

LEADING IN CHANGING CONTEXTS

Module 1 Understanding the changing world and contexts



fourth industrial
revolution



types of innovation



disruption

Module 1



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Understanding the changing world and contexts

Welcome to Module 1! This module aims to help you navigate our changing world and contexts by identifying, understanding and investigating the key **drivers of change**. These are (1) the fourth industrial revolution, (2) the various types of innovation and (3) disruption and disruptive innovation.

It sets the scene for the next module on the challenges of managing and leading in our changing world and contexts at the organisational, team and individual levels.

Themes of this module

- 1) fourth industrial revolution
- 2) types of innovation
- 3) disruption

1.1 Understanding the 4th industrial revolution

1.1.1 A typology of industrial revolutions

L01 Identify and differentiate the fourth industrial revolution

The differentiation of industrial revolutions is meant to mark the successive changes in economies, technologies and methods of production over time.

Follow the link to watch a video describing the previous three industrial revolutions and the suggestion of the current fourth industrial revolution.



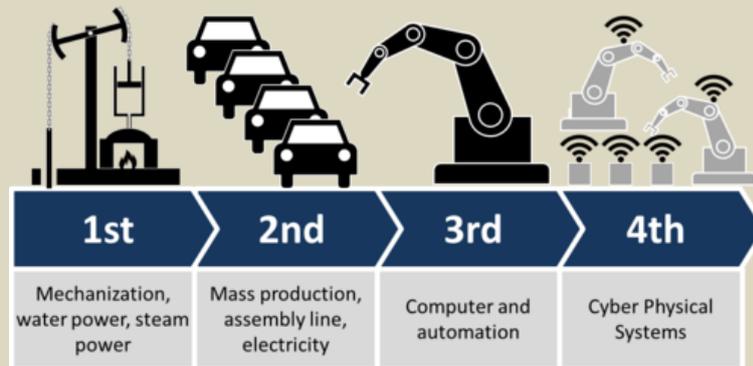
<https://www.powtoon.com/c/cNJfyMDH4ZX/1/m>

L0 = learning outcome
L01 = learning outcome 1

1.1.2 Enrichment exercise - fourth industrial revolution and globalisation

L02 Investigate the debates on the fourth industrial revolution and globalisation

The video, that you just watched, described and illustrated the different industrial revolutions. To recap, below is the graphical summary that was cited in the video.



Explore the source of the image: <http://www.allaboutlean.com/industry-4-0-potentials/>

Now let's explore some of the debates on the fourth industrial revolution and globalisation. Search the web and investigate what are the key debates, criticisms and contestations. Below are some resources to begin with.

“The Fourth Industrial Revolution: what it means, how to respond” by WEF

<https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>

“The 2016 World Economic Forum Misfires With Its Fourth Industrial Revolution Theme” by Jeremy Rifkin

<https://www.huffingtonpost.com/jeremy-rifkin/the-2016-world-economic-f b 8975326.html>

“South Africa in the Fourth Industrial Revolution” by Sim Tshabalala

<https://www.dailymaverick.co.za/opinionista/2017-10-06-south-africa-in-the-fourth-industrial-revolution-a-new-opportunity-to-create-more-jobs-and-a-better-society/#.Wgl8B8sUkdU>

“How the fourth industrial revolution will impact all jobs” by Valter Adão

<https://www.moneyweb.co.za/news/tech/fourth-industrial-revolution-will-impact-jobs/>

“Globalisation: the rise and fall of an idea that swept the world” by Nikil Saval

<https://www.theguardian.com/world/2017/jul/14/globalisation-the-rise-and-fall-of-an-idea-that-swept-the-world>

1.1.3 Self-test quiz – test your knowledge

L01 Identify and differentiate the fourth industrial revolution

L02 Investigate the debates on the fourth industrial revolution and globalisation

Question 1

The fourth industrial revolution can be characterised by the...

- A) introduction of mass production and the division of labour with electric power
- B) introduction of increasing pace and scope of digitalisation through cyber-physical systems
- C) introduction of mechanisation and mechanical production through steam power
- D) introduction of automation, digitalisation and automated production through computing power

Answer to Question 1

Option **B** is the correct answer.

The fourth industrial revolution is characterised by the increasing pace and scope of digitalisation through cyber-physical systems.

(A) is the second industrial revolution.

(C) is the first industrial revolution.

(D) is the third industrial revolution.

1.1.3 Self-test quiz – test your knowledge

Question 2

One of the characteristic features of the fourth industrial revolution is ‘The Internet of Things’. It refers to a possible future scenario of connected and specialist factory machines producing specialist products.

- A) True
- B) False

Answer to Question 2

The answer is **False**.

The Internet of Things refers to the ubiquitous embedment of sensors in various types of devices and the sharing of real-time data between these devices. It is not exclusive to specialist products, factories or industries.

1.1.3 Self-test quiz – test your knowledge

Question 3

Which of the below statements describes 'Globalisation' best?

- A) a new and recent phenomenon of global exchange of goods
- B) a new and recent standard and protocol of global exchange
- C) a continuous and evolving social, economic and political phenomenon
- D) a new phenomenon of the fourth industrial revolution

Answer to Question 3

Option C, “a continuous and evolving social, economic and political phenomenon”, is correct.

Globalisation has and continues to evolve over time; it is not a new and recent phenomenon or protocol. It concerns not only the exchange of goods or economies, but requires the recognition of social, economic and political patterns over time and how institutional arrangements at various levels have evolved.

Answers A, B and D are incorrect.

1.2 Understanding innovation

1.2.1 A typology of innovation

LO 3 Identify the various definitions and typologies of innovation

Defining and framing innovation

There are many ways of defining and framing innovation as there are many theories and frameworks conceptualising it. In addition, the debates on innovation also seem to incorporate discussions on creativity, imagination, divergent ways of thinking and entrepreneurship.

A helpful start is to examine the many available typologies of innovation and the categories therein. Explore the below articles and see how they approach and categorise innovation into four types. Can you identify the similarities and differences between these articles?

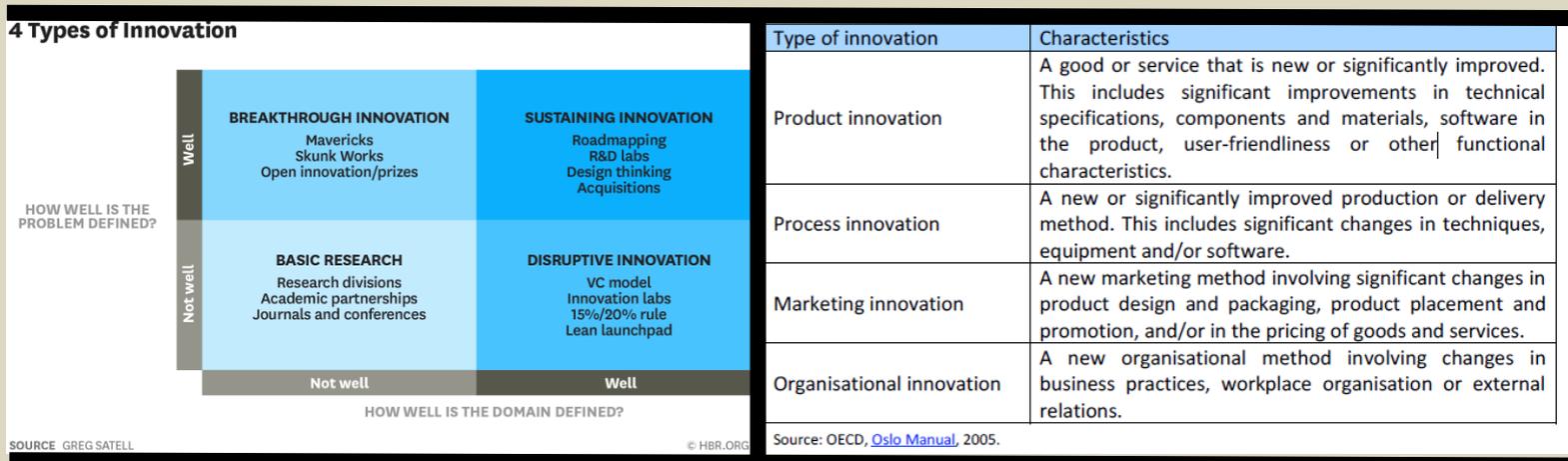
“The 4 Types of Innovation and the Problems They Solve” by Greg Satell. Read the comments on the article as well.

<https://hbr.org/2017/06/the-4-types-of-innovation-and-the-problems-they-solve>

“Understanding innovation” by the EU Parliamentary Research Service.

http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/573968/EPRS_BRI%282016%29573968_EN.pdf

Here are the two typologies side-by-side.



One is organised by domain and the problem to be resolved while the other seems to be based on the business value chain or processes. What are your thoughts? Which did you find useful? How do you think they are defining and looking at innovation?



Did you notice the argument that innovation is a **multi-dimensional concept**? What are the implications then for defining innovation?

Do you agree with the need to explore the innovation **ecosystem**?

What are your thoughts on **policy** and **regulations** regarding innovation?

Are there other typologies? Conduct a web search and compare and contrast the various typologies you found.

1.2.2 Innovation in South Africa

L04 Investigate and debate innovation in South Africa

Given the exploration of various typologies and the discussion on ecosystems, policies and regulations, how would you describe and evaluate innovation in South Africa?

Is the typology of industrial revolutions relevant?

What other constructs and factors would you consider?



Read the following sections of the World Bank report on innovation in South Africa, "Innovation for Productivity and Inclusion": executive summary (pages VII to IX) and 'disruptive technologies' (pages 29-31).

<http://documents.worldbank.org/curated/en/779551505322376708/South-Africa-economic-update-innovation-for-productivity-and-inclusiveness>



1.2.2 Success factors for innovation in South Africa

L05 Debate and evaluate success factors for innovation

Did you identify the success factors the World Bank report listed for South Africa to realise its potential for innovation?

- 1) Foster a business climate conducive to innovation
- 2) Nurture innovation ecosystems in cities
- 3) Build the skills base
- 4) Improve ICT infrastructure
- 5) Enhance the effectiveness of public programmes and incentives for innovation

Do you agree with the World Bank report's analysis of South Africa's socio-economic realities and the success factors identified therein?

Check your reasoning with your fellow participants in the **discussion forum** and peers.

What are the similarities and differences between you, the other participants and the World Bank report?

1.3 Understanding disruption

1.3.1 Disambiguating disruption

L06 Identify the various uses of the term 'disruption'

L07 Understand the concept of disruptive innovation

A term in need of clarification?

Whether the business news channels, books or in daily conversations, the word 'disruption' is used in many and varied ways. At times it seems that the term, 'disruption', is used as a synonym for 'innovation'. It does appear that it is not always clear how the term, 'disruption', is being used and what it means.



Do a web search of the term, disruption, and try to determine how the term is being used and defined.

Christensen's concept and theory of disruptive innovation

Perhaps one way we can get our bearings is to revisit Clayton Christensen's concept and theory of 'disruptive innovation' and understand what he means by the innovator's dilemma.

Christensen argues that one needs to differentiate between **sustaining innovation** and **disruptive innovation**. Follow the link below and watch the short HBR video that explains Christensen's differentiation and the theory it is based on.



<https://hbr.org/video/2688242135001/the-explainer-disruptive-innovation>

1.3.2 Disruptive innovation

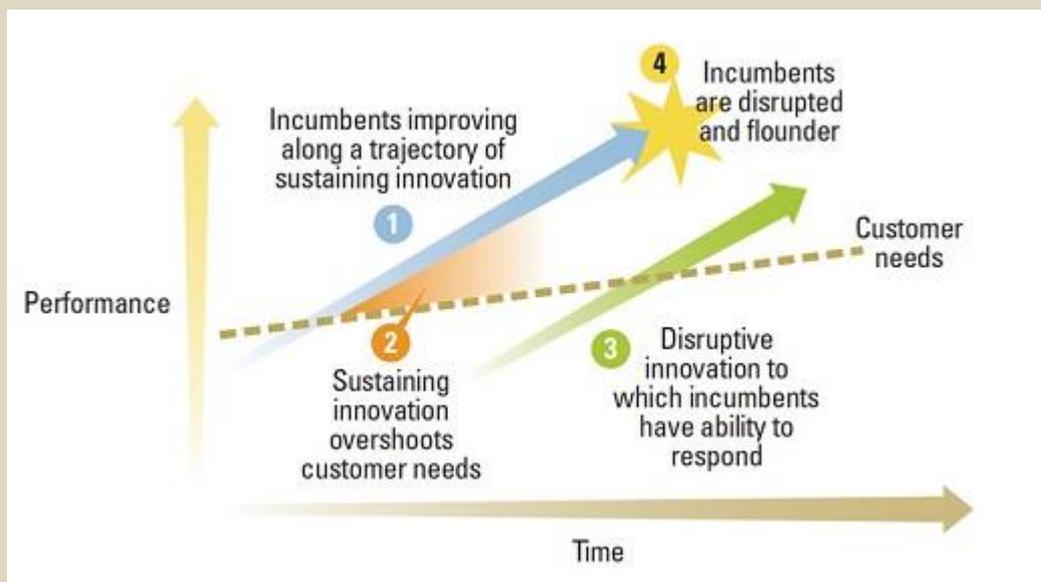
- L07 Understand the concept of disruptive innovation
- L08 Identify and understand key aspects of the theory and process of disruptive innovation



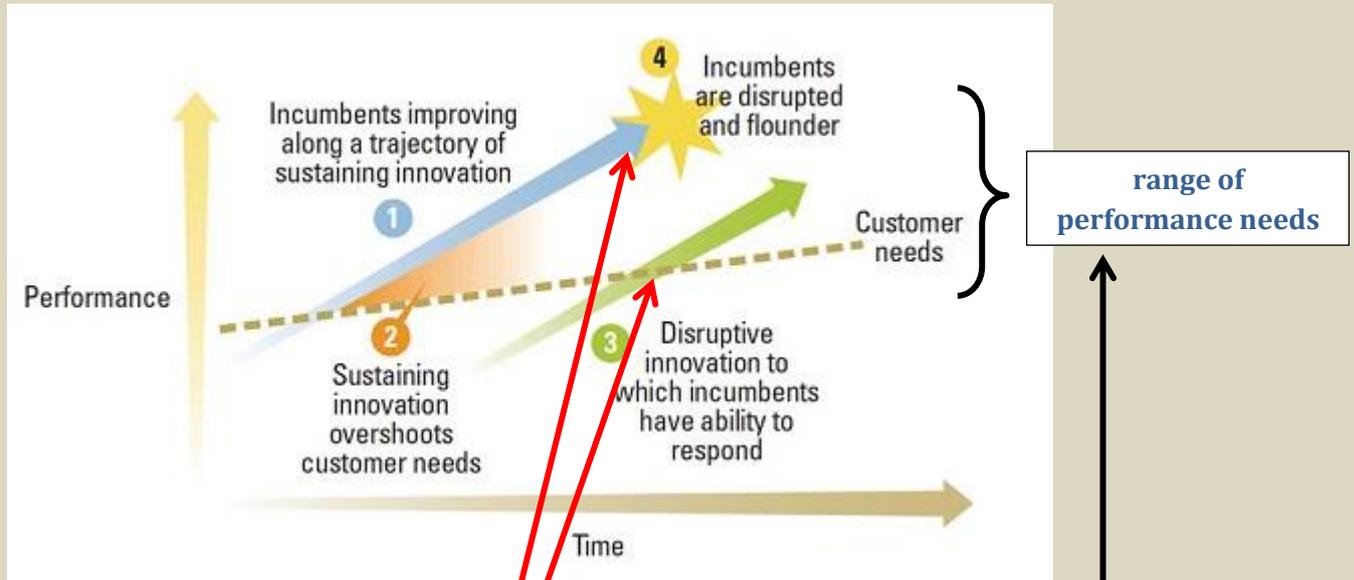
Check your understanding of the video explanation of disruptive innovation

Did you understand the difference between sustaining and disruptive innovation?

Have a look at the diagram below. Can you see the difference between the trajectory lines (1) and (3), which depict sustaining and disruptive innovation respectively?



Source: <https://sloanreview.mit.edu/article/how-useful-is-the-theory-of-disruptive-innovation/>



Source: <https://sloanreview.mit.edu/article/how-useful-is-the-theory-of-disruptive-innovation/>

Did you understand the **entry point** for entrepreneurial companies versus established, incumbent companies or "big guys"? Did you understand their different focus?

Christensen differentiates customers in terms of the range of demands for performance, that is, a range from customers demanding high-end 'performance' with many attributes or features to customers requiring core 'performance'.

In his more recent work Christensen shifts terminology from 'performance' to 'jobs to be done'.

Share your thoughts on the theory and above graph in the **discussion forum**.

In Christensen's own words...

Watch this short HBR video in which Christensen discusses his theory of disruptive innovation.



<https://www.youtube.com/watch?v=qDrMAzCHFUU>

1.3.3 Disruption, innovation and dilemmas thereof

L09 Understand the innovator's dilemma

L10 Identify and debate heuristics and implicit theories we all hold

Christensen's caution ...

Having watched the video in which Christensen explain his theory, did you understand the dilemma Christensen describes?

Did you understand the limits of being purely 'data-drive' and analytical?

Did you understand how he sees the role of theory?



Think about the theories and concepts you use implicitly and explicitly in your day-to-day work and conversations. Check with your fellow participants in the **discussion forum** and peers the theories and concepts they use.

Is it mix of different theories and concepts? Or do you and others hold onto a favourite theory and/or concept, whether implicitly or explicitly?

1.3.4 Enrichment exercise - critical reviews of disruptive innovation

L011 Debate and evaluate the merits and applicability of the theory of disruptive innovation

L012 Draw links between the debates on the fourth industrial revolution, innovation and disruptive innovation



Criticisms explore the contributions, insights as well limits of theories...

Watching the videos on disruptive innovation you may think that it's an elegant and neat formulation that provides a complete theoretical and empirical account. How can you criticise disruption or theories thereof?

All theories and concepts have limits, including the theory of disruptive innovation. Watch the HBR video with Christensen again and pay attention to his discussion on the **applicability** of his theory.

There have also been other critical reviews of Christensen's theory. Read, for example, the following MIT article from which the previous graphic, in section 1.3.2, was drawn from:

“How Useful Is the Theory of Disruptive Innovation?” by A. King and B. Baatartogtokh

<https://sloanreview.mit.edu/article/how-useful-is-the-theory-of-disruptive-innovation/>

What are the broader socio-economic implications of disruption?

Going back to the discussion on ecosystems, economies, policies, regulations and in particular the South African context, what do you think are the broader implications of disruption?

Read, for example, Jill Lepore's criticisms of Christensen's theory and the uncritical acceptance of all things 'disruptive':

<https://www.newyorker.com/magazine/2014/06/23/the-disruption-machine>