



MASTER IN ENTREPRENEURSHIP
INNOVATION MANAGEMENT
IN COLLABORATION WITH MIT SLOAN

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UNIVERSITÀ DEGLI STUDI DI NAPOLI
PARTHENOPE

Strategy disruption and realignment

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Professor profile



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- Senior professional with 30 years of experience.
- Has worked in large organizations such as Deloitte, Trenitalia - Italian railways, small start-ups, and family owned businesses.
- Has worked in different industries: hospitality, tourism, spa & wellness, travel, air and rail transport, ICT, management consulting.
- Skilled in strategic management and business planning, service marketing, business development, sustainability, organizational design, capacity building, asset management, corporate governance.
- Lectures at Sapienza University in Rome and other postgraduate educational institutions.
- Geographical areas of work: Italy, West Europe, Africa, Asia.

Education

- Senior Managers Program - HEC, Paris.
- Master of Science in Tourism & Hotel Management, diploma with Distinction - School of Management - University of Surrey, UK.
- Full degree in Economics and Business (with honours)

Solve this problem

Task: how to fix and light a candle on a wall (or a cork board) in a way so the candle wax won't drip onto the table below. To do so, one may only use the following along with the candle:

- 1) a book of matches
- 2) a box of thumbtacks



Empty page

Solve this problem

Solution for the candle problem or candle task, also known as Duncker's candle problem.

The most efficient solution is to empty the box of thumbtacks, use the thumbtacks to nail the box to the wall, put the candle into the box, and light the candle with the match.

Duncker's candle problem



Walmart case: international successes and failures

The biggest retailer in the world has found that internationalisation is considerably more challenging than expansion at home.

Walmart began its international operations 1991 and today the UK, Brazil and China are their largest markets outside the USA. Walmart International is the company's fastest growing unit with sales of \$141bn (£85bn, €106bn) in 2015, accounting for about 30 per cent of Walmart's overall sales. It included close to 800,000 employees in over 6,200 stores and 11 e-commerce websites in 28 countries. Internationalisation results have, however, been mixed as Walmart has struggled to understand local buying patterns, culture, competitors and regulations, not the least in emerging markets.

Walmart first entered the Americas and has since expanded into ever more distant geographic markets. The early entry into Canada and Mexico was successful, but South America's largest market, Brazil, has been considerably more challenging. After two decades they are still losing money there. Their challenges include regulatory problems, strong competition from the French supermarket chain Carrefour and being unable to convince shoppers about Walmart's 'everyday low prices' model. In 2016, they restructured the Brazil operations and closed 60 outlets, accounting for 5 per cent of its sales.

European expansion results have similarly been mixed. The acquisition of the ASDA Group in the UK was relative successful while Walmart experienced eight years of struggle in Germany that ended in a market exit. First, they did not have enough scale economies compared to local competitors, like Aldi, with strong relationships with German suppliers and already catering to price-conscious consumers. Second, cultural mistakes were made as customers did not approve of American service practices. A third challenge was Germany's then strict regulations on location and opening hours. German workers also resisted Walmart workplace customs, resulting in labour union conflicts.

Walmart's first Asian expansion into South Korea was similar to the German story with strong local competition and failures to meet local customer needs. It ended in exit after eight years. China has been more of a mixed picture. On the one hand, sales have steadily increased, over 400 stores have been established and they make a profit. On the other hand, the distance, both geographically and culturally, was considerably larger than first anticipated. An early discovery was that Chinese consumers prefer frequent shopping trips in contrast to Walmart's home-based experience where customers drive to out-of-town stores and fill their cars with large multi-packs. While they encountered a completely different international market, they also faced large regional variations in this vast and multi-ethnic country. They also struggled with local regulations and food safety issues and tough competition from Carrefour.

In a 2014 interview with the Wall Street Journal, Walmart International President and CEO David Cheesewright, former CEO of Walmart's UK supermarket chain Asda, admits to the struggles, but explained they would still be the Walmart growth engine. He emphasised four initiatives:

'First, create a platform for sustainable growth in China. . . . Second, turn around our operation in Brazil. . . . Third, we have to rejuvenate Mexico. . . . And, fourth we have to drive e-commerce.'

Sources: Dudely, R., 'Wal-Mart's everyday low prices fail to stir Brazilians', Bloomberg Business, 23 April 2014; S. Banjo, 'Wal-Mart's strategy to jump start growth in China', Wall Street Journal, 5 August 2014; A. Felsted, 'China set to remain at head of line for grocery sales', Financial Times, 23 August 2015; Thomson Reuters Street Events, 'Wal Mart Stores Inc. 22nd Annual Meeting for the Investment Community', edited transcript, 14 October 2015; L. Whipp, 'Walmart to close 269 stores as it revamps online presence', Financial Times, 15 January 2016.

Walmart case

Questions

1. What are the internationalisation drivers Walmart International has struggled with?
2. What might be the dangers for a large Western retailer in staying out of emerging markets?

Please go on www.menti.com and enter code 5883 1840

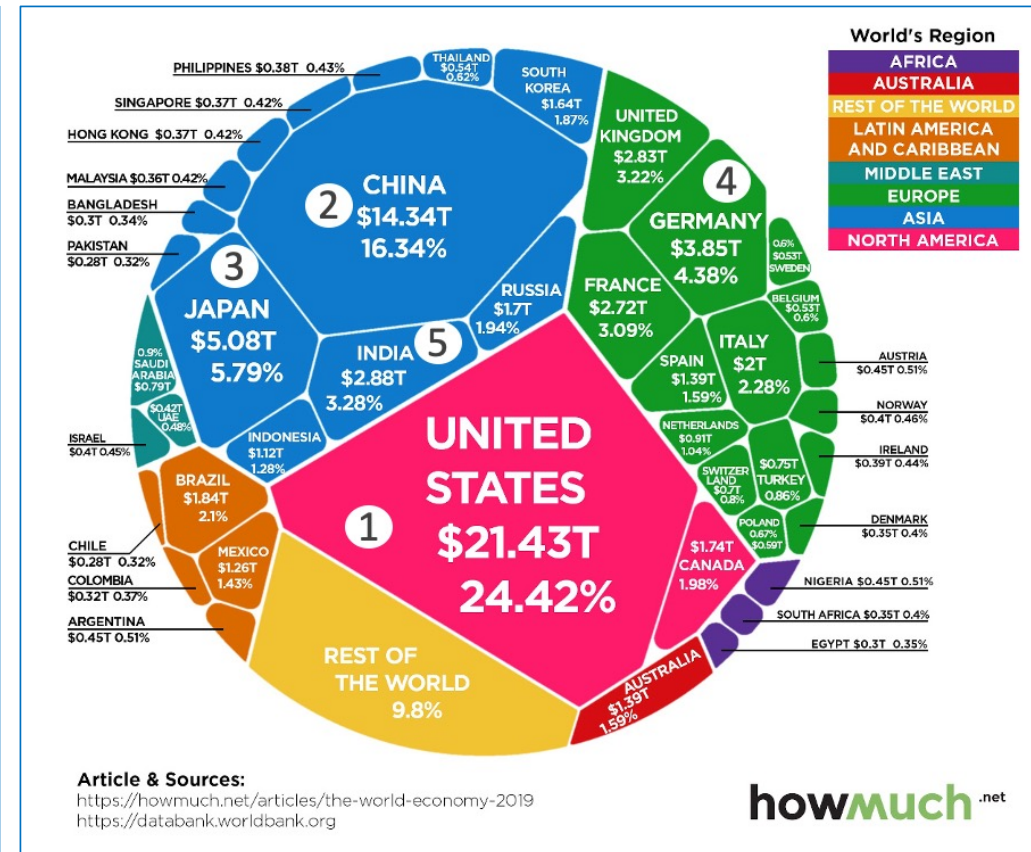
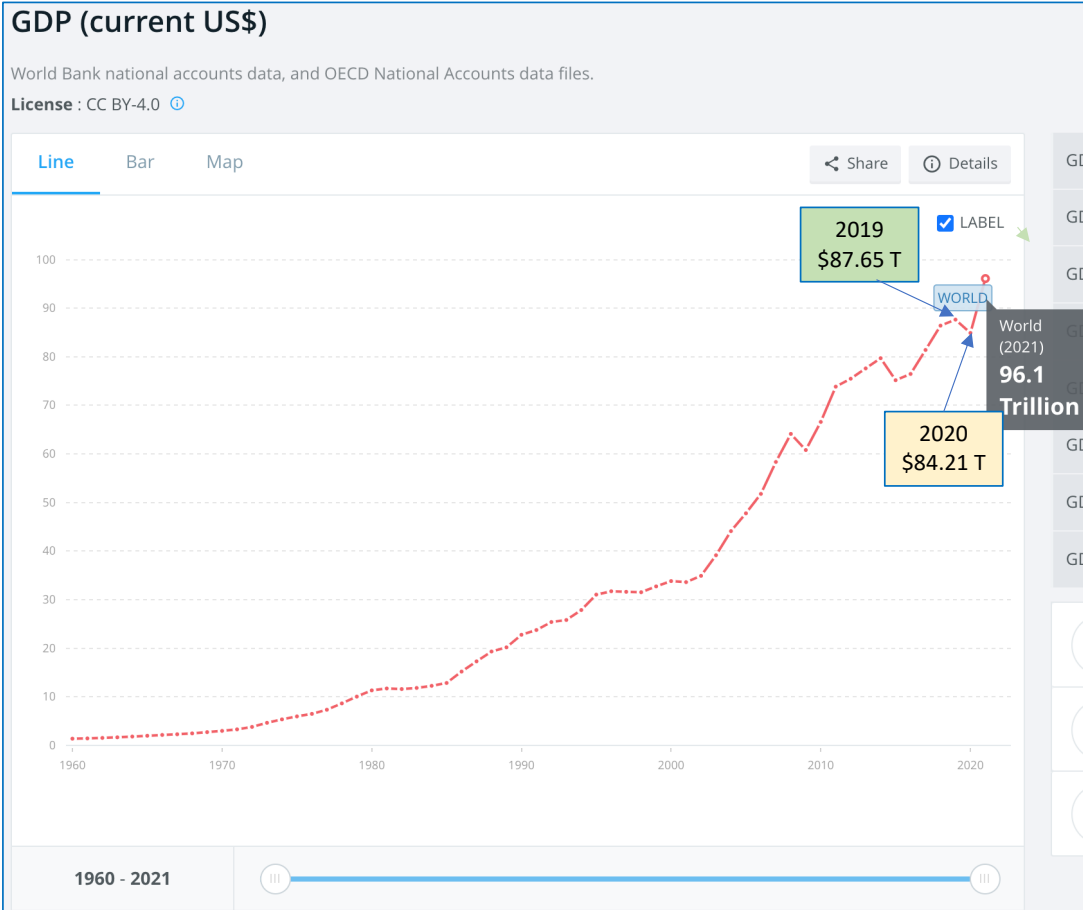
 **Mentimeter**

Please enter the code

Submit

The code is found on the screen in front
of you

Top Countries by GDP



World Economic Outlook, October 2022

The global economy
is...



Video link: <https://www.youtube.com/watch?v=jTvFlyFBG-U>

What's disrupting the global recovery?



Where is disruption happening?

Any example?



Analysis of the business environment

PESTLE Analysis

POLITICS

- Bureaucracy
- Corruption
- Freedom of the Press
- Government Type
- Government Stability
- Social/Employment Legislation
- Trade Restrictions

ECONOMICS

- Interest rates
- Taxes
- Exchange rate
- Economic growth – GDP, FDI
- Employment rate
- Likely Economic Change
- Big Mac Index

SOCIAL

- Health
- Population Growth Rate
- Age Distribution
- Career Attitudes
- Educational Infrastructure
- Social Mobility
- Employment Patterns
- Cultural Taboos
- Core Ethics

TECHNOLOGICAL

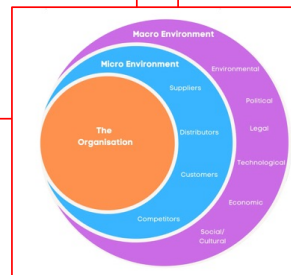
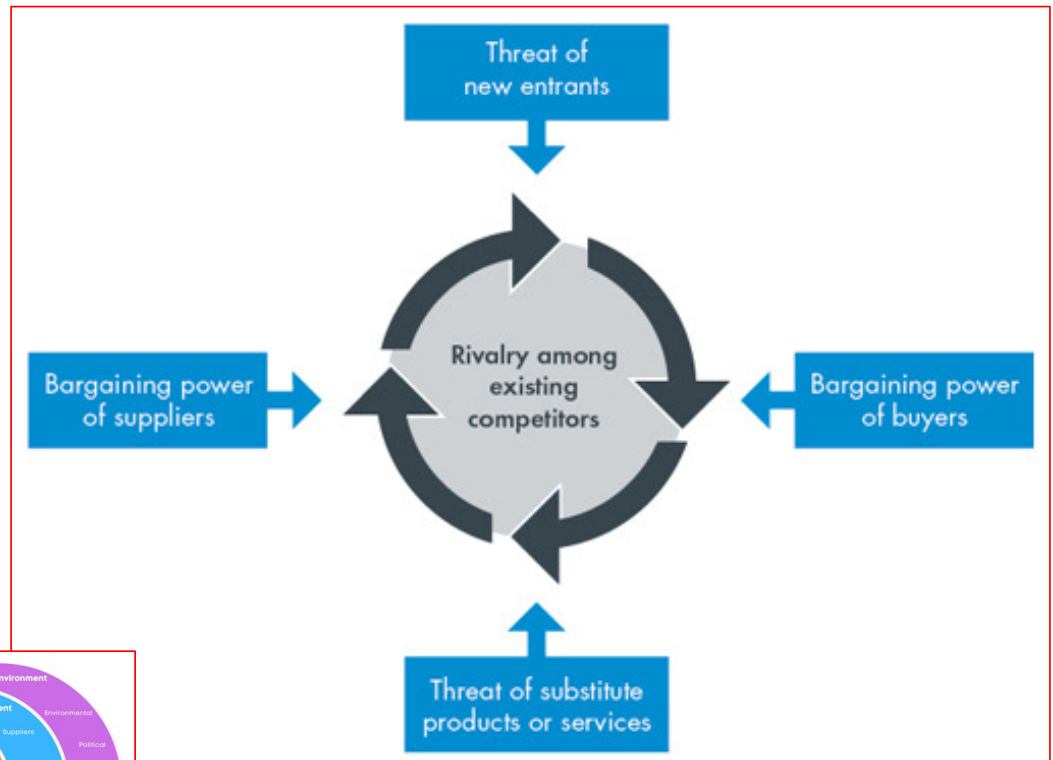
- Degree of Automation
- Emerging Technologies
- Rate of Technological Change
- R&D Activity

LEGAL

- Antitrust Law
- Consumer Law
- Discrimination Law
- Employment Law
- Health and Safety Laws

ENVIRONMENTAL

- Weather
- Climate
- Geography
- Disaster Quotient
- Infrastructure
- Legal



A dramatic sky with dark, heavy clouds over a body of water at sunset or sunrise. The text "DISRUPTION IS UNAVOIDABLE" is overlaid in blue.

DISRUPTION
IS UNAVOIDABLE

Definition

- **Disruption:** is the act or process of disrupting something, a break or interruption in the normal course or continuation of some activity, process, etc.
- Two **examples of new-market disruption** outlined in Disruptive Strategy are the emergence of personal computers and, later, smartphones. Together, they illustrate how disruptors become incumbents that can then be disrupted by a new innovation.
- **Business disruption** is the process in which a product becomes popular enough to replace a traditional or common product or service. These kinds of disruptions can impact entire industries and understanding them can help you manage or create one for your own business.

Disruption is possible in many areas

Here are some categories to consider for potential disruptive events:

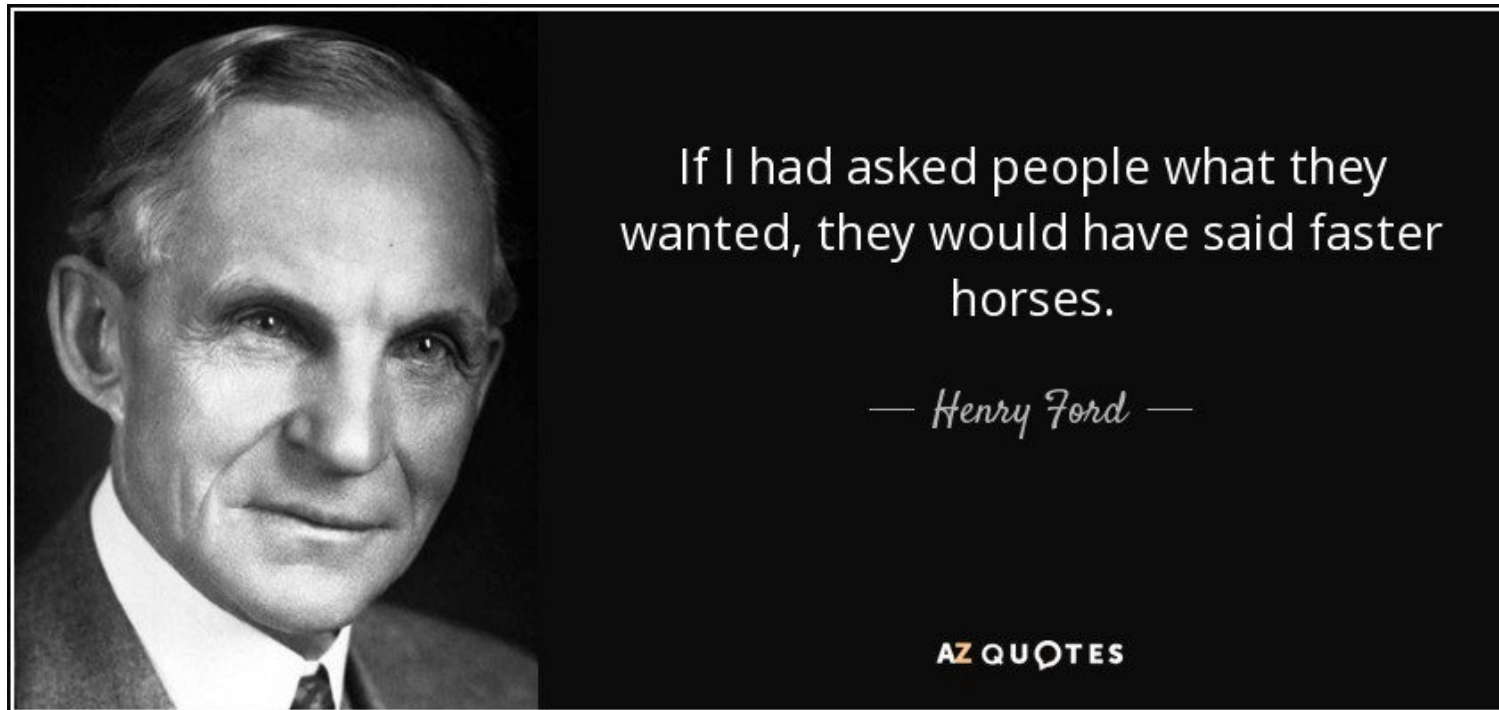
- Extreme Weather and Natural Disasters
- Manmade Disaster or Disruptions
- Human Health & Social Factors
- Significant Economic Events
- Disruptive Governmental or Political Changes
- International Geo-Political Changes
- New Technology – Technological Development
- Industry or Market Changes or Disruptions
- Legal & Regulatory Changes



Disruption from technology

- Technology has long been a disruptive force, radically changing the nature of work and society. In the 19th century, the Industrial Revolution altered our world profoundly and permanently. Electrification, the automobile and mass production, just to name a few massive technological changes, reshaped the 20th century. Today, powerful digital technologies and ubiquitous connectivity have created a knowledge economy that promises to spark the greatest changes in human history.
- Each period of technology-driven disruption has seen business models go extinct and be replaced by ones never before considered. Some companies couldn't evolve and went out of business, while others adapted, seized opportunities and continued to thrive by taking advantage of the new environment. What's different today is that technology is advancing at a pace we have never experienced before in human history – and the pace of change will only increase.





European Defence Agency video: https://www.youtube.com/watch?v=JU_fHqXbAq8

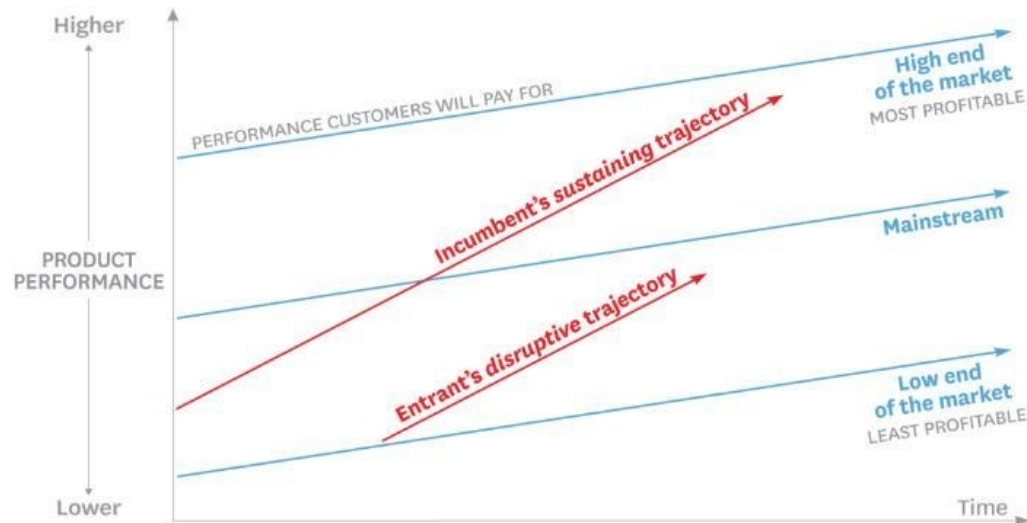
Disruption from technology

- Consider this: In 20 years, we've gone from early electronic mail, hand-coded HTML pages and PCs running DOS to social media, the mobile web and incredibly powerful smartphones, tablets and wearables, the metaverse. How we interact with each other, and our world, has evolved in ways we couldn't have imagined a few years ago. These same technologies are changing the nature of work as well, forcing companies and workers alike to rethink where, when and how work gets done.
- A vast range of ever-improving advanced technologies are driving the disruptive innovation that will soon change our world and define the century to come. "Disruptive innovation", a term coined by Harvard professor Clayton Christensen in his book, describes "a process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves up market, eventually displacing established competitors."

"Disruptive Innovation," Clayton Christensen, www.claytonchristensen.com/keyconcepts/.

The Disruptive Innovation Model

This diagram contrasts *product performance trajectories* (the red lines showing how products or services improve over time) with *customer demand trajectories* (the blue lines showing customers' willingness to pay for performance). As incumbent companies introduce higher-quality products or services (upper red line) to satisfy the high end of the market (where profitability is highest), they overshoot the needs of low-end customers and many mainstream customers. This leaves an opening for entrants to find footholds in the less-profitable segments that incumbents are neglecting. Entrants on a disruptive trajectory (lower red line) improve the performance of their offerings and move upmarket (where profitability is highest for them, too) and challenge the dominance of the incumbents.



SOURCE CLAYTON M. CHRISTENSEN, MICHAEL RAYNOR, AND RORY MCDONALD
FROM "WHAT IS DISRUPTIVE INNOVATION?" DECEMBER 2015

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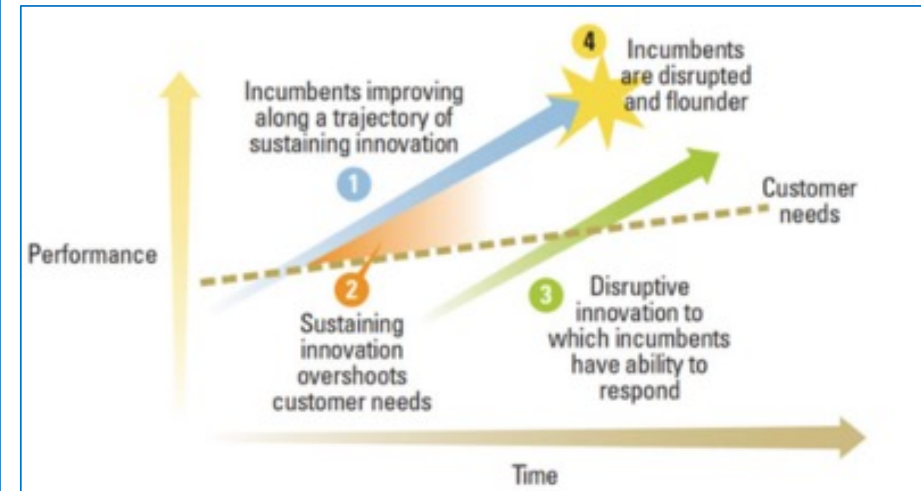


TABLE OF DISRUPTIVE TECHNOLOGIES

A dashboard of 100 wonderful, weird (and possibly worrying) ways the world might change in the foreseeable future



- Example of organizations active in each area**
- 1 Moxi (South Korea), Abena Nova (Denmark), Siemre Secos (Spain)
 - 2 Statoil (Norway), Siemens (Germany), Vultur (US), UMaine (US)
 - 3 Green Skies Vertical Farms (US), Aero Farms (US), Neo Farms (Germany), Urban Crop Solutions (Belgium)
 - 4 Witricity (US), Powermat (Israel), Apple/Power By Proxy (US), Qualcomm (US), Mojo Mobility (US), Mopar (US), Falcon Innovation (US)
 - 5 Google/Alphabet (US)
 - 6 ReWalk (US), Rex Bionics (US), SuitX (US) Bionics (US), Exo Bionics (US), Lockheed Martin (US)
 - 7 Google/Alphabet (US), Samsung (Korea), Heeskin (Canada), Deter (US), Komodo Tech (Canada), Shiftwear (US), Lechal (India), OM Signal (Canada)
 - 8 The Boeing Company/Elon Musk (US), China Aerospace Space and Industry Corporation (China)
 - 9 Reaction Engines (UK), NASA (US), Boeing (US), Lockheed Martin (US), Airbus (France)
 - 10 Deep Space Industries (US), Planetary Resources (US), Made in Space (US)
 - 11 BitBot (Japan), Ripple (US), Litecoin (US)
 - 12 Solarreserve (US), Abengoa (Spain), North China Power Engineering (China), Shanghai Electric (China), Zhejiang Sogon Solar (China), NWEFD (China)
 - 13 PredPol (US), ECH Universe (US)
 - 14 Pavegen (UK), ECEEN (China)
 - 15 Google/Alphabet (US), Joby Energy (US), Altaeros (US), Kitegen (Italy), Enerkit (Germany)
 - 16 Pulstar (US), Amazon (US), Alphabet/Google (US), Nintendo (Japan), Invisible Girl/friend/boyfriend (US)
 - 17 NASA (US)
 - 18 Alphabet/Verily (US), Amazon (US), Vuzix (US), Eversight (Israel)
 - 19 Elegant Embellishments (Germany), Nova (Spain), Studio Roosegaarde (Netherlands), Prossbe 370e (Germany)
 - 20 Datt (UK), Boeing (US)
 - 21 Softbank (Japan), AIST (Japan), Blue Frog Robotics (France), Care-bot (Germany), Riken/Sumitomo Riko (Japan), Mayfield Robotics (US)
 - 22 Amazon (US), Google/Alphabet (US), Philips (Netherlands), Samsung (South Korea), Dyson (UK), Miele (Germany), iRobot (US)
 - 23 Impossible Foods (US), Memphis Meats (US), Super Meat (Israel), Finless Foods (US), New Harvest (US)
 - 24 Wing/Alphabet (US), Starship Technologies (UK), Volocopter (Germany), ehang (China), Piaggio (Italy)
 - 25 Leidos (US), Boeing (US), Rolls Royce (UK)
 - 26 Joulebug (US), Waterpebble (UK)
 - 27 Permalution (US), Sun to Water (US)
 - 28 Powercast (US)
 - 29 NatureWorks (US), Griggs MAPP (Italy), Dermotomics (US), Green Dot Bioplastics (US)
 - 30 NASA (US)
 - 31 Everledger (UK), Stampery (Spain), Brickblock (Germany), Slack (Germany)
 - 32 Blue River Technology (US), Hortau (Canada)
 - 33 Google/Waymo (US), Voyage (US), Nuvia Automotive (US), most major auto-makers
 - 34 Amazon (US), Google/Alphabet (US), Philips (Netherlands), Samsung (South Korea), Dyson (UK), Miele (Germany), iRobot (US)
 - 35 Google/Alphabet (US), Amazon (US), Flirtey (US)
 - 36 Airbus (France), Boeing (US)
 - 37 FiatCrae (Japan), NASA (US)
 - 38 SRI International (US)
 - 39 Stratasys (US), Autodesk (US)
 - 40 NASA (US)
 - 41 Basil Leaf Technologies (US), Dynamical Biomarkers Group (US/Taiwan), Scanadu (US)
 - 42 Starwood Hotels (US), MarCare (Finland), Scalalytics (US), FutureShape (Germany)
 - 43 Flowxy (Japan), Scanadu (US)
 - 44 Tesla (US), ABB (Switzerland), Siemens (Germany), IBM (US), Iron (US)
 - 45 Synthetic Genomics/ExonMobi (US), Global Algae Innovations (US), Algenol (US)
 - 46 Organovo (US), Emision TEC (Germany), RegenHU (Switzerland), Cellink (Sweden), Seraph Robotics (US)
 - 47 HbO2 Therapeutics (South Africa), Biospace (US)
 - 48 For example Vantablack by Surrey NanoSystems (UK)
 - 49 ITER (EU/France), Tokamak Energy (UK), Alphabet/Google/Tri Alpha Energy (US), General Fusion (Canada), Helion Energy (US), Lockheed Martin (US)
 - 50 Festo (Germany)
 - 51 Israel Desalination Enterprises Technologies (Israel), Acciona (Spain), Fluence Corporation (US)
 - 52 Microsoft (US), Google/Alphabet (US), Open AI (US)
 - 53 Open Utility/Essent (UK/Netherlands), Knowlsey (China)
 - 54 Ginkgo Bioworks (US), US Naval Research Laboratory (US), US Army Research Lab (US), Darpa (US)
 - 55 Open Utility (UK/Netherlands), Power Ledger (Australia), LOJ energy (US), Energy Web Foundation (Switzerland)
 - 56 Komatsu Corp (Japan), Mitsubaki (UK)
 - 57 MOOG (US), Darpa (US)
 - 58 Space X/Elon Musk (US), Blue Origin (US), Virgin Galactic (UK), Rocket Lab (US), Axiom Space (US), SpaceX (Israel), Firefly Aerospace (US)
 - 59 Space X (US), UAE Mars Mission (UAE), NASA (US)
 - 60 Intel (US)
 - 61 Kite Pharma/Gilead Sciences (US), ZandiMe (US), Phenogen Sciences (US), Regeneron (US), Veritas Genetics (US)
 - 62 IBM (US)
 - 63 Intuitive Surgical (US), Verb Surgical/Alphabet/Johnson & Johnson (US), Da Vinci Surgery (US)
 - 64 IBM (US), Toyota (Japan), Mimoty (Japan), Persado (US), Jay AI (US)
 - 65 Realbotix (US), True Companion (US)
 - 66 BioTeq (UK), Grindhouse Wearable (US), Dangerous Things (US), see also The Eyeborg Project and the Cyborg Foundation
 - 67 Alphabet/Google Genomics (US), Amazon (US), Illumina (US), Oxford Nanopore Technologies/Metricor (UK)
 - 68 CTRL-Labs (US), Emotiv (US), Neuralink (US), maybe Facebook (US)
 - 69 No example found
 - 70 Improbable (UK)
 - 71 European Organization for Astronomical Research in the Southern Hemisphere (European consortium of 16 countries)
 - 72 No example found
 - 73 Epicenter (Sweden) and Three Square Market 32M (US) are close
 - 74 No example found
 - 75 Twist Bioscience (US)
 - 76 Vaccinogen (US), EpiVax (US), IBM (US), Juno Therapeutics (US)
 - 77 Alphabet/Google (US), KETS (UK), IDQ (Switzerland), Isara (Canada)
 - 78 Darpa (US)
 - 79 Kernel (US), Neuralink/Elon Musk (US), 2045 Initiative (Russia), Darpa (US), General Electric/Brangate (US), possibly Facebook (US)
 - 80 NASA (US), Canva (US)
 - 81 Apple (US), Amazon (US), Alphabet/Google (US), Microsoft (US)
 - 82 No example found
 - 83 CIA (US)
 - 84 Lockheed Martin (US), QinetiQ (UK), Boston Dynamics/Softbank (US/Japan)
 - 85 Woobot (US), Pefin (US), LV (UK)
 - 86 Deep Knowledge Ventures (Hong Kong), Teio (Finland)
 - 87 BAE Systems (UK), Toyota (Japan), NB, Big difference between optical camouflage and banding light to make things disappear
 - 88 Breakthrough Energy (US), RIPE (US), Joint Centre for Artificial Photosynthesis (US)
 - 89 SENS Research Foundation (US), Methuselah Foundation/Peter Thiel (US)
 - 90 Facebook (US), Neuralink/Elon Musk (US)
 - 91 Suicide Machine (Netherlands), Just Delete Me (US)
 - 92 No example found
 - 93 Turin Advanced Neurostimulation Group (Italy)
 - 94 Soomam (South Korea), Revive and Restore (US)
 - 95 No example found
 - 96 Rebaram (US), Solaram Corp (US)
 - 97 Theith Technology (Canada)
 - 98 Improbable (UK), HelloVR (US), Magic Leap (US), Microsoft (US), see also Mind Maze (US), F (US) and possibly Apple (US)
 - 99 Possibility Alphabet/Google (US)
 - 100 As it says, we can't say



What are disruptive technologies? Use the Table of Disruptive Technologies!

Video: <https://www.youtube.com/watch?v=S86mAHwii4>

Disruption will hit every business

- Disruptive innovation has the potential to impact each and every business, no matter its size, sector or location. No business is immune.
- The development and application of advanced technology is accelerating at such an exponential rate that people have difficulty coming to grips with the pace of change.
- Among the key factors propelling these advanced technologies is the exponential growth in computer processing power – and the staggering drop in the price of computer chips. In 1992, you'd pay \$222 for a million transistors; today you'd pay \$0.06.

Some examples of disruptive innovation include:

Disruptor	Disruptee
Personal computers	Mainframe and mini computers
Mini mills	Integrated steel mills
Cellular phones	Fixed line telephony
Community colleges	Four-year colleges
Discount retailers	Full-service department stores
Retail medical clinics	Traditional doctor's offices

Source: www.claytonchristensen.com/keyconcepts

COMPANY EXAMPLES



Amazon has revolutionised the way that we shop by initially creating a website for purchasing books. This stole trade from the high street retailers. They then expanded into more products and disrupted almost the entire retail trade.



IBM created the first portable computer, which established a new mass market that was previously catered for by bulky, expensive mainframes.



Netflix completely switched away from its old business model - posting rental DVD's out to customers, to a new stream-only service, an unheard of move at the time.



Whether you love or hate Apple, the iPod changed the way we listened to music. It became one of the most popular media players and was instrumental in the growth of the MP3 format.

INDUSTRY EXAMPLES

Calculators

The first pocket calculators were pioneered by Busicom, which replaced desk calculators. Later there was then a move from mechanical to digital.

Lights

The LED or 'Light-Emitting Diode' whilst originally significantly smaller and less powerful has now become significantly stronger and efficient and has pushed older more inefficient bulbs out of the market.

Tablets

The innovation that bridged the gap between the Laptop and the Smartphone. Originally people were sceptical about the idea but the innovation created its own market and has been growing ever since.

FIGURE 1

Cost of one million transistors from 1992 to 2012¹²

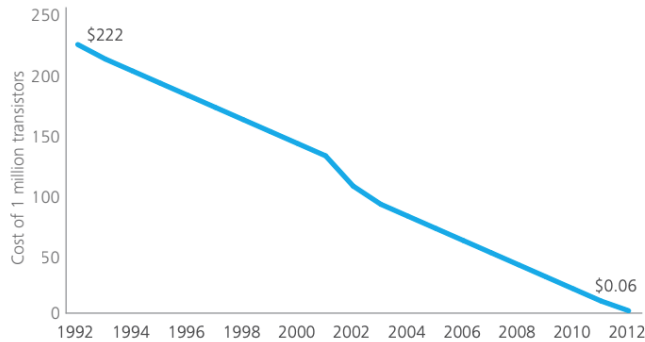


FIGURE 2

Number of years to reach \$1-billion valuation from date founded¹³

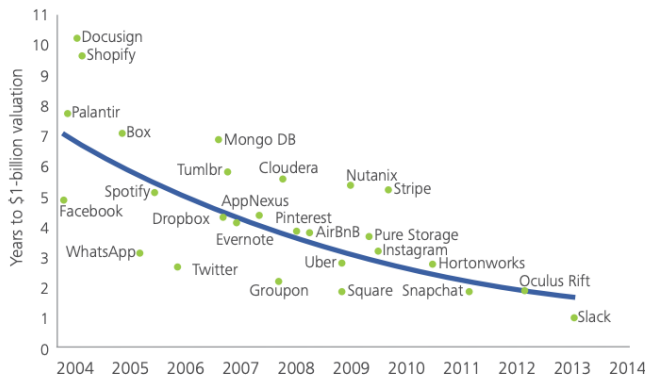


FIGURE 3

Average company lifespan on the S&P Index from 1960 to 2014¹⁴

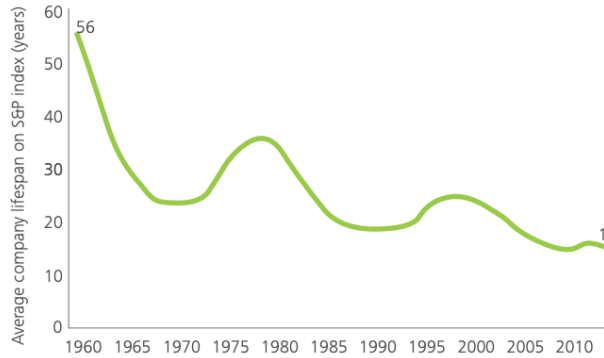
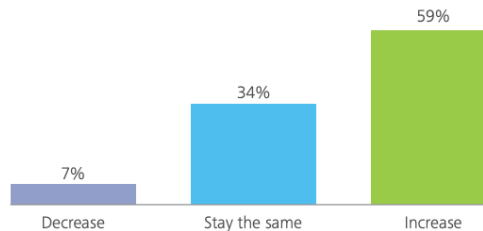


FIGURE 4

Thinking about things such as firm turnover, economic growth and new business models, do you think the pace of change in your industry will increase, decrease or stay the same when compared to the past five to 10 years?



To better put this in perspective, Apple sold 25 times more CPU transistors during the iPhone 6 launch weekend (September 19–21, 2014) than existed in all the PCs on Earth in 1995.

Advances in technology have also increased the rate of business growth – and business failure. Since 2003, a new company has reached a \$1-billion valuation every three months in the United States.⁸ Yet the time it takes to reach that valuation has shrunk considerably: Shopify took nine years; Slack took one (see Figure 2).

If businesses are growing faster, they're also exiting much more quickly. In 1960, the average lifespan of an S&P 500 company was around 56 years; by 2014, it had dropped to nearly 15 years (see Figure 3). Some even suggest that in just 10 years, 40% – nearly half – of today's Fortune 500 companies will no longer exist.

Snapshot on Canada: this dramatic increase in the pace of change has not gone unnoticed by Canadian firms. In fact, nearly 60% of respondents to our survey think the pace of change will increase over the next five to 10 years (see Figure 4). As it does, the likelihood of technology-driven disruption will grow too – and Canada's economic well-being will depend, more than ever, on how well our companies are prepared for what's to come. However, the question remains: If the majority of firms admit that the pace of change is increasing, then why are so few doing anything to prepare for the new economy in which they'll find themselves?

Disruptive Innovation Explained



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

Website: <https://claytonchristensen.com/key-concepts/>

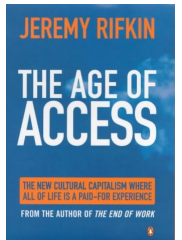


Video: <https://www.youtube.com/watch?v=yUAAtIQDllo8>

Introducing disruption

- The business environment feels more threatening today than it did in the past.
- Business leaders increasingly find themselves at the mercy of disruptors that cast doubt on the stability of all firms, industries and economies.
- The Kodak and Blockbuster case studies clearly exemplify what may happen.
- Disruption seems to be amplified by the speed of technological change, the rapid adoption of new products and compressed product life cycles.
- Traditional barriers to entry are low and dropping; upfront investments are being replaced by purchases as a service and capital for other purchases is easier to find, while social media and cheap shipping are slashing the cost of operating globally.
- There's also the risk that a firm from outside the industry might turn it upside down, as Apple did for smartphones, or Tesla for cars, or Airbnb for distribution of accommodation.
- When we encounter disruption, our efforts to mitigate damage and maximise opportunity are hampered as we are unable to obtain key skills in time.

Disruption is not a new phenomenon. It is, more explicitly, the accelerating frequency of disruption that poses a new challenge for organisations



- Disruption can be viewed at various levels of abstraction. At the highest level are the long-term shifts which are reshaping the nature of the economy. These disruptions are more endemic as they operate on the whole economy, rather than sectors or industries.
- The shift from knowledge stocks to flows, which we might pithily describe as “why remember what you can google?” is a prime example, with one consequence that the balance of power has tipped from merchant to consumer. In the past, merchants had the upper hand as they had all the information on product availability and pricing, while customers knew little. Now, with the consumer Internet, modern smartphones and so on, the consumer has the upper hand and often knows more than the merchant.
- The immediate effect of this disruption is the elimination of the mid-market as customers search the globe for the cheapest or the best (at the best price) rather than compromising based on what they can find from local merchants.

Source: Deloitte, Your next future

Disruption is strongly linked to technology

- The First Industrial Revolution (1760-1840) used water and steam power to mechanize production.
- The Second used electric power to create mass production.
- The Third used electronics and information technology to automate production (in 1957 Olivetti and IBM introduced their first personal computers).
- Now a Fourth Industrial Revolution (4IR) is building on the Third, the digital revolution that has been occurring since the middle of the last century. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres.
- There are three reasons why today's transformations represent not merely a prolongation of the Third Industrial Revolution but rather the arrival of a Fourth and distinct one: velocity, scope, and systems impact.
- The speed of current breakthroughs has no historical precedent. When compared with previous industrial revolutions, the Fourth is evolving at an exponential rather than a linear pace. Moreover, it is disrupting almost every industry in every country. And the breadth and depth of these changes herald the transformation of entire systems of production, management, and governance.

Disruption is strongly linked to technology

- The Fourth Industrial Revolution is a way of describing the blurring of boundaries between the physical, digital, and biological worlds. It's a fusion of advances in artificial intelligence (AI), robotics, the Internet of Things (IoT), 3D printing, genetic engineering, quantum computing, and other technologies.
- It's the collective force behind many products and services that are fast becoming indispensable to modern life. Think GPS systems that suggest the fastest route to a destination, voice-activated virtual assistants such as Apple's Siri, personalized Netflix or Amazon recommendations, and Facebook's ability to recognize your face and tag you in a friend's photo.
- As a result of this perfect storm of technologies, the Fourth Industrial Revolution is paving the way for transformative changes in the way we live and radically disrupting almost every business sector. It's all happening at an unprecedented, whirlwind pace.
- The 4IR brings a particularly pronounced shortage of IT talent*. Bridging the skills gap is all about increasing capacity to solve problems by bringing in groups who previously would not have been able to contribute. Today the skills people require are different from the past.

* Salesforce <https://www.salesforce.com/news/stories/filling-the-skills-gap-in-the-fourth-industrial-revolution/>

Disruption challenges and opportunities

- Like the revolutions that preceded it, the Fourth Industrial Revolution has the potential to raise global income levels and improve the quality of life for populations around the world.
- To date, those who have gained the most from it have been consumers able to afford and access the digital world at declining prices; technology has made possible new products and services that increase the efficiency and pleasure of our personal lives.
- Today many activities can be done remotely by anyone with a device: ordering a cab, booking a flight, buying a product, making a payment, listening to music, watching a film, get delivery, or playing a game.
- In the future, technological innovation will also lead to a supply-side miracle, with long-term gains in efficiency and productivity. Transportation and communication costs will drop, logistics and global supply chains will become more effective, and the cost of trade will diminish, all of which will open new markets and drive economic growth.
- Major shifts on the demand side are also occurring, as growing transparency, sustainability, consumer engagement, and new patterns of consumer behaviour (increasingly built upon access to mobile networks and data) force companies to adapt the way they design, market, and deliver products and services.

Source: Klaus Schwab, Founder and Executive Chairman, World Economic Forum

Disruption and impact on people

- The Fourth Industrial Revolution, finally, will change not only what people do but also who we are. It will affect our identity and all the issues associated with it: our sense of privacy, our notions of ownership, our consumption patterns, the time we devote to work and leisure, and how we develop our careers, cultivate our skills, meet people, and nurture relationships. It is already changing our health and leading to a “quantified” self, and sooner than we think it may lead to human augmentation*. The list is endless and it is bound only by our imagination.
- Enthusiasm about technology and the inexorable integration of technology in our lives could diminish some quintessential human capacities, such as compassion and cooperation.
- People’s relationship with smartphones is a case in point. Constant connection may deprive us of one of life’s most important assets: the time to pause, reflect, and engage in meaningful conversation. This has brought to apps for smartphone use monitoring.
- Privacy is one of the greatest individual challenges posed by new information technologies.

Disruption case

- You own a traditional bakery.
- Your business is declining due to many reasons: growing energy costs, inflation, declining demand, increasing competition from grocery stores, etc.
- You even considered closing down your business.
- Is there any disruptive innovation that may provide you an opportunity to stay in business?
- Is there any technology based solution you can adopt to strengthen your business model?
- Create groups and discuss what would be a possible solution to the above situation.

Disruption case discussion

Source: Klaus Schwab, Founder and Executive Chairman, World Economic Forum.

* mobile apps for health control; VR glasses and augmented reality



Video Joseph Bakery <https://www.youtube.com/watch?v=maKZ24qq-Ec>

Thank you

AND
GOOD LUCK

IT'S BEEN A PLEASURE WORKING WITH YOU TODAY