There is a constant need for businesses to adapt to new technologies, become more creative and find new ways of staying ahead of the competition.

What is innovation?
Human beings are endlessly inventive. In the modern era, the technology they devise is changing faster than ever.

A major concern for the social sciences is to see where innovation comes from and how it is used in society.

Governments like innovation because they hope that an innovative economy will be a fast-growing and prosperous one.

Innovation and change are complex subjects in which some social scientists specialise, including economists and others such as legal scholars.

What does the research tell us?
Professor Alan Hughes is director of the Centre for Business Research (CBR) at the University of Cambridge. He says that the Centre does top-class research which involves businesses and other stakeholders, and routinely disseminates the knowledge it produces to possible users.

He points out that innovation comes in a number of forms.

- Process innovation, which involves changes in production methods, whether for a physical product or a service. Examples include replacing the craft production of cars by assembly line production, or the replacement of high street stores by online shopping.
- When new products emerge, such as mobile phones, laptop computers, jet aircraft or artificial hips.
- When organisations change, for example when new management methods are adopted, such as performance related pay.

He stresses that there is no easy way to tell how innovative the UK is compared to other countries.

One approach is to use some indirect measure of how innovative the UK is, such as the number of patents we produce. Another is to carry out a survey of how innovative businesses think they are in different nations. Such a subjective survey is carried out across the EU. By themselves, these are not direct objective measures of actual innovative activity.

What can stop innovation?
Hughes argues that the UK has a very strong university science base and is a world leader in many areas. What it lacks is high and sustained levels of long-term business investment in new factories and equipment, in R&D and in design training and skills to pull this through into product process and organisational innovation.

The way forward, based on research carried out at CBR, is to develop an industrial strategy designed to provide long-term support for selected technologies and sectors. He calls this a policy of choosing races and placing bets, not of picking winners. Innovation is an uncertain activity with few successes, he says, but unless you choose some sectors to support and place some ‘public support bets’ you will never end up backing a winner.
Using intellectual property to research innovation

Dr Georg von Graevenitz, senior lecturer in innovation management at the University of East Anglia, is an economist with an interest in intellectual property. This is the term for intangible but very real assets that an organisation possesses which allows it to function, ranging from knowledge in people’s heads to the patents and trademarks it owns. Intellectual property is of vital importance to innovative businesses.

He explains: “It is very hard to value something like Coca Cola’s trademark. The methods that have been developed by the marketing industry give widely differing results.”

His project, funded by ESRC and supported by Google, uses Google Trends to spot how Google searches for a specific brand change when it is in the news – for example BP, after the 2010 Texas platform oil disaster, or a car maker which has a vehicle recall.

He says: “We intend to create a tool which anyone can use to see how much damage a brand suffers when something bad happens. In some cases, such as a company quoted on the stock market, we could maybe even attach a financial value to the damage. We could also answer interesting questions. If a company recalls a particular model of car, does the brand name suffer for all its cars, or just that one?”

This work involves extensive analysis of trade mark information to find out just how businesses protect their brand names. Von Graevenitz says: “For many businesses today, intellectual property such as brand names has far more value than their physical assets such as buildings or equipment, so this issue is of growing importance.”

Hughes adds that when recruiting new researchers, he says that he is giving them a unique chance to “become an archaeologist” who will get to make a new discovery about the present day, not the remote past. An example is his study of how university research is used in industry. “One approach we took was to look at intermediate organisations which have been set up to help industry make use of academic research,” he says. They looked at how findings from universities transfered to industry in the field of optoelectronics, widely regarded as a key technology for future computing systems. “The findings from that research were part of the evidence that led the government to set up the current Catapult programme (a technology and innovation centre where the very best of businesses, scientists and engineers can work side by side)” he adds, showing that governments do use research evidence to guide their actions when they consider the future of the UK economy.

Key terms

Here are some terms you will hear used in discussions of innovation and technological change.

- **Clustering:** the idea that innovation will be faster if innovative businesses are located near each other and can interact effectively. Silicon Valley is the ultimate high technology cluster and governments around the world, including the UK, have tried to imitate it.
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- **ICT**: Information and Communications technology.

- **Incubation**: the provision of space, services etc to young businesses in the hope of helping them succeed.

- **Innovation**: the process of bringing a new idea of some sort to successful use. The use could be profit-making, or could change the way a public or non-profit body works. The idea could be scientific, technological, managerial, or related to consumer behaviour.

- **Intellectual property**: the knowledge and other non-physical assets of a business, including its brand names, patents, copyrighted publications, etc.

- **Knowledge transfer**: the process of making use of knowledge from universities, government laboratories and other research centres by industry and other end users.

- **Non-technological innovation**: innovation that centres on new services or markets rather than new products or processes, for example in the retail industry.

- **Open innovation**: the idea of generating innovation by means of collaboration between a wide range of organisations, rather than as a closed activity within a single institution.

- **Patent**: an official permission for the inventor of a new product or method to exclude others from using their invention for a specified period. Patents are important to technological competition in many industries, especially ICT and pharmaceuticals, but can be difficult to defend legally for smaller businesses.

- **Service innovation**: innovation that involves a new service (perhaps a new type of loan from a bank), rather than a new physical product.

- **Stokes’s quadrant**: a way of classifying academic research developed by the political scientist Donald Stokes according to whether it is motivated solely by the pursuit of fundamental understanding; purely by the desire to develop new applications from existing knowledge; or by the pursuit fundamental understanding inspired by considerations of use; or by neither basic nor applied considerations. This gives four quadrants or combinations of motivations. Pasteur’s Quadrant is the third combination, linking considerations of use with pursuit of basic understanding.