



Introduction to Operation Management

010 Directing the operation

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What is Operation Management

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Operation management

Operations management is the activity of managing the resources that create and deliver services and products. It involves directing and designing operations, delivering the products, and developing new ones.

(Slack, N, Brandon-Jones, A. 2019)

In manufacturing firms, the production activities that create goods are usually quite evident. In organizations that do not produce tangible goods, the production function can be less apparent. These activities are often referred to as services. Services can sometimes be "invisible" to the public and even to the customer. Whether the final product is a good or a service, the production activities within the organization are generally known as operations or operations management.

To create goods and services, all organizations perform three key functions:

1. Marketing, which generates demand or, at the very least, processes orders for a product or service (nothing happens until a sale is made).
2. Production and operations, which are responsible for creating the product.
3. Finance and accounting, which track the organization's performance, manage bill payments, and handle the collection of funds.



(Heizer, J., Render, B., 2013).

Operations managers are professionals responsible for managing the processes that convert inputs (like labor, materials, and energy) into outputs (like goods and services). They play a critical role in ensuring that businesses operate efficiently and effectively.

All organizations have operations that produce some mix of services and products. For example, the fleet manager in a distribution company, the administrative manager in a hospital or the store manager in a supermarket.

What do operations managers do?

Operations management activities can be categorized into four primary functions: directing, designing, delivering, and developing.

- **Directing** involves setting the overarching strategy for the operation. It requires a broad understanding of operations and processes, their strategic intent, and performance metrics. This understanding is essential for translating strategic goals into practical actions and for guiding the detailed design of operations and processes.

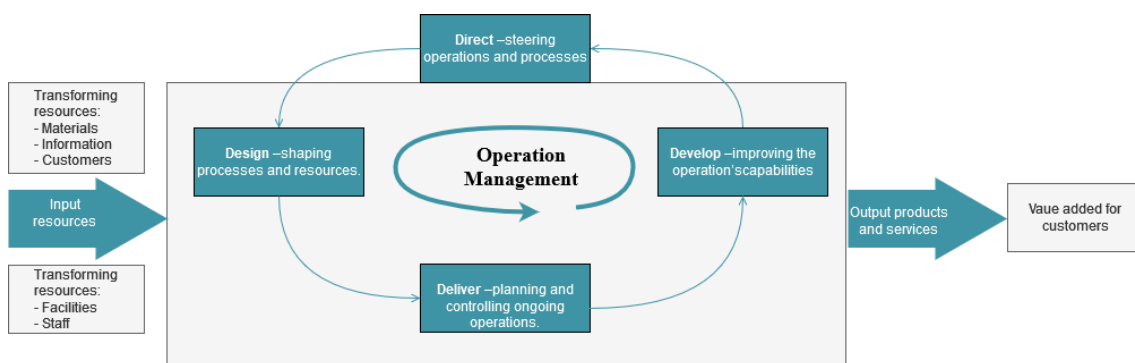
- **Designing** encompasses shaping the operation's services, products, and processes. This function involves determining the physical attributes, configuration, and composition of operations and processes, as well as the end products and services they generate.

- **Delivering** refers to the planning and control of the process that brings services and products from suppliers through the entire operation to the customers. Once the design phase is complete, the actual execution of delivering the designed services and products must be meticulously planned and managed to ensure efficiency and effectiveness.

- **Developing** the operation's capabilities to improve and innovate. This ongoing process involves enhancing existing processes, services, and products, as well as creating new ones to meet changing market demands and to take advantage of new technologies and methodologies. It's about ensuring the operation remains competitive and can adapt to future challenges and opportunities.

(Slack, N, Brandon-Jones, A. 2019)

FIGURE 1. A general model of operations management



Operations in the organization

Within an organization, the operations function holds a pivotal role as it is directly involved in the creation and provision of services and products. This essential function is one of three fundamental pillars that support any organization, which include:

- **Marketing:** This area focuses on market research, branding, advertising, and the strategic promotion of products or services. Its primary goal is to understand and influence consumer behavior, create demand, and facilitate engagement with the market.
- **Finances:** The company must also manage its finances so it can pay for building and equipment expenses, bank loans, worker wages, and supplies.
- **Operations:** This is the function responsible for the actual creation and delivery of the organization's products or services. It encompasses the management of resources, processes, and people to ensure efficient production and distribution. Operations work closely with both marketing and product development to ensure that the goods and services produced meet quality standards and customer expectations.



Operations is a critical function for any business. It ensures that the business runs smoothly and efficiently.

FIGURE 2. Core and support functions.



Some activities of the operations function in various organizations

The operations function can vary significantly across different types of organizations. Here are examples of operations activities in various sectors:

1. **Manufacturing:** In a manufacturing company, operations activities include managing the production line, ensuring machinery is maintained, scheduling shifts for workers, managing inventory levels, quality control checks, and optimizing the supply chain to ensure raw materials are available when needed.
2. **Healthcare:** In a hospital or clinic, operations activities involve patient scheduling, managing the flow of patients through different departments, ensuring medical supplies and pharmaceuticals are well-stocked, maintaining medical equipment, and overseeing compliance with health regulations.
3. **Retail:** For a retail business, operations include inventory management, merchandising, supply chain coordination to ensure products are delivered and stocked efficiently, customer service management, and the maintenance of the retail space.
4. **Technology:** In a tech company, operations might focus on managing the development lifecycle of software products, maintaining IT infrastructure, overseeing technical support, and ensuring cybersecurity measures are in place.
5. **Hospitality:** In the hospitality industry, such as hotels and restaurants, operations activities include room and table reservations management, housekeeping, food and beverage service, maintaining high levels of customer service, and ensuring health and safety.

(Slack, N, Brandon-Jones, A. 2019)

Question 1

Operations Management is applicable only when there are manufacturing operations. State True or False.

- ☐ True
- ☒ False

Question 2

Operations Management focuses on which of the following?

- ☐ Managing finance requirements well
- ☒ Providing competitive products and services
- ☐ Dealing with the competition effectively
- ☐ Addressing labour problems in factories and service systems

Question 3

Operations management is the activity of managing the resources that create and deliver _____ and _____.

- Answer: services, products

Question 4

In organizations that do not produce tangible goods, the production function can be less apparent. These activities are often referred to as _____.

- Answer: services

Question 5

To create goods and services, all organizations perform three key functions: Marketing, Production and operations, and _____ and _____.

- Answer: Finance, accounting

Question 6

Operations management activities can be categorized into four primary functions: directing, designing, delivering, and _____.

- Answer: developing

Question 7

Within an organization, the operations function holds a pivotal role as it is directly involved in the creation and provision of _____ and _____.

- Answer: services, products

Strategic versus tactical operations decisions

Decisions in operations management are categorized as strategic or tactical, with strategic decisions having far-reaching implications that typically require significant investment and commitment of resources. These strategic choices encompass selecting locations for facilities, adopting specific technologies, organizing labor and machinery, and planning for long-term operational capacity to satisfy consumer demand.

Consider the scenario of inaugurating a new hospital. The decision-makers must strategically choose a site that offers accessibility to a broad patient base. Hospital leaders are tasked with assessing a range of medical equipment for both effectiveness and cost-efficiency. Additionally, they must procure information technology systems for maintaining patient records, complying with legal mandates, ensuring prompt communication, and monitoring fiscal performance. Recruitment of medical and administrative personnel is crucial, as is the strategic layout of various departments—such as radiology, laboratories, pharmacies, and physical therapy—to optimize both operational efficiency and patient care quality.

On the other hand, tactical decisions in operations have a shorter-term focus, typically involve fewer resources, and are more flexible in terms of adjustments or reversals. These include planning employee work schedules, implementing quality control protocols, negotiating contracts with suppliers, and overseeing inventory levels. Using the hospital as an example again, tactically aligning staff schedules with patient intake is vital for maintaining high standards of care while managing expenses. Choosing a food service provider is key to catering to the needs of both staff and patients. Maintaining an adequate stock of medications and medical supplies is managed through close coordination with supply chain partners.

Both strategic and tactical decisions in operations are pivotal in enabling an organization to achieve its objectives. They also present the organization with opportunities to carve out distinctive competitive edges that draw in and retain customers.

(Pesch, 2016)

The input–transformation–output process

The Input-Transformation-Output (ITO) process is a fundamental concept in operations management and systems theory that describes how a system converts inputs into outputs through a transformation process. This model is applicable to a wide range of systems, including manufacturing processes, service operations, and information processing.

Inputs to the process

Inputs are the resources that are used to produce the outputs. Inputs are the starting point of the process and are necessary for the transformation to occur. They can include the followings:



All processes have inputs of transforming and transformed resources that they use to create products and services.

Materials – Operations that handle materials may alter their physical attributes, such as shape or composition, as seen in most manufacturing activities. Other operations might transport materials to different locations, like courier services. Retail operations often focus on transferring ownership of goods to customers. Additionally, some operations, including warehouses, are primarily concerned with the storage of materials.

Information – Operations that deal with information may modify its informational properties, changing its purpose or format, as seen in accounting practices. Others may transfer ownership of information, such as market research firms and social media platforms that collect and sell data. Archival and library services are examples of operations that store information. Meanwhile, telecommunications companies are in the business of relocating information from one place to another.

Customers – Operations that serve customers can alter their physical appearance, similar to how material processors work, such as hair salons or cosmetic surgery clinics. Facilities like hotels provide temporary storage or accommodation for customers. Transportation services, including airlines and rapid transit systems, are responsible for changing the location of their customers, while hospitals work to change their physiological state. Entertainment services, such as live music, theater, television, radio, and amusement parks, aim to transform the psychological state of their customers. However, customers are not merely passive subjects in these processes. They often play an active role, contributing to the ambiance of a restaurant, the dynamic learning environment in educational settings, and more.

Inputs to the process – transforming resources

Another crucial category of inputs in any operational process is the transforming resources. These are the assets that exert influence on the transformed resources. There are two primary kinds of transforming resources that serve as the foundational elements of all operations:

Facilities – This encompasses the physical infrastructure such as buildings, as well as the machinery, equipment, and technological systems used in the operational processes.

Staff – This refers to the workforce involved in the operation, including those who run and maintain the facilities, as well as those responsible for planning and managing the operational activities. (It's important to note that the term 'staff' is used here to represent all individuals working within the operation, regardless of their hierarchical position.)



Production is a process of combining various material inputs and immaterial inputs (plans, know-how) to make something for consumption (output).
(Production_economics, Wikipedia)

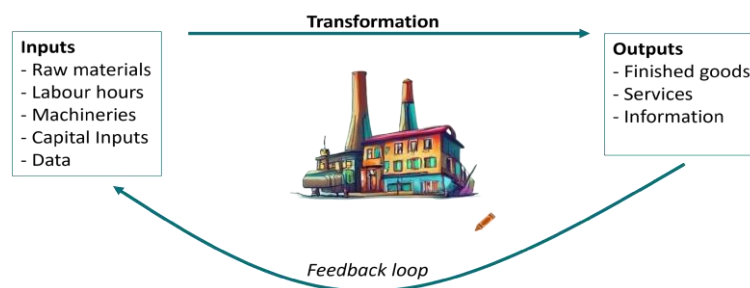
Outputs from the process

Operations are responsible for the creation of both products and services. While products and services are often viewed as distinct entities, with products being tangible items like cars, newspapers, or restaurant meals, and services being the intangible activities or processes associated with using or consuming these products, the reality is that most operations generate a blend of both.

Even though certain services may not involve a significant number of physical products, and some manufacturers may offer limited services, the majority of operations provide a combination of products and services, with one typically being more prominent than the other. For instance, consulting firms, while primarily offering services, also produce tangible reports; hair salons, apart from providing haircuts and styling services, may sell hair care products like gels; and food manufacturers often provide preparation advice or recipes along with their food products.

(Slack, N, Brandon-Jones, A. 2019)

FIGURE 3. The input output process



Transformation of the process

A transformation process is a series of activities that take inputs, apply a value-adding transformation to them, and produce outputs that are delivered to customers or clients. When the inputs are tangible materials, such as milk being processed into cheese and butter, the transformation is quite evident. However, when the inputs are information or people, the transformation can be more subtle, such as a hospital converting ill patients (the input) into healthy patients (the output).

- Transformation processes can involve various changes, including:

- Alterations to the physical attributes of materials or customers.
- Modifications to the location of materials, information, or customers.
- Transfers in the ownership of materials or information.
- Storage or accommodation services for materials, information, or customers.
- Revisions to the purpose or format of information.
- Adjustments to the physiological or psychological condition of customers.

It's common for organizations to transform all three types of inputs—materials, information, and customers. For instance, a bank transaction may involve processing customer information, handling physical items like cheques and cash, and interacting with the customer. Similarly, hospital treatment of a patient may encompass the patient's health condition (customer), the use of medical materials, and the management of patient information.

Different types of transformation can be categorized into:

Manufacture: The physical creation of products, such as automobiles.

Transport: The movement of materials or customers, like a taxi service.

Supply: The change in ownership of goods, seen in retail operations.

Service: The treatment of customers or the storage of materials, such as in hospital wards or warehouses.

These categories help to clarify the nature of the transformation process and the type of operation being conducted.

Feedback loop

Feedback information plays a crucial role in the management and control of operations systems. It allows for adjustments to be made to both the inputs and the transformation processes to ensure that the desired outputs are achieved. For instance, a chef may receive feedback from diners, conveyed by the waiting staff, regarding the quality of the meals served. Negative feedback might prompt the chef to improve the inputs, such as sourcing higher quality ingredients (like better potatoes), or to modify the transformation process by altering the recipe or cooking techniques.

For operations managers, feedback is an indispensable tool. It helps them to monitor performance, identify areas for improvement, and make informed decisions to enhance the quality of goods and services. Feedback can originate from internal or external sources:

Internal sources of feedback include the results of testing and evaluation processes, as well as efforts aimed at continuous improvement within the organization. This might involve quality checks, performance reviews, and process audits that help to refine operations.

External sources of feedback come from outside the organization and include input from suppliers, who may offer insights on the materials or services they provide, as well as direct feedback from the end customers. Customer feedback is particularly valuable as

it reflects the user's experience with the product or service, providing a direct measure of satisfaction and areas that may require attention.

By effectively utilizing feedback, operations managers can ensure that their systems are responsive and adaptive, leading to better outcomes and higher levels of customer satisfaction.

(Open University)

How do operations differ?

All operations processes share the common characteristic of transforming inputs into outputs, yet they can vary significantly across several dimensions. Four key aspects, commonly referred to as the four Vs, are particularly crucial in distinguishing different operations processes:

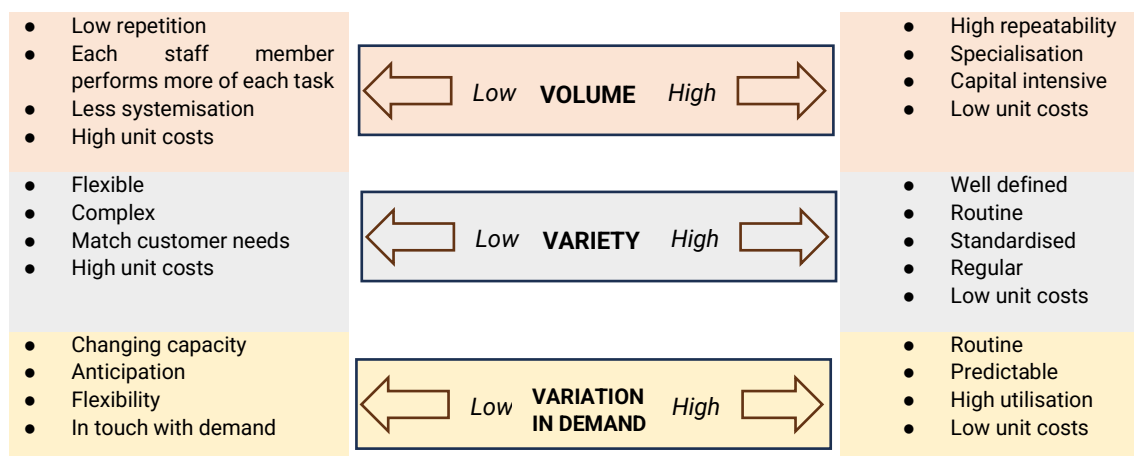
- **Volume:** This refers to the quantity of output that an operation produces. High-volume operations typically produce large numbers of a limited range of products or services, often benefiting from economies of scale. Low-volume operations, on the other hand, may produce smaller quantities and often require more customization.

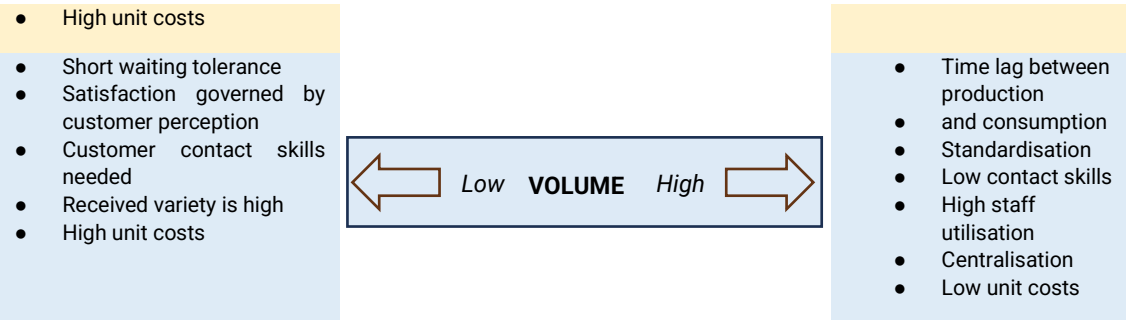
- **Variety:** This dimension considers the diversity of products or services an operation offers. Operations with high variety produce a wide range of outputs, which can lead to greater flexibility but may also increase complexity and cost. Operations with low variety focus on a narrow product range, which can simplify processes and reduce costs.

- **Variation in Demand:** This aspect looks at how much the demand for an operation's output fluctuates over time. Operations that experience high variation must be able to scale up or down quickly in response to changing demand levels, while operations with low variation in demand can plan and operate more consistently.

- **Visibility:** This refers to how much of the operations process is exposed or visible to the customer. High visibility operations, such as restaurants or retail services, allow customers to see and potentially influence the process of service delivery. Low visibility operations, like manufacturing plants, typically keep the production process out of the customer's view.

FIGURE 4. A typology of operations and processes





(Slack, N, Brandon-Jones, A. 2019)

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