

1.1 The impact of new and emerging technologies

Countries losing people	Countries gaining people
Advantages: <ul style="list-style-type: none"> Fewer people to house and feed Extra income may be sent back home Reduced pressure on jobs and resources 	Advantages: <ul style="list-style-type: none"> Labour shortages can be overcome Migrants often prepared to take lower paid jobs Adds cultural diversity
Disadvantages: <ul style="list-style-type: none"> Loss of young and most able people Loss of those with good education and skills Families become divided 	Disadvantages: <ul style="list-style-type: none"> Language problems or other barriers to integration Pressure on housing and health services

Table 1.1.1 Possible advantages and disadvantages of demographic movement.

Technique/system	Description	Example	Advantages	Disadvantages
Standardised design and components	The same components or modular systems are used across many designs Usually an individual part, manufactured in large numbers, to an internationally accepted standard	Electronic (e.g. resistors), or mechanical (e.g. nuts and bolts) components	Consistent safety and quality Speeds up product development as parts already exist Workforce can be easily trained to deal with standard components Cost saving	Difficult to customise Quality of a product may suffer
Just-in-time (JIT)	Computerised stock control ensures that parts are only received when they are needed in the production process and go straight to the production site rather than being stored	Car manufacturers (e.g. production line) On-demand publishing (e.g. photos, greeting cards)	Can increase efficiency and reduce waste Enables changes to production runs to meet demand	Any break in the supply chain holds up production Cost of more frequent deliveries Fewer bulk-buying discounts
Lean manufacturing	Reducing or eliminating waste in design, manufacturing, distribution and customer services	Eliminating overproduction Minimising defects Reducing storage, movement or processing of parts or products	Multi-skilled teams (cells) are each responsible for part of the production process, which can improve efficiency as workers share their skills and expertise	Requires time consuming data analysis Requires disruptive changes to existing processes
Batch production	A set number of products are manufactured that are made in limited quantities or for a limited time	Olympic medals Books with limited print run	Could lower capital costs Reduces inventory/storage space	Downtime when reconfiguring the production system

Key terms

Demographic movement: the way in which the population's structure changes, for example as a result of an ageing community or migration into an area.

Enterprise: a business, particularly one started by someone who shows initiative by taking a risk setting up, investing in and running it.

Crowd funding: a method of raising funds from many people for an enterprise via online platforms.

Sustainability: the ability to meet the needs of the present without compromising the ability of future generations to meet their own needs.

Pollution: the release of contaminating substances that are likely to harm the natural environment.

Recycling: the process of converting waste material into other usable products, such as glass bottles made from recycled glass.

Consumer: a person who uses goods and services.

Apprenticeship: a job with training that allows people to gain nationally recognised qualifications.

Automation: using control systems to operate equipment.

Culture: the way a group of people behave, dress, eat and live their lives. Culture can be influenced by anything from religion, tradition and history to local food sources, climate and artistic expression.

Technique/ system	Description	Example	Advantages	Disadvantages
Continuous production	Manufacturing of identical high demand products, 24 hours a day	Production of sheet materials, such as glass, or standard components, such as nuts and bolts	Removes the cost of stopping and starting the production process Materials can be cheaper in high quantities	Automation can lead to staff redundancy High-capital input Low flexibility in changing product/design A fault in production can stop the whole process
One-off production	A single, unique product made by skilled workers	Complex, large scale products (e.g. a yacht) or smaller-scale crafted products (e.g. specialist furniture)	High quality products	Products are expensive as cost of materials is higher and production is labour intensive Production times are longer
Mass production	Efficiently and consistently producing many products at a low cost per unit Often automated, with parts added in sequence	Toy manufacture	Materials can be cheaper in high quantities	Initial set-up costs can be high If a production line breaks, manufacture is halted Repetitive