

10 Product and service design

Definition

Design means finding the right balance between creating something that people desire to have, that they can afford to buy and that works reliably.

Linked to: Market research Ch3; Market positioning, Ch4; Price elasticity of demand, Ch8; Branding and promotion, Ch11; Quality management, Ch44.

10.1 Introduction to design

The design of a product is not just about its appearance and shape. It is also about the product's function, quality and durability. Designers work to a design brief, which tells them the criteria for looks, cost and quality. All must be considered in designing the finished product. Larger firms have their own design teams on the payroll. Smaller firms may rely on design consultants to turn a product idea or requirement into a finished product.

Good design adds value to products and can be the key differentiator that marks one brand out from its competitors. No other UK firm has been quite as successful at this as Dyson Ltd. Famously, James Dyson created 5,127 prototypes of his first vacuum cleaner before he was satisfied that he had perfected the cleaning mechanism. The modern Dyson empire, though, with global sales of £6 billion and profits of £800 million a



Figure 10.1 James Dyson

year, owes a huge amount to visual (aesthetic) design. The patent on Dyson's 'dual cyclone' vacuum mechanism expired in 2001. Yet the distinctiveness of the products has continued to generate huge sales success even though Dyson prices are often double those of its competitors.

10.2 The design mix

'When you say 'design,' everybody thinks of magazine pages. So it's an emotive word. Everybody thinks it's how something looks, whereas for me, design is pretty much everything involved in making something.'

James Dyson, vacuum design billionaire

A useful way to consider design is through the design mix. Every designer must consider the following three factors.

- 1 **Aesthetics:** the look, feel, smell or taste (that is, the appeal to the senses).
- 2 **Function:** does it work? Is it reliable? Is it strong enough or light enough for the customer's purpose?

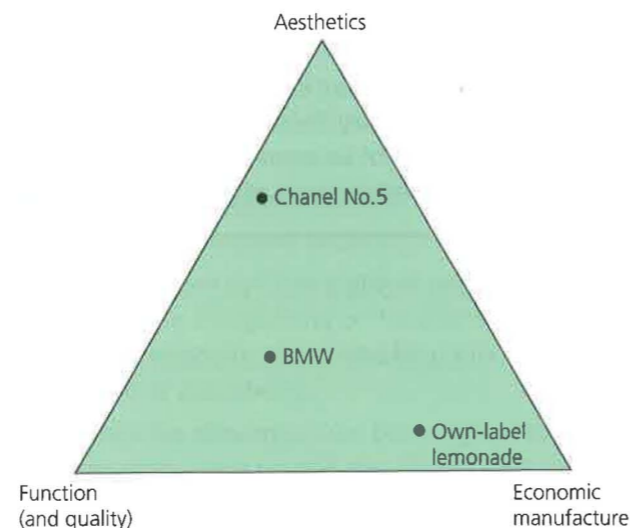


Figure 10.2 The design mix

3 **Economic manufacture:** is the design simple enough for it to be made quickly and efficiently and therefore relatively cheaply?

In some cases, all three factors will be of equal importance. In most, there will be a clear priority. As Figure 10.2 shows, with own-label lemonade, cheap production would be the overwhelming priority. So design will focus on simplicity, using a standard plastic bottle shape and low-cost materials that are easy to manufacture. For BMW, design for function would be important, as would the car's appearance. Production costs will be a lower priority. Firms decide on their design mix after careful market research to identify the purchasing motivations of existing and potential customers. Table 10.1 gives some indications of other design priorities for businesses.

	Aesthetics	Function	Economic manufacture
Dacia Sandero (UK's cheapest car: £5,950)	3	2	1
Hermes 'Birkin' bag (price: upwards from £7,500)	1	2	3
An online, home-delivery dry-cleaning business	2=	1	2=
Box of Cadbury 'Indulgence' chocolates	1	2	3

Table 10.1 Design priorities for different products and services

Real business

Design disaster

In early 2014, Adam Pritchard, boss of £8 million juice brand 'Pomegreat', relaunched the brand as 'Simply Great' with a new pack design featuring 'superhero' brand mascots. Pomegreat had built up sales steadily since its launch in 2000, securing supermarket listings and a 'loyal, middle-aged customer base'. Pritchard believed that a new, younger market could be attracted by the superhero logos and a new range of 'superfruits', including mango and cranberry.

The result was a sales disaster. Within six months, sales had halved. Old-time customers walked away while very few new ones were attracted. Pritchard bit the bullet, brought out a new-but-like-the-old design in early November 2014 and within weeks sales were jumping ahead.

Design matters.

Market research on consumer's needs and state of the market

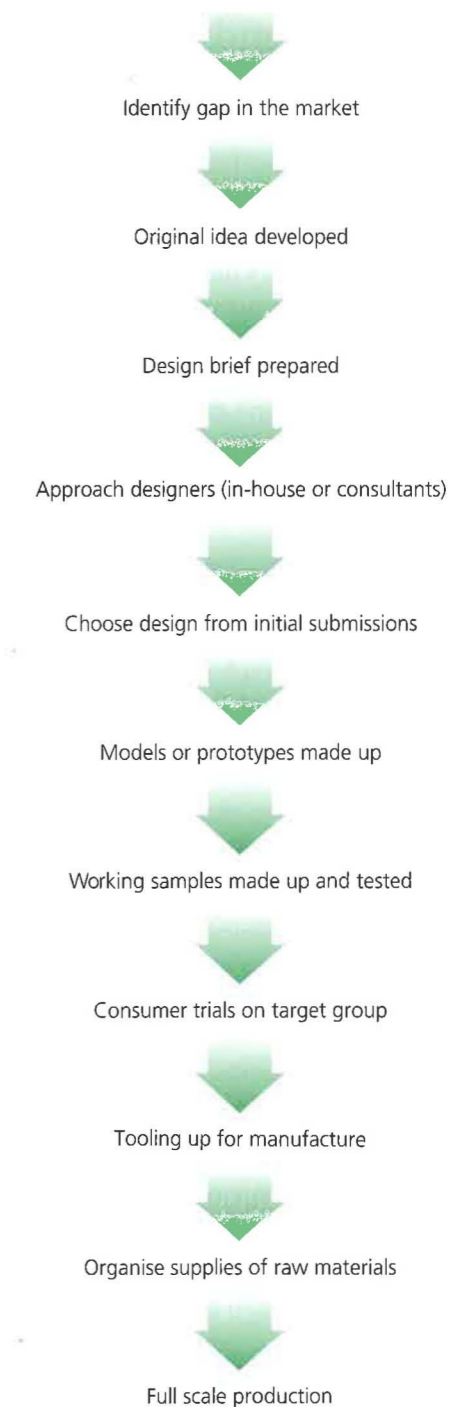


Figure 10.3 The design process

10.3 Changes in the mix to reflect social trends

Concern over resource depletion

With the global population forecast to grow from seven to eleven billion by the end of the century, people worry that key resources such as fresh water will not be able to keep up. They may be depleted to the point that there is not enough to go round. The same could be true of any other resource that is finite – that is, in limited supply. By definition, that is true of minerals such as iron ore and gold, as we have only one planet. Other resources that are a concern include fish stocks, crops that like cool climates (if the planet continues to get warmer) and essentials such as oil and wood.

Sustainability means that the purchase you make will not affect long-term supplies of the product because it is automatically replenished. For example, although cod is an endangered fish, with a serious risk that supplies will dry up, there are plenty of supplies of other fish available, such as pollock. Birds Eye has given in to pressure to reduce the amount of cod in its fish fingers, using pollock instead. Pollock and chips, anyone?

As resources deplete, their price will rise. This will be the signal for designers to try to find alternative solutions based on different materials. Oil is the basis for all plastics. If oil starts to run out, there may need to be a switch back from plastic bottles to glass. Fortunately, that may be aesthetically pleasing.

Designing for waste minimisation and re-use

A well-designed product can be manufactured with minimal wastage. This process starts with computer-aided design (CAD) software, which enables the designer to work out the wastage implications of the production process. Waste minimisation keeps production costs down and helps reduce the environmental footprint of the business. This, in turn, might be used as a marketing message to convey to customers: 'We are serious about every aspect of the environment.'

Re-usage is also potentially important. Economic growth in the twentieth century was associated with

an increasingly disposable society. Disposable lighters, razors, torches and even clothes became fashionable.

Recycling

Waste materials can be disposed of in one of only three ways: burn them, bury them or reuse them. Burning them directly increases greenhouse gas emissions and burying them is not only destructive of the environment, but can also cause air pollution. The ideal solution is therefore recycling, which means re-using as much as possible of the original materials. There are simple solutions to this that shoppers seem uninterested in: for instance, getting milk from a milkman who collects, washes and refills glass milk bottles; people are sufficiently ill-focused to make a fuss about recycled plastic when there is a much better solution available. Nevertheless, individual businesses cannot concern themselves with re-educating the public; their duty is to attract custom.

'A common mistake that people make when trying to design something completely foolproof is to underestimate the ingenuity of complete fools.'

Douglas Adams, author of Hitchhiker's Guide to the Galaxy

In 2014, Colgate-Palmolive announced their intention that by 2020 they would switch to using environmentally friendly toothpaste tubes made from a mixture of paper pulp and recyclable plastic. This may have an impact on the aesthetics of the toothpaste tube (drabber colours, perhaps, or less comfortable to hold). But there will also be a functional benefit that can translate into a new marketing proposition: good for your teeth; good for the planet.

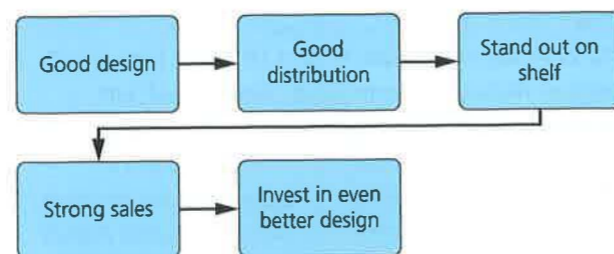


Figure 10.4 Logic chain: design matters

10.4 Ethical sourcing

The Ethical Sourcing Forum (ESF) has been operating since 2002 to try to give western companies an idea about the reality of working conditions and practices

in different parts of the world. In January 2014, they published a report on Bangladesh – doubtless in the aftermath of the 2013 Rana Plaza industrial disaster in which 1,130 garment workers were crushed to death. ESF carried out their research in 400 factories in Bangladesh and found huge inconsistencies within this little-regulated business environment. In 40 per cent of footwear factories, there were too few emergency evacuation exits. The same industry was the worst on a series of measures: wages, excessive working hours and many others. One of the most striking findings was that in 80 per cent of cases in the footwear sector, inspectors were unable to find evidence that workers were allowed a day off a week (as is required by local laws).

For western retailers of clothing and footwear, the working conditions in countries such as Bangladesh, India and Cambodia have become an important issue. Not, in reality, due to the ethical and moral values of the company directors, but because several embarrassing TV and newspaper revelations in the past have made them wary of bad publicity. For 'ethical sourcing', it is better to assume 'sourcing based on fear of ethical revelations'. These are not the same thing.

The term ethical sourcing can be taken in two ways:

- 1 Sourcing based on the manufacturer or retailer's ethical values: this might include buying supplies from known businesses or farms, where the customer knows the supplier treats staff, animals and the environment with respect. Implicitly, for this to be based on ethics, the customer must be prepared to sacrifice some profit in this buying process.
- 2 'Ethical sourcing' may also be a buzz-term, almost a cliché within a business. In 2009, Cadbury announced that its Dairy Milk brand would 'go Fairtrade'. It remains so, yet most Cadbury brands based on Dairy Milk chocolate are not Fairtrade. This surely suggests that Cadbury took that purchasing decision on the grounds of consumer image and

profit maximisation, not through principle. Does this matter? Well, yes, because it would be nice to trust that a company is genuinely concerned about ethical sourcing; in most cases, you have to read the packaging with great care to be sure of how the supplies have been obtained.

Recent years of recession have made it look as if the British consumer takes 'premium' sourcing seriously only in good times. When the 2009 recession arrived, sales of organic food reversed a longstanding upwards sales trend (see Figure 10.5). The slight economic recovery in 2013 presaged a slight improvement in sales of organics. During that same period, sales of Fairtrade produce rose sharply, but that may have been mainly due to supply decisions (Cadbury and Dairy Milk, and Nestlé and Fairtrade KitKat) rather than demand ones.

And what is the relevance of all this to design? In some companies, there will be little or none. Designers at Apple have a critical job to do – but they are not involved at all in the process of getting the products made. Many would have no idea of where key components are made – or the conditions for the workers involved. In other companies, designers would have a greater overall responsibility for the coherence of the product. There is not much point in a beautifully designed dress being made from sustainably sourced cotton if the silk lining is made by child labour in south-east Asia.

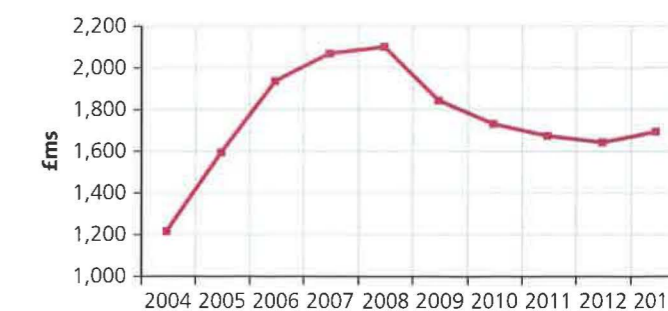


Figure 10.5 Sales value of organic food in the UK (source: Soil Association Annual Reports)

Five whys and a how

Questions	Answers
Why is design important in services as well as products?	Design is vital in the underlying systems, such as the work-flow in a McDonald's, and also matters in terms of how bright and friendly an outlet looks.
Why does design add value?	Good design can turn cheap-to-produce materials into lively, quirky and even classy-looking products that command high prices.
Why might design need graduates from engineering schools rather than art colleges?	Because a lot of design is scientific and technical, such as the design behind Toyota's 'Hybrid Synergy Drive' cars like the Prius.
Why might designers need to think about ethical sourcing?	Because design coherence is important; the design of a posh sofa might be undermined if the wood is not from sustainable sources.
Why might a product be positioned at the extreme tip of 'economic manufacture' on the design mix?	Because the planned target market is lower-income groups.
How might Tesco benefit from better design input?	Better designed stores could use less energy and perhaps fewer staff, making them cheaper to run – and could also look and flow better for customers.

10.5 Product and service design – evaluation

The fundamental theme for evaluating any question involving design is the contrast between long- and short-term thinking. Part of the brilliance of Mercedes engineering is that, although the cars develop year by year, there are design themes that keep a Mercedes completely recognisable. Companies whose objective is short-term profit maximisation are unlikely to think

in this way. The key is to take a long-term view, then stick to it. This is what Pilkington did with its self-cleaning glass, which took ten years to perfect. The Toyota Prius took more than ten years to become profitable. As a past Guinness advertisement once said: 'Good things come to those who wait.'

'Design can be art. Design can be aesthetics. Design is so simple, that's why it is so complicated.'

Paul Rand, art director and logo designer

Key terms

Prototype: a test model of a planned design, used to see if it functions properly, with durability, reliability and safety.

Sustainability: making something using materials that will still be around for future generations, perhaps because you are planting a tree for every one you fell.

10.6 Workbook

Revision questions

(30 marks; 30 minutes)

- 1 Explain how resource depletion might affect the future design of motor cars. (4)
- 2 Explain where you would plot the following on Figure 10.2. Give your reasoning:
 - a) the latest iPhone
 - b) the packaging of a Cadbury £5 Easter egg
 - c) a new double-decker bus for London. (9)
- 3 Explain two marketing advantages that good design could bring to a business of your choice. (8)
- 4 How are the concepts of short-termism and design linked? (3)
- 5 Briefly state and explain whether ethical sourcing would be important to customers in the following circumstances:
 - a) the sourcing of a meat pie at Charlton FC's snack bar

b) the sourcing of a meat pie at Dundonald Primary School

c) the sourcing of a silk scarf sold at a department store. (6)

Data response

General Atomics: making a killing from drones

Drones are unmanned aircraft that are used for military and surveillance purposes. The market for drones is dominated by four American companies: Boeing, Grumman Northrop, Lockheed Martin and General Atomics. The biggest buyer of drones is the American government. They have been used in Afghanistan and Pakistan to kill locals who were terrorist suspects. From the government's point of view, the main advantage of drones over boots on the ground is that they enable a government to kill its enemies without risking the lives of its service personnel. There is a huge amount of profit to be made from supplying the government with military equipment such as drones. According to the Stockholm International Peace Research Institute, the American government's military budget in 2013 was \$640 billion, which is more than the rest of the world's military spending put together.

The MQ-9 Reaper is an armed drone that fires Hellfire missiles. It was developed by General Atomics for the

US government at a cost of \$2.8 billion. Unsurprisingly, the research and development programme that led to the creation of the MQ-9 Reaper was kept secret to ensure that competitors to General Atomics were unable to design a 'me-too' product. The \$2.8 billion investment made by General Atomics has paid off. By 2013, the American government had bought 106 Reapers at a cost of over \$6 billion. Now General Atomics has a new drone to sell – the Avenger. As the photo shows, even though drones may never be seen by the enemy, the design features matter – a warplane should look aggressive; the Avenger certainly does.

Questions (40 marks; 45 minutes)

- 1 Use the design mix to assess the right combination of function, aesthetics and economics when designing a plane such as the Avenger. (10)
- 2 Look at the James Dyson quote on page 56. Assess how well his thoughts relate to the world of General Atomics and drone bombers. (10)
- 3 Evaluate the importance of design to the profitability of a business such as General Atomics. (20)

Extended writing

- 1 Evaluate the extent to which success is guaranteed for a producer with a brilliantly designed new product. (20)
- 2 The Co-op, Waitrose and Sainsbury's all boast about their ethical sourcing. Yet, in

2014, annual sales growth at each company was –1.3 per cent, +5.6 per cent and –2.5 per cent, respectively. Evaluate whether consumers really care about ethical sourcing. (20)