers can do to reduce inequalities is an important debate to start having."

Race Matters

Jane Bekoe and Rebecca Sobodu made a presentation from the Royal College of

Midwives about the Race Matters project which they have been carrying out over the past year. The project has involved talking to midwives, students, maternity support workers, and lecturers about their lived experience in the union, and has discovered a lack of representation, visibility and engagement among members.

The RCM has introduced a Race to Lunch workshop for members where they can engage, network and share

best practice, while it also runs awards for Race Matters unsung heroes and awards for EDI (Equality, Diversity and Inclusion) heroes.

As Rebecca explained: "These are people who have been working really, really hard but not been recognised for the work that they have done as EDI champions or as Race Matters champions.

"It has been really good for us to present our project to the WEI at this conference and get the academic perspective

“ From our point of view, with a global dimension, we can also use opportunities like this to learn about practices in other countries because the nature of our members’ work means they could be working for a UK producer but based in another country. ”



on things that maybe we haven't looked at, and look at how we can collaborate with researchers."

Worker voice

Matia Tapia, an Associate Professor at Michigan State University, spoke about her research around worker voice. "I am particularly interested in intersectionality, or how worker identities come into play when they are collectively acting against an employer, a city, or a government."

She said the conference was an excellent platform to bring together scholars from across borders to talk about very contemporary and important issues. "These include issues around labour, around Covid and work, around EDI, and also issues around fairness at work."

Fair access to work

Ian Manborde, Equalities and Education Officer at Equity, gave a trade union insight into the struggle for equal treatment across the entertainment industry.

Equity is the UK trade union for creative professionals such as actors, singers, dancers and choreographers, and has 47,000 members working across the UK and globally.

As he explained: "I was invited to give a presentation on our

work on improving member opportunities on fair access to get work and equal treatment in work. There was also an element in my plenary where I focused on our more political work which relates to improving representation across stage and screen in relation to class, race and gender."

He added that the opportunity to spend two days in close study around these issues was a perfect learning opportunity. "From our point of view, with a global dimension, we can also use opportunities like this to learn about practices in other countries because the nature of our members' work means they could be working for a UK producer but based in another country. This opportunity to look at comparative employment policy and practice is so important for our union."

Success

Sheena Johnson, Professor of Work Psychology and Wellbeing at the Work and Equalities Institute, said: "We were delighted to return to an in-person event for the fifth Fairness at Work conference. We had more than 100 people travel to Manchester to present, learn about and discuss issues relating to all four themes of the WEI, with a total of 61 presentations and four keynote speakers over the two days. We are already starting to think about planning our next conference." ■

If you want to join the Work and Equalities Institute, be added to its mailing list, or sign up to its newsletter, go to wei.manchester.ac.uk

Gender and productivity

Integrating equality into the productivity agenda is essential for a medium to long-term strategy for raising productivity that aims at improving well-being for all, according to a major new report.

The research paper from The Productivity Institute, which is based at Alliance Manchester Business School, argues that not doing so risks the development of an increasingly polarised and dysfunctional society.

The paper, entitled Gender and productivity, is authored by Professor Jill Rubery, Executive Director of the Work and Equalities Institute (WEI) based at AMBS, Research Associate Isabelle Bi, and Professor Anthony Rafferty, Managing Director of WEI.

Action

They argue that the transition to a more gender equal society requires action on three fronts. Firstly, changes to the way work is organised in the workplace and the home to enable women to make full use of their talents. Secondly, changes to pay structures to ensure women's work is appropriately valued and rewarded. And thirdly, via greater investment in support for working parents.

The paper also provides policy recommendations for improving women's access to employment and skill development and revaluing women's work, and also says men's support is key.

Professor Rubery said: "Although growth has been boosted by women's increased commitment to employment and by their investment in education, the changes needed to allow women to realise their potential in the labour market have yet to be made. Without action to realise women's productivity and properly reward their work, the UK's low productivity problem will not be solved."

Research project

The authors are currently working on The Productivity Institute research project Gender, part-time work and job polarisation: the productivity risks, which this paper is part of. The project examines how more flexible forms of working, including part-time work and new forms of work post Covid, impact on both gender equality and the UK's productivity trajectory.

SELF-BELIEF

BioNTech became world famous for developing with Pfizer the first ever approved mRNA-based vaccine. Chief Business and Commercial Officer **Sean Marett**, who took his MBA at AMBS, shared the extraordinary story at a Vital Topics lecture.

To build any innovation company you have to have motivation, and for BioNTech that motivation was outwardly simple. As Sean Marett told our audience: "Our motivation right from the beginning was the personal treatment of cancer. What we are trying to do is to get the immune system to distinguish between good and bad to destroy cancer cells. If you look at cancer molecularly what you see are mutations. We take these mutations and generate an immune response against them."

But he conceded that late-stage cancer is a "very, very difficult thing to treat" and despite all modern medicine still has high mortality over a five-year period. As such, he said everything the company did was

with new technologies because existing technologies may have reached a plateau in their ability to treat disease.

"We use a variety of technologies because you need a portfolio to calibrate treatment to an individual patient. For us, treating some of these diseases won't be a single product, it will be a combination of products to really destroy tumours.

"Take ovarian cancer. When diagnosed, sometimes the tumour is the size of a small orange. Imagine that small orange is growing exponentially and you are trying to kill it with immune cells. So you either have to get the immune cells to grow at a faster rate than the tumour, and/or attack the tumour from multiple angles, hence different technologies."



Project Lightspeed: First approved mRNA-based vaccine in medicine history





The result, believes Sean, is that over the next 10 to 15 years we will see "much more precise treatments, more combinations of treatments and much more success in our quest for treating cancer". Artificial Intelligence (AI) will also play a role. "AI is going to help us become more precise, because the immune system is very precise. AI will help us design drugs in a better way."

Covid-19

Sean was instrumental in raising finance for the company and internationalising the investor base throughout the 2010s, culminating in a listing on the NASDAQ exchange in New York in late 2019. But barely had the company listed on the exchange when it completely changed track.

As he recalls: "Almost as soon as we went public Covid-19 came along and it changed us forever, as we turned the company from cancer to developing a Covid vaccine. The normal approval time and R&D cycle for such a vaccine would have been 12 to 14 years. We did it in just 11 months, and have since gone on to vaccinate about a quarter of the global population in more than 180 countries."

“ Almost as soon as we went public Covid-19 came along and it changed us forever, as we turned the company from cancer to developing a Covid vaccine. The normal approval time and R&D cycle for such a vaccine would have been 12 to 14 years. We did it in just 11 months...”

He conceded that it was a hectic time. "My wife got so fed up with the phone ringing that I had to take calls from governments in the car outside in winter. But this was all part of the spirit and excitement of really doing something novel. That is what I love about innovation. It's novel by definition and you are never quite sure which way it is going to go, but you have to believe in it."

New chapter

With the immediate Covid crisis over, the company is now renewing its focus on

cancer treatments. For instance, in January this year it signed a Memorandum of Understanding with the UK government to test its different technologies in cancer patients in the UK.

Meanwhile Sean added that he looked back with fondness on his time at AMBS, and says he continues to use the learnings from his MBA all the time in his job.

"When you are trying to figure out capex requirements for factories that don't exist, or how you price a vaccine, or how you estimate cost of goods, or how will you make money to fund research continuously, finance plays an extraordinary role. I will always be very grateful for what I learnt at AMBS." ■

Start of phased submissions

EMA: October 6, 2020
Canada: October 7, 2020
UK: 9 October 2020
Singapore, New Zealand...
and other countries



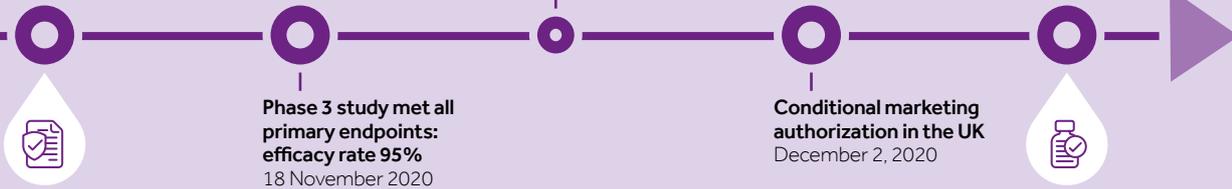
Filing of the EUA in the US

18 November 2020



Conditional marketing authorization in the EU

21 December 2020



Vogel et al., BNT162b vaccines protect rhesus macaques from SARS-CoV-2, Nature 2021, Polack et al, Safety and Efficacy of the BNT162b2 mRNA Covid-19 vaccine, NEJM 2020, Sahin et al, BNT162b2 vaccine induces neutralizing antibodies and poly-specific T cells in humans, Nature 2021. Walsh et al, Safety and immunogenicity of two RNA based Covid-19 vaccine candidates, NEJM, 2020.



FIRM FOUNDATIONS

A full-time MBA at AMBS has set **Pavadee Burapapong** on the path to a blossoming career in the FinTech industry.





“I found the vast amount of alumni networking sessions amazing and was grateful to meet my mentor Jimmy Caceres from the MBA Mentorship programme who supported me in terms of my professional career.”

Q: Tell us a little about your background?

Before starting my MBA in Manchester I was a financial technology regulator at the Securities and Exchange Commission in my home city of Bangkok, Thailand, where I had earlier taken a law degree at Chulalongkorn University. I think my professional experience in the FinTech industry definitely helped differentiate me from other MBA applicants.

Given my obvious interest in the FinTech sector, during my MBA I founded a student-led FinTech enthusiast group, and was also involved in a knowledge-sharing session called 'FinTech Talk'. I also self-sourced an internship over the summer with Innovate Finance which I secured through networking and attending industry events and conferences.

During the internship I learnt about marketing and business development, and afterwards continued to work part-time as a FinTech Ecosystem Associate for the organisation. After graduating this summer I will work there as a FinTech Ecosystem Manager.

Q: Why did you choose AMBS?

The two main reasons were its worldwide alumni network and its strong connection with the FinTech sector. I found the vast amount of alumni networking sessions amazing and was grateful to meet my mentor Jimmy Caceres from the MBA Mentorship programme who supported me in terms of my professional career. AMBS also has close ties with FinTech organisations in the UK, and in the regions such as with FinTech North.

Q: What were the highlights of the MBA for you?

I particularly enjoyed the M&A project where we learnt to source target companies, develop business cases, and simulated a negotiation day. It taught me to utilise the knowledge from core courses we previously studied, such as business accounting and corporate finance, and develop skills especially in negotiation.

I also really enjoyed Manchester Matters, a TED-talk style session, which was an amazing opportunity to share any topics of interest with other MBA students and practice public speaking skills. I also went to the global centre in Singapore during my FinTech, Banking and Blockchain elective. It was great to work with Global MBAs, learn another culture, and expand my global network.

I also found learning in a practical way such as from working with clients in three consultancy projects and exchanging feedback with team members, incredibly insightful. They broadened my perspective and improved my skills to work in a multi-cultural team given there were 30 nationalities represented in our cohort.

Q: What do you think of Manchester?

I have really enjoyed living here. It is a very walkable city centre with good transport links to Manchester Airport, while train stations are close to AMBS too. I also really enjoyed the excellent facilities at AMBS, such as the MBA common room and the syndicate rooms, while the Data Visualisation Laboratory is a fantastic facility.

Q: What are your key professional ambitions now?

To be at the forefront of delivering impactful initiatives to improve the FinTech ecosystem, and also to mentor or support aspiring individuals to achieve their goals. ■



LIFELONG LEARNING

AMBS has launched a new range of short business courses.
Bryan Lukas explains what is driving the move.



Let's say you're a manager in your mid-30s leading a small but highly effective sales team. It is a decade since you completed your undergraduate degree, and perhaps a Masters. Since then, you have poured all your energies into building your business career.

But at the back of your mind you're conscious that the world around you has moved on and is changing very fast. Every week you hear stories about how digital transformation and Artificial Intelligence (AI) are going to change our working

and personal lives. You worry about missing the boat. About missing out on those key ingredients of knowledge that could help you and your business perform better.

Yet over the last 10 years you also haven't set foot in a business school or communicated much with thought-leading management educators and researchers. You decide it's time to act.

Lifelong learning

This is precisely the kind of scenario that is driving a whole new range of short business courses launching at AMBS.

“A further aim of our programmes is to become relevant to a new global audience.”

The core aim of these courses is to provide professionals with a real opportunity to upskill in depth, taking on board bite-sized chunks of learning and yet still walking away with a qualification in the form of a professional certificate.

And to upskill in breadth too, as the new courses go far beyond the usual ▶



Bryan Lukas is a Professor of Marketing and Academic Director of Executive Education.

professional development areas of leadership and management into subjects such as digital transformation, data and AI, digital marketing and finance.

A further aim of our courses is to become relevant to a new global audience. We work from our own market research that the majority of delegates will come from overseas, with around a fifth signing up from the UK.

Educational offer

The courses are also about attracting people back to university who left several years ago and who want to continue their education in a meaningful and immediately applicable way.

Driven by the social, economic and technological changes that the world is going through, there is a growing need for lifelong learning among business

leaders. However, not many UK universities offer courses that require no academic experience and we believe this gives us an opportunity to be a role model.

There are substantial benefits for our academics too. Through our short courses, professional development becomes more accessible to a range of academic colleagues as the courses provide opportunities for them to communicate their expertise to business professionals across many disciplinary areas.

Thought leadership

In my personal view, these courses also demonstrate a particular form of thought leadership in business education, as the content is highly focused and geared towards people who are already managing business operations. They will be exciting and

dynamic individuals with years of professional experience, and they will not hesitate to call us out if we are not providing value on their chosen topic of instruction. Ultimately, we have to offer something that really resonates with individuals, their companies and organisations.

Because these courses are short (typically lasting four days) and can be combined with each other in different ways, it is also an extremely flexible way of knowledge acquisition. Further, as the courses are 'open', they provide an alternative for companies not wanting to go down the customised programme route. Instead, a firm can send individual staff, or a small group, to AMBS on particular topics of interest. And, of course, individuals can sign up on their own account and invest in themselves to advance their careers.

The fact that delegates will be visiting in person is important too. It is worth stressing that the majority of our portfolio of short courses will be face to face. We see tremendous value in that, not least as it affords lively peer-to-peer interaction and networking opportunities.

Manchester offering

Although, as I have mentioned, many delegates will be coming from overseas, this is also an opportunity for business leaders across the North to join us on campus too. At the moment, similar courses are only run by business schools in the south of England, so there is a real opportunity for Manchester in terms of its central geographic location to champion our unique 'original thinking applied' ethos. ■





PORTFOLIO OF SHORT BUSINESS COURSES

Devised by industry-leading academics, these courses aim to equip future leaders with the professional skills needed to lead businesses.

Coping with Cyber Risk

This 'live-run' exercise comprises a safe-space experience of a cyber incident. Hear from experts and increase the resilience of your connected technologies.

Data and AI for Leaders

Discover how data and AI can drive your business decision making and challenge yourself to think critically about technologies and their potential impact.

Decentralised Financial Technologies and Web3.0 Economy

Expand your knowledge of the crypto economy and understand the opportunities and risks for your business.

Digital Marketing Essentials for Leaders

Develop a strategic understanding of digital marketing concepts to optimise your organisation's performance and digital strategies.

Finance for Non-Financial Leaders

Demystify the world of corporate finance, learn to use facts and figures to your advantage, and strengthen communication channels across your teams.

International Business Strategy

Discover how to design an international expansion strategy that will ensure your organisation's global growth and success.

Leading and Implementing Innovation

Learn how to lead your organisation on a pathway to success through powerful new ideas and frameworks to improve competitiveness.

Leading Digital Transformation

Discover how our 3D framework can help your organisation become truly digital-first by following a roadmap towards future progression.

Leading ESG and Sustainability

Discover the challenges that businesses face and explore the fast-increasing, ESG influenced transition to a net-zero and biodiverse economy.

Leading Major Projects

Designed for project leaders, gain the experience, understanding and resources needed to deliver multifaceted major projects.

Managing Complex Business Challenges

Explore new approaches to governance, communication and engagement when navigating decision making and complex business situations.

Managing the Customer Journey

Strengthen your competitive advantage by taking a strategic, transformative view of your customer's journey and your interactions with them.

Manchester Leadership Development Programme

A practical, accelerated leadership development programme for leaders and managers moving forward in their careers.

Market Focused Strategic Planning

Steer your team's strategic planning with best practices, techniques, and frameworks and learn how to shape senior-level strategy.

Personal and Organisational Resilience

Build the skill set needed to anticipate and adapt to challenges within a high-pressured business environment.

Psychology of Leading People

A practical, evidence-based course for those looking to master the tools and techniques of high-performance management in an ever-changing world.

Supply Chain Management

Discover the skills, procedures and frameworks needed to enhance your organisation's supply chains to improve flexibility, cost, and performance.



Visit our website
to find out more
ambs.ac.uk/sbc

AUDIT ATTRACTION

Politicians and regulators joined industry practitioners, academics and students at a special debate at AMBS about the future of audit.

Following a number of high-profile corporate collapses, the government has undertaken a string of reviews into the audit sector to enhance audit quality, increase competition, reduce conflicts of interest, and improve regulatory oversight.

In response to more than 600 formal submissions, the government is now drafting a bill on reforming audit and corporate governance that, among other things, will lead to a new statutory regulator to be known as the Audit, Reporting and Governance Authority (ARGA). As well as new primary legislation, the reforms will require secondary legislation, changes to existing regulatory measures, and market-driven measures for which the regulator will be responsible.

Commanding confidence

Co-hosted with the Institute of Chartered Accountants in England and Wales (ICAEW), our event aimed to give the North West business and academic community the opportunity to feedback to the UK government on proposed reforms to the industry.

Lord Callanan, Under Secretary of State for Business, Energy and Corporate Responsibility, addressed the debate at AMBS via video link from London. He said that it was "vital" that our leading companies commanded the confidence of financial markets.

"We recognise that addressing trust demands action across the whole system. We plan to establish a stronger audit regulator to drive improvements in the

quality of audit and it will have tougher enforcement powers. A strengthened regulator provides clarity for everyone in the system."

He added that the reforms should be treated as something that will be rolled out gradually over time. "This process has been through a lot of iterations, but we are definitely proceeding with drawing up the legislation."

Corporate governance

Julia Penny, President of the ICAEW, told the event that audit usually goes wrong if corporate governance goes wrong first. "Audit quality overall in the UK is of a very high standard but that doesn't mean it can stand still, it has constantly to get better. Audit is important not just for auditors but for the economy as a whole. Auditors should be a critical friend. But without good corporate governance we get these disorderly failures and things that go wrong."

She added that there was a lot that could be done without legislation, such as with the publication of a new corporate governance code this year. Meanwhile she stressed that audit needed to be attractive to the next generation. "It needs to move with the times. For instance, technology is increasingly affecting the industry."

Career attraction

After the presentations there was a wider debate about how to enhance the attractiveness of auditing as a professional career, not just to potential trainees but also to encourage qualified accountants

to remain in audit practice over the longer term rather than seeking post-qualification career moves into industry or other professional and public services.

Chris Humphrey, Professor of Accounting at AMBS, said: "This is the first of what is intended to become a regular debating forum addressing important public policy issues and initiatives impacting on accounting and finance in the Greater Manchester region.

"There is a dual need not just to give voice to, and gain insight from, the practical experiences of seasoned professionals, but to set such discussion in the context of leading academic research and educational initiatives. It was great to see such a range of interesting presentations, together with an ensuing lively discussion between panel members and guests. I would like to thank ICAEW Manchester for setting this initiative in motion and look forward to similarly successful events in the future." ■

“ Audit is important not just for auditors but for the economy as a whole. Auditors should be a critical friend. But without good corporate governance we get these disorderly failures and things that go wrong. ”



Future of Audit

Academics from the Accounting and Finance division at AMBS have played a major role in the debate

about the future of audit in recent years.

Professor Chris Humphrey was appointed to the advisory board of the independent review into the quality and effectiveness of the UK audit market, led by Sir Donald Brydon. In conjunction with the ICAEW's Audit Futures initiative, he has also done much to promote the case for thinking differently about auditing and audit reform.

Visiting Research Fellow at AMBS Dr Yasmine Chahed was also a member of the Brydon review team and has similarly promoted the importance of reviewing the core purpose of audit.

Professor Javed Siddiqui's assessment of the extent to which the case for joint audits is supported by research evidence was cited by the International Federation of Accountants in one of its policy briefings. Similarly, his oral evidence in 2021 to the House of Commons' Business, Energy and Industrial Strategy Committee figured prominently in justifying proposed corporate governance and auditing reforms made in its report on Liberty Steel and the future of the UK steel industry.

Professor Brendan O'Dwyer also recently guest edited a special issue of the European Accounting Review considering transformations in audit practice and the impact/contributions being made by auditing research.

A leading figure in the global ESG (Environmental, Social and Governance) movement has been appointed as an Honorary Professor at Alliance Manchester Business School.

Sacha Sadan has been Director of ESG at the Financial Conduct Authority (FCA) since 2021 in a role that was specifically created to help the organisation develop and advocate its approach to sustainable finance both domestically and internationally.

During his career Sacha has been an asset owner, fund manager and global stewardship director. Before joining the FCA he was Director of Investment Stewardship at Legal & General Investment Management, one of the largest asset managers in Europe. He is also a former senior UK Equity Manager at Gartmore where he co-managed a range of UK equity hedge, retail and institutional funds.

Sacha said he was "truly humbled" to be joining AMBS. "I have been a good friend of Alliance Manchester Business School for many years, working with talented academics who are at the very forefront of research into ESG issues. It is a real honour and accolade to now make my relationship with AMBS more formal and to offer my practical knowledge and experience to both academics and students."



Sacha Sadan
Director of ESG
Financial Conduct Authority

NEW GOVERNANCE

Traditional notions of auditing often don't work in developing countries, says **Javed Siddiqui**.

International auditing and governance practices, generally conceived in the context of Western countries, are often not suitable for developing countries due to the distinct characteristics of their business environment.

For instance, family owners of large, listed companies often have very strong political relationships with governments which leads to a culture where governance mechanisms such as auditing are generally viewed as an unnecessary deterrent.

This has resulted in the creation of a vicious cycle for audit. The corporate sector is not willing to pay for quality audit work as the market is not sufficiently sophisticated to value a good audit. And the poorly paid auditors cannot afford to perform a fair job, affecting the quality of audit.

Policy makers in developing nations are also often keen to comply with requirements set by International

Development Agencies (IDAs) which historically have a strong influence over governments in these countries. This sometimes results in the ritualistic adoption of international auditing and corporate governance standards in many countries with limited efficacy.

In short, traditional notions of auditing don't seem to work in developing countries. So the question therefore is what kind of audit would be more suitable?

Rana Plaza

The answer may partly be found in the inspection regime that was set up in Bangladesh following the Rana Plaza disaster of 2013 when more than 1,100 people died after a building comprising garment factories collapsed.

Following the disaster, as pressure mounted on global brands that used Bangladesh as a cheap outsourcing location, a new private governance regime was introduced.





The 'Alliance' and 'Accord' initiatives established an inspection regime focusing mainly on building and fire safety, in line with Bangladesh labour law. Factories failing inspections were given specific time to improve, otherwise they wouldn't be allowed to export.

The result has been striking. As of 2020 some 93% of the ready-made garment factories in Bangladesh are now certified as safe. Admittedly there are still concerns about the narrowness of the scope of such audits, and especially about their failure to include important issues such as worker voice. Nevertheless, the post-Rana plaza inspection regime has definitely made an impact in terms of building and fire safety.

The case demonstrates that audits can work in the context of developing countries, especially when the scope and

standards dictating such audits are home-grown, rather than externally imposed.

Boundaries of audit

This also raises questions regarding the boundaries of audit. Whereas financial audit of factories involved in the Rana Plaza incident were largely irrelevant, the building and fire safety audits did manage to make a significant impact.

The lessons learnt here are important given the narrative one increasingly hears about accountants and auditors helping to 'save the world', a narrative largely based on the role the profession can play in terms of implementing economic, social and governance (ESG) issues which are currently outside the purview of traditional financial audits.

This also chimes with the recent independent review into the quality and effectiveness of the UK audit market led by Sir Donald Brydon which called for conceptually redefining the purpose of audit and a need to make auditing more holistic.

Looking ahead, as economies in many developing countries become stronger the role of IDAs are likely to diminish gradually. This should give regulators in developing countries the opportunity to take a step back and think innovatively about developing auditing and corporate governance regulations that are more suitable for their economies. And that taking a more holistic view of the social role of audit might just be the way forward. ■



Javed Siddiqui is a
Professor of Accounting.

RESEARCH WITH IMPACT

Two first year AMBS PhD researchers — **Hien Dao and Alejandra Navea Parra** — have been awarded prestigious Doctoral Studies Awards from the Research and Development Management Association (RADMA).



Hien Dao (left) and
Alejandra Navea Parra.



“ Both researchers say the scholarships will not only give their studies greater exposure, but will also help connect them with practitioners and translate their research into impact. ”

Hien Dao

The title of Hien’s PhD is AI-enabled innovation and the changing nature of organisational learning. After completing her Masters at Australia National University in Business Information Systems in 2021, she was keen to continue to explore the increasing role that AI and machine learning plays in the wider innovation process.

“Innovation is critical for any organisation to sustain and grow, and in the years ahead machine learning will continue to replace many existing innovation activities across business. But at this moment in time we don’t know exactly how things are going to change.

“The increasing use of AI and its components as a new source of creativity has made humans no longer the only ones capable of learning and contributing to an organisation’s stock of knowledge. So my research aims to study how AI will alter the ways through which knowledge is created, transformed, and retained in innovation, and the connection between individual and organisational learning.”

In particular Hien, who is from Vietnam, is researching the pharmaceutical industry where recent vaccine development has demonstrated the need for new methods of drug discovery and where there is growing interest in the use of applying AI tools to drug research and development.

As she adds: “The pharmaceutical industry is an important player within the UK and globally, and big pharma companies also pay a lot of attention to knowledge management so are an ideal environment for my studies. My insights will inform the current debate in information systems, innovation management, and organisational research studies in terms of how AI can reshape innovation and contribute to a new view of organisational learning and innovation management theories.”

Alejandra Navea Parra

Alejandra has moved to Manchester from Santiago, Chile, where she worked as an International Trade and Intellectual Property (IP) lawyer with a focus on international IP negotiations at bilateral and multilateral levels.

While working in the IP division of the Chilean Ministry of Foreign Affairs she negotiated IP matters in relation to several Free Trade Agreements, including with the EU and with EFTA states. She has also represented Chile at different WIPO committees held in Geneva, including the Committee on Development and IP.

At AMBS her research is focusing on IP, technology contracting, start-ups and venture capital funding. She says the motivation for taking up the PhD was that she was keen to expand her knowledge and skillset beyond the legal area, and because she believes that more interdisciplinary research is key to achieving greater societal goals.

“I was really keen to do some interdisciplinary research looking at how IP can help start-ups and I was drawn to study in the UK because it is one of the global leaders in the whole field of innovation. So this is a big opportunity for me to learn in a country which is really leading the way in terms of its innovation eco-system.”

Her research is specifically looking at how small businesses can benefit from good IP management in terms of attracting funding. “During the last three decades we have witnessed a transition towards knowledge-based economies. For instance, in 2020 intangible assets comprised 90% of business value within the S&P 500 companies. As such, managing IP has become a really important part of ensuring sustainable business growth, and my research will help understand how start-ups can better manage their intangible assets through IP.”



SUSTAINABLE MODEL

Can the increased production of protein foods across sub-Saharan Africa be sustainable? **Jeremy Brice** has been investigating.



Dr Jeremy Brice is a Lecturer in Sustainability and Innovation.

Growing awareness of the environmental impacts of livestock production has raised questions about whether future growth in global demand for animal protein can be satisfied without compromising environmental sustainability.

Is continuing growth in livestock agriculture compatible with climate change targets? Might expected future increases in protein consumption better be addressed through a transition towards consuming alternatives such as plant-based, microbial or cultured proteins?

These issues particularly come to the fore in sub-Saharan Africa, where expanding populations, GDP growth and rapid urbanisation are all expected to drive a far-reaching 'nutritional transition' involving rapid increases in demand for protein over the coming decades.

Population growth

Many countries in sub-Saharan Africa continue to experience high rates of food insecurity and undernourishment, with the UN estimating that 23% of the region's population faced hunger during 2021.

This has led to concern that if domestic protein

production does not expand significantly then increasing demand for animal products among the region's growing middle class may lead to declines in per capita protein consumption (and higher rates of malnutrition) among the region's poorest citizens.

Alternatively, the region's growing economies may turn to imported meat, fish and dairy products which compete with local produce, limiting opportunities for smallholder farmers and pastoralists to benefit from economic growth.



Research

My recent paper argues that in order to understand the changing nature of protein production in sub-Saharan African diets and food systems, it is important to investigate what motivates different financial players to invest in (or avoid) particular food products, markets and value chains. This is because investors provide the capital required to finance production, develop new products and establish new value chains.

Sub-Saharan Africa currently attracts only a small share of global investment in agriculture and food production, receiving only 1% of global agricultural credit in 2019. However, the region receives 35% of global Overseas Development Assistance (ODA) spending on the agricultural sector. Private sector financial institutions such as commercial banks therefore play an unusually small role in the region's agricultural finance landscape, while development finance institutions (DFIs) play a larger role than they do elsewhere.

Findings

I found little evidence in most of the region's countries that purely commercial investment was encouraging any shift towards large-scale, intensive models of livestock production, or that large shareholder-owned companies are consolidating their control over livestock producers.

Meanwhile, alternative protein production within the region is constrained by limited access to finance, with African banks and private equity funds tending to avoid investing in alternative protein manufacturers which they regard as posing excessive financial risks.

Given that DFIs play an important role in the region's agricultural finance landscape and have a higher risk tolerance than most commercial investors, they would be well-placed to address this investment gap and finance the scaling-up of alternative protein production (perhaps working in partnership with impact investment funds). However, there's little concrete evidence that

“ Sub-Saharan Africa currently attracts only a small share of global investment in agriculture and food production. ”

they currently have plans to invest in alternative protein manufacturers.

Future challenges

In many ways, sub-Saharan Africa's protein investment landscape is already well-suited to supporting sustainable development.

Many of the region's most prominent agricultural investors are motivated by sustainable development objectives and are working actively to finance projects which enhance nutritional health, empower small producers economically and minimise the negative

environmental impacts of livestock agriculture.

However, these more sustainable models of food system development are so prominent precisely because commercial investors are reluctant to finance protein production in sub-Saharan Africa.

As a result, the challenge the region faces is to preserve the concern with sustainable development which currently characterizes its agricultural investment landscape while also attracting more investment into its protein production sector. ■





SYSTEMS LEADERSHIP

A team of researchers have produced a landmark review of systems leadership in health care.

Systems leadership in the NHS in England focuses on leading beyond organisational and professional boundaries to implement policy changes and meet budget requirements. However, despite increased recognition, there is no commonly agreed definition of what NHS systems leadership entails.

The NHS Leadership Observatory commissioned a team of researchers led by Dr Axel Kaehne and Dr Julie Feather from Edge Hill University's Evaluation and Policy Unit to undertake the review of systems leadership, with support from Professor Naomi Chambers and Professor Ann Mahon from AMBS. Their report identified that the NHS lacks a clear definition of what systems leadership means and what qualities NHS leaders need to fulfil their roles. It recommends carrying out further studies to close these gaps and writing a clear definition for NHS leaders to adhere to.

Effective leadership

Ann Mahon, Professor of Health Leadership at AMBS, said: "Effective system leadership and greater integration of care offer important solutions to demographic changes, financial constraints, workforce shortages and the gap between supply and demand that the NHS and healthcare systems globally are experiencing in the post-Covid world. It is important therefore to understand more about what good system leadership looks like and how we can support its development."

The review is set against the establishment of 42 Integrated Care Systems (ICS) across the NHS in England in July 2022. These are partnerships between the organisations that meet health and care needs across an area, aiding in cooperation and planning.

The creation of the ICS means that more than ever NHS system leaders are required to have the skills necessary to steer and manage dynamic transformations

across organisations.

Adding to this is the need to balance longer term system sustainability with the reality of limited resources, all while improving population health outcomes and tackling health inequalities.

Recommendations

Recommendations in the report include: examining the needs of systems leadership within the context of the newly developed Integrated Care Boards; exploring how Equality, Diversity and Inclusion (EDI) can be embedded into business as usual through the lens of systems leadership; and exploring how leaders can embrace technological advances.

Added Professor Mahon: "One of the important findings of our review was an almost universal absence of research on equality, diversity and inclusion as a critical perspective on the development of effective system leadership either from the workforce or the community perspective.

This is a serious gap in the research that needs to be addressed."

Complex set of skills

Postdoctoral Research Fellow Dr Julie Feather, who is part of Edge Hill's Evaluation and Policy Analysis Unit, said: "Systems leadership refers to leadership attributes, qualities, behaviours, mindsets and actions which have a system-wide impact. This complex set of skills is essential in the modern NHS, but our report identified that leaders in the NHS don't fully understand their role or the importance of being systems leaders which must be urgently addressed."

Reader in Health Services Research and project leader Dr Axel Kaehne added: "Our report identifies the complexity of being a systems leader and calls for further analysis to determine what training and development will be needed to ensure NHS leaders are properly supported to be able to steer and manage change in an increasingly unpredictable external environment." ■

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