IfM Education and Consultancy Services

UNIVERSITY OF CAMBRIDGE

Stimulating growth and employment in the UK economy

Lessons from practical engagement with industry: A new priority and approach for direct business support for manufacturing SMEs

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1. Executive Summary

This paper presents the case for changing the focus of the UK government's direct business support for Manufacturing SMEs (small and medium-size enterprises) from 'productivity' to 'growth.' It argues that increased productivity, without output growth, delivers increased competitiveness, but fewer jobs.

Government's focus on boosting the productivity of manufacturing industry has helped businesses to become more efficient – but this has also meant a dramatic decline in the number of jobs required. With diminishing resources available this paper contends it is essential that the government adopts a new focus for direct business support. While productivity remains important, it is no longer sufficient. The priority should be to help SMEs with growth potential to develop the strategies and capabilities they require in order to grow, create new jobs and contribute to the country's economic recovery.

This paper explains why manufacturing SMEs need a different style of intervention to large companies. It shows how, using an approach specially designed for manufacturing SMEs, such firms can develop the capabilities they need to grow and highlights some examples of businesses which have benefited from this approach - across a wide range of sectors and company sizes and in diverse locations around Britain and abroad.

1.1 Background to this paper

This paper is based on eight years of experience of working with SMEs by the University of Cambridge Institute for Manufacturing (IfM) and the University's wholly-owned subsidiary IfM Education and Consultancy Services (IfM ECS) which disseminates the IfM's research and education outputs to industry and government.

IfM and IfM ECS have engaged with more than 500 manufacturing SMEs since 2002, applying approximately 40 person-years of effort, with the aim of developing approaches to enable SMEs to generate financial, strategic and social value. The work has demonstrated that SMEs can grow revenues, profitability and employment, if they:

- have a coherent strategy, with a clear basis of competition
- understand where and how to capture value
- have effective capabilities with which to execute their strategy, and realise value

2. Context

2.1 Re-balancing the UK Economy

In the light of recent announcements by government concerning the need for substantial cuts in public sector spending, it is essential that the private sector increases its economic activity, and so increases employment, exports, profits - and tax revenues.

2.2 Manufacturing contributes financial, strategic and social value

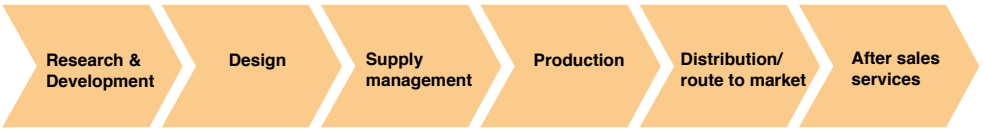

Diagram 1 The Manufacturing Value Chain

Manufacturing, which at the firm level typically comprises the value chain above, is an important part of the private sector because:

- manufacturing enables the creation and capture of financial, strategic and social value[1]
- it enables value to be captured from the UK's distinctive science and technology base
- Gross Value Added per Employee (GVAE) from manufacturing is higher than that for the economy as a whole; GVAE from 'high-tech' manufacturing (a manufacturing industry is classified by the OECD as "high-tech" if global R&D expenditure is greater than 5% of sales) is higher still, as illustrated in Diagram 2 below.

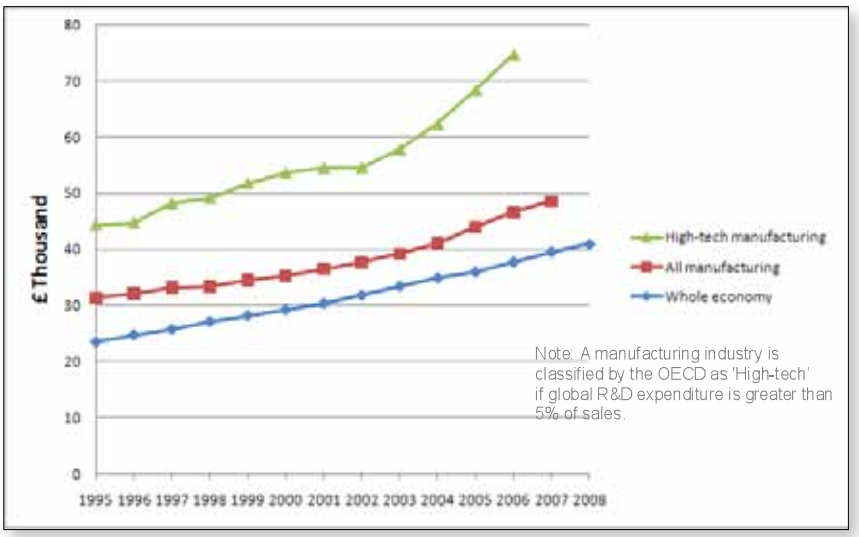

Diagram 2 Gross value added per employee[2]

- Manufacturing can enable social development, and potentially reduce social breakdown, by providing employment to people across a wide range of abilities and skills, such as:
  - experienced leaders and managers
  - science, technology and engineering graduates
  - other graduates undertaking business and commercial roles
  - vocationally-focused skilled and semi-skilled workers
  - unskilled workers, supported by vocational training
- Manufacturing generates indirect employment across the value chain, for example: contract research and development; design consultancy; raw materials processing; marketing consultancy; logistics; financial, insurance, legal and management services. Although data analysing the ratio of direct to indirect jobs in manufacturing is limited, it appears that manufacturing attracts more indirect employment than most other sectors.

2.3 Industrial policy: productivity is necessary, but not sufficient

The focus of government policy towards manufacturing over the last decade or more has been to drive improvements in 'productivity'. This has been encouraged in three ways:

- business support services for SMEs focused on productivity improvements, such as lean manufacturing ('lean')
- foreign ownership of UK manufacturers
- Foreign Direct Investment (FDI) in production facilities in the UK which has driven productivity improvements in the UK supply chain.

However, as Diagram 3 illustrates, increased productivity without output growth leads to increased competitiveness, but fewer jobs.

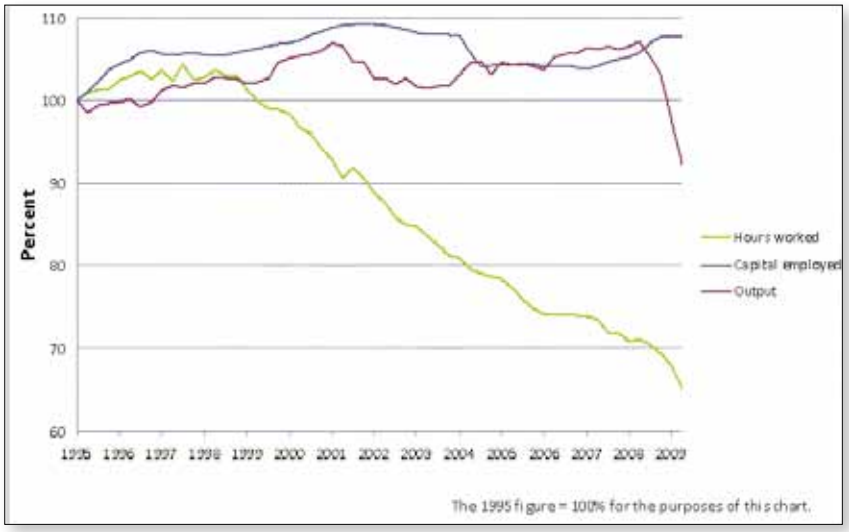

Diagram 3 - Labour and capital inputs and output for manufacturing sector [3]

And, as Diagram 4 overleaf illustrates, the trade deficit in manufactured goods has increased over the same period.

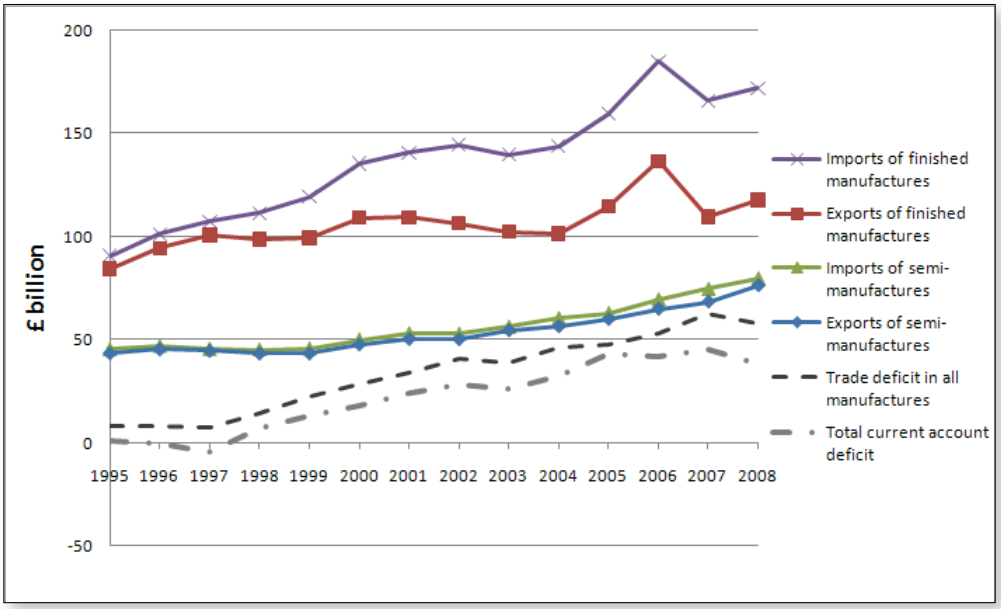

Diagram 4 - Trade in manufactured goods [4]

The UK now needs to re-balance the economy, increasing private sector-driven financial value (GDP impact), strategic value (sustainable employment, intellectual capital development and employee capability development) and social value (social impact of employment). Manufacturing has the potential to play a key part in this.

2.4 The changing context requires a change in SME strategy

The context in which manufacturing SMEs operate – often as part of global value chains – is changing rapidly due to wide-ranging factors. These include: the scarcity of financial capital; the accelerating pace of technological change; resource scarcity (e.g. hydrocarbons, water, rare-earth metals); climate change; population growth and changing demographics; sovereign debt; reductions in public spending; changing economic balance of power from west to east; changing global industrial structures, supply chains and ownership.

This changing context means that the business strategies of many SMEs are no longer suitable for achieving their goals. IfM ECS has found that by engaging in an efficient business strategy development process designed for manufacturing SMEs, such firms can:

- understand the opportunities and threats presented by the external context
- understand their capabilities, competences and core competences
- identify, evaluate and select from a range of strategic options
- develop an action plan to implement their chosen strategy

As a result of following this structured process, SMEs have been able to:

1. Establish a clear direction for the business which is understood by the management team
2. Realistically identify: how the firm will compete; and how it will develop the capabilities necessary to execute the strategy
3. Realise their business goals which, in many cases, include increased revenue, margins, employment and profitability

3. The case for stimulating growth of existing manufacturing SMEs

There are three routes for enabling industrial growth: develop existing firms; build new firms; and FDI. Each has a part to play but, in terms of 'time to benefit,' the fastest way to boost UK industrial growth is arguably to support the development of existing firms. Building new firms takes time to produce economic benefit and the risk finance required is in scarce supply. Foreign direct investment, while attractive, is highly competitive and may need government subsidy to bring the investment to the UK; it also requires parallel effort to develop the supply chains to embed firms fully.

3.1 The manufacturing SME population

The Department of Business, Innovation and Skills' SME Statistics 2008 indicate that UK manufacturing SMEs (companies employing 10-249 people) comprise 32,500 firms providing 1,195,000 jobs.

3.2 Most high-growth businesses are SMEs

Research published by [5]NESTA in October 2009 demonstrates that high-growth businesses – those that experience average annual growth in employment of 20 per cent or more over three years – are the drivers of UK economic prosperity, creating new jobs and intellectual capital. NESTA's report shows that the 6 per cent of all UK businesses with the highest growth rates generated half of the new jobs created between 2002 and 2008. The average high-growth company in the UK tripled its employment over a three-year period, starting with around 60 employees in 2005 to reach over 170 in 2008.

The financial services, construction and real-estate sectors had the highest number of high-growth firms during the period of the 2002-2008 study. However, these sectors contracted in 2008-2009 and are not likely to provide substantial growth in the near term. Manufacturing, however, has shown encouraging growth over recent months. If government policy and business support emphasises 'growth' rather than just 'productivity,' manufacturing could contribute additional, much-needed financial and strategic value, and employment.

3.3 Characteristics of high-growth companies

The NESTA research indicates that:

- high-growth companies are disproportionately innovative
- innovation appears to cause growth
- high-growth firms are not exclusive to so-called 'high-tech' sectors'. High-growth firms are almost equally present in the 'high-tech' and 'low-tech' sectors. And all major UK sectors contained between 4 and 10 per cent of high-growth firms.

3.4 Innovation

Innovation is often identified as an enabler of growth[5, 6]. However, not all forms of innovation deliver employment growth. Work by IfM ECS with manufacturing SMEs has identified that:

- business model innovation can lead to new methods of value creation and capture that can drive growth in revenues, contribution-per-employee and/or employment
- product and/or service innovation can lead to new customer offerings and can generate growth of revenues, margin and employment
- business process innovation, such as through the application of process re-engineering and/or IT systems, can enable productivity improvements, leading to increased competitiveness, but not necessarily revenue or employment growth
- investment in innovation is most likely to be effective when it is aligned with the SME's business strategy
- to create sustainable revenue, margin and employee growth, innovation needs to be established within the SME via appropriate strategies, processes, resources and competences. For product innovation, this typically includes: innovation strategy; understanding the customer and market; idea generation; product portfolio prioritisation; the processes for development and implementation; and employee engagement and competence development.

3.5 It's not just about start-ups

The NESTA research further indicates that although young firms are more likely to be high-growth, most high-growth firms (70%) are at least five years old. Notwithstanding, they note that young high-growth firms are responsible for a fifth of the jobs created by high-growth firms. Their detailed examination of the almost quarter of a million UK start-ups founded in 1998 shows that the majority don't survive ten years (62%), and of those that do, most stay small. Only 10 per cent of those that survived had more than ten employees ten years later; and fewer than 5% had more than 20. The NESTA research concluded that merely encouraging start-ups is unlikely to lead to dramatic growth.

3.6 Manufacturing sectors investing 5% or more of revenues in R&D have higher GVA per employee

Manufacturing sectors investing 5%, or more, of revenues in R&D have higher GVA per Employee than either the economy as a whole, or manufacturing as a whole (see Section 2.2). These firms appear to have greater:

- GDP impact
- intellectual capital development
- product and process innovation

3.7 Implications for manufacturing business support: focus on existing SMEs with growth potential

To foster the development of financial value (GDP impact) and strategic value (sustainable employment, intellectual capital development and employee capability development), manufacturing business support should focus on high-growth SMEs and, more importantly, those that have latent growth potential*, encouraging such SMEs to realise their potential by:

- fostering the development of coherent business strategies
- developing effective capabilities to execute the firm's strategy
- enabling firms to innovate and invest effectively in research and development – and capture value through production and/or service-based business models.

An outline of IfM ECS's approach to business support designed to achieve these aims is given below.

* The approach of (i) screening out 'lifestyle' companies and (ii) using the short 'Prioritisation' intervention identified in Section 4 has proved useful in identifying SMEs with latent growth potential.

4. A new approach to business support for manufacturing SMEs

IfM ECS has worked with over 500 manufacturing SMEs since 2002. This work has demonstrated that SMEs can grow revenues, profitability and employment provided: they have the right strategy, with a clear basis of competition; understand where and how to capture value; and have effective capabilities, such as product innovation, with which to execute their strategy.

The IfM ECS SME programme has had significant impact on many of the firms involved. Examples include:

- an instrumentation company achieved 200% revenue growth over 3 years
- a specialist automotive business increased its staff by nearly 20% between 2008 and June 2010, and achieved a 13% increase in sales over the same period against the trend of global recession, with a projection of further growth by December 2010
- a precision engineering company developed a new strategic direction as a solution provider, acquired underpinning capabilities, and has now expanded into aerospace, defence and autosport sectors increasing full-time positions by 10% after the strategy was developed in December 2009
- an agricultural equipment manufacturer developed a new line of business, made major improvements in new product design and introduction, and increased revenues by 250% over 5 years;
- a company providing capital equipment to the semiconductor industry restructured the way it creates and captures value across its value chain, grew revenues 300% over 5 years, and made dramatic increases in contribution per employee and profitability over 5 years.

The programme has found that manufacturing SMEs require a different approach to business support compared to large companies, and interventions must be configurable to suit the SMEs' specific needs. The support also needs to be delivered by advisers with a broad range of both industrial experience and theoretical understanding. The improvements need to be delivered as 'bite-size' modules, following a structured process:

1. Business-wide prioritisation to identify the most important issues on which to focus.
2. Business strategy development.
3. Capability development, aligned with the business strategy, enabling SMEs to:
   a. win orders, through, for example, distinctive customer value; quality; price competiveness; or social/ethical/environmental performance.
   b. manage constraints facing the business, such as demand; supply; cash; plant and equipment; people and processes.
4. Development of the management team, encompassing leadership skills and functional expertise, such as product and process innovation.
5. Ongoing process and productivity improvement.

Further details of the IfM ECS SME programme are given in the appendices.

5. Summary

1. The growth of manufacturing is a strategic priority for the UK

The manufacturing sector has enormous potential to support economic recovery by creating superior financial and strategic value. In particular, it can help realise value from the country's distinctive science and technology base and provide employment opportunities for people with a wide range of abilities and skills.

2. 'Productivity' is necessary but not sufficient

The emphasis of business support should be re-focused on 'growth' rather than 'productivity.' While productivity is important in raising competitiveness, increased productivity without output growth will result in fewer jobs.

3. SMEs can grow revenues, profitability and employment

The fastest way to stimulate UK industrial growth is to support the development of existing manufacturing SMEs. The IfM ECS SME support programme demonstrates that SMEs can increase profitability and employment once they have a coherent strategy, with a clear basis of competition; understand where and how to capture value; and have effective capabilities, such as product innovation, with which to execute their strategy and realise value.

4. The focus needs to be on manufacturing SMEs with growth potential

To foster the growth of financial value (GDP impact) and strategic value (growth of sustainable employment, intellectual capital development, and employee capability development), manufacturing business support should focus on high-growth SMEs, and those with growth potential, encouraging such SMEs to realise their potential by:

- fostering the development of coherent business strategies, with a clear basis of competition
- developing effective and appropriate capabilities to execute the firm's strategy
- enabling firms to innovate and invest effectively in research and development – and capture value through production and/or service-based business models

5. Business improvement techniques developed for larger firms are unsuitable for manufacturing SMEs.

SMEs are best served by a new approach and not treated as 'small large companies.' Structured approaches to business strategy and capability development need to be designed for, and made accessible to, SMEs. Business support needs to be delivered by appropriately knowledgeable and experienced advisers who, using structured approaches, can enable manufacturing SMEs to grow revenues, employment and profits.

APPENDIX 1

Summary of SMEs' needs for business improvement, and how to engage effectively with them

Conclusions	Observations
Business improvement approaches for SMEs need to be effective and accessible, yielding clear benefits with efficient use of management time	1. Senior managers typically work 'in the business' in Operations, Sales, Development or Finance and have little discretionary time for strategy and capability development. 2. The senior management teams of SMEs often have less awareness of 'management' as taught in business schools than their counterparts in large firms, and find such techniques inaccessible. 3. In many cases, business improvement techniques for large firms cannot be 'scaled-down' to address the needs of SMEs. For example, many approaches lack the 'prioritisation' needed to ensure that the SMEs' scarce resources are focused on the right issues.
Improvement projects must focus on the highest priority for the business as a whole	4. SMEs have limited resources for business improvement. Firms can focus on very few improvement projects at a time. 5. Unlike large firms, SMEs' capabilities are often weak across broad areas of the business; this presents external advisors and consultants with the opportunity to show how their 'offer' can improve the SME's performance in an area related to their own expertise, which may not be a priority for the firm; there is a real danger that this may divert attention from the highest priorities for the firm. 6. Focusing improvement projects on the wrong areas of the business can lead to serious damage. For example, an SME undertook a 'lean' productivity improvement project where the most important need was to improve demand generation. The company implemented 'lean' well but the factory worked only 3 days per week as a result and the firm nearly failed. Now that demand generation has been addressed, the firm is flourishing.
Structured approaches for business strategy and capability development need to be made accessible to SMEs	7. Few manufacturing SMEs have explicit business strategies; those that do, often fail to update them sufficiently frequently. 8. The external context in which firms operates is changing rapidly; as a consequence, firms need to review and update their strategy more often. 9. Most conventional approaches to business strategy and capability development require too much effort from the SME management to be effective.

APPENDIX 2

Lessons from the IfM ECS' manufacturing SME programme

SMEs' needs for business improvement and how to engage effectively with them

1. Business improvement techniques developed for larger firms are not generally suitable for SMEs because, for example: they do not help the SME prioritise their improvement efforts; they require more effort than the SME can spare; they are too complex and / or are not sufficiently easy to use; and they use terminology that the SME managers do not understand.
2. Business improvement approaches for SMEs need to be effective and accessible, yielding clear benefits with efficient use of management time.
3. Improvement projects must focus on the highest priorities for the business as a whole, otherwise they waste the scarce management time and resources of the firm – and, in some cases, can actually damage the business.
4. SMEs are best served by an approach tailored to their needs and not treated as 'small large companies.' Structured approaches for business strategy and capability development need to be designed for, and made accessible to, SMEs.

Codifying and packaging relevant knowledge in a form accessible to SMEs

Engagement approach

The IfM ECS SME programme has found the following approach, configurable to the specific needs of the firm and delivered as 'bite-size' modules, is effective in engaging SMEs' senior management team and enabling them to drive business growth.

1. Business-wide prioritisation to identify the most important issues on which to focus.
2. Business strategy development.
3. Capability development, aligned with the SME's business strategy, that enables the firm to:
   a. win orders, through, for example, distinctive customer value; quality; price competiveness, or social/ethical/environmental performance, and
   b. manage constraints facing the business, such as demand; supply; cash; plant and equipment; people and processes.
4. Development of the management team, encompassing leadership skills and functional expertise, such as product and process innovation.
5. Ongoing process and productivity improvement.

Structured techniques

The IfM ECS SME Programme has developed flexible structured approaches, configurable to the SME's specific needs, to enable:

- business-wide prioritisation and action-planning, deliverable in 1½-2 days depending on the size of the firm. The prioritisation tool also enables decisions to be made about whether the

firm has growth potential, and whether to progress to the next stage
- business strategy development and implementation planning, deliverable in four ½ day workshops
- development of capabilities, such as product innovation, demand generation, supply chain management, etc., through education, assessment (of current and required states, and an action plan to realise improvement) and development modules, deliverable in about four days for each capability

Delivery resources

The IfM ECS SME programme has conducted engagements with SMEs deploying advisers with a broad range of academic and industrial expertise. In order to engage effectively with SMEs in the prioritisation and business strategy stages, it was found that advisers should:
- have experience of multiple business areas and understand their inter-relationships
- have held senior roles in SMEs, such as operations director or managing director
- have a strong, relevant academic background
- be able to quickly gain the respect of SME owners and leaders
- have the facilitation skills and practical approach necessary to engage effectively with the SME's senior and middle management team

Initial experience with capability assessment and development suggests that successful business improvements can be made by advisers with relevant knowledge and experience in the specific capability area, such as product innovation, quality management, supply chain management, etc.

Disseminating knowledge to effect sustainable business improvement

IfM ECS has engaged with a very broad range of manufacturing SMEs in terms of:
- industry sector – spanning automotive, capital equipment, food and beverage, instrumentation, packaging, luxury goods
- location – including East of England, North East, North West, West Midlands, Wales, and internationally from Australia to Latvia, South Africa and Trinidad
- size – from micro-companies (fewer than 10 employees) to medium size firms (up to 250)
- maturity of business processes – from immature to highly structured
- business age – from new firms to well-established firms that have traded for over 100 years
- ownership – including family-ownership, business units of multinationals and investment funds

This breadth of application has enabled:
- IfM ECS to develop an understanding of the needs and issues facing a broad range of SMEs
- business improvement techniques to be tested in a wide range of business environments

Sources

[1]Defining High Value Manufacturing
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ONS Time Series Data, Profitability of UK Companies for capital employed. http://www.statistics.gov.uk/statbase/tsdtimezone.asp
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[4]Diagram 4 - Trade in manufactured goods
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The Institute for Manufacturing

The Institute for Manufacturing (IfM) provides a unique environment for the creation of new ideas and approaches for modern industrial practice. Part of the University of Cambridge's Department of Engineering, it brings together expertise in management, policy and technology to address the full spectrum of industrial issues. The IfM has over 240 people working across a range of specialist areas, integrating research and education with practical application in industry.

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IfM Education and Consultancy Services Ltd (IfM ECS) provides a rapid dissemination route for new ideas and approaches developed at the IfM. A team of industrial practitioners helps companies of all sizes to apply research-based improvement techniques via a programme of consultancy and education services. This work brings benefits to both parties. Industry receives practical solutions based on the latest applied research; the IfM gains live feedback to help set the agenda for new research and an income stream to assist in funding future research activities. IfM ECS is a wholly owned company of the University of Cambridge.

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