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The concept of innovation

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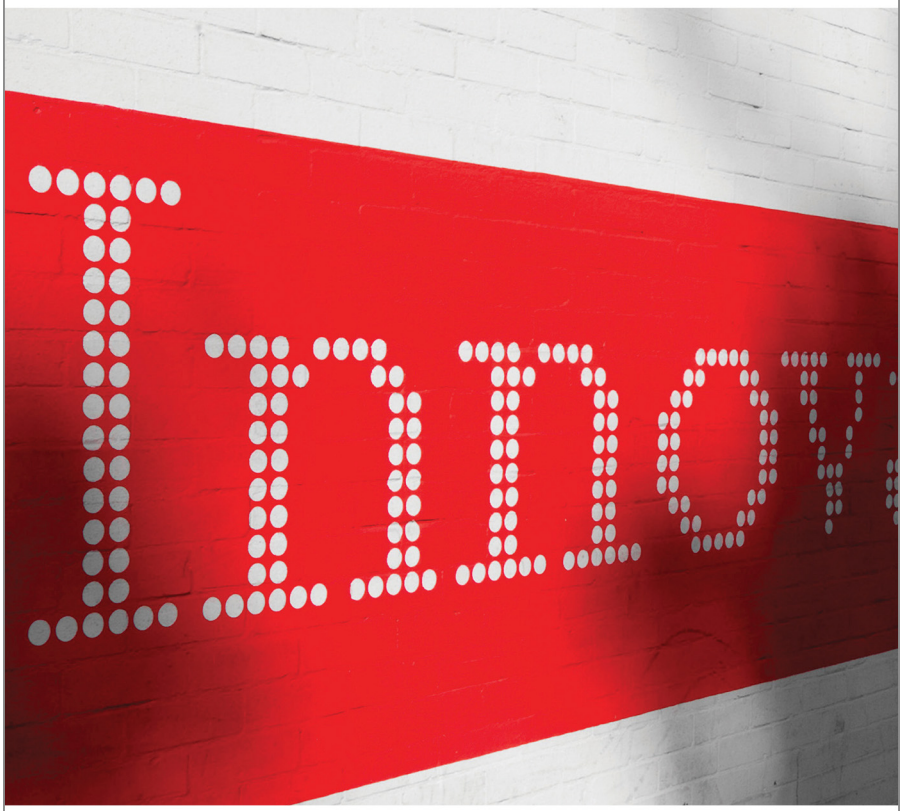

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Contents

Introduction

This course will examine some of the key ideas connected with innovation in organisations. You will be introduced to some important concepts which are used to analyse innovation, in particular the distinction between **innovation** and **invention**. In exploring the theme of innovation, general links will be made to the implications for the business functions.

This OpenLearn course provides a sample of Level 2 study in Business Management.

Learning Outcomes

After studying this course, you should be able to:

- understand why and how innovation is important
- recognise the benefits which innovation can confer on an innovating organisation.

1 Invention and innovation

The terms ‘invention’ and ‘innovation’ are sometimes used interchangeably, although the concepts are readily distinguished. As you will see here, it is helpful to make a distinction in the context of organisational analysis. First consider what you understand by the term invention.

Activity 1

Take two minutes to think about how you would answer the question ‘What is an invention?’.

Answer

Most people would probably associate an invention with something which is tangible and new. Inventions use new knowledge to create something new, perhaps an artefact, service or a piece of equipment. Inventions are useful if they have the potential to enable people to do things in different and better ways, or do things which they would like to do but could not have done before. They are useful if they can satisfy a need or desire which would otherwise go unmet, but inventions cannot always be put to an immediate beneficial use.

As individuals, everyone benefits from past inventions. For example, if the wheel had not been invented many years ago, people would not have been able to benefit from the forms of transport which incorporate the wheel. Carts and horse-drawn carriages, bicycles, motor cars, buses and trains all required the prior invention of the wheel.

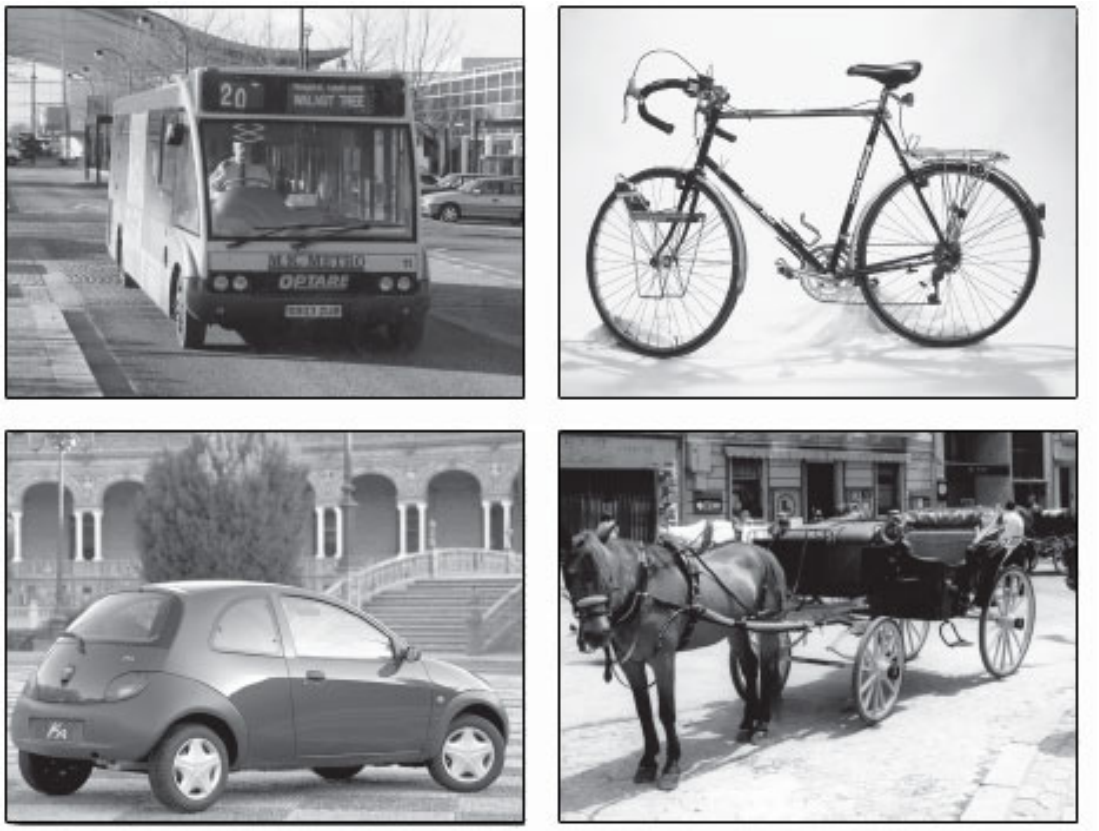

Figure 1 Four types of transport

Activity 2

Take a few minutes to consider the question: ‘Do inventions always confer benefits?’. Make a note of your thoughts.

Answer

Inventions can only confer benefits if they are useful in helping individuals and organisations to achieve purposes and objectives. The wheel was a useful invention because it achieved the purpose of enabling people to travel and transport goods more easily from one place to another. It is an essential part of the motor car which can help to achieve objectives such as getting to work on time. However, inventions can also have negative effects, for example pollution as a result of emissions from motor cars. An invention can benefit an organisation if it reduces costs, increases the effectiveness of product or service provision, or enables an organisation to supply customers with new products and services. However, reducing costs (for example by the use of technology) may actually mean redundancies for some employees.

This assumes that one can always foresee how inventions can be used to help achieve purposes and objectives (and the negative effects associated with them). An invention which does not serve any immediate purpose we have, or which cannot be used to achieve an objective, does not confer any benefit. The concept of invention implies that applications of knowledge create something new, but inventions can only lead to useful innovation when people are able to see how they can serve their purposes. Another way of putting this is to say that not all inventions lead to innovations.

The concept of **innovation** implies that benefit is derived from applications of new market or technological knowledge. Sometimes it can take a long time for an invention to lead to innovation. In 1972, Intel invented the microprocessor. Given the widespread use made in developed countries of computers and computer technologies today, this was clearly a potentially useful invention. However, Intel did not derive any benefit from its invention until the late 1980s and 1990s. It was not able to put its invention to a productive commercial use immediately and did not reap the benefits until it could.

Figure 2 'Magnificent invention! Now, lets get the people in Marketing to figure out what it can do!'

Michael Porter (1990) has also implied the need to distinguish between invention and innovation. He writes that innovation is defined as: 'a new way of doing things (termed invention by some authors) that is *commercialized*' (p. 780). From Porter's strategic perspective, inventions need not result in something tangible. A 'new way of doing things' need not be the result of a new piece of equipment. However, devising or discovering 'a new way of doing things', a new product or service, is not on its own a sufficient condition for a profit-making organisation to make a profit, or for a non-profit-making organisation to achieve its aims and objectives more effectively. New processes, products and services must also be put to a productive commercial use. The point is that innovations are of practical use in providing new or improved products or services and/or enabling people and organisations to do things more effectively and/or efficiently. Inventors, organisational or individual, can only benefit from inventions which they can exploit for gain.

It is perhaps appropriate here to stress the difference between **product** and **process** innovation. Product innovation relates to the development of a new product, for instance a new piece of equipment such as the personal computer (PC). However, when an organisation adopts this innovation to enable it to perform its operations more effectively and efficiently, it can be classed as a process innovation. In effect it is impacting on the

process of the organisation's activities. Keep in mind that what may be innovative for one organisation may be ‘old hat’ for another.

Process innovation is not confined to the use of new equipment in an organisation but, as Porter's definition of innovation suggests, can also refer to a new way of doing things. It is therefore important to remember that when we refer to technology in this course, we are defining it in its widest possible sense to include new equipment, machinery and internet technologies, as well as new ways of organising work, bound up in the systems, processes and procedures of an organisation and not necessarily involving physical equipment and products.

Activity 3

0 hour(s) 5 minutes(s)

In the light of the discussion so far, note down what you understand by the terms invention and innovation.

Invention

Innovation

Figure 3

Answer

An invention is a new process, product or service derived from new ideas and knowledge. It is an application of knowledge which creates something new. The use of knowledge generated much interest during the 1990s and has a direct relationship with the HR function in that it is suggested that in order to be innovative organisations must create conditions in which the creation and utilisation of knowledge can be maximised.

Porter's definition of innovation suggests that **innovation is invention coupled with commercialisation**. Innovation which puts new knowledge to productive use can create and commercialise entirely new processes, products or services of the type which we often associate with the term invention, but it can also lead to the development of improved processes, products and services.

Activity 4

0 hour(s) 5 minutes(s)

Suggest one or two ways in which innovation might benefit an organisation.

Answer

Innovation may create new products or services to serve new markets, enabling an organisation to expand its market base or range of beneficiaries. Alternatively, it may lead to product or service improvements, such as better quality or service flexibility. For example, some medical conditions that were formerly treated by major surgery are now treatable with keyhole surgery. Factors such as these can influence customer perceptions of a company and its market offerings. Customers may be willing to pay more for products and services which they consider are superior in some way to alternatives. Innovation may also enable an organisation to produce existing or improved products and services more efficiently at a lower cost. Again, in linking innovation to business functions, striving for effectiveness and efficiency relates to the operations function. This is not always driven by an improvement in products and technologies but can also involve innovation in working methods, such as group or teamwork, which can be, but is not always, enabled by technologies.

New markets provide a new source of revenue for organisations that sell their products (be they for-profit or not-for-profit), as revenues are determined by the quantities and price of output sold. Improved products and services which are in consequence differentiated from those of competitors can sometimes command a higher price. With or without changes or improvements to the products and services an organisation provides, innovations in organisational processes can improve the effectiveness and/or efficiency of provision. Effectiveness can be a differentiating factor and the more efficient an organisation is, the lower the cost. Innovation can therefore increase revenues and/or reduce costs, and so increase profits of businesses or the ability for not-for-profit organisations to expand services without additional donations.

In donor-funded or tax-funded organisations, such as a government-funded hospital, innovations may also make it possible to meet the needs it serves more effectively and efficiently. New and less expensive drugs could enable doctors to treat more people with particular ailments without additional taxation. Better quality health care provision would enable the hospital to achieve better results. Lower costs enable donor-funded or tax-funded organisations to achieve more with their existing allocation of resources.

As the contrast above indicates, the aims and objectives of profit-making and non-profit-making organisations may differ, but innovation can play an important role in helping both types of organisation to achieve them. It can open new markets and/or create opportunities for related activities, all of which impact on the business functions.

Activity 5

Can you recall what an organisation must achieve to benefit from innovation?

Answer

We have already indicated that organisations benefit from innovations which enable them to offer new or improved products and services, and are consequently differentiated. They also benefit from innovations which enable them to offer products and services more effectively and/or at a lower cost.

Functional innovations can lead to more effective or efficient functional activity, but because functional activities are related in the value chain, innovations in one functional area have implications for others. In the end, successful innovations at functional level can be of wider benefit to the organisation because of their impact on the functioning of the value chain.

2 What's so great about innovation?

So far we have suggested that innovation is a positive concept and, it appears, the rate of innovation continues to accelerate, led mostly by technology. The process is an example of **positive feedback**, in which the change is self-reinforcing: the development of technology itself increases the capacity for technological innovation, and raises the expectation of consumers for further innovation. While there seems little reason why this process of accelerating technological change should not continue for the foreseeable future, a counter-view argues that change for change's sake is not necessarily always desirable. In the following paragraphs we introduce six questions that Neil Postman of New York University believes should be asked when considering innovations (Postman, 1998):

- What is the problem to which this technology is a solution? For example, what problems do a 'smart' door knob, or 500 broadcasting channels, really solve?
- Whose problem is it? Most technologies solve some problems, but the problem may not be most people's problem. The people who benefit from a technology may not be the ones who pay for it.
- What new problems might we be creating? There are few technologies that do not create new problems – often unanticipated ones.
- Who may be harmed by the technology? New technologies always produce losers as well as winners.
- What changes is the technology bringing to language? The electronic community, for example, is very different from the traditional meaning of the word 'community'.
- How does the technology realign economic and political power? By understanding the changes, we can then decide if we want them.

Postman concludes by saying:

> Entrepreneurs like Morse, Edison and Disney created the 20th century, as Gates and others are now creating the 21st. I don't know if much can be done to moderate the cultural changes they will enforce, but citizens ought to know what's happening and keep an attentive eye on such people.
>
> (Postman, 1998)

Examples of the second-order (indirect or unintended) effects of technological innovation are given in Box 1.

Box 1: Second-order technological innovation

- The US government decided not to match the British and French in the development of supersonic passenger transport. The three-hour saving in travel time to cross the Atlantic would probably be used to watch television – so why not put televisions on subsonic jets?
- Should governments (i.e. taxpayers) pay for the development of supersonic transport that would benefit mainly movie stars, rock musicians and corporate executives?

- Cars have solved transport problems but have led to pollution; antibiotics have reduced disease but have weakened the immune system; and television has extended communication and entertainment but has changed the nature of political discourse.
- The Luddites recognised the advantages of mechanisation, but also saw that it would damage their own lives. The use of 'Luddite' (someone who resists technological change) as an insult ignores the reality that technology produces losers as well as winners.
- Email has transformed the nature of communication – many children today have never written a letter.
- Technological innovation empowers some and disenfranchises others. So television favours those who master the soundbite over those who engage in detailed debate. The digital age has created a new class of the electronically illiterate, who may become as disadvantaged as other illiterates.

(Adapted from Postman, 1998)

Activity 6

0 hour(s) 30 minutes(s)

Think of an innovation relevant to you through your work or in your role as a consumer. Answer the following questions in relation to that innovation:

1. What benefits has it brought to consumers, and how do these compare with the benefits brought to the organisation that introduced the innovation?
2. Can you identify any second-order effects that have arisen from this innovation?

Answer

We have chosen as an example the introduction of desktop publishing (DTP) technology, and have answered the questions as follows:

1. We suspect that the benefits to consumers have been considerable, by making high-quality publishing largely independent of scale and greatly expanding its accessibility. There have also been benefits to the software manufacturers, but these have been shortlived, as newer technologies replaced the older ones and competition has restricted the price and margin potential for the manufacturers.
2. There are several second-order effects, many of them derived from the de-skilling that the new technology brings about. The positive aspects of this – greater access, lower costs, speed – are offset in part by the negative effects on the traditional craft industries of printing and design. The winners are the customers of traditional printers, and those organisations that have rapidly developed the skills in the new technology. The losers are the craft printers and those who have been unable or unwilling to develop the skills to operate the new technology.

Conclusion

This course should have given you some idea of the issues surrounding the concept of innovation, in particular the key concepts of invention and innovation, and the negative as well as the positive effects that innovations can bring. Although the business functions have been recognised in passing, you should be able to see how the functioning of an organisation can be affected by innovation. Remember that although innovation can take place within any one function of the organisation, this can have an impact across the whole organisation.

We hope that you have found this an interesting and challenging course and that you now have a better understanding of the importance of innovation to organisations.

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