# THE VALUE CHAIN AND THE IMPACT OF DIGITALIZATION

INTENT 4.0

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# 1. The value chain according to Michael Porter

The value chain was defined by Michael Porter in 1985 and revisited in 1998. It is the profit model more used nowadays to describe “the series of activities which give added value to a product”(1)

Porter´s model builds upon Leontief´s input/output model by emphasizing links between primary and support business activities.

Michael Porter concluded that “firms gain competitive advantage from conceiving of new ways to conduct activities, employing **new procedures, new technologies, or different inputs**.”
Porter’s value chain involves five primary activities: inbound logistics, operations, outbound logistics, marketing and sales, and service. Support activities are illustrated in a vertical column over all of the primary activities. These are procurement, human resources, technology development, and firm infrastructure.

(1) PORTER, M. E. (1998). *Competitive advantage: creating and sustaining superior performance : with a new introduction*. New York, Free Press.

# 1. The value chain according to Michael Porter


IT students

Logistics students

In each primary activity value is added.

The support activities help to increase margin due to cost reduction, faster response to market, application of innovation…

Source of the graphic: https://www.smartsheet.com/value-chain-model

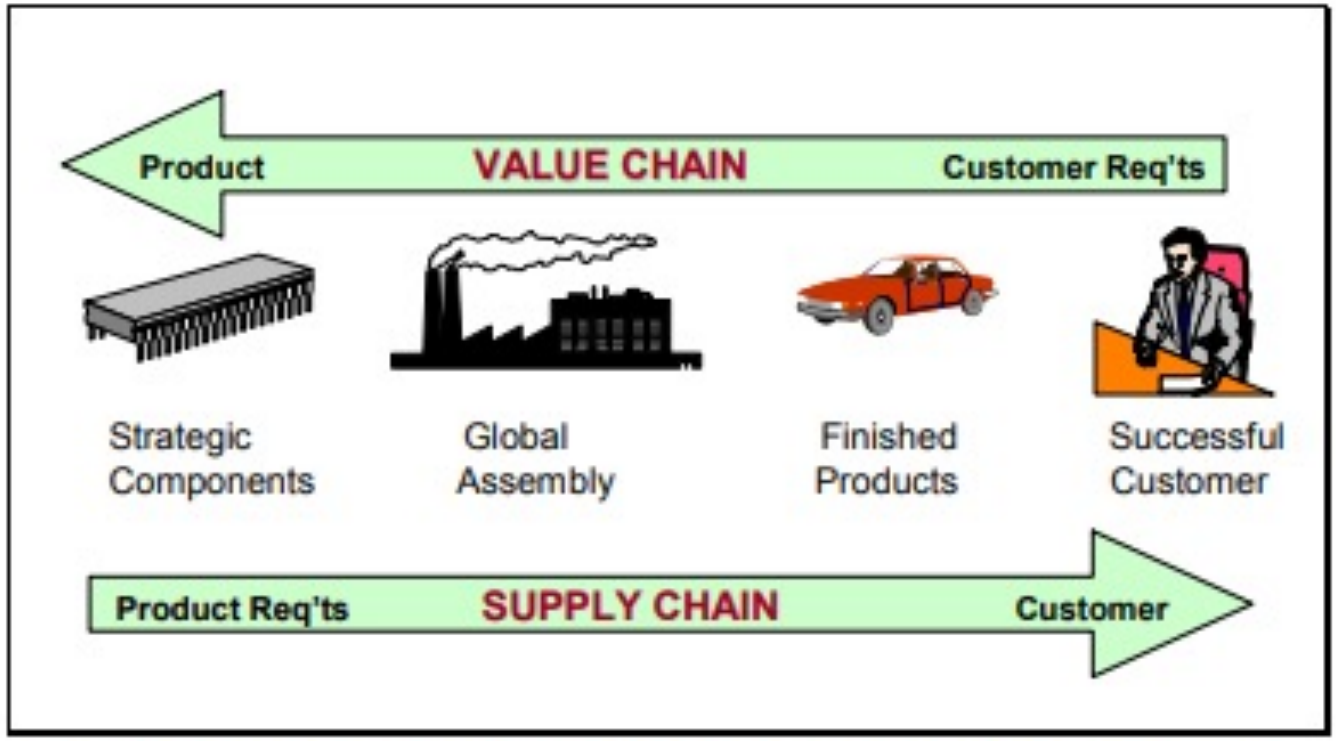
# 1. The value chain according to Michael Porter

In the generic model, the value chain represents all primary activities with an equal weight. However, the weight of each of them will depend on the activity of the company.

For example, in the value chain of a hairdresser, the weight will be specially on the service activity, as this is the one which generates more added value. In the case of a drone producer, the weight will be in the operations part (which includes design and production)

# 1. The value chain according to Michael Porter

## Differences between value chain and supply chain




Source: Andrew Feller, Dr. Dan Shunk, and Dr. Tom Callarman. *Value Chains Versus Supply Chains.* 2006

Interrelated and, in some cases, interchangeable.

| Supply chain | Value chain |
|---|---|
| Transference | Add value |
| Operations management | Business management |
| Starts with request, concludes with delivery | Starts with demands, concludes with modifications in the product/service |
| Customer satisfaction | Competitive advantage |

# 2. Primary activities and support activities in the value chain

According to Porter, there are 5 kinds of primary activities, each of them containing a variety of sub activities depending on the company´s activity.

In a very simple way, they can be described as follows:

- ✓ **Inbound Logistics**: Activities necessary to bring raw materials or goods to your facilities in order to storage them and use them for operations.
- ✓ **Operations**: Activities related to transformation of raw materials and goods into final products to be put in the market.
- ✓ **Outbound Logistics**: Activities to deliver your products to the final consumer.
- ✓ **Marketing and Sales**: Activities related to the presentation of the final product and the selection of sale channels.
- ✓ **Services**: Support that the company provides to the consumer after the sale (for example, training to use a product, maintenance, updates…)

**Knowledge pill.** The primary activities ADD VALUE. Outbound logistics can *prove to be extremely important both in generating value and in improving differentiation, as in many industries control over distribution strategies is proving to be a major source of competitive advantage – especially as it is realized that up to 50% of the value created in many industry chains occurs close to the ultimate buyer* (2)

(2) Wiley Encyclopedia of Management 3rd edition Vol 12 Strategic Management (pp.5). Edition: 3rd. Chapter: value chain. January 2014. Publisher: John Wiley & Sons. Editors: John McGee & Tanya Sammut-Bonnici

# 2. Primary activities and support activities in the value chain

The support activities are grouped in 4 categories[(3)]:

- ✓ **Firm Infrastructure**: This entails all the management, financial, and legal systems a business has in place to make business decisions and effectively manage resources.
- ✓ **Human Resource Management**: Human resource management encompasses all the processes and systems involved in managing employees and hiring new staff.
- ✓ **Technology Development**: Technology development helps a business innovate. And technology can be used in various steps of the value chain to gain an advantage over competitors by increasing efficiency or decreasing production costs.
- ✓ **Procurement**: This is how the resources and materials for a product are sourced and suppliers are found. The goal is to find quality supplies that fit the business' budget.

**Knowledge pill.** The support activities help the primary activities to GENERATE COMPETITIVE ADVANTAGES over competitors. In other words, by improving support activities we can impact on the primary activities in a way that will position us in a more favorable position towards our competitors, increasing greatly the added value of all the primary activities or some of them which are mor strategic for our business.

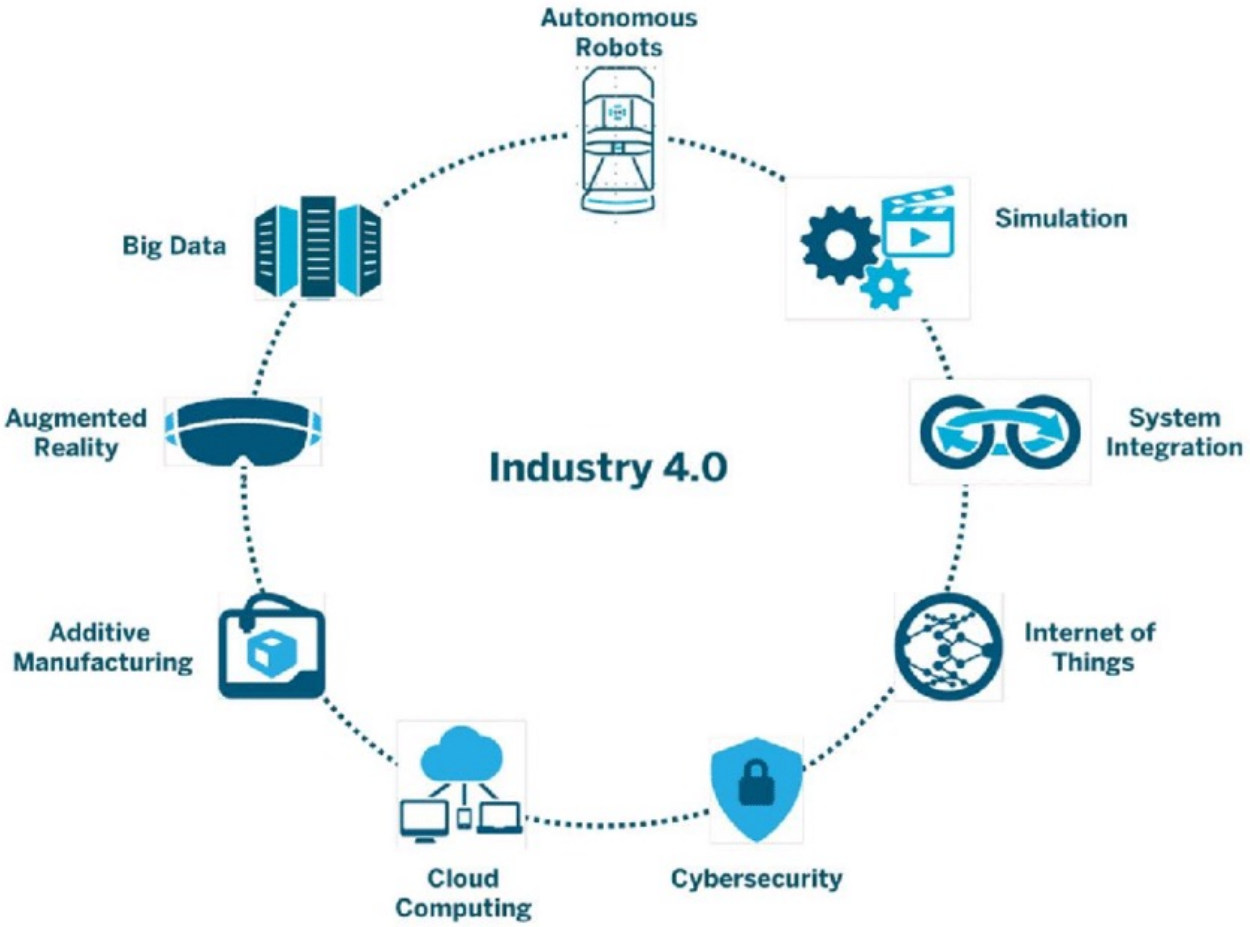
(3) https://blog.hubspot.com/sales/value-chain-analysis?toc-variant-a=

# 3. The impact of digitalization on the value chain

***ALERT!*** The terms "digitalization", "Industry 4.0", "smart manufacturing" or "Revolution 4.0" overlap with each other but they mainly refer to the same.

We understand digitalization of a company as the use of digital technologies in order to add value to business.

There are around (depending on the source) 7-9 Key Enabling Technologies which makes digitalization possible.




Source: www.aethon.com

# 3. The impact of digitalization on the value chain

The purpose of the application of these technologies and, thus, increase the digitalization of a company is:

- Increase FLEXIBILITY to provide a more AGILE answer to market needs.
- Do the above while REDUCING COSTS

How to achieve this?

- By reducing stocks
- By improving personnel planning
- By optimising outbound logistics
- By lowering maintenance costs
- By automating processes
- ….

Recommended watch: *The Rise of the Intelligent Digital Supply Chain*

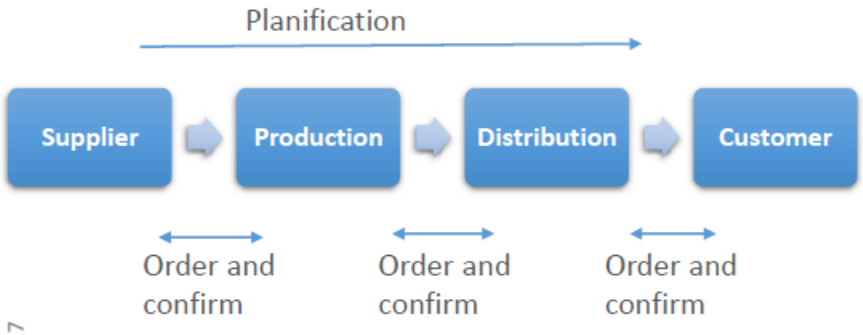
https://www.youtube.com/watch?v=fc095ewxgu4

# 3. The impact of digitalization on the value chain

## Digital technologies are disrupting the manufacturing value chain

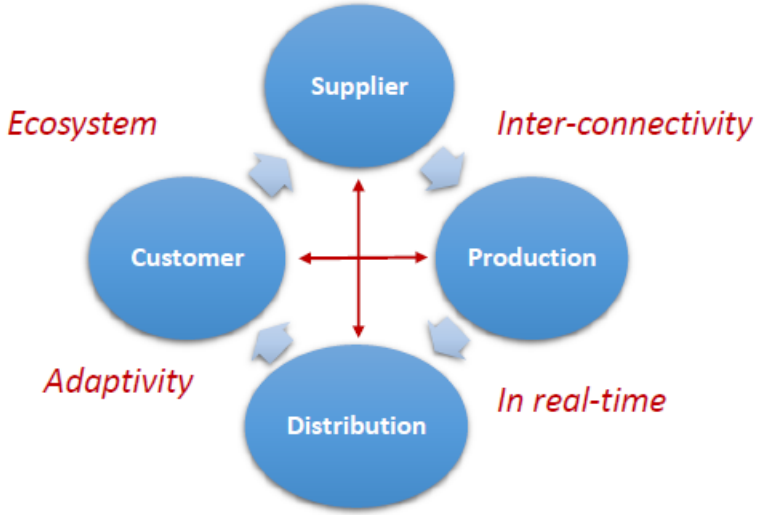
### Evolution of the supply chain

From a traditional supply chain






Towards a more connected, smart, and highly efficient supply chain ecosystem.




There is an increasing demand for innovative supply chain that support businesses in real-time.

Source: www.lait4.0.eu

# 3. The impact of digitalization on the value chain

Recommended watch: *Digital supply chains*

# 4. The impact of IT on logistics

Information Technology (IT) is playing a key role in the transformation of the transport and logistics sector by the means of increasing transparency of the whole purchasing process and the exchange of information between customer-business and customer-customer.

We can mention 5 ways technology is changing logistics and the supply chain[(4)]:

- The ability to integrate multiple platforms.
- Greater security for data protection and monitoring.
- Reduced costs (simplification of shipping and returns processes, digitally organized data and inventory, better quality control…)
- Ease of scalability (assist with each additional order)
- Removal of geographical borders (possibility of sourcing materials from any place of the world thanks to fast communication and transparency).

(4) https://collegeforadultlearning.edu.au/5-ways-technology-is-transforming-logistics-and-the-supply-chain/=

# 4. The impact of IT on logistics

We can name 4 technologies (out of the 9 KET seen before) which are having the highest impact on the logistics and transport sector [(5)]:

- ✓ **Big data**: has a great impact on demand forecasting, route planning, and capacity forecasting.
- ✓ **Internet of Things (IoT):** can enable real-time tracking and monitoring of cargo and fleet management optimization. In order to improve lead-times, fleet operators can use IoT technology for remote diagnostics of their trucks and monitor driver behavior for fuel and time efficiency. From the consumer side, real-time tracking and tracing of parcels would add value and improve the customer experience.
- ✓ **Cloud computing based on blockchain**. A blockchain is a growing list of records, called blocks, which are linked using cryptography. Each block contains a cryptographic hash of the previous block, a time-stamp, and transaction data. Start with the concept of smart contracts; this will improve goods handling in ports and cargo transport with ships. For many shipping companies, costs in trade compliance and documentation can be minimized in the port terminals. Further on, Blockchain technology can improve verification of goods and deliveries transforming analog data to digital. This would improve the flow of handling goods and transports and increase the transparency for shippers, 3PLs and freight forwarder.
- ✓ **Cloud technology for platform design**. Cloud solutions can be in the area of online booking, cargo handling, container management, and customer management services. With the help of the cloud platform, it would also be possible to use the full potential of data analytics to in real-time analyze large data sets from booking, fleet management, and distribution data.

Recommended reading: *Top 10 Supply Chain and Logistics Technology Trends in 2021*

(5) https://digitalstrategy-ai.com/2019/06/01/how-digital-technology-is-transforming-the-transport-and-logistics-sector/

***The new digital age does not consist of technological changes,***

***but rather of social changes enabled by technology.***

# Sources:


https://www.smartsheet.com/value-chain-model

https://blog.hubspot.com/sales/value-chain-analysis?toc-variant-a=

https://www.mckinsey.com/business-functions/operations/our-insights/digitizing-the-value-chain#

https://supplychaindigital.com/magazine/april-2020

https://d-nb.info/1186710896/34

https://digitalstrategy-ai.com/2019/06/01/how-digital-technology-is-transforming-the-transport-and-logistics-sector/

https://nae.global/en/digitalization-challenges-in-the-logistics-industry/

https://jktech.com/insight/case-studies/digital-solution-for-logistics-company/

https://www.infosys.com/industries/logistics-distribution/case-studies.html

Andrew Feller, Dr. Dan Shunk, and Dr. Tom Callarman. *Value Chains Versus Supply Chains.* 2006