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Rebalancing Manufacturing After Global Shocks and Stresses

ESG-related Manufacturing and Supply Chain Trends and Research

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Foreword From Jake Berry

Rt. Hon. Jake Berry MP

Since the 2008 financial crisis, we have seen a marked increase on the focus, by both consumers and investors, in the Environmental, Social and Governance (ESG) of companies and businesses.

What was once simply regarded as the preserve of the senior management team has now become a global priority with both regulators and government looking for a robust ESG policy at the heart of an organisation's growth strategy. This, combined with the legally binding government targets to achieve "net zero" in the UK by 2050, means that every company in the North should regard ESG as a new driving force.

The good news is that, just like previous periods of rapid change, the "Green Industrial Revolution" is already being driven by the Northern manufacturing powerhouse. The North is now a global leader in hydrogen, wind power and green infrastructure. This has been delivered by the preexisting prime capability of the North's economy for high-value engineering. As the rest of the world moves to match the UK's Net Zero ambitions following the COP26 conference in Glasgow (November 2021), the North is perfectly placed to export its world-beating technology around the globe.

In the 19th and 20th centuries, it was the natural resources of the North that drove its industrialisation. As the world moves away from these carbon-heavy resources, it is now our people that represent our greatest natural resource. COVID-19 has made home working the norm for many, but not so for manufacturing. With an increasingly flexible labour market, if we are to retain our highly skilled workforce to power the "Green Industrial Revolution", all businesses must have their people at the heart of the ESG growth strategy. Again, this offers a considerable opportunity to drive productivity in the workplace and those businesses that succeed will have an active programme to develop their people.

This report on Rebalancing Manufacturing After Global Shocks and Stresses makes a significant contribution to the debate and with expert advice on hand, it will be those who take an optimistic and positive approach to the ESG agenda who will succeed.

Foreword from Squire Patton Boggs

Andrea Cropley, Hannah Kendrick and Jonathan Ross

2021 provided unique challenges for businesses operating across the manufacturing industry. Aside to the impact of the pandemic, we are also seeing a changing and challenging landscape due to increasing economic, consumer, regulatory and compliance pressures. With ongoing market changes, this landscape is increasingly difficult for businesses to navigate.

In part, these changes are driven by the rapid adoption and evolution of automation by businesses. The incorporation of automation into business models is becoming a necessity for businesses to survive. This was evidenced by the impact of COVID-19, forcing many human driven workforces to cease or at least slow down production, while automated production could continue and enjoyed reaping their financial rewards.

So, in a world where automation is increasingly becoming the norm, how can manufacturers use automation to not only reset following shocks to the market, but also use automation to obtain a competitive advantage?

Let us consider automation in relation to the ever more significant role of ESG factors, a concept that is firmly placed at the top of the boardroom agenda. As these factors continue to prove themselves as drivers of financial performance and business resilience, ESG is a hot topic for investors and shareholders worldwide.

ESG is more than just a financial driver. Our experience tells us that businesses that adopt ESG centric polices into their business model demonstrate better sustainability and greater resilience, among other benefits, in the longer term.

ESG centric policies will also help businesses in recovering from the aforementioned shocks to the business landscape in recent years that include Brexit-related changes to trade and standards, skills shortages, global supply chain problems, and the creation of net-zero carbon goals, to name just a few.

Automation can resolve labour shortages, it can improve working conditions and product standards throughout the supply chain, it can reduce carbon emissions, and it can improve overall productivity. Furthermore, as automated technology continues to innovate, we are continuously identifying resolutions to both new and existing challenges.

However, the adoption of automation is not without its challenges. It is costly, putting it out of reach for many small and medium enterprises, it requires a new set of skills, of which many manufacturers do not currently possess and similarly, may lead to redundancies in the existing workforce, it may expose cybersecurity risks, and newfound intellectual property issues, to name just a few.

Every day, we work with businesses that are adopting automation and ESG-centric policies into their business operations, and we support these businesses in navigating the changes and challenges that they face in making this transition. As we touched upon earlier, we recognise the connections between the adoption of automation, the significance of adopting ESG-centric initiatives, and the attainment of a competitive advantage.

With grounding and empirical support from the accomplished researchers at Leeds University Business School, the series of research and articles in this report will address just some of the key ESG-related challenges that manufacturers face in adopting automation, with the intention of helping businesses to maximise their strategic and financial performance post-pandemic.

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Foreword From Leeds University Business School

Leeds University Business School

Professor Krsto Pandza

Manufacturing companies worldwide are under intense pressure to build new sources of competitive advantage. Old fashioned ways of basing competitiveness on continuously creating efficiencies from existing processes, resources and employees may be insufficient in the global environment characterised by uncertainty, complexity and ambiguity.

Although businesspeople crave certainty, excel at managing simple challenges and thrive if problems are clearly defined, they are increasingly asked to explore uncertain innovation opportunities, respond to complex and interconnected challenges and navigate ambiguity among different possible strategic directions.

Digitalisation, sustainability and unpredictable crises (e.g. political and health) are the most important trends that affect manufacturing companies. Not surprisingly, these are complex, uncertain and ambiguous and require businesspeople at manufacturing companies not only to be effective managers, but to become reflexive, strategic and creative thinkers willing to explore new business models and ways of working. Digitalisation does not only offer reaching the new frontiers of productivity (doing more with less), but creates opportunities to rethink conventional manufacturing business models and transforms firms' strategies. Similarly, sustainability should be seen as the main driver of innovation, as doing the old things in a more sustainable way may not be enough to balance business objectives with net-zero requirements. Unpredictable adversity and shocks became other elements of managing a manufacturing company strategically. Strategic resilience is, therefore, a core organisational capability and it requires managers to be aware, action-oriented, resourceful and networked.

Managers from manufacturing companies could benefit from collaborating closely with business schools when it comes to managing under uncertainty, complexity and ambiguity. Business school researchers are excellent in diagnosing strategic challenges and recommending evidence-based interventions. Leeds University Business School has a vision to connect academic researchers with businesspeople to share and co-create insights with social and economic impact on organisations. Therefore, we are excited to team up with Squire Patton Boggs to share insights from our research, which we believe could be informative for manufacturing companies. We address the issues of collaborative and transformative innovation, linkages between sustainability and supply chain management and dive deep into understanding how to engage with employees in order to make them more creative and proactive. All these issues are of considerable importance to the UK manufacturing sector and, given our regional economic growth ambitions, of significant relevance to the Northern Powerhouse and the levelling-up agenda.

For further information about research at Leeds University Business School, please visit its website or email the team

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Leeds University Business School

Executive Summary

Rebalancing Manufacturing After Global Shocks and Stresses

2020 and 2021 brought unprecedented forced disruption from a global pandemic.

We have also seen the exit of the UK from the European Union, global political movements and a spotlight on climate change. This has brought wider societal and global pressures into sharper focus for many manufacturers. The pivot forced many manufacturing firms to start producing ventilators, PPE and sanitiser at short notice (to keep their workforce employed), which was just the start of a continuous cycle of organisational adaptation needed to keep pace with global shifts. Continuous innovation is crucial for competitive and stable environments, yet discontinuous innovation is imperative when radical changes are on the horizon.

Our research focuses on five pillars of disruption innovation: resilience and innovation, organisational behaviour, supply chain and customers, sustainability, and workforce. We explore each of these issues in detail and look at ways of future proofing manufacturing .

We have identified 5 pillars for businesses to focus on:

Resilience and Innovation	Business innovation to build a resilient organisation and gain a competitive advantage, with a focus on supply chains and technology.
Supply Chain and Customers	Developing partnership models, providing a fair chance for new market entrants and adhering to human rights across the supply chain. Delivering fair competition, reliable, trustworthy digital ecosystems and transparency around products and services.
Organisational Behaviour	Demonstrating support to communities and people's wellbeing, paying a fair share of taxes, validating ethical use of data and stewardship of the environment. Continuous innovation, sustained investments and sustainable shareholder returns.
Workforce	Diversity and inclusion, employee wellbeing, upskilling and retraining, and fair executive remuneration.
Sustainability	Business strategies for decarbonisation using the government's ten point plan and Energy White Paper. Providing practical advice to support businesses in becoming more sustainable and gaining a competitive advantage.

Summary of Articles

Subject	Title	Summary
Resilience and Innovation	**Can Automation Save the Day?** Andrea Cropley and Jonathan Ross, Squire Patton Boggs	This article reflects on the important role of automation in helping businesses recover from the pandemic among other significant market changes in recent years. The article contains a review of local government support that is fuelling innovation, as well as explaining the role of automation in creating a greener future.
Resilience and Innovation	**How to Think About Innovation Strategy in the Era of Discontinuous Change** Krsto Pandza, University of Leeds	Continuous innovation is an important factor in a manufacturers' operation; for competition, for maintaining a unique selling position, and for stabilising returns, to name just a few. However, in recent years we have endured a period of discontinuous change, which, in turn, requires a discontinuous style of innovation. We establish the differences in types of innovation and the benefits of adopting both continuous and discontinuous innovation into business operations.
Resilience and Innovation	**The New Agenda for Manufacturing Companies: Building Organizational Resilience** S. Tamer Cavusgil, University of Leeds and Georgia State University	In light of the pandemic, and various political and social events over the past few years, businesses are proactively looking to improve their resilience and devise contingency plans "just in case". Our research identifies the key areas that leadership should consider, including rebalancing supply chains, technology adaptation and innovation, upskilling or reskilling the workforce, and meeting societal expectations.
Resilience and Innovation	**Reset and Reinvest: ESG at the Center of Building Back Better** Matthew Kirk, Anita Lloyd, Caroline Noblet, and Hannah Kendrick, Squire Patton Boggs	As we emerge from a global pandemic, we encounter a critical time to "build back better", in which businesses have an important role to play. The pandemic has sped up the conscious capitalism movement and life will not just be returning to a new normal, but also a more resilient and sustainable one. Where businesses embrace ESG criteria into their operations, they gain a competitive advantage, improve financial performance and strengthen their resilience. Thus, at this critical time, we help businesses to understand how they can adapt their corporate behaviours in relation to ESG factors in order to build back better.
Supply Chain and Customers	**International Customer Involvement in New Product Design of Exporting Suppliers: Implications for Managers** Zhaleh Najafi-Tavani (University of Leeds), Ghasem Zaefarian (University of Leeds), Peter Naude (Manchester Metropolitan University) and Sahar Mousavi (University of Loughborough).	Customers provide a valuable source of knowledge. They allow a business to access both institutional knowledge and local market knowledge, which is a significant benefit for innovation and product development where a business operates internationally. However, this is not as straightforward as it seems, as cultural heterogeneity is recognised as a barrier to effective knowledge sharing. Thus, we summarise the research to date, helping management to recognise the factors that both facilitate and hinder cross-cultural knowledge sharing, as well as provide advice to overcome these challenges in order to optimise customer involvement in innovation.
Organisational Behaviours	**Integrity and Ethics in the New Normal** Jonathan Chibafa, Louise Barber, Rob Elvin and Hannah Kendrick, Squire Patton Boggs	Reputation and corporate purpose are increasingly important as calls grow for businesses to play their part in solving the problems of people and the planet. As a result, stakeholders expect greater transparency in ESG criteria in order to see who is fulfilling this role. There are benefits in doing so, including a competitive advantage, improved financial performance and business resilience. Therefore, it is recommended that businesses implement robust compliance programmes to help benchmark their compliance and mitigate risks.

Subject	Title	Summary
Organisational Behaviours	**Mitigating ESG Risk** Anita Lloyd and Jonathan Chibafa, Squire Patton Boggs	As the interest in ESG continues to gain momentum, there are a number of potential litigation threats arising that businesses need to be aware of, relating to stakeholder activism, liability for ESG disclosures and regulatory enforcement. Furthermore, claimants are increasingly looking to exploit corporates' ESG policies, practices and disclosures as part of their litigation strategies. We illustrate these litigation threats to businesses and provide advice on how to best mitigate the risks.
Work Design and Motivation	**Proposed Right to Disconnect Lacks Joined-up Thinking (UK)** David Whincup, Squire Patton Boggs	One of the major impacts of the COVID-19 pandemic has been the rapid shift to agile working, which looks set to stay for the foreseeable future. This way of working is favoured by most, with the Chartered Institute for Personnel and Development (CIPD) reporting that 30% of employees see agile working as empowering, and 51% reporting that they enjoy the flexibility. However, with this transition comes new (home) office etiquette, leading to calls from trade unions to "ban out of hours emails from bosses". We analyse the transition to agile working and the implications for the future of workplace etiquette.
Work Design and Motivation	**Developing Employee Proactivity Through Work Design** Chia-Huei Wu, University of Leeds	Research shows that motivated employees are more likely to be proactive and contribute to their organisation in a positive way. Further research by Leeds University Business School proposes task interdependence and job autonomy as important design factors to be considered in promoting proactivity and explains why these are important considerations for leadership in improving productivity.
Work Design and Motivation	**Preventing Bullying, Harassment and Long-term Conflict in Manufacturing** Sam Farley, University of Leeds	Research conducted by the Chartered Institute of Personnel and Development (CIPD) recently found that, among other factors, employees in manufacturing experience lower quality relationships at work than employees in other professions. This article provides an overview of these results, as well as practical advice for prevention, reduction and mitigation of such problems in the workplace.
Work Design and Motivation	**UK Government to Introduce New Duty on Employers to Prevent Sexual Harassment in the Workplace** David Whincup, Alison Treliving, Charles Frost, and Matthew Lewis, Squire Patton Boggs	This article explains from a legal perspective, the recent announcement that the UK government will introduce a new duty for employers to prevent sexual harassment in their workplace.
Work Design and Motivation	**Unconvincing Lack of Detail in UK Government's Response to Harassment Consultation** David Whincup, Squire Patton Boggs	This article provides an in-depth analysis of the UK government's response to the recent harassment consultation, breaking down legal jargon to help businesses understand their responsibilities and a recommended response to ensure compliance and reduce the risk of litigation.
Work Design and Motivation	**UK Aerospace Restructuring: Implications for Jobs, Skills and Industrial Policy** Chris Forde, Ian Greenwood, Andrew Shires and Jonathan Winterton, University of Leeds	This article provides an overview of the Leeds Business School Challenge Fund's change model for accurately forecasting future skills and jobs, and reducing skills mismatches and labour shortages. This will add value, where the aerospace industry has experienced a turbulent year, from the collapse of Thomas Cook (pre-pandemic), to the grounding of airlines due to various national and international lockdown rules and resulting in mass redundancies across the industry.

Subject	Title	Summary
Sustainability	**The Future of Green Energy** Anita Lloyd, Squire Patton Boggs	As we stand at the precipice of the race to net-zero carbon by 2050, we provide an overview of the ten point plan as a framework to support this transition, including an analysis of the role of green energy in economic recovery and the key challenges that will arise on this transition.
Sustainability	**The Energy White Paper: A Lot of Promises to Deliver On** Rob Broom, Paul Brennan and Ray O'Connor, Squire Patton Boggs	On 14 December 2020, the Department for Business, Energy & Industrial Strategy (BEIS) published the long-awaited Energy White Paper, which builds on the prime minister's ten point plan for a Green Industrial Revolution and the National Infrastructure Strategy, and sets out the steps the government intends to take within the next decade to address the transformation of the UK energy system to achieve net zero by 2050. The Energy White Paper focuses on strategy in six key areas: consumers, power, energy systems, transport, buildings, oil and gas, and industrial energy. We take an in-depth look at the key announcements in the Energy White Paper affecting electricity and gas consumers, and consider progress since its publication.
Sustainability	**How Can Small and Medium-Sized Manufacturers Contribute to the Net Zero Target?** Chee Yew Wong, University of Leeds	When the government announced its ten point plan in 2020, it fired the starting gun on the race to net-zero carbon by 2050. There is also increasing pressure on businesses to play their part in this transition, not only from new changing regulation but also through ESG investment criteria. This may seem a daunting challenge to smaller enterprises given they often lack the resources of larger firms. This article identifies changes for SMEs to adopt in order to contribute to net zero by 2050.
Sustainability	**Helping Manufacturing SMEs to be Both Productive and Environmentally Sustainable** Kerrie Unsworth, University of Leeds	With increasing pressure on businesses to improve their environmental impact, many are devising strategies to improve their sustainability prospects. While some have adopted independent strategies for sustainability, others have placed sustainability at the heart of their business plan. There are pros and cons to each method, which our research will summarise and evaluate to help businesses develop their own sustainability strategies.
Sustainability	**The Hydrogen Economy** Nick Helm, Squire Patton Boggs	The government's ten point plan details the production of 50GW of Hydrogen by 2030 – making the fuel a significant part of the UK's journey to net-zero carbon by 2050. In order to spark the transition to Hydrogen, a greater level of detail is required from government in regards to infrastructure, financial investment, research and development. Thus, manufacturers are eagerly awaiting The UK's National Hydrogen Strategy. This article provides an overview of the hydrogen economy in the North West at present, detailing the current infrastructure plans to supply local industry, and establishes the key components that the industry expects from the UK's national Hydrogen strategy in order for the rollout and scaling up of the Hydrogen economy to be a success.

Resilience and Innovation

Can Automation Save the Day?

Andrea Cropley and Jonathan Ross | Squire Patton Boggs

Recent years have brought unprecedented forced disruption from a global pandemic, seen the legal exit of the UK from the European Union, as well as the UK's departure from the Single Market and Customs Union, created global political movements and prompted a keener focus on climate change. This has brought wider societal and global pressures into sharper focus for many businesses.

Technology and Automation

COVID-19 has sped up the fourth industrial revolution and has been a catalyst for more human interaction with technology. During the crisis, we have seen further calls to build back better and harness the power of technology for good and to balance inequalities.

Trends are rapidly showing that digital experiences are becoming a must in consumer-led sectors and there has been a sharp upturn in the growth of digital communities. Human-AI synergies relationships are becoming a reality in the post-COVID-19 workplace and a driver for productivity and engagement. Robotics, smart devices and a sharp turn towards contactless experiences are now working across all public and business environments.

We envisage further trends towards strengthened investment in advanced manufacturing, the automation of life-risking and hazardous tasks across multiple industries and the reskilling and re-deploying of workforces. With such game-changing steps, an increasing awareness of risk and compliance should be heeded. With workforce, reputation, ethical issues and finances being under potential threat, should, for example, automation or artificial intelligence (AI) go rogue or technology fail, risk and business continuity planning needs to play a pivotal role in any strategic planning. Data analytics will be at the heart of any significant enterprise, and corporate leaderships will need to understand how to contract in data, how to value data and how data affects competitive markets.

For businesses that have not yet undertaken digital transformation, this is an opportune moment to not only change internal processes, but harness automation and technology to increase productivity and enhance customer experience/service.

Innovation and Cybersecurity

In 2020, we were delighted to see, and it was very supportive of the news to show, that more than 30 leaders from across UK local and civic government, universities and research institutions signed a new manifesto designed to boost the UK's regional innovation potential. The signatories have pledged their support to boost productivity through innovation, levelling-up the UK economy and supporting its COVID-19 recovery. The 10-point manifesto includes calls for a new national innovation policy, every UK region to have a centre of world-class research excellence by 2040 and greater collaboration between UK cities and regions to adopt a global mindset. The manifesto also calls for:

- A review of existing innovation infrastructure
- An emphasis on translational research to capture more of the value of UK research institutions
- A rebalancing R&D expenditure to ensure every UK region has at least one world-class centre of research – currently over 50% goes to London and the South East
- A transformation of attitudes to ensure businesses back innovation
- A devolution of power, responsibility and decision-making to civic leaders to best allow regions to focus on strengths
- The development of alternative and more flexible investment models

As we enter a period of fast-paced digitalisation and global and economic instability, the rise of the dreaded "cyberattack" and data breach has seen a spike. It is anticipated that much larger and sophisticated attacks could be on the horizon – some will be about theft of data and some about denial of service. With risks aplenty on the horizon with ongoing working from home, the growing reliance on the Internet of Things and the 5G rollout that companies will need to address, this will require investment in terms of the right in-house support, third-party vendors and broad organisational awareness of the risks.

The recent ECJ "Schrems II" judgementis already having a significant effect on data sharing between the UK and EU. Those that proactively address cybersecurity and manage the potential risks are more likely to gain a sustainable competitive edge, winning customers' trust and loyalty.

Digital markets will face new regulations aimed to deliver greater competition and innovation for the use of data, while protecting consumers' rights. These new regulations will complement existing antitrust, data protection and electronic communications laws. In some cases, governments are also contemplating the creation of new digital markets regulators or conferring to the existing national competition and consumer protection agencies. Requirements to make data open source, as a stimulus to innovation, could come into various sectors and activities.

Although some continue to caution against interference that could chill innovation, there is an increasing sentiment from national governments, consistent with broader enforcement trends, that new *ex ante* regulations may be needed to address economic dependency from a few companies with exclusive use of valuable data, data monopolies, interoperability of data systems, data mobility and portability, and transparency and fairness.

Smart and Green Infrastructure

Chancellor Rishi Sunak has previously unveiled a £3 billion package to stimulate the UK's green economy in the wake of the COVID-19 pandemic, which included £1 billion to upgrade public buildings and a £2 billion Green Homes Grant, alongside a number of new clean tech R&D and nature restoration programmes.

More is still to be announced to embrace green infrastructure as a means of sustainable development and unleash its potential for economic growth, as well as for wider societal benefits. This could take shape in the long-awaited National Infrastructure Strategy that will provide the course of action to level up the economy, speed up investment in the Northern Powerhouse and fast-track net zero carbon neutrality

Aside from this, there is a growing call for green infrastructure and technology developments to be further incentivised through seed investments and supportive regulatory environments, such as electric vehicle (EV) charging, renewable and low carbon energy and energy storage, among others. The information available to researchers about which activities contribute to climate emissions as a result of the COVID-19 lockdown will feed more targeted policy-making, and we can expect positive and negative incentives to start to shape the way the green economy develops.

Local council reform is being discussed and the growing calls from government for more mayors, less councils (which is seen a catalyst for more devolved powers) and finances allowing decision-making and investment to have less "red-tape", will put smart and green infrastructure at the centre of economic recovery.

Many businesses pivoted during the initial stages of the pandemic, changing to manufacture hand sanitiser, ventilators or PPE. The opportunities and funding around a clean, green recovery will allow some businesses to take advantage of the financial incentives to drive business growth and support job creation for the recovery.

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How to Think About Innovation Strategy in the Era of Discontinuous Change

Krsto Pandza | University of Leeds

Background

At the beginning of the 90's, the world of manufacturing was introduced to the concept of lean manufacturing. A comparative analysis of Japanese, USA and European automotive assembly plants suggested that a set of operations management principles could eliminate the conventional trade-offs between quality, costs and flexibility. One of these principles was a relentless focus on removing waste by continuously implementing small changes into the production process. The lean movement spread like a fire beyond the automotive industry and also well beyond manufacturing operations. This is why a lot of manufacturing companies still see innovation as continuous improvements of existing products where incremental yet frequent changes based on exploiting existing expertise rule the day.

If the automotive industry gave us valuable and omnipresent lean techniques, it also offers a cautionary tale of how innovation strategy needs to change and how continuous incrementalism may not suffice in the environments characterised by complexity, uncertainty and ambiguity. In the 90's, competition among car manufacturers was intense, yet confined to a relatively large number of companies familiar with each other. There were no upstarts like Tesla or digital giants thinking about creating autonomous vehicles. Strategy focused on deciding a strategic position such as differentiators (premium brands), cost leaders and those in the middle. Business models were stable and linear. Suppliers sold to car manufacturers and they sold the end product through a complex network of dealerships to end users. Personal ownership of a car was fundamental to this linear business model. In such highly competitive yet rather stable world innovation strategy was largely about exploiting existing expertise and capabilities to continuously improve products. Although the end product became better and better, there was a high continuity between current and past expertise, technologies and capabilities. Collaboration was crucial for innovation, but it was largely confined to engagement with existing suppliers and customers. Collaboration among familiar partners, sharing similar industrial experience and identity was smooth and efficient. Investment into innovation projects required focus and commitment under the assumption that "the future will be similar to the present".

The Present

Fast forward 30 years and the automotive industry is facing discontinuous and disruptive challenges. The stable industrial architecture of the past is being disrupted by the entry of digital giants that integrate services and directly engage with costumers. Competitive pressures are driven less by actions of competitors, but originate mostly from larger social trends. Cities influence the future of urban mobility, younger customers are increasingly ambivalent about car ownership and environmental concerns determine new regulations. Hence, strategic challenge is less about choosing an adequate combination between quality and costs, but more about systemically focusing on future opportunities and potential discontinuous changes that could make core capabilities or business models obsolete. In other words, the question is less about "are we good in what we are doing?", but more "does what we are good at still matter?". For example, shared ownership models (e.g. car sharing schemes) potentially disrupt the existent manufacturing business model in the automotive industry. Larger digital platforms threaten to disrupt the direct link to the end-users and the importance of brand names. All these require a fresh look at innovation strategy.

Innovation is no longer a high-tech, low-risk game where technological advances support existent products and extend core expertise. Innovation strategy becomes more about identifying discontinuous trends and finding ways to replace disrupted capabilities. The discontinuity can be a threat as it often makes existent capabilities and business models obsolete. However, it also creates innovation opportunities for the companies willing to embrace complexity, uncertainty and ambiguity. Such discontinuous innovation requires experimenting with new collaborative partners often from different industries and with different innovation culture (e.g. universities that develop emergent technologies). Moreover, it requires disciplined and stage investments that create options for the future and at the same time offer flexibility to respond to uncertainty. Continuous innovation is crucial for competitive and stable environments, yet discontinuous innovation is imperative when radical changes are on the horizon.

	Continuous Innovation	Discontinuous Innovation
Competitive environment	Competition among industrial actors with well-understood capabilities and strategic positions.	Competition driven by societal issues, cultural changes and industry convergence.
Strategy	Establishing a unique position between quality and costs.	Systemic focus on future opportunities and disruptive changes.
Business model	Stable and linear.	Hybrid and platform-driven.
Innovation strategy	Exploitation of existing knowledge and organisational capabilities.	Exploration of new capabilities and business models.
Collaboration	Partnering with existing suppliers and customers.	Experimenting with new partners from different ecosystems.
Investments approach	Focus on returns with stable commitment.	Focus on flexibility with staged investments.

The Solutions

The automotive industry is not the only manufacturing sector facing discontinuous changes. Semiconductor manufacturers, consumer electronic producers, mobile network equipment manufactures and medical technology companies are all facing similar discontinuous challenges. However, it is still very indicative that a lot of manufacturing companies, especially those of medium size, ignore discontinuous trends. They are keen innovators, but only if innovations align with their knowledge, sit within their comfort zone and do not require engaging with new partners, experimenting with new business models and exploring new and emerging industries. For those eager to develop capabilities for discontinuous innovation, here are some managerial recommendations:

- Teams that work on continuous innovation (improving core business and products) should be separated from teams that focus on discontinuous innovation (exploring emerging business opportunities).
- Continuous and discontinuous innovation activities require different innovation processes and key performance indicators.
- Innovation teams systematically should scan the peripheral environment and emerging technologies, as well as unusual business models, from different industries and unconventional customers.
- Broad collaboration with multiple actors from the innovation ecosystem is important.
- Investment into a portfolio of emerging businesses should be implemented in a disciplined and staged manner.
- An internal environment supportive of autonomous and entrepreneurial actions should be created, with willingness to embrace uncertainty and contradictions between old and new.

Author

Krsto Pandza is a Professor of Strategy and Innovation at Leeds University Business School and the Director of the Centre for Technology Innovation and Engagement. He has a background in manufacturing engineering and has led several European grants focusing on innovation in the sector. His most recent EU grant (Complex Open Innovation for Network Society) involved collaboration with the global electronics giant, Ericsson. The research helped shape and develop organisational capabilities for corporate innovation. Krsto has published in *Technovation, Journal of Management Studies, Research Policy, Strategic Organisation* and *Long Range Planning*. He is the author of a book "Managing Emerging Technologies for Socio-Economic Impact".

The New Agenda for Manufacturing Companies: Building Organisational Resilience

S. Tamer Cavusgil | University of Leeds and Georgia State University

Background

There is no doubt that the future business landscape will continue to feature volatility, uncertainty and new challenges. The good news is that it will also bring many opportunities.

In recent history, companies had to be concerned about a limited set of risks: commercial, financial, cultural, and so on. In contrast, the contemporary business environment poses a broader set of risks that include:

- Technological (obsolescence, automation)
- Cybersecurity
- Trade wars between countries
- Sustainability challenges
- Social tensions
- Black swan events like the recent global health pandemic

These major events in the macro environment impact business, economy, society, cultures and personal lives, and define our future world.

So how should manufacturing companies prepare for the new realities? One is reminded of the wisdom often attributed to Albert Einstein: "It is in the crisis that inventiveness, discoveries, and great strategies arise. Those who overcome the crisis overcome themselves without being overcome." Forward looking, progressive leaders will always find a way to mitigate adversity and reinvent their organisations.

Building a Resilient Organisation

Clearly, the ultimate goal for management is to build a resilient organisation. Just as relevant for individuals and communities, resilience refers to the capacity to withstand or absorb external stressors. In the face of adversity, managers must assume a proactive role in dynamically adapting to the new imperatives. This involves overcoming problematic, stressful and life-changing events by holding onto blueprints from norms, traditions and processes that made the company successful in the first place.

This is a tall order especially for multicountry, multi-industry organisations, bound by multiple national and geopolitical environmental influences. Yet, resilient organisations manage this when they stick to what Bartlett & Ghoshal[1] identified in 1989 as three strategic objectives: efficiency, flexibility and learning on a worldwide basis.

What does building organisational resilience through a dynamic approach to adaptation imply?

For starters, managers must closely monitor and react to megatrends of our times. Key tasks include:

- Learning how to track, anticipate and respond to megatrends
- Gaining agility; an ability to quickly respond to disruptions
- Acquiring flexibility, and an ability to switch course of action
- Fostering a proactive and risk-mitigating culture where employees are empowered to take quick action.

Is there a more specific best practice made imperative by the latest set of global disruptions? The following highlights some essential actions for building resilient organisations.

Rebalancing Supply Chains

Long, complicated supply chains have now been proven to be risky during the pandemic. In the past, companies practiced global (typically single) sourcing and supply chain optimisation to minimise costs, reduce inventories and boost asset utilisation. "Just in Time" sourcing enabled companies to deliver more products to customers at the lowest price with higher profits.

Now, in a relatively de-coupled global economy, COVID-19 has demonstrated the vulnerability of this strategy. Managers have discovered many bottlenecks – chokepoints – in the distribution of essentials such as medical supplies early in the pandemic. As another example, car companies have stopped assembly lines due to an acute shortage of microchips.

The outcome is a rebalancing, shifting from "Just in Time" to "Just in Case" supply chain management. Businesses look to simplify and shorten their supply chains as more disruptions are almost certain to occur. For example, Harley-Davidson recently announced its "Rewire Playbook" strategy, which lowers production volumes in reaction to reduced demand, while also eliminating models. By simplifying, the company is sharpening its focus on the products that matter most to clients. Rebalancing of supply chains is also made possible by the narrowing of cost differences between the UK and emerging markets. Advances in manufacturing – Industry 4.0 Principles (big data, analytics, advanced robotics, 3D printing, etc.) – now offset about half the labour cost differential between China and the US and UK.

1 Bartlett, Christopher A. & Sumantra Ghoshal. 1989. Managing Across Borders. The Transnational Solution. Boston: Harvard Business School Press.

Technology Adoption and Innovation

The old adage, "necessity is the mother of invention", still rings valid as we see numerous companies and entrepreneurs creating new business opportunities. In 2020, more than 1.5 million new business applications were received in the US – double the number in 2019! The UK saw an 8.2% increase from 2019 to 2020, with over 780,000 new company formations. These were in a variety of industries: healthcare, financial services, real estate, education, remote learning technologies, online grocery, branchless banking, cybersecurity and social online gaming.

The pandemic has accelerated digitisation, e-commerce adoption and a shift to remote working. Companies and entrepreneurs introduced novel business models, and deployed digital technologies. Those with the ability to innovate and course-correct rapidly, while pursuing a stable financial and operational organisation, will fare better.

As well as the impact of the pandemic, the UK is entering a new trading relationship with the EU. In this context, a recent McKinsey study[2] suggests that those firms that race ahead in technology adoption are able to sustain their competitiveness. The UK manufacturing industry was highly exposed to EU trade and reported some border disruption, yet it also has opportunities to grow business in the UK and non-EU countries. In 2020, the manufacturing industry generated the second largest Gross Value Added (GVA) in the UK after retail and wholesale businesses.

Upskilling and Reskilling Employees

With accelerated automation and digitalisation, companies are left with fewer qualified workers. Apart from fundamental requirements such as communication and analytical skills, employees need to acquire Industry 4.0 skills. These are higher cognitive skills (required, for example, in business analytics), technological skills (AI, robotics, etc.), and social/emotional skills (self-realisation). This implies that managers must invest in the reskilling of existing staff to provide the workforce with professional and personal development opportunities. In addition, they must recruit successive generations of qualified talent[3].

Interestingly, a recent BCG study found that interest in working abroad among workers has fallen in most countries[4]. Naturally, COVID-19 concerns loom big, exacerbated by concerns over immigration policies, social unrest and the rise of virtual mobility. While some 62% of UK workers indicated that they would be willing to relocate abroad for work in 2018, this percentage fell to 48% in 2020. Similarly, while the UK ranked second (after the US) in 2014 in terms of staff who would move to UK for work, it fell to the fifth rank in 2020 (after Canada, US, Australia and Germany).

These trends have important implications for UK companies with international operations. First, the question arises as to how well UK manufacturers would be able to build foreign partner relationships. How can you build meaningful and lasting relationships while working remotely? If customers, network partners, or employees are hesitant, non-committed, or confrontational about working with you, then how will you win them over? Second, conflict management is likely to be more challenging. Will resolving disputes and conflicts with your partners be made more difficult due to virtual connectivity? Third, knowledge transfer will become more complicated. How successful will managers be in communicating tacit knowledge? UK companies have traditionally been successful in transferring and exploiting existing repositories of knowledge around the world. Now what?

2 "Facing the future: How UK businesses can thrive in the next normal", Tera Allas, Yuval Atsmon, Andrew Goodman, and Virginia Simmons, McKinsey, March 2021.

3 Ibid.

4 "Decoding Global Talent, Onsite and Virtual", Orsolya Kovács-Ondrejkovic, Rainer Strack, Jens Baier, Pierre Antebi, Kate Kavanagh, and Ana López Gobernado, Boston Consulting Group, March 2021.

Meeting Rising Societal Expectations

In his 1759 book, "Theory of Moral Sentiments", Adam Smith underscored the importance of empathy. He reminded us that, while we all have a natural tendency to look after ourselves, as social human beings, we are also endowed with empathy towards others. In 1945, Milton Hershey, American chocolate pioneer, suggested that "business is a matter of human service." More recently, Paul Polman, former chief of Unilever, promoted "conscious capitalism" as a sustainable form of capitalism. Similarly, Neville Isdell, former CEO of the Coca-Cola Company, spoke of "connected capitalism" as a way for companies to better engage with their stakeholders wherever they do business.

It is no surprise that social accountability and sustainability have now risen to the top of the corporate agenda. Consumers and shareholders alike want more from businesses, and solutions for a better future. UK companies operating in emerging markets are especially under scrutiny and increased pressure to comply with these broader societal goals. In response, companies have implemented numerous programs and adopted new scorecards to comply with these societal pressures. Companies now track and report such measures of societal impact as mitigation of climate effects; externalities of business activity; ESG priorities; and products that "do good".

The question is also asked whether shareholder value accurately reflects what society values. Is gross domestic product (GDP) still a valid measure of well-being? As capitalism changes, so must our metrics. Accordingly, there is now growing consensus that what we measure no longer reflects what we value. The metrics guiding national policies and corporate investments focus narrowly on short-term financial value. We now require a longer-term perspective, a deeper understanding of value, and new metrics measuring human, social and environmental well-being. As an illustration, GDP is the most well-known measure of economic activity. GDP captures the financial value of goods and services exchanged (i.e. as in an income statement). Yet it omits:

- Anything "external" to the market, including environmental and social costs, which is a fatal flaw as the costs of climate change mount
- Income and wealth distribution, which contributes to rising inequality, boosts populist leaders and diminishes trust in political institutions
- "Free" digital services such as internet search and mapping or social media
- Intangibles such as knowledge and data, such as hours worked and life expectancies

To illustrate, the UK's per capita GDP is about 75% of the US[5]. However, UK citizens live 2% longer than Americans and enjoy a third more leisure time. After reasonable adjustments for such differences, overall wellbeing in the UK is estimated at 97% of the US level.

One promising new metric is the Genuine Progress Index, or "GPI," developed in several US states, Finland and Canada. GPI is designed to take broader measures of social well-being explicitly into account. For example, the GPI falls in value if the poverty rate increases.

These and similar developments imply that, more than ever, UK manufacturers must be successful in building resilient organisations and contend with new requirements in order to achieve global competitiveness.

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5 Beyond GDP: The Need for New Measures of Progress (2009), Robert Costanza Maureen Hart Stephen Posner John Talberth, The Frederick S. Pardee Center for the Study of the Longer-Range Future, Boston University. https://www.bu.edu/pardee/files/documents/PP-004-GDP.pdf

Organisational Behaviours

Reset and Reinvent: ESG at the Centre of Building Back Better

Matthew Kirk, Anita Lloyd, Caroline Noblet, and Hannah Kendrick | Squire Patton Boggs

COVID-19 sped up the conscious capitalism movement and life will not just be returning us to a new normal, but also a more resilient and sustainable one. Knowing your corporate purpose and holistic stakeholder engagement is central to building back better and will become increasingly important as calls grow for businesses to play their part in solving the problems of people and the planet.

For businesses, building back better means more than just corporate social responsibility, instead it is about resetting and reinventing their longer-term strategy to create truly sustainable businesses that are resilient, profitable and put people, the planet and purpose at the centre. Businesses will increasingly need to adopt a long-term stakeholder approach to their business models in order to remain not only relevant, but also viable in the long term and profitable.

The call for greater corporate transparency on ESG issues will only amplify as ESG factors prove themselves not just to be non-financial considerations, but also material drivers of financial performance and business resilience. Incorporating non-financial considerations will become a mainstay of business planning and decision-making as more and more companies implement frameworks for ESG factors into their business models.

External pressure will continue to come not just from legal compliance, but also all stakeholders. Businesses will need to focus their attention on the following stakeholders, adapt corporate behaviours and find solutions for the ESG pressures underpinning them.

	Consumers	Employees and Workforce	Investors and Shareholders	Society	Supply Chain
Environmental	**Pressures**				
	Responsible consumerism and ethical consumption are driving change as the demand for sustainable and ecofriendly products taking into consideration what it is made from, who made it, where, how and whether they were paid fairly for doing so is at front and centre for decision-making. For example, eating Fairtrade chocolate and wearing sustainable fashion.	Employers' green credentials are becoming increasingly important in an environmentally conscious age, none more so than for the younger generation, who are attracted to companies with a purpose aligned with their values.	On the board agenda will be the need to produce an action plan to reduce carbon emissions (decarbonisation) to meet net-zero targets. The financial risks of climate change in their reporting with many reporting against TCFD recommendations Growing trend to link corporate targets to global target goals.	Businesses will be under increasing pressure to support the communities in which they work or their business impacts. Society will expect fair and transparent business practices, and companies will be required to "walk the walk".	Supply chain transparency is increasing and companies will become accountable for the whole supply chain, no longer turning a blind eye to sub-standard practices, which could previously be blamed on supply chain partner activity.
	Solutions				
	Implement management systems to ensure that products and services comply with standards to safeguard from environmental, health and safety risks. In addition to this, review any reputational risks across social media to protect your business.	Embed the green agenda into your policies, practices and employee benefits.	Assess the possible solutions available for decarbonising businesses, and establish the necessary steps to tackle financial, legal and regulatory risks.	As carbon disclosures become mainstream and we move to nature disclosures, assess environmental regulation and environmental litigation trends to minimise corporate risk.	Review your commercial and supply chain arrangements, ensuring product stewardship across the entire life cycle of production, use and recycling of products.

Social					
	Pressures				
	Conscious consumerism focuses on making positive decisions throughout the buying process. Other factors such as pay equality and humane working practices also drive this type of consumption.	There is greater scrutiny on employers to demonstrate their values and purpose, including whether they pay fairly, look after their workforce, and are inclusive and diverse. These are factors that will draw and retain the best talent, which, in turn, creates competitive advantage and minimises cost.	Integrating social factors to ensure responsible investment practice is a board priority. Applying the social lens and recognising that social issues can positively impact financial performance and reduce risks, as well as build human capital and productivity, provide competitive advantage and enhance your reputation and profit.	When accessing new markets and communities, empowering and promoting equal opportunities and social and economic inclusion will be on the agenda.	Paying a fair or living wage in all countries of operation and implementing a supply chain model that enables social benefit and has positive benefit for poorer communities will become priorities as we head towards 2030
	Solutions				
	Identify the risk of reputational damage in relation to modern slavery and put programmes in place to address the risks identified.	Stay abreast of human resources issues, from policies, procedures and training that support best practice on (D&I, mental health and wellbeing, work-life balance, pay and reward mechanisms, etc.) and seek legal support on remedial measures when things go wrong (investigations, disciplinaries, employment litigation, performance management, etc.)	Identify the national and international standards, protocols and policy agendas to support productivity and help you to consider the impact on employment, direct and indirect, in your investment decisions. Also, put in place adequate procedures to ensure that they and the persons who perform services for them, do not engage in bribery or corrupt practices.	Review opportunities to access new markets and communities to ensure minimal risk, as well as monitor emerging trends relating to tax.	Develop policies and practices to promote economic inclusion when selecting suppliers, support the implementation of a supplier diversity programme and policies, and identify risks in your supply chain (safety, productivity, etc.) that you can mitigate through education and skills development.

Governance					
	Pressures				
	Demonstrable evidence of ESG capability will be critical to retaining and acquiring new customers and mandates. Aspects including transparency on stewardship and engagement activities are considered key in demonstrating a strong ESG capability.	Strong governance structures demonstrate the integrity and sustainability of your business model. Corporate reputation is just as important for your workforce as it is for other stakeholders who are looking for diversity of representation on boards and transparency on pay and remuneration.	Leadership, purpose, board independence, diversity and composition, as well as executive pay and compensation, are some of the myriad factors that investors will be looking at when scoring companies on governance.	Against a COVID-19 backdrop and the call to build back better, corporate "purpose" will become key. Incorporating non-financial considerations into business decision-making has also become the mainstay of investors and shareholders as they adopt ESG factors into their corporate frameworks. There is a trend towards more stakeholder scrutiny around corporate decision-making under their duties under the Companies Act 2006.	Enforcement in human rights issues and director accountability are hot topics. Businesses that fail to take steps to monitor and deal with human rights issues across their supply chain are increasingly seeing reputational damage and claims. Businesses need to consider that they are responsible for assessing and policing their supply chains. Businesses are increasingly dealing with fair wages, working hours and humane treatment issues in the boardroom and in the public view.
	Solutions				
	Develop a clear policy for customer engagement and ensure you have a strong corporate code of ethics and conduct that meets the ongoing changes driven by your customer base or external global factors.	Create a framework that not only covers compliance with legal and regulatory requirements, but also offers a holistic assessment of business integrity that takes into account reputational and commercial factors.	From the governance reviews that provide independent assurance for investors to strategic guidance on purpose and business integrity processes, your business needs to demonstrate accountability and transparency in relations with investors and shareholders.	Pursue a long-term view on social responsibility, fairness and sustainable value creation and publicly define a social purpose, take a holistic and equitable approach to capital allocation decisions, considering the workforce, stakeholders and providers of capital, and communicate comprehensively with all stakeholders to instil confidence and trust in a company's approach to build resilience into strategy and operations.	Put policies in place to respect human rights that address modern slavery, human trafficking and child labour. Identify and assess human rights risks in relation to your supply chain and integrate human rights considerations into your supplier and third-party due diligence practices.

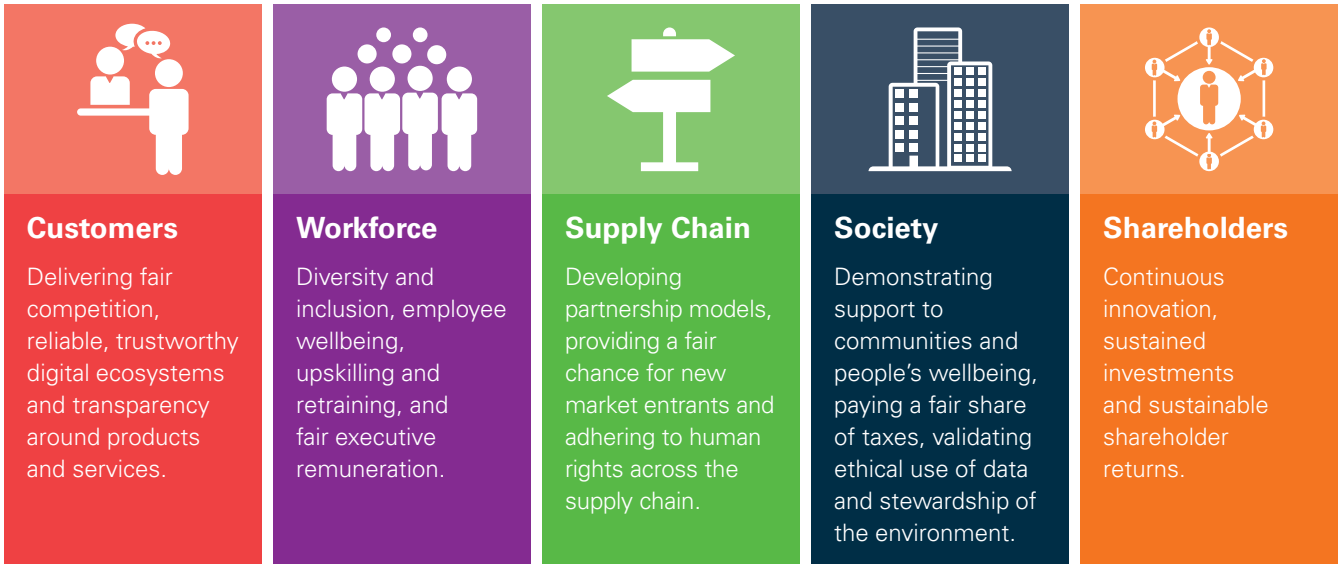
Compliance Pressure

Reputation, as well as corporate purpose, will become increasingly important as consumer calls grow for businesses to play their part in solving the problems of people and the planet. Businesses will increasingly need to adopt a long-term stakeholder approach to their business models in order to remain relevant.

Incorporating non-financial considerations will become a mainstay of business planning and decision-making as more and more companies implement frameworks for ESG factors into their business models. For businesses, this means not only demonstrating ESG credentials, but also establishing a clear purpose, which is in line with the UN Sustainable Development Goals.

Going forward, the call for greater corporate transparency on ESG issues will only amplify as ESG factors prove themselves not just to be non-financial considerations, but also material drivers of financial performance and business resilience.

Pressure will continue to come not just from legal compliance, but also from customers, the workforce, supply chains, society and shareholders. Businesses will need to focus their attention on the following corporate behaviours:



In addition, the increasingly complex regulatory regime has increased the exposure faced by businesses. This is particularly acute, as the regime extends to actions of third parties acting on a business' behalf, in particular within their supply chain.

Developing a Robust Compliance Framework

From our experience, the consequences for a lack of robust compliance programmes are very real, including unlimited fines, loss of operating licences and damage to the business' reputation. Businesses will require a well-designed and well-implemented compliance programme to help mitigate substantial risk, which is also able to detect/address systemic weaknesses. Governance is critical and it has to be on the boardroom agenda.

A robust global compliance framework requires you to benchmark, assess, implement and/or maintain effective compliance programmes to prevent, deter and detect violations of legal and regulatory requirements or internal policies across the full spectrum of business integrity risks, including:

Anti-tax evasion (corporate tax offence)	Modern slavery
Bribery and corruption	Money laundering
Competition	Reputation
Data privacy	Sanctions
Environmental	Sexual harassment

Mitigating ESG Risk

Anita Lloyd and Jonathan Chibafa | Squire Patton Boggs

ESG considerations are at the forefront for governments, for regulators, for consumers and for employees. Businesses cannot ignore the growing momentum behind ESG factors and the drive to greater disclosure and transparency.

But it is more than that. When it comes to developing, implementing and reporting on strategy, businesses are beginning to see ESG factors as central to creating long-term value. ESG factors are proving themselves as material drivers of financial performance and business resilience. More transparency is leading to more profitable investing and better disclosure is seen as benefitting all stakeholders. This is highlighted by a growing body of data showing that companies with better ESG ratings generate higher returns than did their peers.

Pressure on businesses to improve their ESG transparency and disclosures is coming from:

- Investors and lenders imposing ESG conditions on access to capital
- Statutory and regulatory obligations and the resulting regulatory scrutiny
- "Voluntary" industry group standards, charters and principles of best practice
- Consumer and market pressure
- Stakeholder activism
- Current and prospective employees
- Benchmarking against competitors
- Increased audit and assurance requirements

As businesses address greater corporate transparency alongside a strong corporate purpose that embeds sustainability and ESG initiatives into the business strategy and operating model, they need to consider the risks that come with that and how to manage those risks.

Managing and Addressing Litigation Risks

As well as improving your ESG credentials and disclosures, there are a number of potential litigation threats arising from the increased focus on ESG:

Stakeholder Activism

Some stakeholder groups are using financial disclosure laws to pressure companies to increase the amount of information they disclose about their emission of greenhouse gases and their plans to minimise those emissions. Increased engagement with stakeholder groups on issues of concern can decrease the risk of activism, adverse publicity and litigation.

Liability for ESG Disclosures

The rise of "greenwashing" is prominent, which relates to the practice of making an unsubstantiated or misleading claim about the environmental status of a business or the environmental benefits of a product, service, technology or company practice. Incorrect or misleading statements about a company's ESG performance can increase the risk of litigation against a company and its directors. Putting in place an effective audit and assurance regime around ESG disclosures can help mitigate this risk.

Regulatory Enforcement

With increased law and regulation comes the increased risk of regulatory enforcement if law and regulation is breached. Organisations need to have an effective governance framework in place around ESG-related risks and issues together with robust policies and procedures.

Claimants are increasingly looking to exploit corporates' ESG policies, practices and disclosures as part of their litigation strategies:

- By using environmental statutes against companies for their perceived "contribution" to climate change
- Courts are accepting parent company liability and duty of care in claims arising from allegations of the local activities of overseas subsidiaries, for example modern slavery and workers' rights violations
- NGOs, claimant law firms and litigation funders are increasingly using class actions to seek judicial redress

Getting It Right

ESG risk reviews should be undertaken periodically and at every stage of your business cycle .

Fundraising and Investing

- Investor circulars and prospectuses
- Responsible investment policies
- Ongoing ESG reporting and disclosure to investors
- Audit and assurance

Policies and Disclosures

- Corporate social responsibility
- Health and safety
- Climate change
- Decarbonisation
- Business and human rights
- Policies, practices and statements with respect to activities of subsidiaries
- Financial statements and disclosures
- Equal opportunities
- Board diversity
- Gender, CEO and ethnic pay gap reporting
- Biodiversity loss
- Water scarcity
- Deforestation

Mergers and Acquisitions

- SPAs and ESG representations and warranties
- Targets' policies, practices and key contracts for ESG litigation risk
- Increased ESG-focused due diligence
- Investor requirements to be met

Business Collaborations

- Shareholder, joint venture and partnership agreements
- Management and outsourcing agreements
- Service and supply agreements
- Supply chain monitoring and assurance

Recruitment and Retention

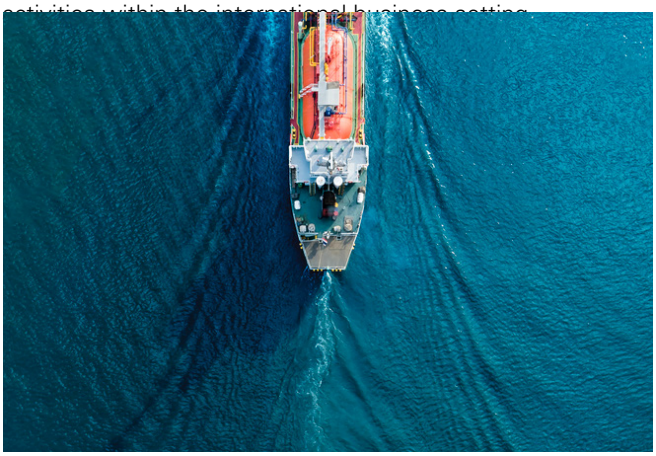
- Communication and engagement with workforce

International Customer Involvement in New Product Design of Exporting Suppliers: Implications for Managers

Zhaleh Najafi-Tavani (University of Leeds), Ghasem Zaefarian (University of Leeds), Peter Naude (Manchester Metropolitan University) and Sahar Mousavi (University of Loughborough)

Background

The involvement of customers, not just as information providers but also as co-creators of new products, has become increasingly important for the success of developer firms. Particularly, within the context of international business, the involvement of international customers in the development of new products enables exporting suppliers to overcome one of the main barriers of operating in overseas markets, namely the lack of local market knowledge. As such, more multinational companies, such as Boeing and Microsoft, are now involving their international customers in the development of new products. And yet, our understanding is limited in terms of both the factors facilitating international customer involvement, as well as the consequences of such arrangements within the context of international marketing channels. Our research study[1] of 264 Chinese exporting firms that involved their international customers at the design stage of new product development provides a number of important insights into the co-creation activities within the international business setting.



Involving International Customers in Designing New Products Contributes to the Exporting Supplier's Performance

Exporting suppliers need to recognise that the responsibility for developing better products should not be limited to the firm and its departments, but should be shared with channel members (i.e. the firms involved in the process of getting products or services to end-users). International customers such as importing firms have direct and frequent interactions with local markets and, compared to other sources of knowledge, the information provided by these customers is updated more frequently, of higher quality, and more accurate.

Through involving these customers in the design of new products, exporting suppliers can gain access to various sources of knowledge such as local institutional-related knowledge (e.g. social, cultural, and legal practices), and local business-related knowledge (e.g. end-users' requirements and preferences). Accessing such diverse sources of knowledge enables exporting suppliers to generate new design ideas that better match with the requirements and preferences of local markets, thereby leading to the development of superior products. Moreover, in addition to providing local market knowledge, international customers can also participate in joint problem-solving activities and decision making with the exporting supplier in developing new designs. The international customers are also identified as the main source of novel products – and hence the main source of competitive advantage – as they often come up with out-of-the-box solutions that effectively meet local market needs; yet due to their novelty, such solutions may not be in-line with solutions/perspectives identified or developed by the supplier's new product development team.

1 Najafi-Tavani, Z., Mousavi, S., Zaefarian, G. and Naudé, P. (2020). Relationship learning and international customer involvement in new product design: The moderating roles of customer dependence and cultural distance. Journal of Business Research, Volume 120, pp 42-58, ISSN 0148-2963, https://doi.org/10.1016/j.jbusres.2020.07.020

Be Aware of the Implications of Cultural Differences Between Exporting Suppliers and International Customers

While involving international customers in the design of new products can benefit the exporting customer's performance, the effectiveness of such arrangements depends on the extent to which channel partners are culturally different. In particular, culture is so powerful that cultural heterogeneity is often considered as the main barrier for interfirm communication, knowledge exchange and learning. Within the context of cross-border collaborations, this means that even if an international customer possesses good ideas regarding new product designs, it would be difficult to successfully exchange such ideas if cultural differences exist. Co-creation activities such as joint problem solving may prove difficult or fail due to communication difficulties resulting from a lack of cultural similarities between channel partners. Therefore, managers should make sure that they either limit any involvement in the design of new products for those international customers with whom they share a sufficient level of cultural similarities, or should work through their cultural intelligence, meaning that managers should understand how to interact successfully across cultures. Otherwise, involvement of an international customer will become fruitless, if not harmful, for instance, if there is a lack of understanding or respect for each other's cultural preferences.

Be Aware of the Learning Capabilities Needed for More Productive Involvement of International Customers

To increase the level of customer involvement in the design of new products, managers should develop and maintain dynamic learning capabilities such as relationship learning[2]. Relationship learning requires the mutual commitment of channel partners, as it involves joint problem solving and interfirm knowledge exchanges that provide the necessary baseline for the involvement of international customers in developing new product designs. On this basis, interfirm relational capabilities become more beneficial as the level of dependence of the international customer on the exporting supplier increases. Thus, when capitalising on relationship learning, managers should pay attention to the extent to which their international customers depend on them. Research suggests that dependent customers are often more committed to the interfirm relationship, and hence are more willing to dedicate important resources to the relationship.

In addition to the dependence of the international customer, exporting suppliers should also pay attention to the extent to which they are culturally different from their international customers when developing relationship learning capabilities. Such differences can create tension and misunderstandings between channel partners, which, in turn, reduces the likelihood of involving international customers in co-creation activities, regardless of the level of relationship learning.

Overall, good relationship quality and the ability to learn from relationships, coupled with cultural intelligence, can prevent international customer-exporting supplier collaboration from drifting to the dark-side, enabling such cross-country collaboration to constructively deliver on their goals.

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2 Salnes, F. and Sallis, J. (2003). Promoting Relationship Learning, *Journal of Marketing*, Vol. 67 (July), pp 80-95.

The Future of Green Energy

Anita Lloyd | Squire Patton Boggs

In November 2020, Prime Minister Boris Johnson announced his ten point plan for a green industrial revolution. The plan intends to provide a direction for future legislation on the road to net-zero carbon by 2050, and green energy has an important role to play in reaching this goal.

For the Rt. Hon. Kwasi Kwarteng, Minister of State at The Department of Business, Energy and Industrial Strategy, the most significant parts of this plan are the electric vehicle ambitions, and the strategies to increase the use of both carbon capture usage and storage (CCUS), and hydrogen capacity by 2030. Why? First, these renewable sources have the potential to fuel economic recovery, by attracting investment and creating "green-collar" jobs. Secondly, the increased use of electric vehicles on the road engages the public, an important stakeholder, in the race to net-zero by 2050.

Business leaders in the energy sector are in agreement that the future of green energy consists of a diverse mix of energy sources. The initial stages of the transition will see the baseload of energy provided by gas, wind and nuclear as we make the transition to an efficient mix of energy sources that can provide renewable energy at scale.

Currently, there are a number of renewable energy projects taking place across the regions with the potential to contribute to the future of green energy. Notably, the Wave Master Project (funded by Bibby and Peel) sees the maritime industry investigating suitable alternative energy sources, such as ammonia. Acorn in Scotland is undertaking a large-scale CCUS and hydrogen project, and Drax is experimenting with CCUS and biomass.

In addition to these natural resources, there are green-tech opportunities within the wider circular economy, such as technology with the ability to convert plastic to hydrogen. Thus, industry experts are likely to construct many innovative solutions to decarbonisation.

A one-size-fits-all approach will not be appropriate for the future of green energy. Primarily, inconsistencies in UK weather prevent solar or wind from reliably sustaining the national grid. While we have greater control over the volume of green hydrogen produced, such operations are expensive, so, for example, powering the UK on hydrogen, or any other renewable source alone, would not be an economically viable solution. Nevertheless, a whole systems approach to planning is recommended by industry experts, in order to find the most efficient blend of energy resources.

The Role of Green Energy in Economic Recovery

It is clear that the government has devised the ten point plan to contribute to economic recovery. The allocation of National Investment Bank funds and sovereign green bonds demonstrate the government's intention to support a green revolution, create jobs and make decarbonisation a success

COP 26

Along the way, the UK hosted COP26 in November 2021 , which provided the optimum platform to showcase the UK's green energy capabilities to the world. This can lead to the attraction of new business and investment into the UK market, further job creation and sector growth. In addition, this private investment will fuel the global race to net-zero carbon, a race that is heating up, with the addition of China, Japan and India in the last 18 months and more recently, the US.

2050

A number of critics argue that the deadline of 2050 for carbon neutrality is not fast enough. If we are able to make a change now, then we should, and some regions, even individual businesses, have set themselves more imminent targets. Similarly, some regions will need to reach carbon neutrality at a much earlier date in order for the UK as a whole to achieve carbon neutrality by 2050.

However, the UK faces a number of challenges that will take time to overcome. Namely, the affordability of green energy and consumer behaviour change. Thus, as the Rt. Hon. Kwasi Kwarteng explains, the current timeline is a suitable balance of ambitious versus plausibility.

The Challenges

Funding

Funding is required to a) facilitate new project developments, and b) make renewable sources an economically viable option both to businesses and the consumer. It is reassuring that the government has already committed public funding through the ten point plan and energy white paper, but in publishing the ten point plan and the Energy White Paper, the government has also created an all-important framework for private sector investment to support this transition.

For some time, the sector has been in a paradoxical position where businesses know that they, and the wider economy, are required to decarbonise, but may have lacked confidence in what the future of decarbonisation looks like. Thus, there has been a reluctance to plan and invest in energy and infrastructure projects, due to concern for stranded assets in the future. Government plans enable businesses to commit to, and invest in, decarbonisation with greater confidence, and this fuels sector growth.

To demonstrate, the offshore wind industry received £94 billion in private sector investment as a result of the government's investment framework, which massively accelerated growth in this part of the sector. Today, the UK is a world leader in offshore wind energy, providing 35% of the global capacity. Thus, the energy sector is likely to receive greater and longer-lasting financial support through private equity than government support.

The Consumer

While consumers seem to be increasingly engaged with climate change issues, they remain largely uneducated on the complexities required to achieve carbon neutrality. Hence, a coordinated response from both government and industry is needed to educate and explain these changes to consumers, as well as any associated costs.

Consumer behaviour can take a long time to adapt due to the embedding of social norms. The consumer may be expected to purchase new technologies of which they have little experience, which can often be expensive and lack sufficient infrastructure in the early stages. On the other hand, there can often be substantial cost savings in the longer term as a result of investment in energy efficiency. To promote the adoption of new technologies and behaviour change, the consumer needs to understand the reasons for the change, the benefits of the change, and see the change become commonplace. Therefore, the more consumer engagement in driving decarbonisation, the easier it will be to embrace the change across the economy. The rollout of electric vehicles in the UK is a great example of this.

Conclusion

The future of green energy will not be a one-size-fits-all in terms of technologies that lead the way. Instead, a diverse mix of renewable resources and green-tech will be required to meet our zero-carbon goals. The current hurdles to achieving this are consumer behaviour and cost. However, these can be addressed over time with a coordinated consumer education, an investment framework and consistent government policy.

Government publications, including the Energy White Paper and the ten point plan, have "fired the starting gun" in the race to carbon neutrality, providing a clear direction, an inclusive and diverse mix of energy sources, incentives and a realistic timeline to get decarbonisation right. The current plan, if successful, has the capability to restore economic activity, showcase the UK industry's capabilities and establish the UK as a global superpower.

The Energy White Paper: A Lot of Promises to Deliver On

Rob Broom, Paul Brennan and Ray O'Connor | Squire Patton Boggs

On 14 December 2020, the Department for Business, Energy & Industrial Strategy (BEIS) published the long-awaited Energy White Paper, which builds on the prime minister's ten point plan for a Green Industrial Revolution and the National Infrastructure Strategy, and sets out the steps the government intends to take within the next decade to address the transformation of the UK energy system to achieve net zero by 2050.

The Energy White Paper focuses on strategy in six key areas: consumers, power, energy systems, transport, buildings, oil and gas, and industrial energy.

The year 2050, with its zero emissions target, is considerably closer now than it was when the Climate Change Act 2008 came into force. The UK's new 78% reduction target for 2030, in just nine years' time, is only marginally less than the original 80% target for 2050 under the act.

Achieving the world's most ambitious greenhouse gas reduction target will clearly demand bold policy decisions. The challenges are immense. There is little doubt that a fundamental rethink of the commercial and regulatory framework for the UK's energy system, predicated as it was on large centrally dispatched fossil fuel and nuclear power stations and an abundance of gas, is required, though many in the industry will shrug wearily at the prospect of yet more legislative intervention. Time is of the essence and these changes must address the current obstacles to installing the new network infrastructure required to achieve such ambitious targets.

For a decarbonised world, electricity distribution will be no less essential than water, and although there is no mention of it in the White Paper, electricity distribution and transmission companies will surely need powers more akin to those of water and sewerage undertakers, if the aspirations in the White Paper are to be met.

Whether or not the UK is capable of rising to the challenge remains to be seen, but the Energy White Paper does at least deliver a vision and direction of travel that will be welcome to investors. The government is placing a good deal of faith in the power of competitive grant funding as a way of bringing forward new technologies. However, funding and developing full-scale commercial projects is a knottier problem. There are a dizzying array of initiatives currently under development, many of which will depend on subsidies, ultimately paid for by energy consumers – voters, who will inevitably demand protection against escalating energy prices. There is, though, little prospect of subsidy free development until carbon is priced out of the market, which would add to consumer costs in areas other than energy, and, in the absence of concerted international effort, further jeopardise the UK's industrial base. As for nuclear and new renewable development, the White Paper stresses that the government's policies to stimulate investment are subject to the proviso that they offer value for money to consumers. But, with the Climate Change Committee stressing that "action is required across all areas and all sectors, without delay", there is no credible alternative. Yet, in the medium term, the signs are propitious.

You can read further analysis of the government's Energy White Paper here.

How Can Small and Medium-Sized Manufacturers Contribute to the Net-zero Target?

Chee Yew Wong | University of Leeds

Net Zero depends on SMEs

Small and medium-sized enterprises (SMEs) are the backbone of the UK's economy by contributing 47% of the country's GDP. They also have the ability to collectively contribute to the country's net-zero target, i.e. to cut the UK's net emission of greenhouse gases by 100% by 2050 (or 50% by 2030) relative to 1990 levels.

However, many SMEs lack skills, financial and human resources required for implementing environmental management systems (EMS) and environmental management practices (EMPs) such as green produce design and cleaner production technologies[1]. EMS is a formal system firms use to articulate goals, make choices, gather information, measure progress and improve environmental performance. While not all SMEs have EMS such as ISO 14001 certification, they may adopt simple EMPs that do not require significant investment to attract customers who are increasingly concerned about sustainability or to gain cost saving while reducing waste. The Business & Energy Secretary, Kwasi Kwarteng said, "simple changes could differentiate a business from the competition, attract new customers and investment and save them money on their running costs."[2] SMEs need to learn which simpler EMPs that require less investment can help them gain efficiency.

Are Low-hanging Fruits Enough?

There are many small and less-costly changes that can lead to big impacts, such as switching to renewable energy. Using energy-efficient programmes can save energy costs to compensate investment in renewable energy. What customers appreciate is not just suppliers who save energy cost or use renewable energy. There is a need to reduce other types of emission that arise from the use of materials, transportation and packaging. This article argues that installing energy-saving light bulbs and solar panels alone will not be enough for achieving our Net Zero goal. SMEs often do not have massive financial resources but their actions to reduce emission are required to achieve the net-zero goal. SMEs need to know which EMPs to invest in that lead to cost saving and customer satisfaction. It is important to understand how SMEs may allocate their limited resources to EMPs in an effective way, and how large firms and the government can provide them with resources they need.

Research on SMEs

This article is based on two studies published by Professor Chee Yew Wong from Leeds University Business School, together with his co-authors from Hong Kong Polytechnic University (Christina W.Y. Wong) and Thammasat Business School (Sakun Boon-itt).

The studies[3] show that small firms can adopt sustainable packing and logistics practices to improve both eco and cost-efficiencies if they learn how to address the emission issue in a systematic manner. A reactive approach to coping with regulatory pressures often leads to inefficient investment. Most firms benefited from the more formal, structured approach of an EMS, but this involves high investment costs. Without a formal environmental certification (e.g., obtaining ISO 14001), SMEs can establish their own EMS by integrating environmental management decisions with business strategy, resource management and information systems. Small firms can invest in reducing the amount of materials used in packaging materials, reducing scraps, and reusing/recycling packaging materials. Many customers are changing their sourcing strategy to emphasise the use of SMEs that embrace sustainability. SMEs can increase profits, and energy efficiency by working with their customers and other shippers to improve vehicle fills (i.e. to fill up the vehicle capacity and reduce transportation cost per unit delivery) and coordinate delivery schedules (to consolidate deliveries and increase vehicle fills).

The studiesalso point out that large firms are more capable of developing capabilities in sustainable design and production to not only achieve eco and cost-efficiencies, but also financial and market advantages. Large firms have the financial resources to invest in research and development (R&D) and collaboration. They have the capacity to change the design of their products to those that consume fewer resources. They have the capability to change/upgrade their production methods and machineries so there is less energy, emissions and waste. Studies show such a resource advantage gives large firms a unique edge over small firms, i.e. the ability to generate or capture new markets using sustainable product designs or production technologies.

1 Wong, C.W.Y., Wong, C.Y., Boon-itt, S. (2020), Environmental management systems, practices and outcomes: Differences in resource allocation between small and large firms, International Journal of Production Economics, 228, 1-12. 107734. URL: https://doi.org/10.1016/j.ijpe.2020.107734

2 https://www.financialaccountant.co.uk/news/small-business-asked-to-lead-the-way-to-cut-emissions-to-net-zero-by-2050

3 Wong, C.W.Y., Wong, C.Y., Boon-itt, S. (2020), Environmental management systems, practices and outcomes: Differences in resource allocation between small and large firms, International Journal of Production Economics, 228, 1-12. 107734. URL: https://doi.org/10.1016/j.ijpe.2020.107734

To acquire knowledge and capabilities in sustainable product design and sustainable production, SMEs can cooperate with large firms. Collaboration with customers brings several benefits. First, customers who are serious about competitiveness often demand that their suppliers reduce emissions, waste and cost at the same time. Studies[4] show that collaborating with such customers leads to the adoption of sustainable practices that are eco and cost-effective. Second, collaboration with customers also leads to the development of customer-specific knowledge that the customers appreciate and rely on, leading to long-term commitment to the relationship. Customers are often keen to transfer know-how to such strategic or preferred suppliers.

Towards a Collaborative Paradigm

The UK government is keen to support SMEs through the SME Climate Hub[5], the Zero Carbon Business[6] partnership programme and other initiatives. The SME Climate Hub provides small and medium-sized businesses with a database of practical tools and resources to develop a climate strategy, curb emissions and build business resilience. The partnership programme aims to accelerate the adoption of net-zero business practices and bring companies of all sizes into the critical "Race to Zero". The article suggests linking large and small firms in a supply chain to work together, addressing sustainable product design and production challenges. Through such partnerships, government agencies play an important role in orchestrating the transferring of technical know-how and financial resources from large firms to small firms. The research shows that large firms are capable of investing in green design and production. Small firms in their supply chains can take advantage and learn from this, enabling them to contribute to innovation and the development of sustainable materials, product design and production methods. Government partnership programmes and financial support schemes are, therefore, needed, to facilitate these transfer relationships whereby larger firms transfer know-how and resources to improve sustainability throughout the supply chain.

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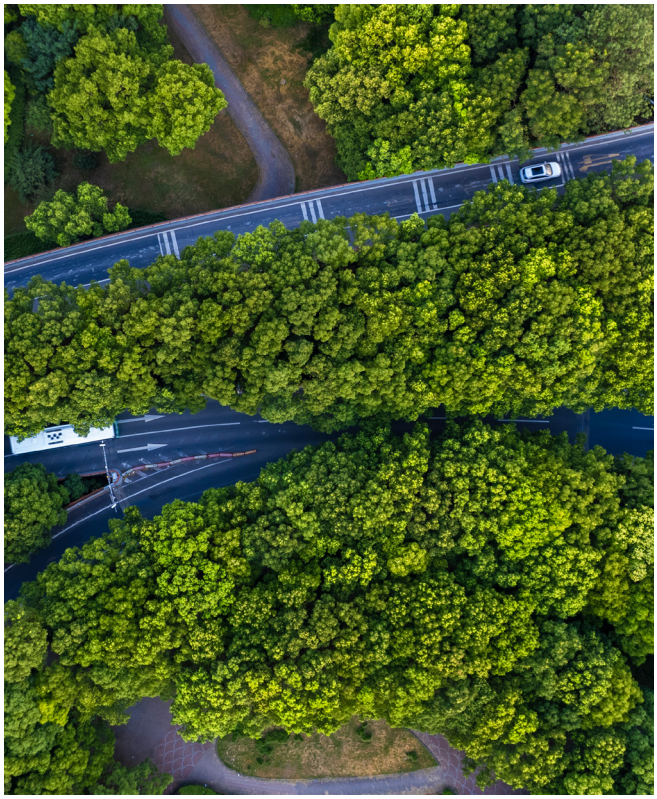

4 Wong, C.W.Y., Wong, C.Y., Boon-itt, S. (2018), How does sustainable development of supply chains make firms lean, green and profitable? A resource orchestration perspective, Business Strategy and the Environment, 27(3), 375-388. URL: https://doi.org/10.1002/bse.2004

5 https://smeclimatehub.org/. The SME Climate Hub is a global support initiative for SMEs that aims to remove the obstacles SMEs face in taking climate action.

6 https://www.zerocarbonbusiness.uk/about. Zero Carbon Business was set up by the Federation of Small Businesses and the British Chambers of Commerce to give small businesses advice on reducing carbon emissions.

Helping Manufacturing SMEs to Be Both Productive and Environmentally Sustainable

Kerrie Unsworth, University of Leeds

Background

Companies need to be productive. Companies need to be environmentally sustainable. Both these statements are plainly true. But combining them into their logical merger – companies need to be productive and environmentally sustainable – is not easy. In a recent research project[1] of small and medium manufacturing enterprises (manufacturing SMEs), we found that the vast majority recognised the truth of both statements and were trying hard to reconcile them. We found two general approaches to this: 1) environmental sustainability was added on to the core strategy, leading to a focus on how to be sustainable; or 2) environmental sustainability was at the heart of the strategy leading to a focus on why they were sustainable. Both approaches had advantages and disadvantages so we cannot yet provide a boiler-plate recommendation that will solve all problems. However, we can suggest ways in which companies can engage in strategic sustainability and decide upon the best way forward for them at this time.

Organisational Approaches to Being Both Productive and Sustainable

The first approach to being both productive and environmentally sustainable comprised the majority of the companies we came across – we, therefore, called these "traditional". These businesses tend to see sustainability as separate to their core strategy. They want their organisation to be environmentally friendly but it is in addition to the "day job". For traditional companies, this usually means focusing on how they can be more environmentally sustainable. They focus on implementing initiatives and actions, often reducing plastic waste, recycling and being more energy efficient. The way in which these traditional organisations approach the merger of productivity and sustainability is that sustainability can help them save money.

Yet, we also came across companies who put environmental sustainability at the heart of their strategy – it is their day job. These "environmentally-driven" companies were built around sustainability and social responsibility principles and it provided them with a unique selling point (USP) that differentiated them from competitors. For these organisations, the concern was why they were engaging in environmentally friendly actions and making sure that what they were doing was aligned with their values. Given this, the environmental policies and behaviours were embedded throughout the various aspects of production and these environmentally driven organisations approach the merger of productivity and sustainability as one of competitive advantage.

Pros and Cons of the Approaches

These two types of companies view the problem of being both productive and sustainable differently. While one tackles the problem by focusing on implementing initiatives that fit their other tasks, the other tackles it by focusing on aligning their values. It would be naïve of us to suggest that we have identified a template that simply needs to be followed and that one is better than the other. Neither the traditional approach nor the environmentally driven approach is without problems.

Traditional organisations are working hard to battle the inertia that comes with a long-held strategic direction and are moving forward incrementally. The traditional, additive approach demonstrates that, when implemented well, productivity and sustainability do not have to oppose each other. This can be a useful argument in a conservative environment. However, going from a negative situation to a neutral one (that is, moving from a perception of environmental sustainability initiatives being detrimental to a strategy that doesn't pit sustainability against productivity) will not help us get to a positive one (that is, a strategy where productivity and sustainability can enhance each other). While, on the one hand, any pro-environmental change is valuable (see our review for more information on how to get employees involved[2]), on the other hand, these incremental changes tend to focus on the low-hanging fruit of waste and energy-efficiency and this will not be enough to meet the net-zero carbon emissions target.

1 ESRC Productivity Insights Network (2020) Unsworth, Davis, Pieniazek, Song & McKay; *Sustainable and Productive?! Helping manufacturing SMEs to manage multiple goals.*

2 Unsworth, K.L., Davis, M.C., Russell, S.V. & Bretter, C. (in press). Employee green behaviour: How organizations can help the environment. *Current Opinion in Psychology.*

Environmentally driven organisations, on the other hand, are more likely to take radical steps and fundamentally shift their greenhouse gas emissions. There is a clear strategic benefit for them to do this, as long as it fits their values. The problem for these companies is that the competitive advantage for environmentally responsible products and services will decline as more businesses act in this fashion. What was once a positive scenario where productivity and sustainability boosted the other has the potential to move back to zero. What will these environmentally driven organisations do once it is no longer a USP to be environmentally friendly?

Although this research only identified two approaches, there are, of course, others that exist. For example, in our work with social enterprises we have found some entrepreneurs who are not concerned with productivity gains – they want to stay small and do not care about their financial performance beyond survival[3]. We are also well aware that, while the vast majority of the corporate world recognises the need to act (see, for example, Accenture's 2019 study of CEOs[4]), there are still some companies whose managers either deny anthropogenic climate change or deny any responsibility to mitigate it[5].

Conclusion and Recommendation

At this stage, our research[6] suggests that the complexity of each company's environment and processes are such that any boilerplate recommendation would be ingenuous at best and foolish at worst. Instead, we suggest that organisations need to engage in what we call strategic sustainability – honestly reflecting on how environmental sustainability positively and negatively affects all of their organisation's goals from their values to their key performance indicators (KPI's) and daily tasks. Our report[30] provides more detail about a method that can be useful in doing this in depth; however, even setting aside one meeting to discuss strategic sustainability will be useful. The key point is to identify more opportunities to connect environmentally friendly actions to various aspects of the purpose and values of the business, which will lead to more opportunities for radical changes in greenhouse gas reduction.

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3 Pieniazek, R., Unsworth, K.L., & Dean, H. (2021). A Psychological Model of Why Social Entrepreneurs Manage Financial and Social Goals Differently. Manuscript under review.

4 Accenture, "UN Global Compact-Accenture Strategy 2019 CEO Study – The Decade to Deliver: A Call to Business Action | UN Global Compact," 2019. Accessed: Oct. 29, 2020. [Online]. Available: https://www.unglobalcompact.org/library/5715.

5 Unsworth, K.L., Russell, S.V., & Davis, M.C. (2016). Is dealing with climate change a corporation's responsibility? A social contract perspective. *Frontiers in Psychology*, 7: 1212. https://doi.org/10.3389/fpsyg.2016.01212.

6 A full report of the research is available at: https://productivityinsightsnetwork.co.uk/app/uploads/2020/12/KU-et-aL-FINAL-report.pdf

The Hydrogen Economy

Nick Helm, Squire Patton Boggs

On 18 November 2020, The UK government announced the ten point plan for achieving net zero, sparking the green industrial revolution. The plan demonstrates the significance of hydrogen in achieving net zero, detailing the production of 50GW by 2030 and ambitions for a hydrogen fuelled industrial sector, transport sector and domestic heating.

The UK has already made significant strides in achieving net zero. Our carbon emissions have been reduced by 50% since 1990, which has been achieved through de-industrialisation and decarbonisation of electricity, namely through a move to solar and wind powered alternatives. However, electricity only comprises between a quarter to a third of the nation's total energy use. The remaining 50%, comprised of industry, domestic heat and heavy transport, will be far more difficult to tackle.

The North West Hydrogen Economy

Prior to the publication of the UKs national hydrogen strategy, wheels were set in motion for the rollout of hydrogen. HyNet, a hydrogen delivery project in the North West, creates low carbon hydrogen (blue hydrogen) through an auto thermal reforming system, and plans to supply this blue hydrogen to the hard-to-reach sectors of the economy in the North West.

HyNet have partnered with Cadent Gas to provide hydrogen to the industrial corridor that lines the Manchester Canal, partnered with Pilkington Glass to supply industry North of Liverpool, and partnered with Inovyn to supply the Cheshire area. Furthermore, Salt Cavern storage in Cheshire will provide a storage facility for their newly produced hydrogen. With investment from private partners and the UK government, and support from various industrial partners, HyNet have ambitions to displace half of the natural gas in the North West by 2030, at a cost of £2 billion.

In addition, the rollout of hydrogen-supportive infrastructure, the North West facilitates an eco-system for hydrogen innovation, with a number of multi-level government projects ongoing, world-class universities and The Fuel Cell Innovation Centre supporting businesses in this space.

The Fuel Cell Innovation Centre is a £4.1 million state of the art laboratory exploring the science of the fuel cell, engaging with local industry and developing the technology talent of tomorrow. It works with businesses using a technology readiness level approach to develop hydrogen fuelled concepts through R&D and create tangible technologies, essentially allowing businesses to innovate, identify market opportunities and attract investment.

Large regional companies and projects such as HyNet are laying the groundwork for significant growth in the hydrogen market. Growth in this market will be significant as we are starting from a low base, and there is a strong demand within the hard-to-reach sectors of the economy (industry). Until then, the challenge is a chicken and egg conundrum. People are not purchasing hydrogen-fuelled technology because they cannot access hydrogen, hence there is no demand to produce hydrogen, which is a deterrent for investors. This predicament demonstrates why the success of the UK's national hydrogen strategy is so important.

The UK's National Hydrogen Strategy

In order for the rollout of hydrogen to be successful, practitioners hoped that the national strategy would:

- Establish a clear ambition to support investment decisions.
- Establish a clear business model that sufficiently funds the transition, including frameworks and plans for practical deployment.
- Support ongoing investment in research and development.
- View the big picture of hydrogen production to hydrogen usage and everything in between.

Largely speaking, the UK's National Hydrogen Strategy was well received by the renewable energy sector, who were optimistic, given the emphasis placed on hydrogen in the ten point plan, and especially given the BEIS announcement of a £60 million hydrogen fund and a £240 million net-zero hydrogen fund.

It is important that the national strategy plays to the strengths of the UK – our advanced manufacturing sector and our ability to scale up. We need to scale up our green technologies, particularly those required for hydrogen production and those fuelled by hydrogen. As the hydrogen market scales up, the cost of hydrogen production will come down, thereby facilitating supply and demand and the rollout of hydrogen across the UK. In turn, this will attract inward investment to the UK, bolstering not only the green energy sector, but also the wider economy.

Scaling up the Hydrogen Economy

Scaling up the UK hydrogen economy will not be without its challenges. As aforementioned, a key component to attracting investment is to stimulate demand. We should be encouraging conversations about the urgency of climate change and the benefits of renewable energy sources in order to raise awareness and encourage hydrogen-fuelled products to become commodities.

Investment is necessary to roll out hydrogen at scale. In addition to stimulating demand, investors will also be more interested where there is a detailed plan for efficient usage because this will demonstrate government commitment and the longevity of the industry. To date, funding, projects and plans have largely focused on the production and usage elements, but detailed blueprints and contingency plans for the efficient use of hydrogen, among other renewable sources, will provide a clear sense of direction for renewable energy enhancing investor confidence. Thus, it is time to start addressing the small and necessary details required for scaling up.

Another key component to scaling the hydrogen economy is a skilled workforce. At present, traditional education does not provide suitable skills for the hydrogen experts of the future. The Fuel Cell Innovation Centre has developed Europe's first programme of targeted hydrogen education, which has been rolled out across six countries, and is already being used in schools. However, this does not go far enough. At present, there are local leaders without hydrogen expertise making significant decisions relating to the rollout of hydrogen.

Furthermore, the government has high ambitions for 50GW of hydrogen production by 2030. As a result, we urgently need to upskill our existing and future workforce to ensure the hydrogen strategy is a success. Finally, in order to scale-up the hydrogen economy successfully, the regions need to work in partnership. At present, the government's cluster sequencing programme encourages competition between different regions. However, where regions collaborate, there will be a smoother rollout of hydrogen across the UK, ensuring all four corners of the country benefit from the future of green energy.

Proposed Right to Disconnect Lacks Joined-up Thinking (UK)

David Whincup, Squire Patton Boggs

BBC News Online reported on a call by trade union Prospect for the government to legislate to "ban out of hours emails from bosses" or, beneath the headline, to "ban bosses from routinely emailing or calling outside set working hours". This looks like the proposed introduction into English law of the "right to disconnect" seen in a number of other countries, but for the reasons below, there seems little or no chance of its making the cut for the Employment Bill due out later this year.

Prospect's Guidance to Union Activists as issued last month and now available on its website clearly represents the product of some considerable thought on the question, running to 18 pages of statistics, surveys, suggestions and overseas practice, which makes it a reasonably useful source of reference if you want to know more on this topic. Most importantly, it is also unusually balanced for trade union guidance, recognising that there are advantages, as well as disadvantages, to the ability to email and be emailed out of hours. As a result, after some initially uncompromising language, you find on page 12 of the guidance that despite the BBC headlines, Prospect does not actually want the government to ban anything, only to introduce a French-style obligation on employers to consult annually on ground-rules about out of hours contact with employees.

The Guidance notes CIPD reports that 30% of employees see remote access to the workplace as empowering, 41% as it is helping them to manage their workloads, and 51% as it is assisting them to work flexibly. On the face of it, whether you work remotely has little connection with whether you are concerned by out of hours emails from your managers. The link arises through studies showing that the line between home and work, on-time and off-time, is significantly blurred by homeworking, all the more so if your workplace is not a physically distinct room but the same place where you eat or relax or play with the children. Prospect's Guidance notes the attendant risks for workers – unrewarded overtime, work intensity, always-on culture, mental health and diversity impacts and the rather less convincing "remote or digital bullying" and "growth in monitoring or surveillance technology".

Hence, the suggestion of some form of "right to disconnect", but what would that right look like in the first place? Prospect's starter for 10 is the seemingly unqualified right "not to receive or answer any work-related emails, calls or messages outside employees' normal working hours". However, it then immediately softens that position by quoting three principles used in the Irish approach to this question:

- The right to not routinely perform work outside normal working hours.
- The right not to be penalised for refusing to attend to work matters outside those hours.
- The duty to respect another's right to disconnect by not routinely calling or emailing them outside those hours.

There is no attempt in any of this to define "routinely", nor indeed to suggest what counts as "normal working hours" if your contract contains the very usual obligation to do, say, 9-to-5 "plus such other hours as are reasonably required for the proper performance of your duties" and your pay reflects that obligation. It cannot realistically require a total blackout on communications from your manager because then you would not receive the non-routine emails that genuinely do need dealing with out of hours. There is also no light shed on what is meant by "penalising" – if it means being subject to disciplinary action, then usually fair enough, but if it is a reference to not being subject to any disadvantage relative to those who are willing to work after hours, then that is a different thing. It could not be intended by Prospect that an employer could not reward those who worked harder for it by giving up some of their evening, whether that reward was by money or opportunity or advancement – indeed, one of its concerns relates expressly to unpaid overtime so it could hardly complain if that extra time led to some extra benefit in return.

And what about all the arguments in favour of being able to work out of hours – less stress, greater flexibility, better preparedness and less on your desk for the day ahead? The Guidance notes a Canadian paper recognising that some employers may favour employees who respond to work-related communications outside working hours as a proxy for commitment or merit, which may prejudice those who cannot remain connected after hours due to family responsibilities, most often women. Agreed, but that might make giving those people the ability to deal with work matters after dealing with the children all the more valuable. How do we deal with customer emails out of hours where speed of response may be key to gaining or retaining the business? Or colleagues operating in different time zones? What about employees who go home without finishing something important and the manager needs their input to find it?

Any form of mandatory provision in this respect also begs the bigger question around all this – is it reasonable or sensible to hobble all employees' ability to work out of hours, willingly or not, solely in order to deny the few who cannot do so any sense of disadvantage. Do we suppress the ambition or dedication of employees who want to stand out from their peers by a faster response, merely because someone else may not want or be able to do that? As soon as the system allows anyone to gain (or even think that they may gain) career advantage by going that extra mile at night, there will be pressure to do it, not necessarily from Prospect's faceless "bosses" but from the employees themselves. It would never be possible to legislate away the decisions people make for themselves about what their work requires of them and what they are prepared to give to it, nor the fact that some can and will, entirely unprompted, give more than others.

Prospect itself admits that there can be no one-size-fits-all solution to this, a concession that, by itself, probably scuppers the right to disconnect's chances in the legislature, even before the scorn that has been politely but unmistakably poured over the idea by the CIPD, employers and employment lawyers. Banning anything of this sort is far too blunt an instrument for the variety and complexity of today's working practices, especially because a fair part of the problem here is generated not by unthinking bosses detonating email grenades in employees' homes late at night, but by the employees themselves. The BBC Online piece refers to bank worker Omar — "When you are in the office", he says "there is the journey in, buying a coffee, chatting to a colleague and sitting down at your desk at 8.30 or 9am". By contrast, when you are working from home, "you are on your laptop before breakfast". Then pull yourself together, Omar, and just stop it. Do something self-indulgent with the saved journey time, open your laptop at 8.30am and you are away, rested, fed, on time and ready to do a full day's work.

Even if the BBC Online headline were true, which it is not, there is, therefore, very unlikely to be any legal right to disconnect included in the Employment Bill, nor even any greater specific statutory duty to talk about it with staff than is already implied via the existing Health and Safety legislation. However, that does not mean at all that the principles behind Prospect's concerns are not valid, or that employers cannot earn themselves considerable goodwill or ESG-points both within and outside the business through being seen to consider it. That may mean little more than reminding employees at all levels (this is not just a "bosses" problem) of the need to be mindful of others' working hours or days in choosing when emails are sent or calls made and responses expected, and certainly does not have to go anywhere near system changes to shut down servers at particular points or disciplinary action as soon as a "boss" chases for something. A visible willingness to engage on this may well be helpful to the business in defending employee claims for mental health or other injury through alleged overwork or stress.

Developing Employee Proactivity Through Work Design

Chia-Huei Wu, University of Leeds

Introduction

Proactive behaviour and actions by employees can lead to very positive changes that improve the work environment and support the individual's personal career development. In a manufacturing context, employees can be proactive in many ways. For example, they can identify problems and put forward solutions that underpin and enhance team effectiveness, generate new ideas for improving work procedures, or actively share information about industry trends. They can be proactive in finding better ways to complete their individual tasks, learn new skills, and adapt to new ways of working, for example, due to automatisation and ask for changes in their tasks to develop their professional careers.

Research shows that motivated employees are more likely to be proactive and contribute to their organisation in a positive way. What can managers do to promote employees' proactivity? Before asking this question, managers should understand the difference between two types of proactivity:

Pro-team proactivity and Pro-self proactivity:

- **Pro-team proactivity** refers to employees' proactivity for the good of the work units, such as contributing to a common goal and effectiveness of the work unit. It is likely to occur when one's social role in the team is emphasised,
- **Pro-self proactivity** refers to employees' proactivity for their individual work, learning, growth and development. It is likely to be triggered when one's personal goals, and ambitions are emphasised.

As the two different types of proactivity focus on different targets, the work team or the individual, managers should find ways to promote both of them where appropriate.

Using Work Design to Promote Proactivity

Work design (or redesign) can be a vehicle to promote different types of proactivity. Work design is a process of determining tasks, responsibilities and executions of a job and how the job relates to other jobs within the work structure and system in the organisation. For promoting pro-team and pro-self proactivity, my study[1] shows that **task interdependence** and **job autonomy** are two different work design factors to be considered.

- **Task interdependence** refers to the extent to which employees must depend on others' work and interact with others to complete their jobs. Employees perceiving higher task interdependence are likely to understand how their work fits a bigger picture involving others' work and communicate the value of the team and their collective work. They are likely to value their roles as being a member of a team and be proactive to achieve the team's goal, such as suggesting ways to make the work team more effective and improving methods to help the work team perform better.
- **Job autonomy** reflects the extent to which employees can exercise discretion over their day-to-day work. Having a chance to take ownership for one's work (what, how and when) provides a sense of mastery and promotes felt responsibility, motivating an employee to think about better ways to improve their work. Having opportunities in determining work activities also helps employees understand their needs and interests and actively develop their career plans for learning and growth.

In one of my longitudinal studies using data over four years[2], higher job autonomy helps employees develop a general sense of agency (i.e. a feeling of having control or influence over events in one's daily life) over time while also enjoying higher job satisfaction. Such an impact cannot be achieved by simply offering opportunities for employees to utilise their skills at work, thus revealing the importance of giving room for employees to determine their work activities.

1 Wu, C. H., Parker, S. K., Wu, L. Z. & Lee, C. (2018). When and why people engage in different forms of proactive behavior: Interactive effects of self-construals and work characteristics. *Academy of Management Journal*, 61, 293-323. https://doi.org/10.5465/amj.2013.1064

2 Wu, C.-H., Griffin, M. A., & Parker, S. K. (2015). Developing agency through good work: Longitudinal effects of job autonomy and skill utilization on locus of control. *Journal of Vocational Behavior*, 89, 102-108. https://doi.org/10.1016/j.jvb.2015.05.004

Intuitively, job interdependence and job autonomy appear to be opposite or contradictory; but this is not necessarily the case. Manufacturing employees typically work with others to complete a project as a team while having their own work and tasks where they can exercise their discretion. Moreover, it is not uncommon that employees need to be proactive toward both their work teams and themselves to do their jobs and progress their careers. As both pro-team and pro-self motivation can be intertwined in the work activities of each employee, managers need to be flexible using a work design approach to promote different types of proactivity.

To conclude, managers can use a work design approach[3] to boost and sustain employees' proactivity for teamwork and for their individual work and personal development. By focusing on how employees complete tasks and designing or redesigning those tasks in relation to others' roles and duties, organisations can shape employees' attention, attitude and behaviour in performing their work[4].

Biography

Chia- Huei Wu is Professor in Organizational Psychology at the University of Leeds. His research interests include proactivity at work, work and personality development, and subjective well-being. He has published over 100 journal articles and book chapters. His work appears in leading management journals, including the Academy of Management Journal, the Journal of Applied Psychology and the Journal of Management, among others. He is the author of the books, Employee proactivity in organizations and Work and personality change, and one of the editors of the book, Emotion and Proactivity at Work: Prospects and Dialogues. He currently serves as an associate editor for the Journal of Management.

3 Parker, S., & Wall, T. (1998). Job and work design: Organizing work to promote well-being and effectiveness. SAGE Publications, Inc., https://www.doi.org/10.4135/9781452231518. The full text of this book can be accessed at https://sk.sagepub.com/books/job-and-work-design. Chapter 7 and 8 provide examples and step-by-step guidance for job redesign based on research conducted in manufacturing companies in the North of England.

4 Parker, S. K. (2014). Beyond motivation: Job and work design for development, health, ambidexterity, and more. *Annual Review of Psychology*, 65, 661-691.

Preventing Bullying, Harassment and Long-term Conflict in Manufacturing

Sam Farley | University of Leeds

Background

For the past three years, the Chartered Institute of Personnel and Development (CIPD) have conducted a large study of the UK working population, which examines how seven indicators of job quality vary by occupation. One of these indicators, "Relationship Quality", assesses the extent to which people experience good quality relationships at work. The data show that employees in manufacturing occupations experience lower quality relationships than employees working in many other professions, including healthcare, sales and teaching. In addition, research has found that working in the manufacturing industry puts employees at greater risk of experiencing workplace bullying and harassment.[1]

It is not clear why manufacturing occupations attract higher levels of bullying and lower levels of relationship quality, as there has not been enough research on the topic. However, working conditions involving unclear role expectations, a lack of opportunity to participate in decisions and utilise skills, as well as higher workloads and higher cognitive demands, have been cited as a cause of workplace bullying[2]. This is significant because the CIPD data on job design shows that manufacturing occupations involve these job characteristics to a greater extent than other occupations. This may be due to a prevailing belief that process simplification and efficiency can be achieved more easily when employees have higher workloads and lower autonomy[3]

Prevention

This raises the question of how manufacturing organisations can seek to prevent the occurrence of bullying, harassment, and long-term conflict. Recent findings suggest that bullying can be prevented and resolved more easily when organisations create a "psychosocial safety climate" (PSC)[4]. An organisation can claim to have a PSC when:

- Senior management is committed to psychological health.
- Management prioritises psychological health and safety over productivity goals.
- The organisation communicates with employees about the health and safety issues that affect them.
- The organisation consults employees and other stakeholders when developing stress management interventions.

Reduction and Mitigation

There are three main ways in which a PSC can reduce and mitigate workplace bullying:

- The organisation can seek to build an atmosphere where bullying is not tolerated.
- The organisation can design jobs in a way that limits job characteristics linked to workplace bullying, such as those involving higher workloads and little opportunity to participate in decisions or utilise skills.
- Organisations can help employees to resolve any conflicts that arise as quickly as possible, so that small disagreements do not escalate into entrenched conflict.

1 Notelaers, G., Vermunt, J. K., Baillien, E., Einarsen, S., & De Witte, H. (2011). Exploring risk groups workplace bullying with categorical data. *Industrial health*, 49(1), 73-88

2 Notelaers, G., De Witte, H., & Einarsen, S. (2010). A job characteristics approach to explain workplace bullying. *European Journal of Work and Organizational Psychology*, 19(4), 487-504.

3 Cullinane, S. J., Bosak, J., Flood, P. C., & Demerouti, E. (2013). Job design under lean manufacturing and its impact on employee outcomes. *Organizational Psychology Review*, 3(1), 41-61.

4 Dollard, M. F., Dormann, C., Tuckey, M. R., & Escartín, J. (2017). Psychosocial safety climate (PSC) and enacted PSC for workplace bullying and psychological health problem reduction. *European Journal of Work and Organizational Psychology*, 26(6), 844-857.

Conflict Resolution

Over the past three years, I have researched how employees can resolve conflicts quickly and effectively. Within the conflict literature, there is a consensus that resolving conflict informally and speedily is one of the best ways of preventing bullying. However, this is easier said than done, as the parties involved in a conflict must reflect on "both sides of the story" and must be willing to proactively seek to resolve their differences. To help employees do this, some organisations have developed conditions or procedures that enable employees to have difficult conversations about their disagreements. For example, one organisation implemented the idea of yellow and red cards, which employees could brandish when someone said something that "crossed the line".

How We Can Support You

Yellow and red cards will not work in every organisation. For this reason, I have been working with the Advisory, Conciliation and Arbitration Service (ACAS) to develop a conflict de-escalation workshop that seeks to help staff and organisations to agree their own procedures for resolving conflicts. The purpose of the workshop is to help organisational representatives to produce a system of conflict management that might work in their own organisation.

We are currently piloting this three-hour workshop with organisations from different sectors and would be happy to deliver it for any organisations from the manufacturing sector who feel it would be helpful. Please contact Dr Sam Farley (s.j.farley@leeds.ac.uk) for more information on this.

Author

Dr Sam Farley is a Lecturer in Organizational Psychology at the University of Leeds Business School. Sam researches workplace mistreatment, such as incivility, bullying, cyberbullying and social undermining. The aim of Sam's research is to determine when employees are most at risk of experiencing impaired well-being following workplace mistreatment and to identify how best to prevent its occurrence. Sam completed his PhD thesis on workplace cyberbullying, a form of bullying channelled through technology, the outcome of this research was a valid and reliable scale for measuring cyberbullying encountered by employees. Since starting his research in 2012, he has published in Medical Education, the International Journal of Human Resource Management and Work & Stress. He has written for *The Guardian, Cybersmile* and *Safety Management Magazine*.

UK Government to Introduce New Duty on Employers to Prevent Sexual Harassment in the Workplace

David Whincup, Alison Treliving, Charles Frost and Matthew Lewis

Squire Patton Boggs

The government has this week confirmed it will be introducing a new mandatory duty on employers to prevent sexual harassment in the workplace. At this stage, it is still not clear exactly what this new duty will entail, but it seems there is going to be a proactive obligation on employers to take "all reasonable steps" to prevent sexual harassment in the workplace.

In other words, rather than being able to rely on such an argument to defend an actual claim of sexual harassment (as is currently the case), employers are going to be required to demonstrate this upfront or risk liability if an incident of sexual harassment takes place.

The government's proposals are set out in its response to its 2019 consultation exercise on sexual harassment in the workplace. The response itself is very much a high-level overview of what the government intends, with very little detail on what any draft legislation might look like. Most companies are likely to feel fairly comfortable with the imposition of such a mandatory duty if, as the response suggests, it does not require employers to take any practical steps they are not already expected to take if they wish to benefit from the statutory defence. "Clear guidance" about what employers will be required to do to satisfy the test has been promised in the form of a new statutory code of practice from the Equality and Human Rights Commission (to complement its technical guidance issued in January 2020) and in new non-statutory "accessible" guidance outlining the sort of practical steps employers can take to comply with the duty.

The government is also planning to introduce (or should we say reintroduce) protection for employees who are subjected to third-party harassment, e.g. by clients or customers. Again, it is not yet clear exactly what this will look like, but the government apparently intends to allow for the same employer defence of having taken "all reasonable steps" to prevent the harassment.

This was something contained in the first version of the Equality Act but quickly repealed in 2013 when it proved unworkable in practice – it will be interesting to see what has changed since then.

It will not be introducing new protection for interns and volunteers under the Equality Act 2010 as, in its view, most interns are probably covered already (to the extent they are employees or workers) and to give protection to volunteers would create a "disproportionate level of liability and difficulties for the organisation", especially those in the voluntary sector. Finally, the government has confirmed it will be "looking closely" at extending the time limit for bringing all claims under the Equality Act 2010 (so not just sexual harassment claims) from three to six months. It recognises there are strong arguments for doing so, but has essentially said it is not willing to do this now because the tribunal system is already struggling to cope with the number of claims being brought and it does not want to overload the system further.

All of the above changes will apply to employers in Great Britain.

As for when these changes are likely to happen, we do not know. Once again, the government has said it will introduce legislation "when parliamentary time allows". It is unlikely we will see any draft legislation soon, but it is clearly just a matter of time before these changes hit the statute books. On that basis, employers should be reviewing the steps they currently take to prevent sexual harassment in the workplace and whether they might need to do more to satisfy any new mandatory duty. In the last few years, many employers have started to take more proactive steps to tackle all forms of harassment in the workplace, so this should hopefully stand them in good stead.

Unconvincing Lack of Detail in UK Government's Response to Harassment Consultation

David Whincup, Squire Patton Boggs

Sexual harassment is absolutely no laughing matter, but it is difficult to suppress a tired smile when reading the government's response to its 2019 consultation on harassment in the workplace. This is very heavy on prospective voter-appeal but rather lighter (weightless, basically) on the practicalities.

We shall impose a proactive duty on employers to prevent harassment, it says earnestly, and we shall make them liable for harassment of their staff by third parties, in each case unless they have taken "all reasonable steps" to prevent that sort of thing happening. You will probably recognise this "all reasonable steps" phrasing as a straight lift from the existing statutory defence in Section 109(4) Equality Act, which allows an employer to escape liability for the harassing conduct of its employees towards each other if it can show that it had taken all reasonable steps to prevent it.

It is clear that some work has gone into the government's Response. There are many fewer spelling errors than usual, for example, and only a small part of the Ministerial Foreword is repeated in the Introduction immediately underneath it. However, it is also glaringly apparent that all that work has yet to lead to any concrete proposals as to how those two main recommendations could realistically be made to work in practice.

First, the creation of a proactive duty. Some survey respondents suggested in 2019 that a default on this should be enforceable by staff as a failure even if there had not actually been any harassment, or in other words, that employees should be permitted to claim compensation for the employer's failure to take adequate steps to prevent harassment that had not happened. Mercifully that did not make the cut in the Response, so as matters stand, an employee will only be able to claim breach of that duty if they have been the victim of harassment, much as at present. However, the Equality and Human Rights Commission can bring an action even without harassment taking place first, in much the same way that the Health and Safety Executive can take enforcement action in relation to a risk in the workplace that has not yet turned into an accident.

The obvious weakness in that comparison, however, is that a health and safety risk is generally the product of a specific physical arrangement of premises or machinery or industrial processes that can be corrected, while all that is required to generate a risk of sexual harassment is other people. The expectation will have to be that the EHRC's intervention would not lead immediately to a money penalty but instead to an order or recommendation that the employer takes specified steps to bring its suite of protections against harassment up to scratch, such as doing some training or giving more prominence to existing policies. If it did not do so and then lost a harassment claim, that failure could presumably lead to significantly increased compensation. Still, no detail yet so we will have to see.

The government's concession in the response that an action to enforce that duty would only lie for an employee once harassment had taken place effectively neuters the new provision from the perspective of the individual harassment claimant. Whether with it or without it, the employer will be liable for that harassment unless it has taken all reasonable steps in advance to stop it.

As to making employers liable for harassment by third parties, we have been this way before. The original version of the Equality Act contained a similar provision, which was repealed in 2013, in part because it was completely unworkable in practice. It will be interesting to see if and how those issues are circumvented this time around. Do not hold your breath for this – the promise is to legislate "when parliamentary time allows" so cynics will be forgiven for not expecting this until shortly before the next election.

Still outstanding on this front, says the Response, is the question of whether employers would be liable for a failure to take all reasonable steps even if there has yet to be any actual incident of harassment by a third party. It is hard to think so given the position above in relation to in-house harassment. However, the original version only made the employer liable if it failed to take such steps after three such incidents, and there was apparently no support for that approach this time around either.

The government's catch-all solution is the "all reasonable steps defence", which it says "is both flexible and allows for proportionality". That is obviously lovely, but the problem with it is that whether all such steps have been taken will inevitably be judged in hindsight after an act of harassment has taken place. That means that by definition, whatever steps you took as employer were not up to the job. As a result, it is far less likely that an ET would find that those steps were in fact all those that were reasonable. Bear in mind that Section 109(4) requires the taking of all reasonable steps, not just some such steps, or only those that might realistically have any impact or that will not really get up the nose of those confronted with them. If there are 10 such steps you could take and you diligently implement nine of them (the 10th perhaps not occurring to you at all), then you have not taken all reasonable steps and so despite all your efforts, will lose.

More particularly, the problem with creating new legal obligations in the workplace is of course that they are generally closely followed by someone who alleges breach of them and then seeks protection as a whistle-blower. The vaguer the actual requirements of the law, the easier it is to allege a genuine belief that it has not been followed, especially given that what appears practicable to the employee may not to the employer, etc. So it will be very easy to say as employee (quite without the need for evidence in the form of any actual harassment) that a particular piece of training was not up to scratch or that the Equal Opps policy misses out some obscure piece of the legal picture that no-one has else ever thought twice about (see below) and, therefore, that in your view, not all reasonable steps have been taken. If the duty becomes proactive, the complainant will not even need to say that what he/she proposes would actually make any difference, since that is not the test of what is practicable. No one will argue that preventing harassment is not reasonably believed to be in the public interest, so immediately you are off to the races.

Unsurprisingly, employer respondents to the original consultation paper in 2019, therefore, sought a more or less definitive statement of what they would have to do in order to keep themselves compliant with a proactive duty of this sort, a not unreasonable requirement of a bit of law, one might think. That principle has been both accepted and rejected in this Response in about equal measure. Accepted, in the government's promise to issue clear and accessible guidance, but then rejected via its refusal to provide any exhaustive list in case it leads to a "tick-box" approach among employers "who would likely only focus on establishing the defined "all reasonable steps" without giving proper consideration to the specific needs of their workplace". In other words, on its face, we cannot tell you in detail what you need to do in case you then just do it.

This is actually somewhat less perverse than it sounds. It recognises that some working environments put employees at greater risk of sexual harassment than others – the Response cites hospitality as a particular problem area – and also that factors such as staff turnover may quickly erode the value of staff training.

Existing EHRC guidance indicates that what counts as "all reasonable steps" may be affected by past experience, such that the obvious ineffectiveness in practice of prior steps is a good pointer to your needing to do something more. Recent case law has shone a bright and uncomfortable light onto how you can have a policy and training and still fail if it is not accurate or recent enough. These new rules, being inevitably very generic in nature, will place a particular premium on your polishing up obvious indicators of that sort.

The clear thrust of Section 109(4) and its proposed new siblings is that these are steps that must be taken before the conduct in question takes place. However, the EHRC code also includes as a reasonable step "dealing effectively with employee complaints". That will not count as a reasonable step in relation to the harassment that just happened, but it could well do so in the next case, if you get it right. It probably has two components – treatment of the complainant (whether the allegations are ultimately upheld or not) and, if they are, treatment of the perpetrator. A failure against either will be taken as undermining your anti-harassments stance. Obviously, you cannot really discipline or dismiss a member of the public or the employee of a client or customer, but extrapolation from that provision in the EHRC code suggests that you could and should certainly think about barring them from your premises, seeking an apology and/or dropping a line to their employer where their identity is known.

Exactly what you do will have to depend on the circumstances in which your employees have business dealings with third parties in the course of their employment, both within and outside your workplace. None of the other "reasonable steps" suggested by the EHRC code (have a policy, keep it under review, make staff aware of it, do some training) really work when applied to third parties. So what might we see as reasonable steps in those cases? How about some of these:

- Many more of those notices in public areas of workplaces that "our staff are entitled to work without harassment"
- Terms in contracts requiring suppliers of contractors or other labour who will come onto your premises to have given them equal opportunities training first
- More robust treatment of serial offenders through suspension of supply or service (at its most basic, for example, barring someone from your pub or restaurant)
- With or without (ii), more comprehensive induction procedures for individual contractors and suppliers
- A requirement for a signature from visitors acknowledging receipt at your Reception of a very short notice to the effect of (i) above, or at least one of those little give-out cards of the sort you might normally use for telling visitors about the fire precautions
- Clarification to your employees of proper channels specifically for the reporting of harassment by third parties, and training for managers on how to deal with such allegations
- Hopefully, the final extinction of any suggestion by businesses that clients should be allowed to get a little frisky with your staff if it means that you will win/keep their business

UK Aerospace Restructuring: Implications for Jobs, Skills and Industrial Policy

Chris Forde, Ian Greenwood, Andrew Shires and Jonathan Winterton , University of Leeds

Background

The COVID-19 pandemic has provoked more economic restructuring than earlier shocks including the 1930s depression and the 2008 financial crisis. The closure of stores like Debenhams, Topshop and TM Lewin, and workforce reductions in John Lewis and Clarks Shoes, are highly visible on the high street. The pandemic accelerated the move towards internet shopping and some of the restructuring has involved companies moving all business online.

Similarly, restrictions on international travel have put travel companies and airlines at risk. In January 2020, before the pandemic, the collapse of Thomas Cook, the world's first travel agency, demonstrated how competitive and overcrowded the travel industry had become. Once the pandemic was underway, airlines began to collapse, with Flybe going into administration in March 2020, after a government rescue deal two months earlier. Aircraft were grounded worldwide and many airlines cut their workforces. First furloughing workers, BA announced redundancies in April 2020 and were accused of opportunistic restructuring. The pandemic facilitated changes that would have been contested in any other context, but the impact on airlines was quite immediate; aeroplanes only generate revenue when they are flying passengers.

Aircraft/Aerospace Manufacturing

Aircraft manufacturing involves long lead times with long and complex supply chains, and at first sight, it might not have been expected that they would be immediately affected by an "external shock" like a pandemic. However, most aerospace firms, including Rolls-Royce, Magellan, GKN Aerospace, BAE Systems and Airbus, have all announced significant job losses, totalling tens of thousands of workers globally. Rolls-Royce have made some of the most highly qualified engineering workers in the world redundant. Significant revenue at Rolls-Royce came from engine maintenance, and with aircraft grounded, there was no maintenance income to be made.

Forecasting Future Skills and Jobs in Aerospace

This unprecedented restructuring of aerospace manufacturing is having a profound impact on employment and skills, and may put in jeopardy the "high-involvement/ high performance" work systems[1] that are essential for such a high skill, capital intensive sector. Through the Leeds University Business School Challenge Fund[2], we are undertaking research into the aerospace sector, to understand the dynamics of restructuring in such a turbulent sector where production lead times are extremely long, and where job losses over the pandemic have been extremely high. We have undertaken interviews with key aerospace stakeholders and are looking to develop further case study work. Our goal is to deliver a new sectoral change model to facilitate accurate forecasting of future skills and jobs, reducing skills mismatches and labour shortages.

Current approaches to modelling and forecasting in aerospace are largely at organisational level, determined by business strategy and imperatives. Sectoral change models, where they do exist, tend to prioritise some aspects, notably factors that can be easily captured and identified in "Political, Economic, Social and Technological" (PEST) or "Strengths, Weaknesses, Opportunities and Threats" (SWOT) models and disruptions at organisational level. Often the sources of influence are wide-ranging and hard to capture and measure. In highly complex sectors, subject to extreme volatility, and where high-performance working is widely assumed to be present, typically such models do not capture the full range of influences, the complex inter-relationships between actors/stakeholders, nor the possible range of options and responses available to firms, and to sector-level stakeholders[3]. As a result, it is impossible with current change models adequately to predict and plan for change.

1 Boxall, P., Huo, M.L., Macky, K. and Winterton, J. (2019) 'High-involvement work processes and systems: a review of theory, distribution, outcomes, and tensions', *Research in personnel and human resources management*, 37: 1-52.

2 The Challenge Fund is a competitive award make to academics in the School to undertake exploratory research with a view to winning an externally funded major research grant.

3 See Winterton., J. and Forde, C. (2013), "Europe en Crise: vers un modele heuristique de la restructuration", in Le Deist, F. (ed) *Restructurations et Santé au Travail: Regardes Pluridisciplinaires*, Toulouse: Octares: 27-46.

Our earlier work has looked at restructuring in steel, coal mining and clothing[4] and has involved the development of sector change models and competence frameworks that can help forecast jobs and optimise skills.

There remain major knowledge gaps in aerospace manufacturing around how to optimise human capital, ensuring that in the post-pandemic period, people have the key competencies. The urgent need to reduce carbon emissions will necessitate innovative forms of propulsion (nuclear, hydrogen, solar) and new materials for aircraft frames (carbon fibre and ceramic composites). Non-kerosene propulsion options could be available relatively soon for short-range commercial aircraft but not for long haul, which will necessitate biofuels. Airlines may reduce long-haul flights and increase short-haul flights but it is not realistic to replace a long haul flight like Amsterdam to Kuala Lumpur (10,000 km) with a series of short-hauls (usually defined as under 1,500 km).

Seeking to design optimum solutions for developing, deploying and retaining human capital at sector level, our research project has involved stakeholder engagement from the outset; we carried out interviews as part of the scoping exercise. Focus groups with industry experts and policy makers are built into the three-year project to ensure it remains grounded in sector realities.

Key characteristics of aerospace manufacturing include long lead times from order to delivery, long and complex supply chains, high cost of errors and a highly skilled workforce. The benefits of the project should extend beyond aerospace and be of wider relevance to other advanced manufacturing sectors. What the UK aerospace industry will look like in the future currently affects thousands of small and medium-sized enterprises (SMEs) in the supply chain and raises issues of industrial policy and the future of advanced manufacturing in the UK. Human capital is at the centre of the equation and what happens to jobs and skills, as well as training and development, matters for forms of work organisation predicated on high performance and high involvement.

Authors

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Jonathan Winterton, Professor of Work and Employment in Leeds University Business School, led teams researching restructuring of British coal mining and the Department for Trade and Industry Skills Foresight for Clothing Manufacture.

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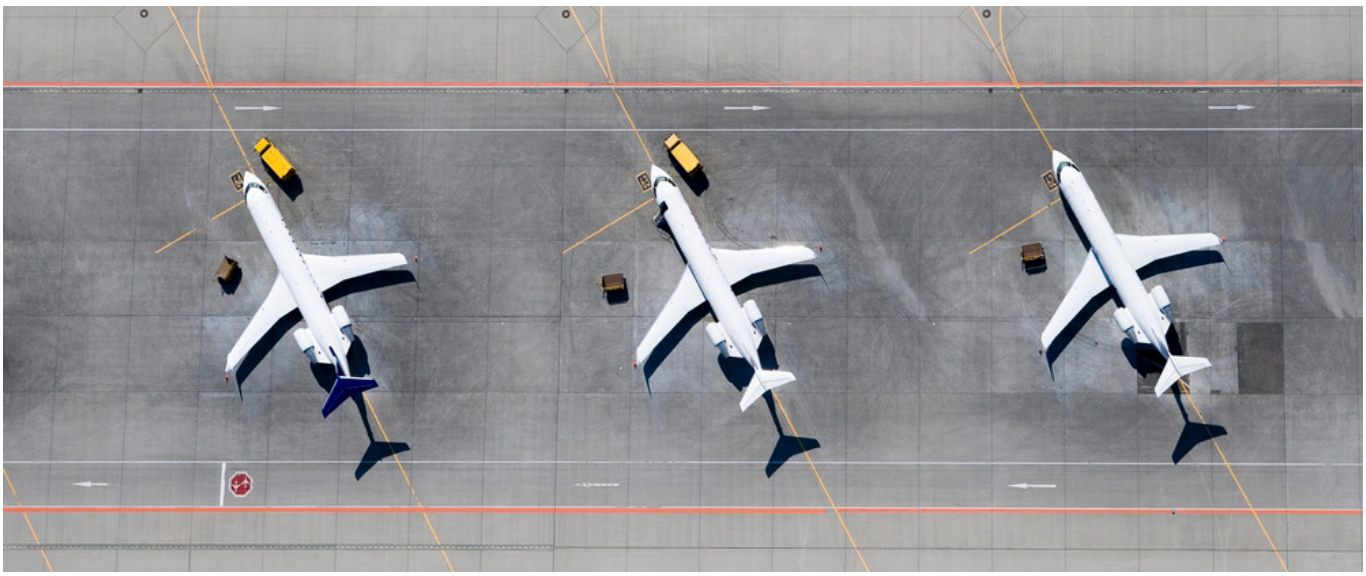
CERIC, Centre for Employment Relations, Innovation and Change at Leeds University Business School is hosting this research.



4 All Party Parliamentary Group on Steel and Metal Related Industries (2017) Forging a Future for the British Steel Industry, UK Parliament; Taplin, I.M. and Winterton, J. (1995), "*New clothes from old techniques: Restructuring and flexibility in the US and UK clothing industries*", *Industrial and Corporate Change*, 4(3): 615-638. Burns, A., Newby, M. and Winterton, J. (1985), "*The restructuring of the British coal industry*", Cambridge Journal of Economics, 9(1): 93-110. Winterton, J. and Turnbow, T. (2020), "*What is competence? Theory, policy and practice*", in Dundon, T. and Wilkinson, A. (eds) *Case Studies in Work, Employment and Human Resource Management*, Cheltenham: Edward Elgar: 123-128. .

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