7 Technology: A Double Edged Sword

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Learning goals

After studying this chapter, a reader will have the ability to

1 Define technology in general;

2 Distinguish between cradle-to-grave and cradle-to-cradle technology;

3 Exemplify how cradle-to-cradle technology can be applied in a hospitality settings.

Introduction

This chapter functions as a brief introduction to the section on building and aims at clarifying what technology is and under which conditions it supports a more sustainable development of the hospitality industry.

The term 'technology' is composed by two words from ancient Greek: *techne* and *logos*. *Techne* means art, skills and a cunning hand; while *logos* refers to the capacity to explain something, to science. Thus, literally, technology is the science of crafting, i.e. turning an input, which can be raw martials or energy, into an end product or a service. In other words, technology is a group of (human designed) tools, or knowledge, that transform inputs into outputs.

Humans have used technology since the beginnings. Think at stones thrown to animals to chase them; at the domestication of fire; at pottery – and so on. Animals, such as chimpanzees, use technology too: for example wooden sticks to fish for termites or stones to crack nuts open. To use technology one does not need to exactly know how it works. Think for example of driving a car or sending a message on a mobile phone: some may know exactly how these devices work; most of us know only how to use them.

Technology has been and still is widely used to make our life more comfortable and secure. Yet, technology can also be used to less noble scopes. The automatic gun used by suspected shooter Nikolas Cruz at Majory Stoneman Douglas High

School in Parkland (Florida) on 14 February 2018 to kill seventeen people and wound fourteen is also a fruit of technology. In this chapter we will not discuss this type of technology, but will only consider the (unintended) negative consequences of technology developed to ease people's life. Because technology has unintended consequences we called it in the chapter's title 'a double-edged sword'. In this chapter we will look at technology in general, and then give some examples applied to hospitality. The bottom line of our discussion is that in the context of sustainability, when evaluating technological solutions, managers should not only ask themselves whether the proposed solution improves productivity; increases profit or gives a competitive advantage. They should also ask themselves whether it also add value to people and planet.

Main sustainability challenges

In this section we will consider three main sustainability challenges connected with technology. First we will show how technology that was introduced to solve an issue may cause unintended negative consequences. Then we will discuss in-built obsolescence, and, third, the issue of recycling products made of mixed materials. As a conclusion to this section, we will look at the main paradigm underlying the development of modern technology, i.e. that the world has an unlimited capacity to provide us with raw materials and to cope with our waste.

To start with, let us emphasise that generally speaking technological development is fuelled by a desire to make people's life more easy and comfortable. Think for example of refrigerators. Before they were invented, conserving food was a time intensive, costly and risky activity. Food has to be smoked, for example, or dried to keep it from rotting; or ice had to be collected from mountains and brought into cities to keep food cold. This last was an expensive activity, and only few could afford to cool their food in this way during summer. Conserving food was risky in the sense that, notwithstanding efforts to conserve it properly, food could still get spoiled, and had then to be thrown away. Several languages have proverbs that remind us of this difficulty, such as the saying 'a rotten apple spoils the whole barrel'. In the absence of other technologies to conserve or produce food during winters, the consequence was that families had to endure hunger.

The fridge was therefore saluted as a lifesaving discovery. Yet, the first fridges used ammonia for the cooling. Ammonia is toxic for people and animals, and therefore producers kept looking for other options. One of these options was chlorofluorocarbons, a low toxic and not easily inflammable man-made cooling substance. Since the 1930s ammonia was gradually replaced by chlorofluorocarbons, also known as freon. All's well that end's well, you might say. Yet, in the early 1970s it become evident that chlorofluorocarbons were responsible for the breaking down of the ozone layer in the upper atmosphere, that filters ultraviolet rays. Ultraviolet rays are damaging to humans and other animals living on the Earth's surface. The international community reacted rather quickly, and freon

was banned during a meeting in Montreal in 1987 (see Cavagnaro and Curiel, 2012: 35-36). This story illustrates that technologies – even when they are designed to improve a product – may have unintended negative consequences.

Sometimes, thought, technology is used intentionally not to improve but to worsen a product. A typical example is the light bulb. Incandescent light bulbs work because a thin wire filament is heated to such a high temperature that it glows with visible light. Their usual life span is few years, as anybody who still uses them knows. It may therefore sound quite extraordinary that at the Livermore's Fire station in California (US) there is an incandescent light bulb that has been burning since 1901. The bulb was made by Adoplhe Chaillet in his own factory, Shelby Electric Company; is a hand-blown bulb with carbon filament; is left burning continuously as a nightlight over the fire trucks; and in 2015 reached 1 million light hours (Centennial Light, n.d.). Some people think that the bulb in Livermore is a fake. Others think that it is still burning thanks to a special procedure, not well explained in the documentation left by Chaillet. Still others see the bulb as an example of planned obsolescence (Krajewski, 2014). Planned obsolescence refers to in-built weaknesses in a product so that it does not last long and should be replaced. While at the time that Chaillet build his bulbs quality and durability of a product were central to marketing campaigns, later on the focus shifted and longevity was seen as bad to business. The reasoning goes that if things last too long, people will buy less, and thus profits will be affected. In the case of bulbs, there is evidence suggesting that all big producers, including the American General Electrics and the Dutch Philips, agreed in the 1920s to reduce the maximum burning hours of a bulb to 1,000 hours, an amount significantly lower than the 1,500 to 2,000 hours that had previously been common. The new, short-lived bulbs were of higher quality and brighter than previous ones, but also more expensive. It seems therefore that the major bulb-producing companies were motivated by the desire to increase sales and thus profit at the expense (literally) of consumers (Krajewski, 2014).

In-built weaknesses come in different kinds. Think for example of materials, such as a thinner wire in the case of bulbs, and at the power of marketing, such as new colours and shapes dictated by the new fashion. In our digital era a weakness might be hidden in the software or be the consequence of (the absence of) updates – as everyone who possesses an 'out-dated' phone or computer model will know. We put 'out-dated' in quotation marks because 'out-dated' nowadays may mean two to three years old. Out-dated products may be reused or recycled, but often they are discarded and become waste. Waste is, as we have seen in several places of this book, environmentally and socially unsound (see, for example, Chapter 1). Moreover, it should be rememberd that, to produce goods, raw materials have to be sourced; transported, often across long distances; assembled using energy and labour; and transported again to the outlets where they are sold. The question arises therefore whether the environmental impact of an economy based on consumption of goods and services that are replaced faster and faster is environmentally and socially sustainable. We will come back to this point later on, in the