Business model innovation

A snapshot of research and practice at the IfM
Introduction

In recent years, research into business model innovation has developed significant momentum. At the IfM, where our research is both focused on, and informed by, real industrial need, it has become an increasingly important part of our activities across a number of different areas, such as: technology and innovation management, servitization (including the role of information in service delivery), sustainability, global value network design and policy development. Business model research also underpins the work of IfM Education and Consultancy Services (IfM ECS) in developing and applying research-based toolkits for business improvement.

It seemed to us that now would be a good time to take stock, share our thoughts and findings with the wider research community and collectively develop a clear and coherent research agenda for the future. To this end, we are running a series of events bringing together researchers from across the academic community – both in the UK and internationally – to explore the role of technology and business models in industry and identify areas for future research and collaboration.

This document summarises the key areas we are exploring at the IfM and the projects which support them, ranging from large collaborative research projects to PhD theses and the creation of business support tools. We have organised them into four broad themes:

- service
- capturing value from technology, innovation and networks
- sustainability
- developing business-support tools

We hope this provides a useful starting point for identifying and prioritising which research questions we should now be addressing.
The Cambridge Service Alliance (CSA) brings together leading businesses and the University of Cambridge to improve the way high-performance complex services are designed, deployed and delivered. The Alliance provides a forum in which our partners – BAE Systems, Caterpillar, IBM, Pearson and Zoetis – share their knowledge and experience with each other and work with us to develop a collaborative research programme.

There are several major shifts across all sectors in the economy that make complex services important and which mean that many firms need to innovate their business models. The CSA addresses a number of challenges associated with the shift to services. Firms increasingly recognise that their clients value the solutions they offer – often more than their products – but many struggle to make the transition to a new business model. This is partly due to the lack of structured guidance in understanding this shift and how, for example, it affects the relationship between manufacturing firms, their partners and customers. The complexity of these solutions means that a single firm can rarely deliver them by itself. Instead, it has to rely on a network of firms acting as a business ecosystem in which competition may go hand in hand with cooperation. But what are the factors that determine who creates and who captures value across these new ecosystems?

Moreover, developing data-driven business models is perceived to be an important part of the shift to services. ‘Data is the new oil’ is a much quoted phrase but there is still a gap in our understanding of ‘if’ and ‘how’ big data actually creates value for companies and hence what business models relying on data look like.

### Current Cambridge Service Alliance research projects

- **Making and sustaining the shift to services**: how can we identify and evaluate the shift to services and solutions while creating and sustaining the business case?

- **Building better business ecosystems**: formalising an ‘Ecosystem Strategy Framework’ that helps executives create and implement innovative corporate strategies, and influences the characteristics and future development of business ecosystems.

- **Building a taxonomy of data-driven business models**: proposing a taxonomy of business models used by firms that rely on data as a resource of major importance for their business (data-driven business models or DDBMs).
Business models for **capturing value from technology, innovation and networks**

This theme encompasses business model research from across a number of IfM Centres addressing how firms can more effectively capture value from technology and innovation.

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**Technology and innovation management**

Research from the Centre for Technology Management looks broadly at the role of technology and innovation management in the development and delivery of new products and services from a range of different perspectives including industrial emergence and business ecosystems. The research spans a wide range of sectors, technologies and companies of all sizes from multinationals to start-ups.

**Major research projects and themes include:**

- **‘Bit by Bit’:** looking at digital fabrication from three perspectives:
  - Trends, patterns, barriers and enablers in the emergence and diffusion of digital fabrication to date.
  - How value is captured from digital fabrication technology and what traditional and/or disruptive business models it has enabled.
  - What future scenarios and associated business models may result from the diffusion of digital fabrication technologies?

- **Roadmapping:** integrating a business model thinking approach into the IfM’s ongoing roadmapping research programme, to articulate the strategic vision for early stage ventures in business model terms. In the longer term, this approach will be extended to business model transformation.

- **Open innovation:** exploring the challenges of developing and implementing business models involving multiple organisations, with particular emphasis on ‘asymmetric’ partnerships, the use of intermediaries to support business model development, and business models based around emerging technologies.

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**Short research projects**

- **‘Marketing’ process for technology:** developing a practical approach to identifying what problems a technology can solve at an early stage of an innovation project so the business is able to fully exploit its opportunities.

- **Synergistic technology competencies within supply chains:** investigating the enablers and barriers to developing new products and processes with supply chain partners, and operationalising a collaborative approach using business model innovation to link synergistic business strategies, market drivers and technology capabilities.
Capturing value from global networks

The Centre for International Manufacturing has been developing a set of approaches to help firms understand and redesign their global value networks.

**Major research theme**

- **Capturing value from global value networks**: strategic approaches to configuring international production, supply and service operations.

**Current research projects include:**

- **Reconfiguring medicine’s end-to-end supply chain**: a £23m project to reconfigure pharmaceutical supply chains in the UK by exploiting new technologies and patient-centric delivery models.
- **E-commerce-driven last-mile logistics**: using supply network design tools as companies develop new routes to market using e-commerce-based supply chains.

**PhD projects**

- **Understanding emergent healthcare industrial ecosystems** and the ‘convergence challenges’ of stakeholders using business model innovation to link the ecosystem stakeholder needs to the capabilities required in the value network.
- **Designing manufacturing networks through business model thinking**: investigating value creation and capture in manufacturing networks based on business model thinking.

The role of information in service delivery

The Distributed Information and Automation Laboratory (DIAL) works closely with the Cambridge Service Alliance to support business model innovation through advanced information systems.

**Research projects include:**

- Using intelligent data management methods to enhance supply chain logistics for e-commerce-based business models.
- Models for supporting the current and future needs of key infrastructural assets relating to the value of and information needs of the assets.
- The performance of information systems in supporting the delivery of availability service contracts for the repair of domestic appliances.

**PhD project**

- Models for establishing information requirements for complex engineering service design and delivery.

Turning science into successful technologies

The Centre for Science, Technology and Innovation Policy (CSTI) is an applied policy research unit exploring what makes national innovation systems effective at translating science and engineering ideas into novel technologies and emerging industries. CSTI, while not leading research focused specifically on business models, is interested in their role in the realisation of value (at the UK, regional and firm levels) from government-funded R&D.

**Joint research project with the Centre for Technology Management**

- Business models from the perspective of emerging technologies and how to develop new business models to navigate the pathway to effective deployment.
Business models for sustainability

The IfM’s Centre for Industrial Sustainability conducts research that helps move industry towards a sustainable future that will deliver shared and long-term success – economically, environmentally and socially. Our aim is to improve industrial practice, to create future leaders and to inform policy.

Industry is often perceived to be a significant contributor to the world’s environmental and social problems. Our research presents a different model in which technology, management and policy combine to build a healthy and thriving future. Industry is a key player in the use and flow of energy, water and resources and is adept at co-ordinating people, money, machines and materials and at using technology on a large scale. The Centre works with some of the firms who lead the way in thinking about the transformation of our wider systems but we are also concerned with persuading all manufacturers that it is possible to add value while using less energy, water and materials.

Our research has three main strands: understanding how manufacturers can improve now (and with a limited budget); building the tools and technologies that industry will need over the next ten years; and studying the future shape of sustainable making. This research agenda is based on our view that all our research should be both practical and systemic – having a route to practice while understanding that all manufacturing occurs within a complex system.

Centre for Industrial Sustainability research projects

- **Business Models for Sustainable Industrial Systems** is a three-year project which aims to advance the research and practice on business model innovations that support industrial sustainability with partners Toyota and Riversimple.

- **Redress** is a collaborative, two-year project with Marks & Spencer to drive garment recovery and retained value through business model and supply chain innovation. The outcomes of the project can be applied to textile and other industries.

- **Innovation for Value** is developing a toolkit to help businesses understand and realise the full benefit of the value they are creating for their customers and other stakeholders. Could a firm’s current business model be actively destroying value for others, ultimately affecting the organisation’s ability to capture value in the long run? The Innovation for Value toolkit comprises: i) The Value Mapping Tool which helps firms systematically analyse various forms of value and stimulates innovation in sustainable value creation; ii) The Sustainable Value Analysis Tool which helps manufacturing companies identify opportunities to create sustainable value by analysing the captured and failed value throughout the entire life-cycle of products; and iii) The Business Transformation Tool which supports firms in turning a new value opportunity into a new business model.
Developing business-support tools

IfM Education and Consultancy Services (IfM ECS) is owned by the University of Cambridge and works with organisations of all sizes to help them create and capture value. To support this activity, IfM ECS designs and applies business support tools and processes based on University of Cambridge research. Understanding business models is a prerequisite for the design of effective business toolsets. An important area of interest for IfM ECS is, therefore, mainstream business model archetypes, how they differ according to sector or business focus (whether more product or service-oriented, for example) and how they evolve.

The focus has been on developing an overarching view of manufacturing through the business model lens (see figure below), to align business strategy with the elements of value creation and capture. By identifying these elements, we can concentrate on key business needs. And understanding the interrelationships between the elements gives us a clearer view of how individual tools can be linked to create ‘joined-up’ decision support systems and toolsets.

IfM ECS tool development projects

- **Early stage venture strategy** – helps early stage ventures develop strategies which will create a balanced business model platform.
- **Business scale up** – examines the readiness of a firm to successfully scale up its business model and provides the strategy and capability development to do so.
- **Marketing toolkit** – addresses the configuration and development of the marketing and sales (and demand) capability within the business model of the organisation.
- **Service toolkit** – helps to increase a company’s service orientation and its readiness to adopt a new competitive strategy based on services.
- **Embedding sustainability profitably** – supports firms (regardless of their size) to carry out their businesses with a renewed focus on sustainability and do so without conceding profit.
INSTITUTE FOR MANUFACTURING: IfM
The IfM is part of the University of Cambridge. It brings together expertise in management, technology and policy to address the full spectrum of issues which can help industry and governments create sustainable economic growth.

IFM EDUCATION & CONSULTANCY SERVICES LIMITED: IfM ECS
IfM ECS works with companies of all sizes to help them create and capture value and with national and regional governments to support and grow their industrial sectors. It does this by transferring the new ideas and approaches developed by researchers at the IfM through a programme of education and consultancy services. IfM ECS is owned by the University of Cambridge. Its profits are gifted to the University to fund future research activities.

For more information about business model research across the IfM:
Cambridge Service Alliance
www.cambridgeservicealliance.org

Distributed Information and Automation Laboratory
www.ifm.eng.cam.ac.uk/research/dial

Centre for Industrial Sustainability
www.ifm.eng.cam.ac.uk/research/industrial-sustainability

Centre for International Manufacturing
www.ifm.eng.cam.ac.uk/research/global-networks

Centre for Science, Technology & Innovation Policy
www.ifm.eng.cam.ac.uk/research/csti

Centre for Technology Management
www.ifm.eng.cam.ac.uk/research/ctm

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