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## 5. Operations management / 5.2 Operations methods

### The big picture

Karimoku is Japan's leading wood furniture manufacturer. The company was started in 1940, when Shohei Kato started a woodworking shop in Kariya, Aichi Prefecture, alongside a lumber dealing business he had inherited. The company started to produce several different wood products, moving into furniture production by the 1960s. The company is known for combining high-tech manufacturing with human craftsmanship, a concept it calls 'high tech and high touch'.

**Video 1** shows part of the manufacturing process used to create Karimoku's New Standard brand of furniture. In manufacturing this brand, Karimoku supports hardwood forest regeneration; it uses wood that is both grown and harvested sustainably, and it uses low-diameter trees, which are often otherwise discarded or used to make paper. The production of New Standard furniture is a collaborative process between the Japanese craftspeople employed by Karimoku and international designers.

As you watch the video, notice how the company combines methods that are both capital intensive and labour intensive in its production. (You may wish to watch the video at double speed.)



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## The making of KARIMOKU NEW STANDARD HD



**Video 1.** The manufacturing process for Karimoku's New Standard furniture brand.

More information for video 1

The video opens with on-screen text: KARIMOKU NEW STANDARD, followed by a delicate, bare branch with slender twigs extending from it against a backdrop of soft white snow and scattered green leaves. On-screen text reads: The making of KARIMOKU NEW STANDARD. The scene transitions to a carpentry workshop where a man meticulously mends a wooden chair. Various carpentry tools lie scattered across his workbench and the nearby area, alongside a few incomplete chairs, yet to receive their seats.

The scene shifts to a snow-covered landscape in Iwate prefecture, northern Japan, marked by a trail of tiny footprints, followed by a shot of the sun blazing brightly above the skeletal branches of barren treetops. A forest slope, sparsely covered with light snow and dotted with barren trees, comes into view. Fallen branches and entire trees lie scattered on the ground. On-screen text reads: The forest. Iwate prefecture, northern Japan. The scene evokes the stark beauty of a northern winter.

A worker fells a tree with a sharp chop, sending it crashing to the ground. The scene then focuses on several tree barks, heavily laden with thick snow, followed by a view of a snow-covered stack of harvested logs.

The next scene unfolds in a sawmill, also in Iwate prefecture, northern Japan. A sawing machine processes a log. On-screen text reads: The sawmill. Iwate prefecture, northern Japan. Subsequently, the logs undergo precise cutting.

The video transitions to two men handling a log, feeding it into a filing machine and then stacking the processed wood on the other side. The footage then transitions to an open log storage area where a front loader transports several logs. In the background, a crane lifts and lowers more logs.

An experienced worker operates advanced machinery to precisely slice the logs into uniform planks. The uniformly cut wooden planks advance through the machine. The footage shifts to a scene inside the factory where numerous craftsmen work at individual stations. These skilled workers further process the uniform planks into smaller components. The video then shows a machine in operation inside the factory, from which more refined cut wooden planks emerge on a roller belt. At the machine's intake, a worker selects and feeds logs.

The footage transitions to a man standing before a large, advanced machine, carefully examining the wooden planks as they exit.

A close-up of a building bearing the "Karimoku" inscription follows, set against a clear blue sky.

The video shifts to a meticulously maintained line of lush green trees in Aichi prefecture, central Japan. On-screen text

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reads: The factory. Aichi prefecture, central Japan. The text remains as the scene pans to a flatbed truck on the factory grounds, carrying two forklifts.

The video now features a blue robotic arm rotating 360 degrees, precisely buffing and shaping a piece of wood with a sander machine. The automated system also measures the wooden component before the arm places it on a conveyor belt for further processing. Various other machinery and equipment are visible in the background, highlighting the automation of the process.

The video transitions to footage of a woodworking CNC machine in operation. A spinning milling bit meticulously carves the top of a wooden workpiece, leaving a scattering of shavings and dust. The camera pans across the intricately carved top as the CNC machine begins to shape the sides of the wooden piece.

The footage shifts to a woodworking machine where a circular blade precisely cuts through the wood, slicing planks both vertically and horizontally. Sawdust flies as the machine further shapes the designed wooden piece, now turned upside down to create pilot holes.

The video focuses on a man sanding an upside-down wooden plank with pilot holes. Wearing an apron and mask, the worker diligently smooths the surface and ensures a precise fit by sanding both the front and the grid pattern.

The video transitions to a hand wielding a spray gun, applying a vibrant pink paint to the wooden piece. First, the vertical stripes of the grid are meticulously painted, followed by the horizontal stripes after rotating the workpiece. The process is repeated to deepen the intensity of the color.

After painting, the worker turns the piece upside down and wipes it clean. Flipping it to reveal the pink surface, he then uses a sanding tool to achieve a proper texture. He carefully sands all sides, ensuring a uniform finish. The surface now displays a distinct grid pattern with dark pink lines.

The video now shows a skilled artisan precisely working on the wooden surface, refining the pink markings on the shaped piece. He continues to smooth the grids of the workpiece using sandpaper and a sanding tool.

The scene moves to a close-up of the worker's hands as he buffs and sands the wooden piece to perfection. Holding the workpiece securely, he meticulously sands all surfaces. Various tools and crafting equipment are scattered across the workbench, evidence of his skilled craft.

The scene shifts to the craftsman placing the wooden stools onto a dark, curved metal bar. The stools are then uniformly polished with a spray, rotated to ensure complete coverage.

The video transitions to factory workers concluding their workday, switching off the lights and leaving the factory. The footage then shows all the workers gathered in a dining hall, some collecting their meals while most are seated and eating.

The scene changes to two men collaborating in the factory. One holds a wooden plank while the other reaches out to examine it closely.

A woodworking machine is shown in action, featuring four metal hydraulic clamps positioned above four rectangular wooden blocks. On-screen text reads: Castor chair.

The video shifts to a room with a large green machine where a worker, wearing an apron and mask, carefully assembles the wooden blocks and other components, ensuring precise alignment and stability. He applies adhesive to the wood ends to create strong joints, which are then refined using a sanding tool.

The video transitions to a worker operating a machine surrounded by green machinery and equipment, along with a container of materials. A stack of joint woods is visible, and long pipes hang above the machinery. The worker places the



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joint wood into the machine and closes the door. He then uses two different filing machines — one thin and one slightly wider — to shape the round joint woods, filing with each in succession. A spray gun attached to the same machine is used to apply a finish after filing, and the processed wood is then set aside.

The video shifts to another workman operating digital machinery. He switches on the machine and then precisely files long cylindrical wooden pieces, placing them in a holder before closing the machine's door.

The footage returns to CNC machines, now used for the precise cutting of wood for a stool. A thin, small cutter makes intricate cuts on the ends of the wooden piece. A circular disc cutter shapes the sides of the wood. The footage then focuses on a thin cutter shaping the side ends of the stool top, creating a curved form. The worker then refines these curves with a filing machine and uses sandpaper to achieve a smooth texture, carefully examining the piece for any imperfections.

The video shifts to another worker, wearing a white jacket, cap, and mask, operating a large woodworking machine. He meticulously arranges wooden pieces on a green worktable, assembling the various components of a chair with close attention to detail. The parts are bound together to form a chair, and the finished piece is placed aside.

The scene transitions to another workman drilling holes in a piece of wood before placing a wooden chair on a worktable. In the background, a green shelving unit holds various tools and materials, including spools and containers. He turns the chair towards him and hammers in a nail, then files the leg to achieve a smooth texture. He carefully examines the chair for any needed repairs and secures parts to the frame using a stapler-like tool. He refines the backrest with filing and sanding before removing the completed chair from the workbench.

The video shifts to a workman spraying black paint on a circular wooden piece, with a finished wooden chair visible in the background. The scene then moves to a metal wall with evenly spaced dark holes and water cascading down its surface. The black-painted wooden chair is displayed hanging in front of this unique backdrop.

The scene transitions to a worker sanding the black-colored wooden chair on a workbench, wearing an apron and mask. He hands the chair over to another worker, who continues the sanding process. The video then shows a line of workers meticulously sanding the surfaces of multiple chairs.

The footage shifts to a scene where a worker applies a final spray to a black chair. Black chairs and round chair tops, suspended from chains and hooks, are visible in the background.

The video now focuses on a black chair suspended from a chain and hook, moving along a pulley system. A workwoman sprays black paint onto the chairs as they move towards her on the automated line. Another worker performs the same task.

The video transitions to a factory area filled with the haze of spray paint, where numerous spraying pipes and chairs hang from hooks.

Two workers spray paint onto a tabletop suspended from a hook in an area filled with hoses, cables, and hooks running along the walls and ceiling. Various equipment related to the spraying process are visible in the background.

The video shows a woman worker from behind, spraying chairs in the same industrial setting.

The footage then shifts to a spacious workspace filled with rows and sections of finished chairs and a group of workers. One worker carries a chair and places it on a workbench. The camera slowly pans across the area, showcasing the volume of finished products and the remaining workforce.

The footage returns to the worker who placed the chair on the workbench. He attaches a tag and sets it aside. Another worker carefully examines the chair, ensuring the quality of the finishing.



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Numerous packaging boxes are stacked in the background. A worker brings a box and places it beside the finished chair with a tag on the workbench. The workers then proceed to pack the finished products.

The next scene shows several forklifts loading the packaged products and moving out of the factory. The video zooms into a warehouse interior, revealing stacks of cardboard boxes labeled "KARIMOKU NEW STANDARD," neatly arranged beneath a metal framework supporting a wooden ceiling. Some boxes are stacked on wooden pallets. On-screen text reads: Movie by Norio Kidera. The video continues with a forklift carrying the packed goods out in the background.

Finally, the video shifts to a wide-angle view of the factory exterior, bordered by neatly trimmed shrubs along the walkway. Metal pipes entering the factory walls are visible above, and a person walks across a crosswalk in the foreground, entering the building.

This subtopic will explore a number of operations methods that make use of both technology and human craftsmanship in order to transform resource inputs into product outputs.

### **Learning objective from the IBDP Business Management guide with assessment objective level:**

- **Examine** the features of the main methods of production, including: (AO3)
  - job production
  - mass production/flow production
  - batch production
  - mass customisation

5. Operations management / 5.2 Operations methods

## **Job production and batch production**

Operations methods      Operations methods

If you have had a haircut at a salon or barber shop, or if you have bought bread at a bakery, then you have already encountered two different operations methods: job production and batch production. Sometimes, as with a haircut, businesses need to make each product unique to the customer. Other times, as with breadmaking, businesses can produce a variety of products in groups for greater efficiency. These two operations methods are explored in more detail in this section.



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# Job production

Overview

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Job production refers to the production of unique items that are tailor-made to meet the needs of individual customers. The products are highly specialised and often unique. Highly skilled workers produce a single good or provide a service to one customer at a time. Producing these goods and services is usually a very labour-intensive process.

A haircut or style, for example, is usually carried out in a way that meets the customer's specific requirements. Stylists consider the precise cut, colour and style that is required to meet the specific need or want.



**Figure 1.** A haircut or style uses job production methods to meet a customer's unique requirements.

Credit: Nitat Termmee, Getty Images

A business may choose to use job production because customers have very specific requirements that cannot be met using other operations methods. Another reason for using job production might be if the number of customers is small and demand is low. In this situation, using other operations methods that require technology, for example, would be too expensive. **Table 1** outlines some of the advantages and disadvantages of job production as an operations method.



## Concept

### Creativity

Creativity involves generating new ideas and considering existing ideas from new perspectives. Creativity may be evident in the use of inputs, business processes, product outputs and other solutions. The creation of ideas and solutions involves a process of synthesising and evaluating in response to changes in the external environment and consumer needs.



Student view

Job production requires a high level of creativity to meet customers' individual needs and expectations. Collaboration between the customer and designer/producer is necessary for job production to be a success.

**Table 1.** Advantages and disadvantages of job production.

Advantages of job production	Disadvantages of job production
<b>Flexibility and choice.</b> The product is adapted to meet individual customer requirements.	<b>High costs.</b> Production can be costly because it is carried out by specialised and skilled workers using lower quantities of materials. This makes it difficult to achieve economies of scale.
<b>High quality.</b> Quality is high due to the highly skilled labour and high-quality materials used in production.	<b>Time-consuming.</b> Production takes more time because specific customer needs need to be fulfilled.
<b>High profit margins.</b> The product can be sold for a higher price due to its unique specifications.	<b>Cash flow problems.</b> Large projects, such as bridges or stadiums, will be expensive to produce and there will be fewer of them. Businesses will need to manage cash flow well to ensure they have the funds to produce the product.
<b>High worker motivation.</b> Employees are often more motivated because they can use their expertise and skills.	

## Theory of Knowledge

Job production requires an interaction between producer and consumer, so that the consumer can make their needs and expectations known to the producer. With other operations methods, this kind of interaction does not occur as frequently.

- How might the continuous interaction between consumer and producer in businesses that use job production methods lead to greater innovation?

## Batch production

Batch production involves producing items in groups of identical products. Small changes are made in each batch so that a range of customers' needs can be fulfilled. This method can be considered a compromise between job production and mass/flow production, which you will

learn about in the next section.

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Batch production has the advantage of producing large quantities, leading to high productivity and lower average costs through economies of scale. However, it does also allow a range of different products to be produced, which can meet the needs of different target markets.

Businesses that make a range of different products use batch production. An example is a bakery that makes batches of cup-cakes and batches of cookies separately. Clothing manufacturers Zara and H&M are also examples of companies that use batch production, by producing skirts and other clothing items in batches of sizes, colours and styles.



**Figure 2.** Batch production involves producing items in identical groups such as this batch of bread.

Credit: Phil Boorman, Getty Images

Batch production may be used when the amount of demand created for certain products in the market is unclear. Estimates are made by businesses and then a batch is produced. Alterations to production can be made by analysing the demand after the first batch is created. Batch production is appropriate when a business has a range of similar products that meet different consumers' needs. If this is not the case, then batch production is unlikely to be appropriate. Batch production may also be appropriate if some of the benefits of economies of scale are desirable, but mass production is not feasible. **Table 2** outlines some of the advantages and disadvantages of batch production as an operations method.

**Table 2.** Advantages and disadvantages of batch production.



Advantages of batch production		Disadvantages of batch production
<p><b>Some flexibility and variety.</b> The characteristics of each batch can be adjusted to meet a range of customer needs and expectations.</p>		<p><b>Less flexibility and variety than job production.</b> Batch production may be unsuitable for products that need to be tailored to very specific customer needs.</p>
<p><b>Economies of scale.</b> In contrast to job production, larger numbers of products can be produced with the same characteristics, making it possible for the business to realise some economies of scale.</p>		<p><b>Higher storage costs.</b> Businesses may need to store more resources for different batches of products, thus increasing the stock (inventory) costs.</p>
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## Activity

**Learner profile:** Thinkers

**Approaches to learning:** Thinking skills (critical thinking)

Copy and complete the following table. Consider the products listed and decide whether each would be more suited to job production or batch production. Explain your reasoning for each.

Product	Job or batch production	Explanation
Wedding cakes		
Furniture		
School courses		
Portraits		
Books		
Car repairs		

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Product	Job or batch production	Explanation
Garden landscaping		

### ① Exam tip

When discussing appropriate operations methods, it is important to understand the context of the business, particularly with regard to customer specifications. Where there is an expectation of a highly individualised product, job production may be more appropriate than batch production.

## 2 section questions ^

### Question 1

- 1 Job production✓ involves producing unique items that are tailor made to meet the needs of individual customers.

### Accepted answers and explanation

#### #1 Job production

##### General explanation

Job production involves producing unique items that are tailor made to meet the needs of individual customers. Businesses using the job production method provide highly specialised, unique products that fulfil exact customer requirements. This may require highly specialised, skilled labour and more time to complete the work.

### Question 2

Which of these businesses is most likely to use batch production?

- 1 A school offering different IB courses



- 2 A nail salon

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- 3 A car repair shop



#### 4 A business providing house painting services

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##### Explanation

Schools offering IB courses are likely to deliver their education services in batches. Teachers produce lessons delivered to groups of students. They do not create individual lessons for each student.

The other services are all provided on demand; they meet the specific requirements of the customer and are therefore likely to use job production.

5. Operations management / 5.2 Operations methods

## Mass/flow production and mass customisation

Operations methods      Operations methods

Two further operations methods – mass/flow production and mass customisation – are covered in this section. These methods are capital intensive and relate to products that are created on a very large scale. The economies of scale they achieve mean that production costs are lower than with job production and batch production methods, which were discussed in Section 5.2.1 (/study/app/business-hl/sid-351-cid-762729/book/the-big-picture-id-39052/).

## Mass/flow production

Mass production (also known as flow production) involves the production of large amounts of standardised products on an assembly line. Mass/flow production is a continuous process whereby a product moves on an assembly line from stage to stage. At each stage, a worker or robot performs some operation on the semi-completed product, which then flows to the next stage. Products are continuously being started and completed.

If you look at the box of any Apple product, you will find the words, ‘Designed by Apple in California, assembled in China’. Almost all consumer electronics, such as phones or computers, are produced using mass production.

Mass production is likely to be capital intensive as it uses more machinery relative to workers. Often there may be no workers involved at all. But mass production may also involve production lines where workers remain at a single station, performing the same task over and



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over again, perhaps thousands of times a day. This generates massive economies of scale and high productivity, leading to low average costs. The downside, however, is that workers are unlikely to find their job motivating. This can cause problems with product quality.

- 762729/o Mass production is well suited to large, consumer product companies. If the company enjoys a large, perhaps even global, demand for its goods, then mass production may be the only way this demand can be met within a reasonable time scale. In addition, companies that make standardised items are likely to use mass production, since machinery can produce massive quantities of identical products. If mass production is used, companies must be able to implement robust quality control techniques so that output can be regularly checked. **Table 1** outlines the advantages and disadvantages of mass/flow production as an operations method.



**Figure 1.** Canned goods are often produced using mass/flow production.

Credit: Artinun Prekmoung / 500px, Getty Images

**Table 1.** Advantages and disadvantages of mass/flow production.

Advantages of mass/flow production	Disadvantages of mass/flow production
<b>Large-scale production.</b> Large quantities of products can be made due to the efficient, capital-intensive production of standardised products.	<b>Set-up, running, replacement and storage costs.</b> Capital-intensive production requires expensive machinery and large volumes of resource stocks (inventory) that need to be stored, which can increase costs of production.
<b>Standardised quality.</b> Mass/flow production uses machinery to produce products, which can result in uniform quality of goods and fewer defects.	<b>Less flexibility.</b> Once production begins, there is little to no chance of altering the specifications or design of the product.

Advantages of mass/flow production	Disadvantages of mass/flow production
<p><b>Lower costs of production.</b> Large volumes are produced using machines so costs are spread across large quantities with little expensive labour involved, reducing average costs.</p>	<p><b>Lower worker motivation.</b> When workers are involved, they may be demotivated by the repetitive work of mass/flow production.</p>

## Mass customisation

Mass customisation involves producing large quantities of goods that can be adjusted to customer specifications. This combines the flexibility and personalisation of custom-made products with the low unit costs of mass/flow production resulting from economies of scale.

Improvements in production technologies make mass customisation possible. A variety of different mass-produced products can be made on the same production line. One of the most well-known examples of mass customisation is in the production of cars. Car manufacturers use the same production line to produce the basic car model. However each car can be customised with a different steering wheel, a different dashboard, and different interior colours, seat coverings and types of wheels.

Mass customisation may be appropriate when economies of scale are needed due to intense competition in the industry but, as with a car, where the high prices of the products bring consumer expectations of individual specifications.

Companies that produce lower priced goods, however, are also using mass customisation to adapt their products to customer specifications. Nike, the footwear manufacturer, allows mass customisation of its shoes in its product range [Nike By You ↗](https://www.nike.com/nike-by-you) (<https://www.nike.com/nike-by-you>). This gives the customer the opportunity to personalise their own shoes with different colours and styles.





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**Figure 2.** Mass customisation, allowing changes to individual components, is common in the auto industry.

Credit: Monty Rakusen, Getty Images

## 🌐 International Mindedness

Mass customisation may be particularly important for global businesses that face different customer expectations in the countries where they operate. Sociocultural differences may result in a variety of needs and expectations among consumers.

There are several different types of mass customisation used by businesses:

- **Collaborative customisation.** This is where there is close interaction between the business and customer to adapt a mass-produced product according to the customer's specifications.
- **Adaptive customisation.** Customers can choose from pre-set customisations provided by the business. For example, there are a variety of mattresses on the market that can be adjusted from very hard to soft according to the customer's requirements.
- **Cosmetic customisation.** This is where the face of the product, often the packaging, is changed to suit the needs of the customer.
- **Transparent customisation.** Personalised items are recommended to the customer, based on their online shopping cart. This involves analysing online customer data to make recommendations.

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**Table 2** outlines the advantages and disadvantages of mass customisation as an operations method.



## ① Exam tip

As you look at **Table 2**, which is the final table of advantages and disadvantages of operations methods outlined both in this section and in [Section 5.2.1](#) ([\(/study/app/business-hl/sid-351-cid-762729/book/the-big-picture-id-39052/\)](#)), keep in mind that it often makes sense to compare the advantages and disadvantages of one method with another method. For example, an advantage of mass customisation is that it is more flexible than mass/flow production, but it would be less flexible than job production.

**Table 2.** Advantages and disadvantages of mass customisation.

Advantages of mass customisation	Disadvantages of mass customisation
<b>Customer satisfaction and loyalty.</b> Because they provide some variety to suit customers' needs, businesses can target a wider range of customers.	<b>Handling returns.</b> Reselling of returned products is difficult due to customisation; thus businesses might suffer losses.
<b>Lower costs.</b> Mass customisation provides consumer choice, but it maintains the economies of scale of mass/flow production due to large volumes and capital-intensive production methods.	<b>Higher costs for customisation.</b> Customisation costs the business more because a wider variety of stock is needed and more specialised equipment is required. The business needs to be able to price its product so these costs are covered.
<b>Higher prices and profits.</b> Since products are customised according to customer demand, a higher price can be charged.	<b>Time.</b> Customised products may take more time to produce, which could result in supply chain problems.

## 🔑 Concept

### Change

Change is an act or process through which something becomes different. Businesses operate in a dynamic world with constant change. Understanding change involves researching and responding to signals (feedback) from the external environment and evaluating causes, processes and consequences. Businesses need to adapt their objectives, strategies and operations to respond successfully to internal and external changes.

In the case of mass customisation, changes in technology make it easier to customise products on a very large scale. While this may result in higher costs of production in the short term, increased demand and higher prices could outweigh those costs,

increasing profits for businesses that can achieve mass customisation.



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## Activity

**Learner profile:** Thinkers

**Approaches to learning:** Thinking skills (critical thinking)

Copy and complete the following table. Consider the products listed and decide whether each would be more suited to mass/flow production or mass customisation. Explain your reasoning for each.

Product	Mass/flow production or mass customisation?	Explanation
Oil extraction		
Eyewear		
Shampoo		
Cans		
Cars		
Laptop		
Paper clips		



## Case study

### Levi Strauss & Co

Using the latest technology to keep up with the changing tastes and trends of the fashion industry, Levi Strauss & Co enables customers to design their own pairs of jeans. It does this through its 'Lot-1' service.

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Customers can choose a pair of unfinished jeans and choose the style, colour, size, cut and (even) text. There are more than 1000 different combinations of customisation.



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By developing its own imaging tool and by using laser technology, the company has digitised the entire experience. This saves time and increases customer loyalty and satisfaction. The self-designed jeans are priced higher than mass-produced jeans, so Levi's revenue and profits increase.

Watch **Video 1** to see how Levi Strauss & Co has transformed its operation methods.

### Introducing Levi Strauss & Co. Project F.L.X.



#### **Video 1.** Mass customisation at Levi Strauss and Co.

### Questions

1. Define mass customisation. [2 marks]
2. Explain **two** advantages for Levi Strauss & Co of adopting mass customisation. [4 marks]

#### **Question 1**

Mass customisation involves producing large quantities of goods that can be adjusted to customer specifications. This combines the flexibility and personalisation of products that are custom made with the low unit costs of mass/flow production resulting from economies of scale.

**Define** is an AO1 level command term, requiring the precise meaning of a term.

- One mark is given for a vague definition.
- Two marks are given for a complete definition.
- Definitions do not require application to the stimulus material.

#### **Question 2**

One advantage of moving to mass customisation (from mass/flow production) is increased customer satisfaction and loyalty. Because customers can specify the colour, style and cut and make other adaptations according to their needs and



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expectations, they are more likely to be happy with the product and more likely to buy it again. Because of this, Levi Strauss & Co is likely to experience increased revenues and profits.

A second advantage of moving to mass customisation (from mass/flow production) is the higher prices that can be charged for customised goods. Consumers are willing to pay higher prices for goods that match their specific requirements. In the case of Levi Strauss & Co, their self-designed jeans will command a higher price and should result in higher revenues and profits for the business.

**Explain** is an AO2 level command term, requiring a detailed account including reasons or causes. Explain *why*, explain *how*.

- Other responses may be possible and, if appropriately explained and applied in context, may receive full marks.
- To achieve full marks, you must always include theory and application to the case study in your responses to the **explain** command term.

## 2 section questions ^

### Question 1

- 1 Mass/flow pr... ✓ involves the production of large amounts of standardised products on an assembly line.

#### Accepted answers and explanation

##### #1 Mass/flow production

#### General explanation

Mass/flow production involves the continuous production of a single product whose characteristics are standardised. It is likely to involve capital-intensive production methods and few workers.

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### Question 2

Which of the following would most likely involve mass customisation during production?

	1	Cars	
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	4	Cans (for canned goods)	

### Explanation

Auto production is an area where mass customisation is common. All the other products are simple, standardised products where consumers do not expect unique qualities.

5. Operations management / 5.2 Operations methods

## Terminology exercise

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### Check that you understand the terminology used in this subtopic by dragging the correct word into each space.

There are four main operations methods used by businesses to produce goods and services.

When a business produces completely unique products or services according to customers' requirements, it is using . This usually involves highly skilled labour and the business can usually charge higher prices for its goods or services.

When a business produces a product or service in differentiated groups, it is using . With this method, small changes are made in each batch so that a range of customers' needs can be fulfilled.

Capital-intensive production involves production lines on which large volumes of standardised products are manufactured. The initial cost of capital equipment is likely to be high, but once the production lines are running, average costs will be very low.

Mass production involves producing large quantities of goods that can be adjusted to customer specifications. This combines the flexibility and personalisation of products that are custom made with the low unit costs of mass/flow production resulting from economies of scale. More and more businesses are moving to this operations method as new technologies make it possible to meet consumer specifications on a large scale.

[batch production](#)

[mass/flow](#)

[economies](#)

[customisation](#)

[job production](#)

Check

### Interactive 1. Terminology Exercise: Operations Methods.

5. Operations management / 5.2 Operations methods

## Checklist

### Section

Student... (0/0)

Feedback



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[Assign](#)

Student view

### What you should know

By the end of this subtopic, you should be able to:



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- define the following terms: (AO1)
  - job production
  - batch production
  - mass/flow production
  - mass customisation
- examine the features of the main methods of production, including: (AO3)
  - job production
  - batch production
  - mass/flow production
  - mass customisation

5. Operations management / 5.2 Operations methods

## Reflection

**Section**

Student... (0/0) Feedback

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762729/book/reflection-id-48335/print/)

**Assign**

### Teacher instructions

The goal of this section is to encourage students to pause at the end of the subtopic and to reflect on their learning. Students can use the questions provided below to guide their reflection. The questions encourage students to look at the bigger picture and to consider how the subtopic's contents might have impacted the way they view the subject.

The following table shows you how each prompt aligns to the DP *Business management guide*:

Prompt #	Syllabus alignment
1	<b>Learner profile:</b> Principled
2	<b>Concept:</b> Change
3	<b>Concept:</b> Creativity



Student  
view



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Students can submit their reflections to you by clicking on 'Submit'. You will then see their answers in the 'Insights' part of the Kognity platform.



## Reflection

In this subtopic you learned about different operations methods, such as batch production, job production and mass production.

Take a moment to reflect on your learning so far. You can use the following questions to guide your reflection. If you click 'Submit', your answers will be shared with your teacher.

1. To what extent do you think mass production helps or harms the environment?
2. Today, 3D printing allows producers to meet customers' individual needs and expectations more efficiently. To what extent has 3D printing changed job production? How do you think it will change job production in the future?
3. Which type of production allows manufacturers to be more creative: batch or mass production?

Once you submit your response, you won't be able to edit it.

0/2000

### Rate subtopic 5.2 Operations methods

Help us improve the content and user experience.



Student  
view