POLIMI GRADUATE SCHOOL OF MANAGEMENT

SACE

DIGITAL TRANSFORMATION: DIGITAL INNOVATION AND DIGITAL STRATEGIES

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THE «INNOVATION MESS»
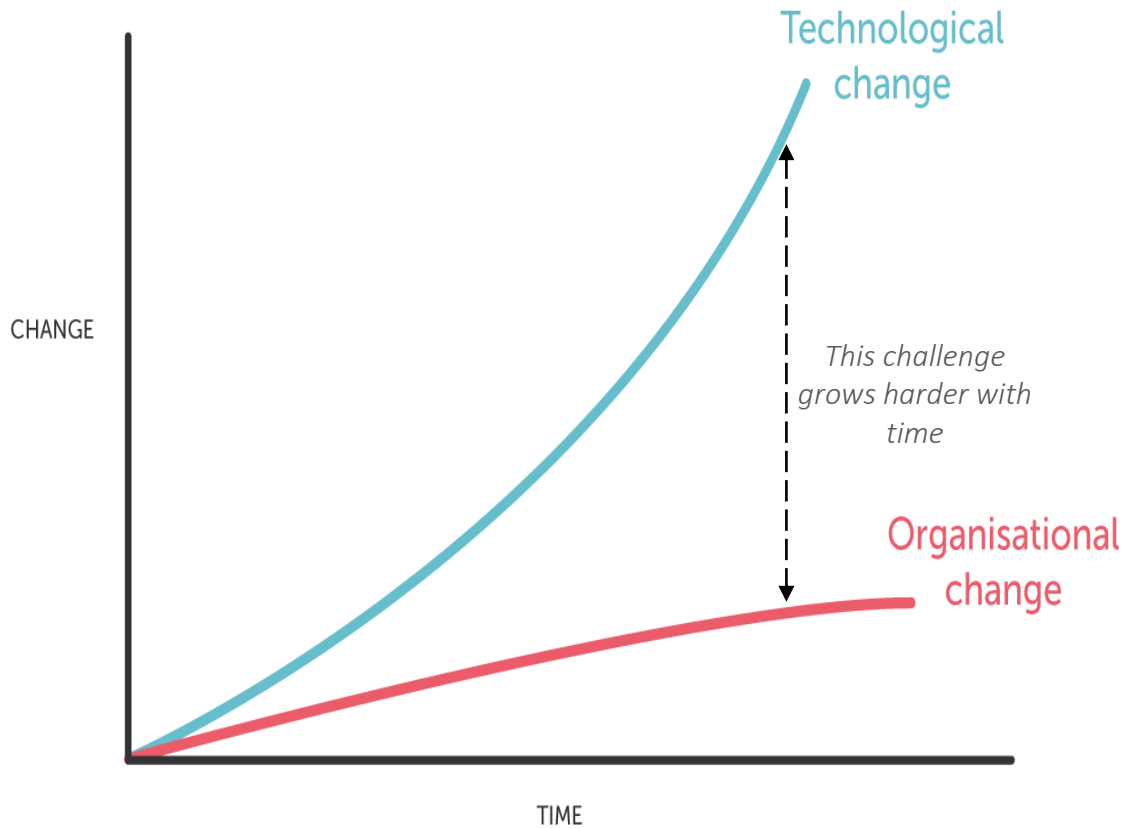
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Old and new challenges for corporate innovation

- Market turbulence?
- Broadened industry value network and plethora of new players and roles in the competitive arena: new competitors, new customers, new partners?
- Digitalization and digital transformation?
- Information asymmetry
- Short-term vs long-term goals?
- Hidden and implicit sources of value?
- Not invented here (NIH) syndrome?
- Degree of openness of the innovation process?
- Intellectual Property (IP) protection?
- Constant need for Strategic Renewal and Business Model Innovation (and risks of strategic inconsistence and overstretching)?
- Internal reorganization of functions, processes and roles?
- Disruption (often startup-led)?
- Call for being "lean"?

MANAGEMENT ACADEMY

Martec's law

The greatest managerial challenge in the XXI century

Technological change

CHANGE

This challenge grows harder with time

Organisational change

TIME

Technology changes exponentially, while Organizations change logaritmically

Management shall strategically choose which technological changes to adopt

STRATEGY & BUSINESS STRATEGY
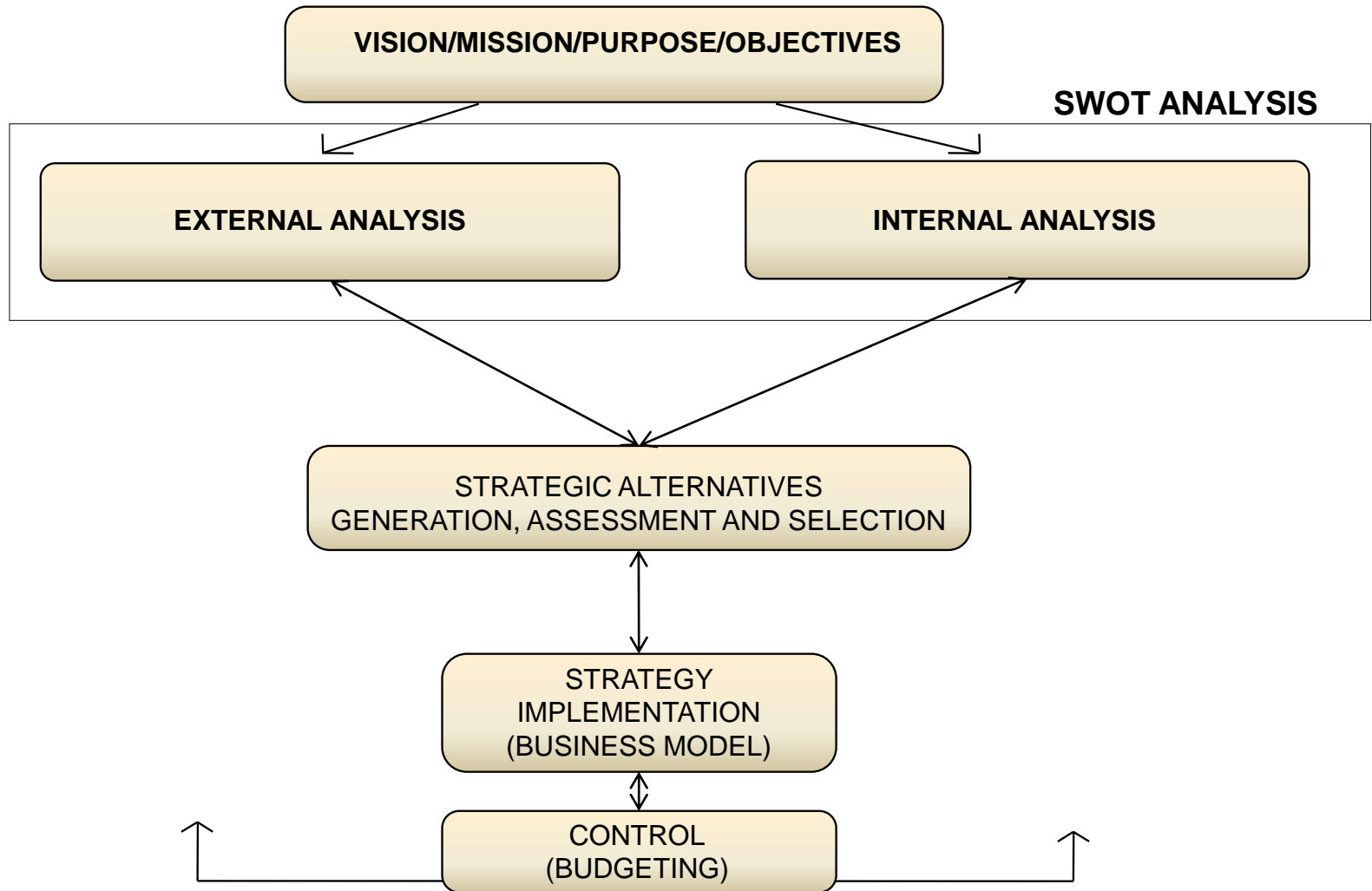
Prof. Antonio Ghezzi, Ph.D.

The concepts of «strategic decision» and «strategy»

✦ **Strategic decision**: a decision that
- has **long term**, **significant** and **non-reversible** effects on the **final goal** of the organiZation (decision maker)
- (usually) requires **large amounts of resources**
- requires **top management involvement**

✦ **Strategy**: an integrated, comprehensive plan which
- identifies the **scope** and the **direction** of the organiZation (decision maker)
- is aimed at obtaining **long term performance superior to competitors** (in relation to the **goal**)
- integrates a **coherent set of strategic decisions**

Business Strategy formulation process

VISION/MISSION/PURPOSE/OBJECTIVES

SWOT ANALYSIS

EXTERNAL ANALYSIS

INTERNAL ANALYSIS

STRATEGIC ALTERNATIVES
GENERATION, ASSESSMENT AND SELECTION

STRATEGY
IMPLEMENTATION
(BUSINESS MODEL)

CONTROL
(BUDGETING)

The strategy formulation process
Strategy execution - Business Model

- The Business Model is a company's architecture of value.

- It represents the way a company:
    - Generates value for its target customers (value generation)
    - Delivers value to its customers (value delivery)
    - Captures a share of such value to make its business sustainable (value capture)

"The essence of a business model is in defining the manner by which the enterprise delivers value to customers, entices customers to pay for value, and converts those payments to profit" (Teece, 2010)

The strategy formulation process
Strategy execution - Business Model

- Quite recently (2010) Alexander Osterwalder, in his book «Business Model Generation», developed a framework to represent the business model that goes under the name of Business Model Canvas.

- The canvas results from a deep academic investigation on the business model ontology (i.e. essential concepts and elements)

- However, it is presented in a unified, simple and intuitive way, that enables interaction and iteration, thus being significantly appealing for practitioners (e.g. entrepreneurs and managers)

- The Business Model Canvas is currently the most used tool for representing and implementing strategic decisions in both consolidated companies and startups.

The strategy formulation process
Strategy Execution - Business Model Canvas

— **Value Proposition:** a selected *bundle of products and/or services* targeting a *group of customers* and satisfying well-defined *needs*

— **Value Interface:** the *channels* through which we offer our value propositions to our customers and the types of *relationships* we entertain with our customers

— **Value Infrastructure:** the *key activities*, *resources* and *suppliers/partners* on which the value proposition is built

— **Value Monetization:** the *revenue streams* through which the company earns from its customers and the corresponding *cost structure*

The strategy formulation process
Strategy Execution - Business Model Canvas

The strategy formulation process
Strategy Execution - Business Model Canvas

Key Partners
Who are our Key Partners?
Who are our key suppliers?
Which Key Resources are we acquiring from partners?
Which Key Activities do partners perform?

Key Activities
What Key Activities do our Value Propositions require?
Our Distribution Channels?
Customer Relationships?
Revenue streams?

Value Propositions
What value do we deliver to the customer?
Which one of our customer's problems are we helping to solve?
What bundles of products and services are we offering to each Customer Segment?
Which customer needs are we satisfying?

Customer Relationships
What type of relationship does each of our Customer Segments expect us to establish and maintain with them?
Which ones have we established?
How are they integrated with the rest of our business model?
How costly are they?

Customer Segments
For whom are we creating value?
Who are our most important customers?

Key Resources
What Key Resources do our Value Propositions require?
Our Distribution Channels? Customer Relationships?
Revenue Streams?

Channels
Through which Channels do our Customer Segments want to be reached?
How are we reaching them now?
How are our Channels integrated?
Which ones work best?
Which ones are most cost-efficient?
How are we integrating them with customer routines?

Cost Structure
What are the most important costs inherent in our business model?
Which Key Resources are most expensive?
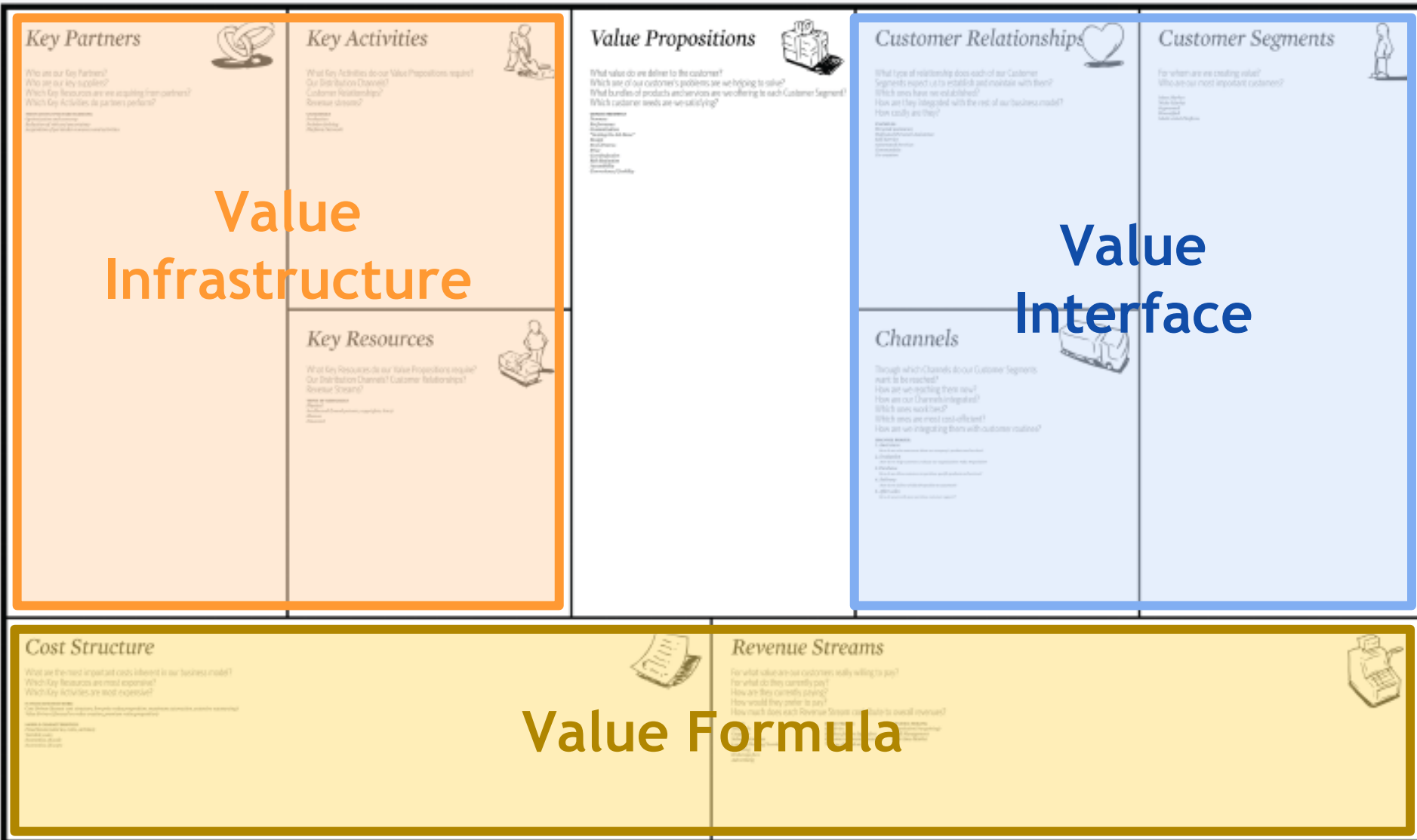Which Key Activities are most expensive?

Revenue Streams
For what value are our customers really willing to pay?
For what do they currently pay?
How are they currently paying?
How would they prefer to pay?
How much does each Revenue Stream contribute to overall revenues?

Value Infrastructure

Value Interface

Value Formula

The strategy formulation process
Strategy Execution - Business Model Canvas

A business model can be described by looking at a set of nine building blocks. To get a good picture of our business model we should describe our:

- **Value proposition**: The bundles of products and services that satisfy our *customer segments'* needs
- **Customer segments**: Our groups of customers with distinct characteristics.
- **Channels**: The channels through which we offer our value propositions to our customers (communication, sale, distribution channels).
- **Customer relationships**: The types of relationships we entertain with each *customer segment.*

- **Key resources**: The key resources on which our business model is built.
- **Key activities**: The most important activities performed to implement our business model.
- **Partner network**: The partners and suppliers we work with.

- **Revenue streams**: The streams through which we earn our revenues from our customers for value creating and customer facing activities.
- **Cost structure**: The costs we incur to run our business model (capex vs opex, fixed vs variable).

IT STRATEGY

Prof. Antonio Ghezzi, Ph.D.

The Strategic role of IT:
Harvard Business Review Debate

Does IT (ICT) matter?

The Strategic role of IT – Carr's article:
IT doesn't matter (HBR, May 2003)

- IT (ICT) cannot be a source of sustainable, long term, competitive advantage, since it is becoming more and more
  - standard
  - cheap
  - available to all
  - outsourcable

  …in a word a commodity

- IT (ICT) is more and more essential to operations but it is insignificant to strategy

The Strategic role of IT:
Reply from other HBR's authors

- **Technological perspective**

  ICT Competence is seen as a bundle of software & hardware assets and technical skills that are fully available on the market

- **Infrastructure perspective**

  The focus is mainly on Infrastructure (hardware and network) that is becoming more and more a commodity

VS

- **Single ICT Project perspective**

  The focus is on the single ICT Project, that may or may not be the driver of competitive advantages

- **Organizational & Business Perspective**

  ICT Competence is the <u>ability</u> of a company to exploit/leverage ICT to pursue business innovations, to change business practices, to improve business performance …. <u>this is in short supply</u>!

- **Application perspective**

  Business Applications are extremely customized … built on the specific business logic of the company … embedded in the organizational routine of the company. They can create <u>strategic differentiation</u>

- **Learning Process perspective**

  This capability is the result of a complex and long cumulative (path dependent) and collective (organizational) learning process. This can lead to <u>durable and defendable competitive advantages</u>

The Strategic role of IT
External and internal impacts on strategy

- **Internal Perspective**

  ICT can create new sources of competitive advantage both in terms of cost and differentiation by impacting on the company's Value Chain and resources
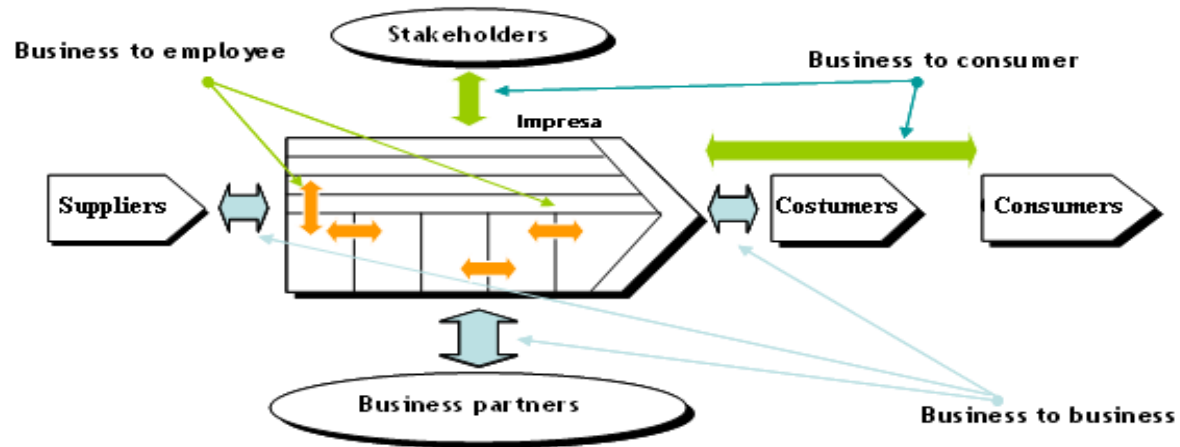
- **External Perspective**

  ICT can drive transformations in the competitive landscape, changing the role and the intensity of each competitive force (internal rivalry, potential entries, substitute products, suppliers' and customers' bargaining power)
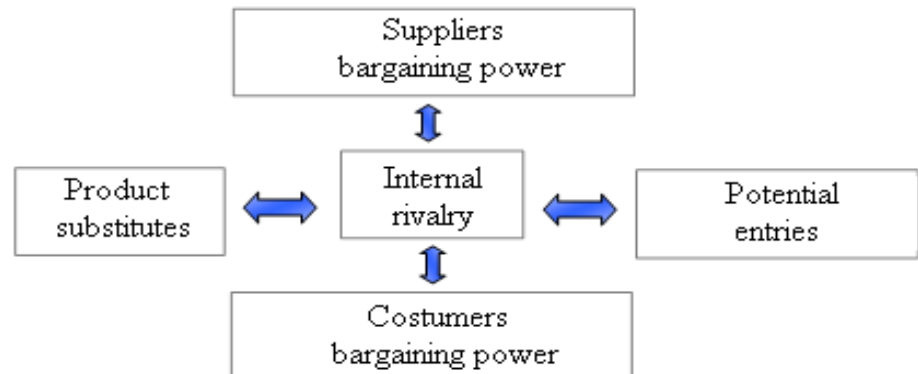
… but the real business role of ICT depends on the specific business context …

The cultural barriers

1. **Top Management's** real commitment and sensitivity to ICT - the CEO above all

2. The characteristics of the **CIO** and his/her key people (in terms of leadership, business acumen, organizational competence, communicational skills, etc.)

3. **Business Managers'** open-mindedness and sensitivity to ICT

DISRUPTIVE INNOVATION & BIG-BANG DISRUPTION

Prof. Antonio Ghezzi, Ph.D.

Disruptive Innovation

- First things first: disruption does not (necessarily) mean destruction. It means *interruption*, *discontinuity*.

- A disruption happens when an established company, well respected and well positioned on the market (incumbent), is beaten and displaced (from a competitive standpoint) by a newcomer, usually a new venture, which takes the market leadership.

- How is it possible that a large, established (and normally financially strong) company is beaten by a smaller, unknown company new to the market? Shouldn't have the top management and the line management of the organizational functions (marketing, R&D,…) foreseen what was going on, anticipated the newcomer and prevented this change from happening?

Disruptive Innovation

Lessons learnt from the history of disruption cases

- Technology matters for strategy…

- It is not just "innovation" (incumbent firms are innovative as well) … it is an innovation that disrupts mainstream technologies

- Disruptive technologies are hard to intercept as they appear significantly weaker than the established one at the very beginning (they usually start "cheap and simple")

Disruptive Innovation
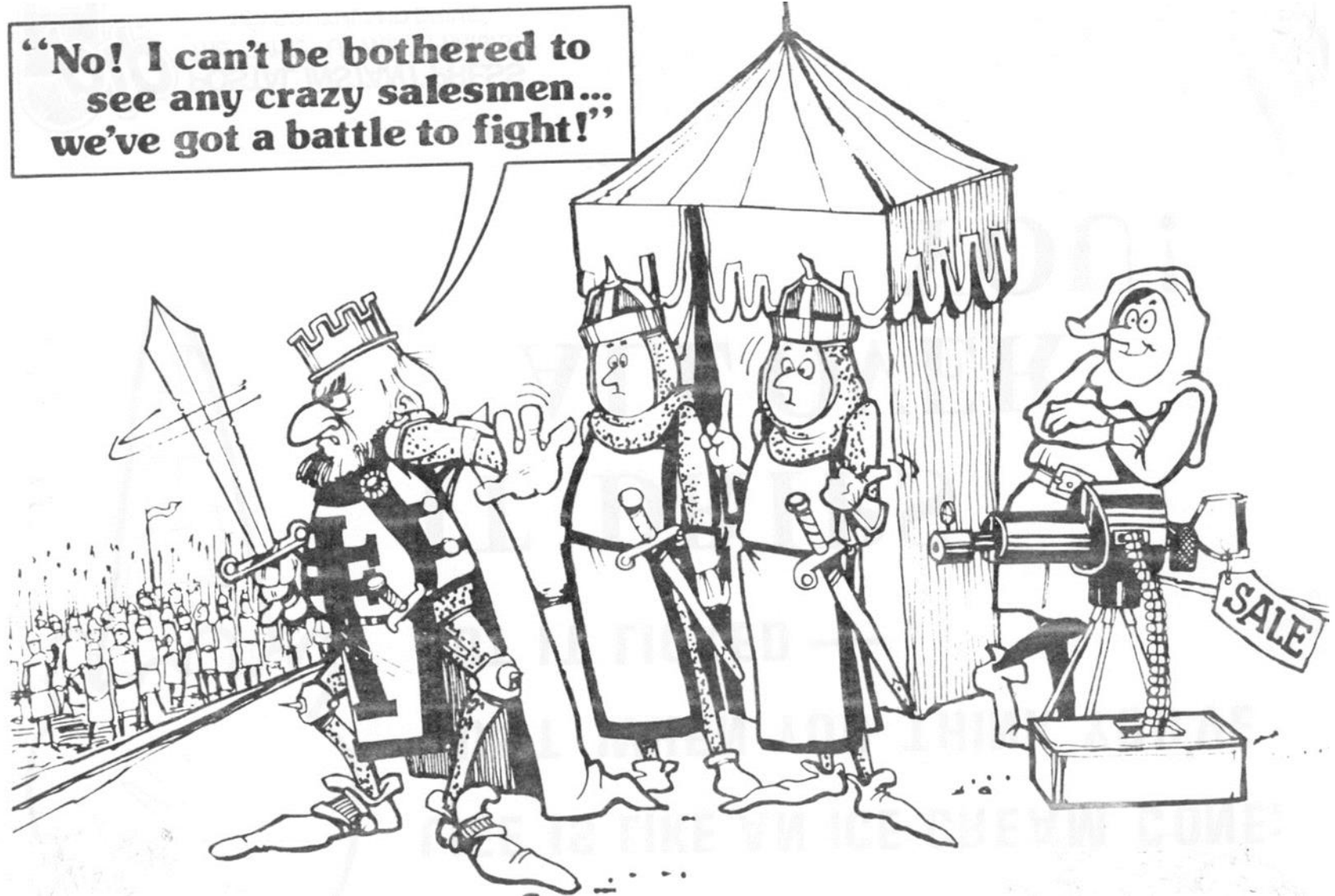
Sustained and disruptive technological change

Sustained vs. disruptive technology

Performance
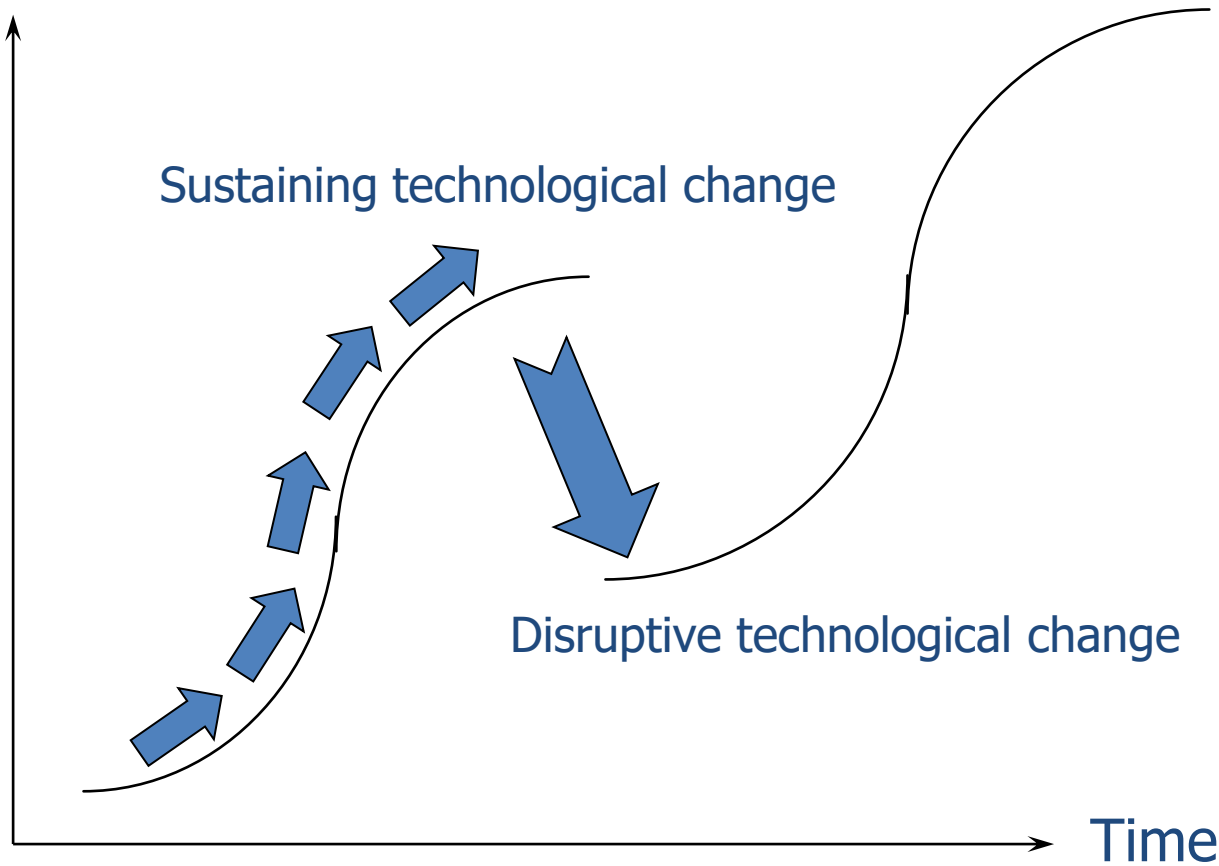
Sustaining technological change

Disruptive technological change

Time

The threat of disruptive technologies

FOUR ELEMENTS OF THE THEORY OF DISRUPTIVE INNOVATION

This illustration shows four important elements of the theory of disruptive innovation: (1) sustaining innovation, (2) overshoot of customer needs, (3) the emergence of a disruptive innovation to which incumbents have the ability to respond, and (4) incumbent firms floundering as they are disrupted. Following Christensen and Raynor, we collapse the multiple value dimensions of existing products to just one dimension labeled "performance." We also show customer needs as a line, although in fact there is a distribution of needs.

4 — Incumbents are disrupted and flounder

Incumbents improving along a trajectory of sustaining innovation

1

Customer needs

Performance

2 — Sustaining innovation overshoots customer needs

3 — Disruptive innovation to which incumbents have ability to respond

Time
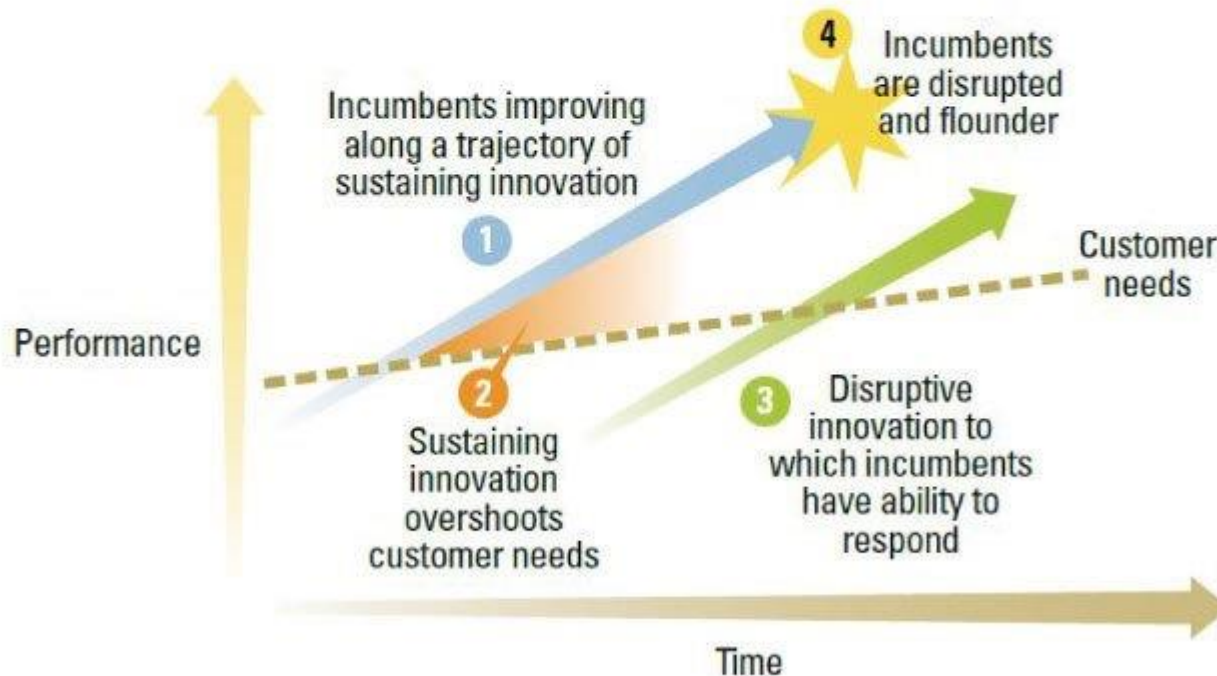
The threat of disruptive technologies

HOW WELL DO THE CASES MATCH THE THEORY?

This Venn diagram maps the 77 examples listed in *The Innovator's Dilemma* and *The Innovator's Solution* and shows the extent to which, in the opinion of industry experts, they exhibit each of four key elements of the theory. Using the industry experts' assessments, only seven of the cases (9%) exhibited all four elements of the theory.
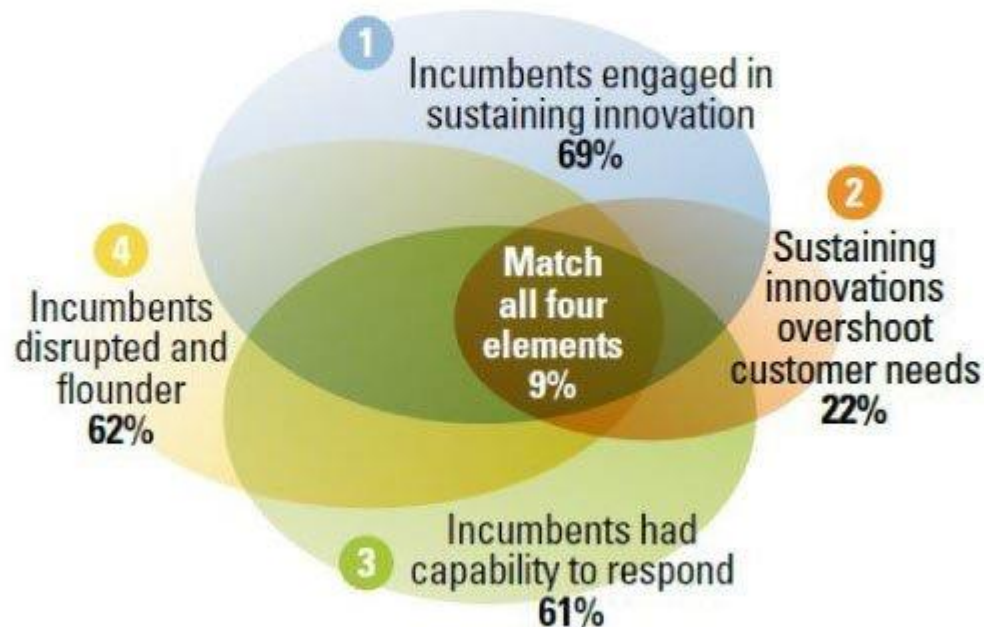
1 Incumbents engaged in sustaining innovation 69%

2 Sustaining innovations overshoot customer needs 22%

4 Incumbents disrupted and flounder 62%

Match all four elements 9%

3 Incumbents had capability to respond 61%

Technology cycles
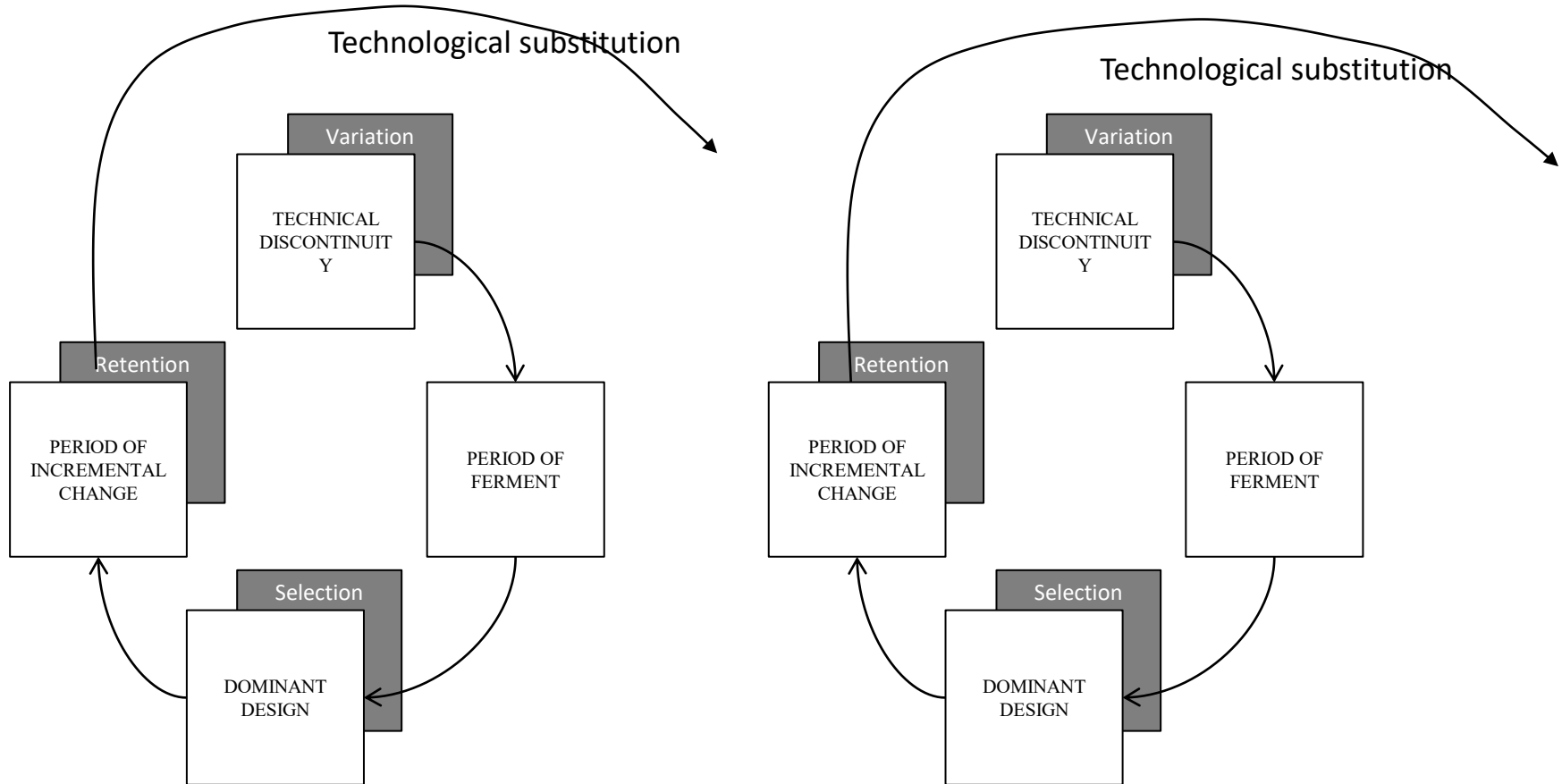
- As a result, technological change in a product class is characterised by long periods of incremental change punctuated by discontinuities (radical innovations)

… but sometimes disruptions are "big-bang"

by Larry Downes and Paul F. Nunes

BIG-BANG DISRUPTION

Big-Bang Disruption

- Disruptive technological innovations have traditionally started out cheap and simple, gradually improving in quality until they challenged incumbents (*Christenses, 1997*)

- New digital platforms such as the smartphone, however, are enabling innovations that offer customers both a better experience and a much lower price, right out of the gate. (Think of free mobile apps' superiority to dedicated GPS devices) (*Downes and Nunes, 2013*)

- These **"big-bang" disruptions** are often unplanned and unintentional. They do not follow conventional strategic paths or normal patterns of market adoption

- To survive them, incumbents need to develop new tools to detect radical change in the offing, new strategies to slow down disrupters, new ways to leverage existing assets in other markets, and a more diversified approach to investment

- To leverage them, startups should get the most out of their devastating features

Three key characteristics («devastating features») of Big-Bang Disruption

Market Penetration

Unconstrained Growth

Undisciplined Strategy

Unencumbered Development

BIG BANG DISRUPTION

TRADITIONAL TECHNOLOGY ADOPTION CURVE

Time
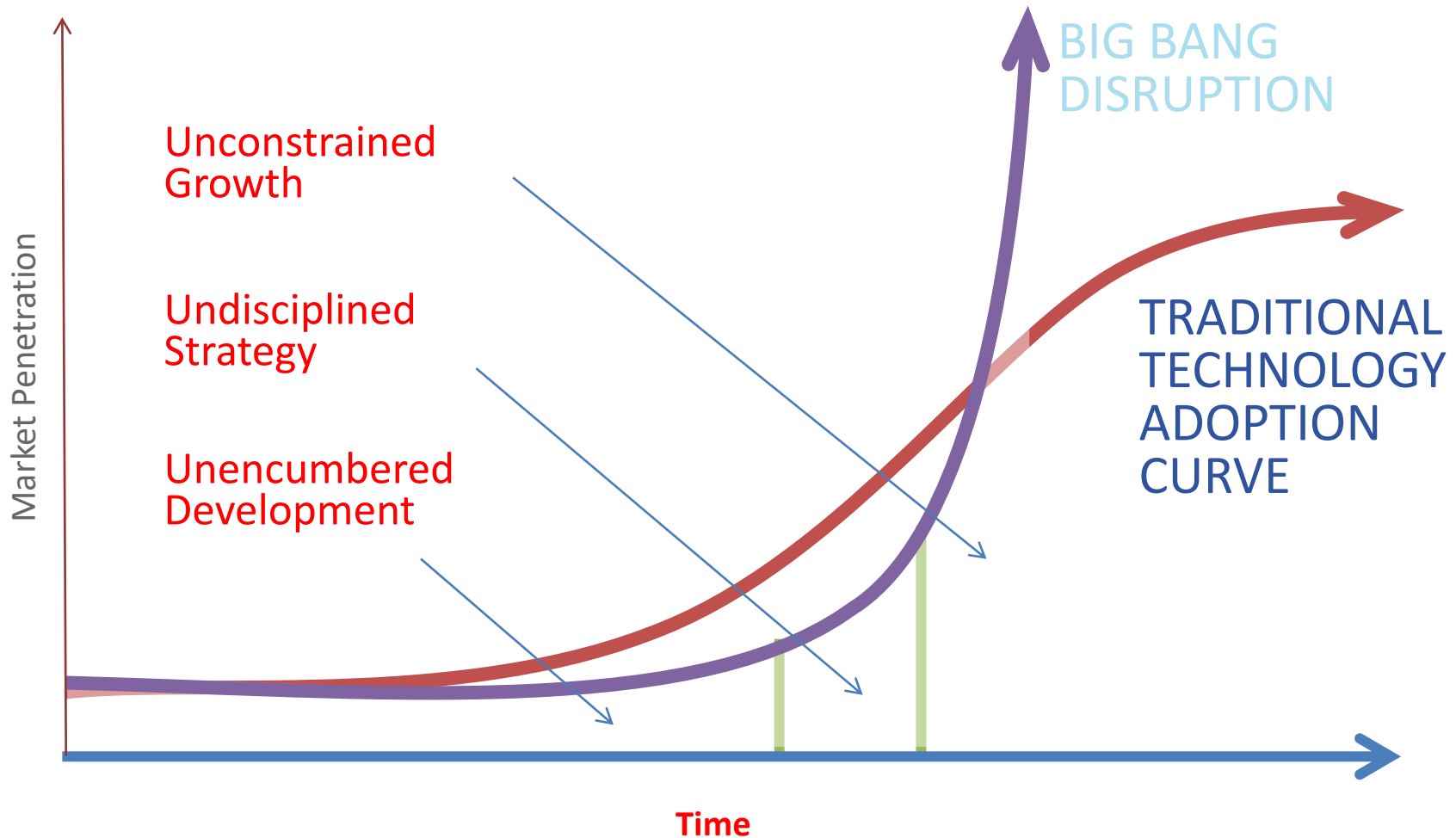
Big-Bang Disruption

Big Bang Disruption's *devastating features*

1. **Unencumbered development**

- Big-bang innovations are often born of rapid-fire, low-cost experiments on fast-maturing, ubiquitous technology platforms

- They don't need budget approval and aren't vetted before development begins

- These innovations are often built out of readily available components that cost little or are free

- Innovators and entrepreneurs can experiment with new applications at little risk to investors, abandoning prototypes that do not quickly prove popular

Big-Bang Disruption

Leverage the Big Bang Disruption's *devastating features*

2. Unconstrained growth

- Big-bang disruptions collapse the product life cycle

- Now there are only two segments: **trial users**, who often participate in product development, and **everyone else**

- The new product cycle can be simplified into three basic stages:
  1. development
  2. deployment
  3. replacement

- The innovators collectively get it wrong, wrong, wrong—and then unbelievably right.

- In today's hyperinformed world, each epic failure feeds consumer expectations for the potential of something dramatically better

Big-Bang Disruption

BIG-BANG MARKET SEGMENTS

TRIAL USERS

VAST MAJORITY

Traditional Technology Adoption vs. Big-Bang Disruption

Big-bang disruptions don't follow the usual pattern of customer adoption famously described by Everett Rogers. According to his model (shown in gray), new products sequentially gain popularity with five market segments. The big-bang model (shown in red) is taller and much more compressed: In it, new products are perfected with a few trial users and then are embraced quickly by the vast majority of the market.

INNOVATORS (2.5%)

EARLY ADOPTERS (13.5%)

EARLY MAJORITY (34%)

LATE MAJORITY (34%)

LAGGARDS (16%)

ROGERS'S MARKET SEGMENTS

Big-Bang Disruption

Leverage the Big Bang Disruption's *devastating features*

3. Undisciplined strategy

- Big-bang disrupters contradict much that you know about competitive strategy

- Big-bang disrupters are thoroughly undisciplined:
  - They start life with better performance at a lower price and greater customization. They compete with mainstream products on all three value disciplines (low cost; constant innovation; product customization) right from the start.

- How can better also be less costly?
  - The faster, cheaper, and smaller computing power (Moore's law) is now deployable on a global scale and delivered through the cloud to inexpensive mobile devices
  - Today's technology continually and dramatically reduces costs (parts and manufacturing, embedded technologies and intellectual property, and development costs), thus making it possible to sell new products and services more cheaply than the inferior alternatives they displace

Big-Bang Disruption

It is not «a phenomenon», but the result of some **MEGATRENDS**:

- Growth of the **«sharing economy»** model
- Growth of the **«product servitization»** model (use vs. ownership)

And...

- The **momentum growth of the «entrepreneurial» dynamic**

And...

- The **reduction** of creation cost
- The **reduction** of marketing cost
- The **reduction** of experimentation cost

... so, the Big-Bang disruption paradigm is here to stay.

DIGITAL STRATEGY

Antonio Ghezzi, Ph.D.

Business Strategy vs. IT Strategy vs. Digital Strategy

- Business Strategy, IT Strategy and Digital Strategy shall be related and aim at common goals (i.e. higher performance in terms of value creation and value capture), but have different meanings.

- A Business Strategy is an integrated, comprehensive and long-term plan that includes a consistent set of strategic decisions and is aimed at creating and sustaining competitive advantage in a business area, compared to competitors

Business Strategy vs. IT Strategy vs. Digital Strategy

- Concerning IT Strategy and Digital Strategy, boundaries become fuzzy and blurred.

- Although often used as synonyms and overlapping terms, IT Strategy and Digital Strategy are growingly diverging in the meaning associated to them and the approach they evoke and advocate for.

- "Everyone thinks they have a digital strategy these days. But while your company may have a business or IT strategy that incorporates digital technology, an IT strategy does not equal a digital strategy." (McDonald, 2012)

Business Strategy vs. IT Strategy vs. Digital Strategy

IT Strategy:

- The use of information technologies adopted by organizations as tools to boost productivity or lower operational costs .

- The broad strategic view was that IT strategy had to be aligned with the firm's business strategy (Henderson and Venkatraman, 1993).

- "IT Strategy is a technical answer to a business question: "How will IT help the business win?". It assumes the business strategy is set, then considers how to use IT to make that strategy successful. IT Strategy is usually conducted downstream of/ after business strategy" (Aron, 2013)

- "Most IT strategies treat technology in isolation. Your company may be working on a cloud strategy, social strategy, or mobile strategy." (McDonald, 2012)

Business Strategy vs. IT Strategy vs. Digital Strategy

From IT to "Digital Technology": a pragmatic definition

- Digital technologies can be viewed as the combination of:
    - Information
    - Computing (Hardware and Software)
    - Communication
    - Connectivity (protocols such as Internet and Mobile web)

    technologies which are fundamentally reshaping traditional business strategy as modular, distributed, cross functional, and global business processes that enable work to be carried out across boundaries of time, distance, and function (Bharadwaj et al., 2013)

Business Strategy vs. IT Strategy vs. Digital Strategy

From IT to "Digital Technology": what's new about digital?

- **Pervasive**. Digital technologies are so pervasive that they create a different everyday experience
- **Multi-purpose**. Digital technologies can be employed in a plethora of alternative environments with a vast range of applications
- **Customer-centric**. Digital technologies affect customers' touchpoints and journey to such an extent that they enable and call for a true customer centricity in a company's strategy
- **Value-relevant and transformational**. Digital technologies, if properly leveraged, can have a transformational and innovative impact on value propositions

Business Strategy vs. IT Strategy vs. Digital Strategy

Due to Digital's characteristics, today it is easier for managers and strategists to grasp and be aware of the strategic implications of such technologies at all level.

Digital Strategy cannot be confined to the IT Function anymore (as it happened to IT Strategy), but shall be formulated alongside Business Strategy, as it impacts all of its key steps.

As a result, rather than calling it Digital Strategy, we should refer to it as "**Digital Business Strategy**" (i.e. a Business Strategy which is inherently Digital in nature, aim and scope)

Business Strategy vs. IT Strategy vs. Digital Strategy

Digital Business Strategy:

- "Digital Business Strategy is a business answer to a digital question: "How should our business evolve to survive and thrive in an increasingly digital world?" It is not a separate strategy, but instead a lens on business strategy. All aspects of the business strategy should be informed by digital considerations." (Aron, 2013).

- "Digital Business Strategy is more than IT strategy since it is the extent to which a firm engages in any category of IT activity to create value." (Mithas et al., 2013)

- "Digital Business Strategy is a pattern of deliberate competitive actions undertaken by a firm as it competes by offering digitally enabled products or services." (Woodard et al., 2013)

- …

Business Strategy vs. IT Strategy vs. Digital Strategy

- "DBS is an organizational strategy formulated and executed by leveraging digital resources to create differential value." (Bharadwaj et al., 2013)

- "Digital is the application of information and technology to raise human performance. Human performance is the essence of digital transformation. Human performance creates the type of value that leads to revenue. Alternative goals for digital create efficiencies that largely drive down the cost of creating short-term benefits but drain the economy and growth." (McDonlad, 2015)

Business Strategy vs. IT Strategy vs. Digital Strategy
The essence of a Digital Strategy

- "Today's hottest customer-facing solutions rely on pervasive digital connections in which the individual technologies (cloud, near field communications, mobile, big data, etc.) merge to deliver an experience that looks and feels an awful lot like our natural behavior.

- In other words, the more connections between people, places, information, and things (aka digital density), the more customers can interact with companies and each other in a seamless and satisfying way.

- Digital strategies are not only about digital substitution (i.e. automating and substituting physical resources with digital transactions, thus only creating virtual copies of the real world which are commoditized and duplicable), but call for creating a digital edge, where digital information and physical resources combine in new ways to create value and revenue" (McDonald, 2012)

Business Strategy vs. IT Strategy vs. Digital Strategy
The essence of a Digital Strategy

- Enterprises seeking a digital edge transform processes, business models, and the customer experience by exploiting the pervasive digital connections between systems, people, places, and things.

- A digital edge is a performance edge, as it exploits a Digital Strategy merged with a Business Strategy to create competitive advantage (Digital Business Strategy).

- The essence of digital strategy is to deliver more because leaders think broadly about how digital technology creates value and revenue; and to think about how digital will combine to create new capability rather than replace old operations.

Digital Business Strategy: a new domain

DIGITAL BUSINESS STRATEGY DOMAIN

VISION/MISSION/OBJECTIVES

SWOT ANALYSIS

EXTERNAL ANALYSIS

INTERNAL ANALYSIS

STRATEGIC ALTERNATIVES
GENERATION, ASSESSMENT AND SELECTION

IT STRATEGY DOMAIN

STRATEGY
IMPLEMENTATION
(BUSINESS MODEL)

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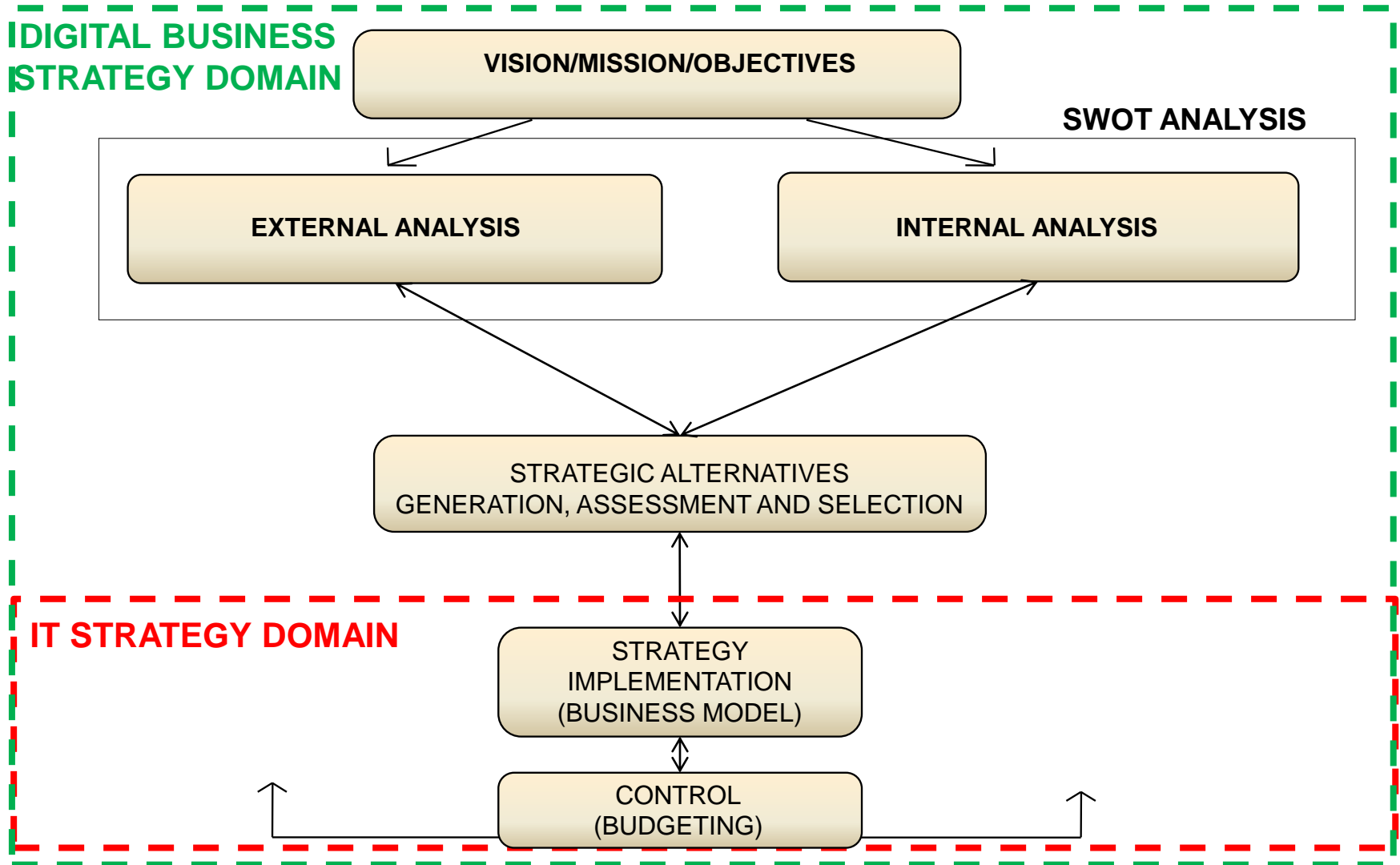
Business Strategy vs. IT Strategy vs. Digital Strategy

- To wrap it all up (with my take on the recent debate, keeping in mind the older "quarrel" about the strategic role of IT):

  - A Digital Strategy is a revamping of the IT Strategy in a world with a new context, new tools, new management and consumer awareness and a greater digital density.

  - Digital Strategy is what IT Strategy should have been if virtuously applied, but what it seldom delivered.

  - Alignment is not enough: Business Strategy and Digital Strategy co-creation and co-formulation and digital strategic renewal around the idea of the original combination of digital assets and capabilities as the new sources of competitive advantage are and will be key (Ghezzi, 2016)

Digital Transformation

Digital Transformation is the **organizational response** to the introduction of **Digital Innovations** within a company's boundaries, affecting organizational:

- **Culture and values** (e.g. corporate entrepreneurship, innovation, openness, trust, change, risk acceptance)
- **Structures** (e.g. new functions or units at macro-level);
- **Processes** (e.g. decision-making, hierarchy, span of control at meso-level)
- **Individual roles** (e.g. new job titles, new digital resources, competencies and skills)

Digital Transformation is the **enabler** for **Digital Business Strategy's implementation**

Saturday, December 2nd

Agenda

- Digital Strategy Models
- Multisided Platforms
- Teamwork
- Plenary Presentation(s)

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DIGITAL STRATEGY MODELS

Antonio Ghezzi, Ph.D.

A DBS-specific tool supporting SWOT and strategic alternatives generation: Strategy Palette

Strategy palette is a framework that helps firms in evaluating three dimensions of the environment where they operate: predictability, malleability and harshness.

○ PREDICTABILITY: can you forecast it?

○ MALLEABILITY: can you, either alone or in collaboration with others, shape it?

○ HARSHNESS: can you survive it?
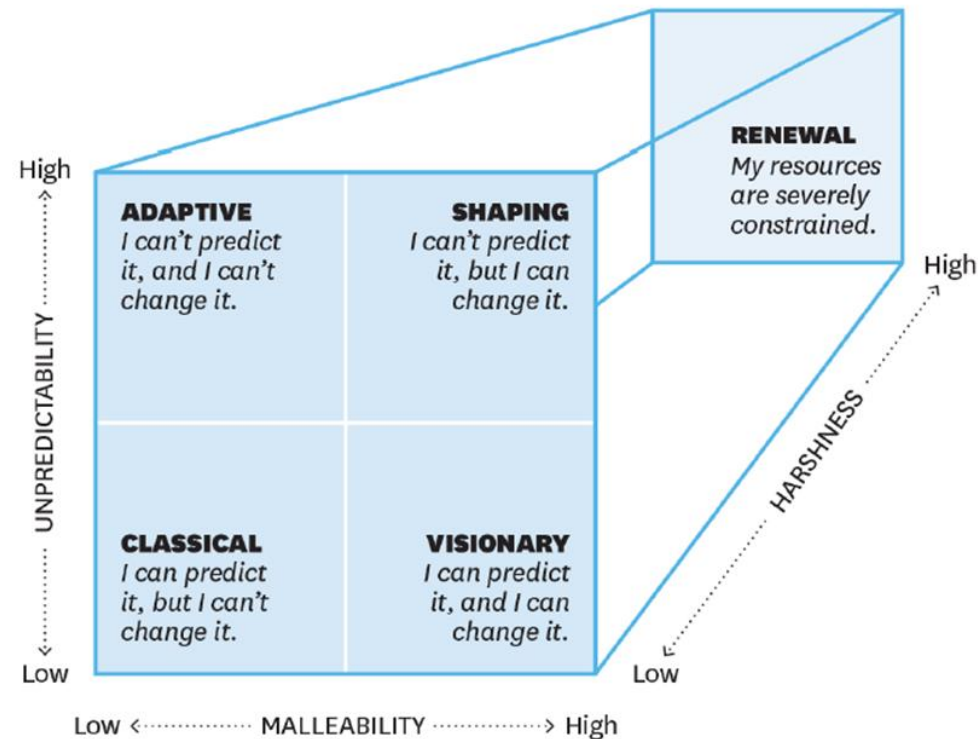
(Reeves, Haanaes and Sinha, 2015)

A DBS-specific tool supporting SWOT and strategic alternatives generation: Strategy Palette

- **Classical: Be big** (e.g. Mars)
  - low unpredictability, low malleability: I can predict it, but I can't change it

- To achieve winning positions, classical leaders employ the following thought flow:
  - they analyze the **basis of competitive advantage** and the **fit** between their **firm's capabilities** and the **market** and

  - They forecast how these will develop over time.

  - Then, they construct a **plan** to **build and sustain advantaged positions**, and, finally, they **execute it rigorously and efficiently.**

A DBS-specific tool supporting SWOT and strategic alternatives generation: Strategy Palette

- **Adaptive: Be fast** (e.g. Tata Consultancy Services)
  - high unpredictability, low malleability: I can't predict it, and I can't change it

- To be successful at strategy through **experimentation**, adaptive firms master three essential thinking steps:
  - they **continuously vary** their approach, generating a range of **strategic options to test**.

  - They carefully **select** the most successful ones to **scale up and exploit**.

  - And as the environment changes, the firms rapidly **iterate** on this evolutionary loop to ensure that they continuously **renew** their advantage.

A DBS-specific tool supporting SWOT and strategic alternatives generation: Strategy Palette

- **Visionary: Be first** (e.g. startups)
  - Low unpredictability, high malleability: I can predict it, and I can change it

- First, visionary leaders **envisage a valuable possibility that can be realized.**

- Then they work single-mindedly to be the **first to build it.**

- Finally, they **persist in executing and scaling the vision** until its full potential has been realized.

- In contrast to the analysis and planning of classical strategy and the iterative experimentation of adaptive strategy, the visionary approach is about imagination and realization and is essentially **creative.**

A DBS-specific tool supporting SWOT and strategic alternatives generation: Strategy Palette

- **Shaping: Be the orchestrator** (e.g. Amazon, Alibaba)
  - High unpredictability, high malleability: I can't predict it, but I can change it

- Firms **engage** other stakeholders to **create a shared vision** of the future at the right point in time.

- They **build a platform** through which they can **orchestrate collaboration** and then evolve that platform and its associated stakeholder ecosystem by scaling it and maintaining its flexibility and diversity.

- Shaping strategies are very different from classical, adaptive, or visionary strategies - they concern **ecosystems** rather than individual enterprises and rely **as much on collaboration as on competition**.

A DBS-specific tool supporting SWOT and strategic alternatives generation: Strategy Palette

- **Renewal: Be viable.** External circumstances are so **challenging** that your current way of doing business cannot be sustained. (High harshness: my resources are severely constrained)
    - A company must first **recognize and react to the deteriorating environment** as early as possible.
    - Then, it needs to act decisively to **restore its viability** - *economizing by refocusing the business, cutting costs, and preserving capital, while also freeing up resources to fund the next part of the renewal journey*.
    - Finally, the firm must **pivot** <u>to one of the four other approaches to strategy to ensure that it can grow and thrive again</u>.
- The renewal approach differs markedly from the other four approaches to strategy: it is usually **initially defensive**, it involves two distinct phases, and it is a **prelude** to adopting one of the other approaches to strategy.

NEW BUSINESS MODELS: MULTISIDED PLATFORMS

Antonio Ghezzi, Ph.D.

Multisided Platforms Business Models: main elements

1. *Definitions*

2. *Examples*

3. *Network effects*

4. *Subsidy-side and Money-side*

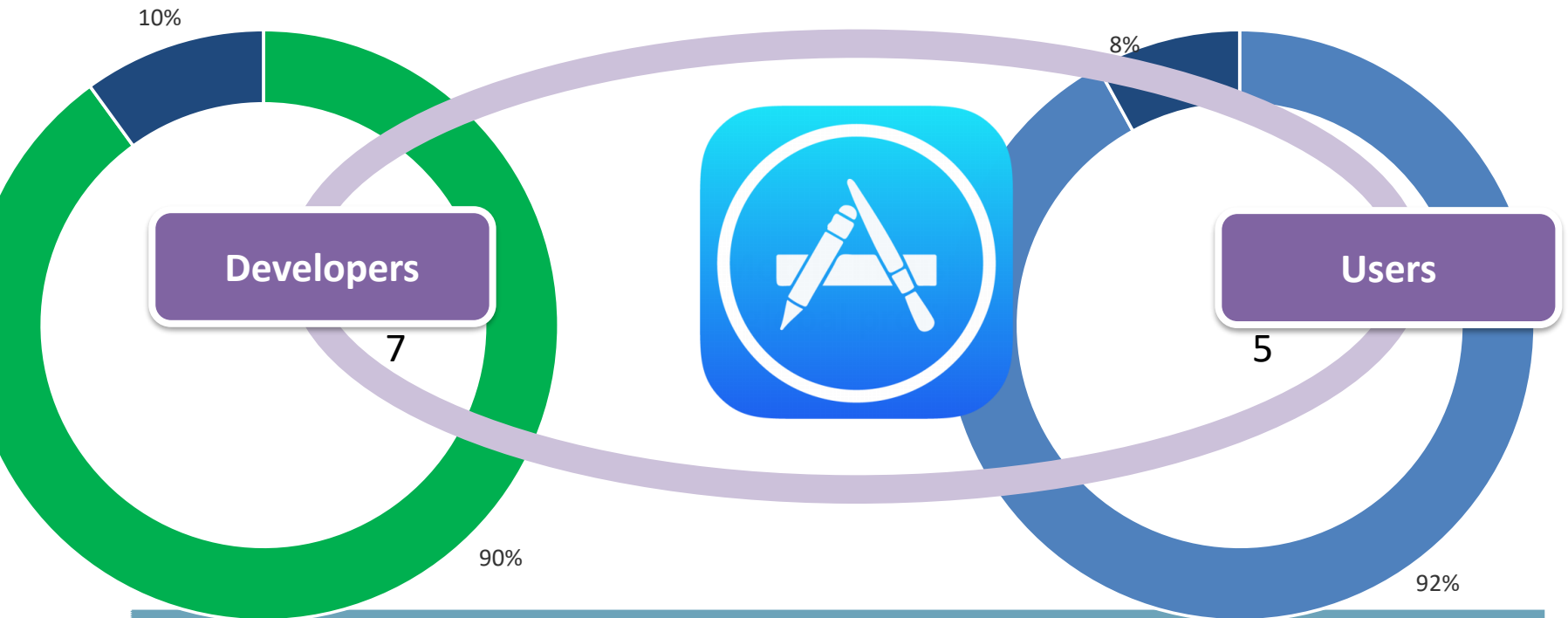5. *Critical issues*

6. *Ignition strategies and tactics*

Setting the case for multisided platforms

In the last 15 years, multi-sided platforms have:

- Become some of the largest and fastest-growing businesses

- Reduced several market frictions

- Challenged many industries

- Overran the incumbents in many cases

10%

8%

Developers

Users

7

5

90%

92%

Definitions

*"A platform provides the **infrastructure and rules** for a **marketplace** that brings together **producers and consumers**"* (Van Alstyne et al., 2016).

*"**Multisided platforms** are **technologies, products and services** that create value primarily by **enabling direct interactions between two or more customer or participant groups**"* (Hagiu, 2013).

*"**They** [Multi-sided platforms] enable direct interactions between two or more distinct sides. Each side is **affiliated to the platform**"* (Hagiu and Wright, 2015).

*"Platforms are **matchmakers** of sorts, although the matchers are often not one-to-one. But like matchmakers, they **discover a need for**, and then **facilitate, consumer coordination**"* (Wu, 2013).

*"They are called platforms because they usually **operate a physical or virtual place** that helps the **different customers get together**. Their efforts are aimed at **reducing a market friction**. Such a reduction is a **necessary but not sufficient condition** for a multi-sided platform to succeed"* (Evans & Schmalensee, 2016).

Definitions

Multi-sided platforms create huge value by:

- **Reducing search costs**

  Airbnb provides advanced search functionalities based on the desirable characteristics;

- **Reducing transaction costs**

  eBay allows payments performed by Paypal;

- **Reducing product development costs**

  Wikipedia provides editors with tools for collaboration; Sony provides game   developers with development kits and application programming interfaces.

Examples: traditional businesses

Merchants

Consumers

Readers

Advertisers

Examples: new businesses

Passengers

UBER

Drivers

House Owners

airbnb

Travellers

Examples: more than two sided
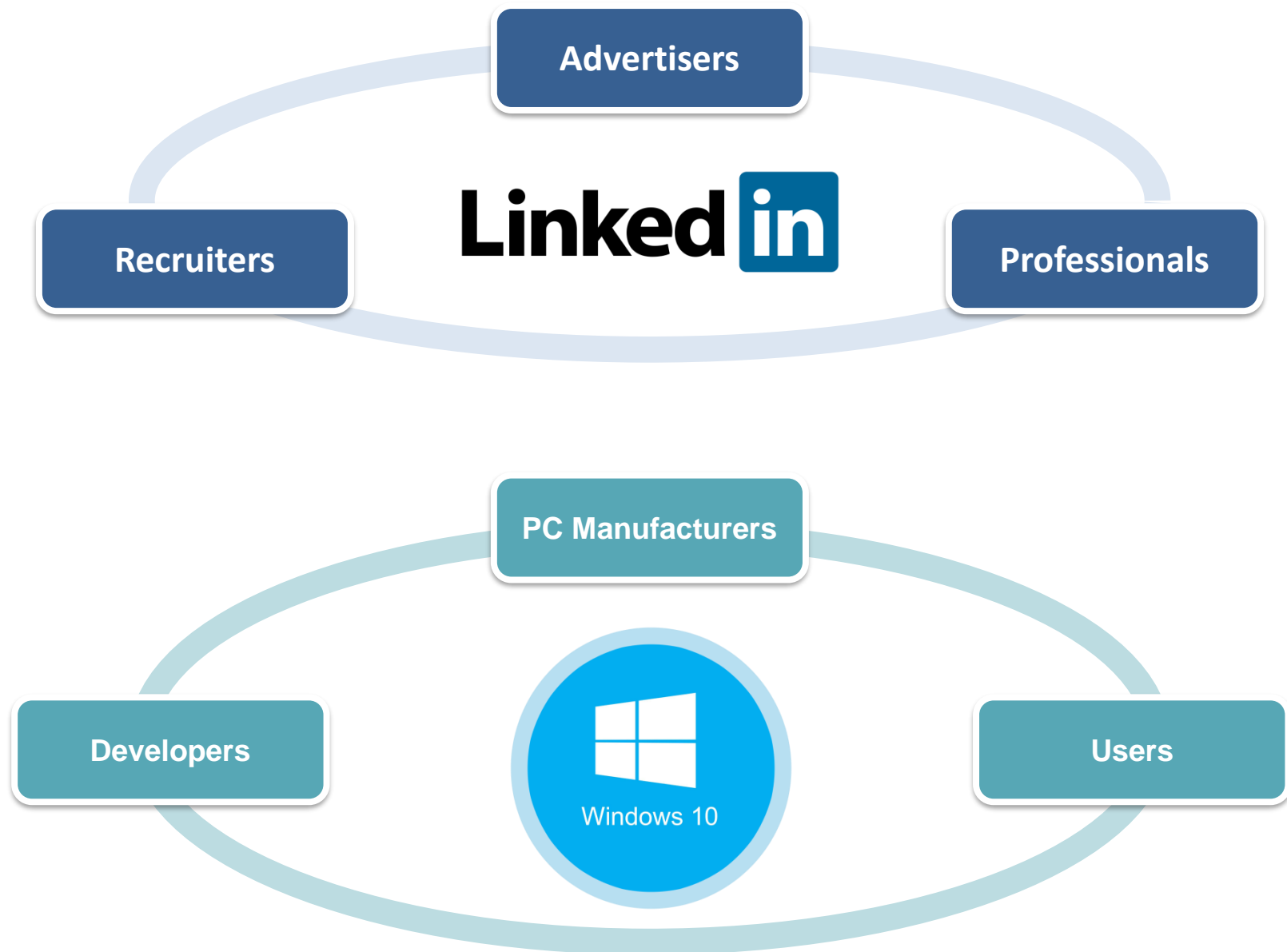
Network effects

I. Same-side network effects

Network effects affect the same customer group they originate from.
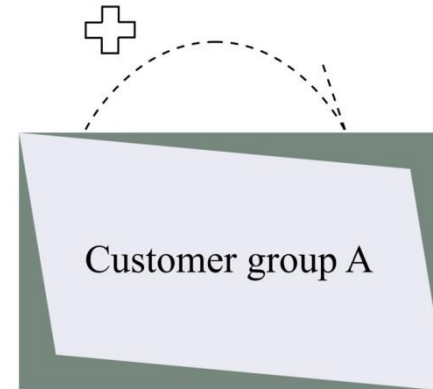
Customer group A

II. Cross-side network effects

Network effects affect a different customer group from the one they originate from.

Customer group A

Customer group B
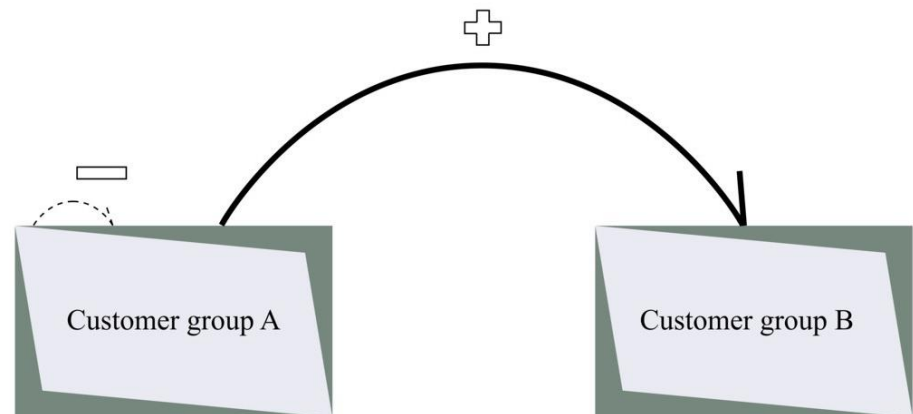
Network effects: the eBay case

More sellers boost the platform traffic, making joining eBay more attractive for other sellers

More sellers attract more buyers due to the increased supply

More buyers make the platform better due to more feedbacks, reviews, etc.

Sellers

Buyers

More sellers create more competition

More buyers attract more sellers due to the increased demand
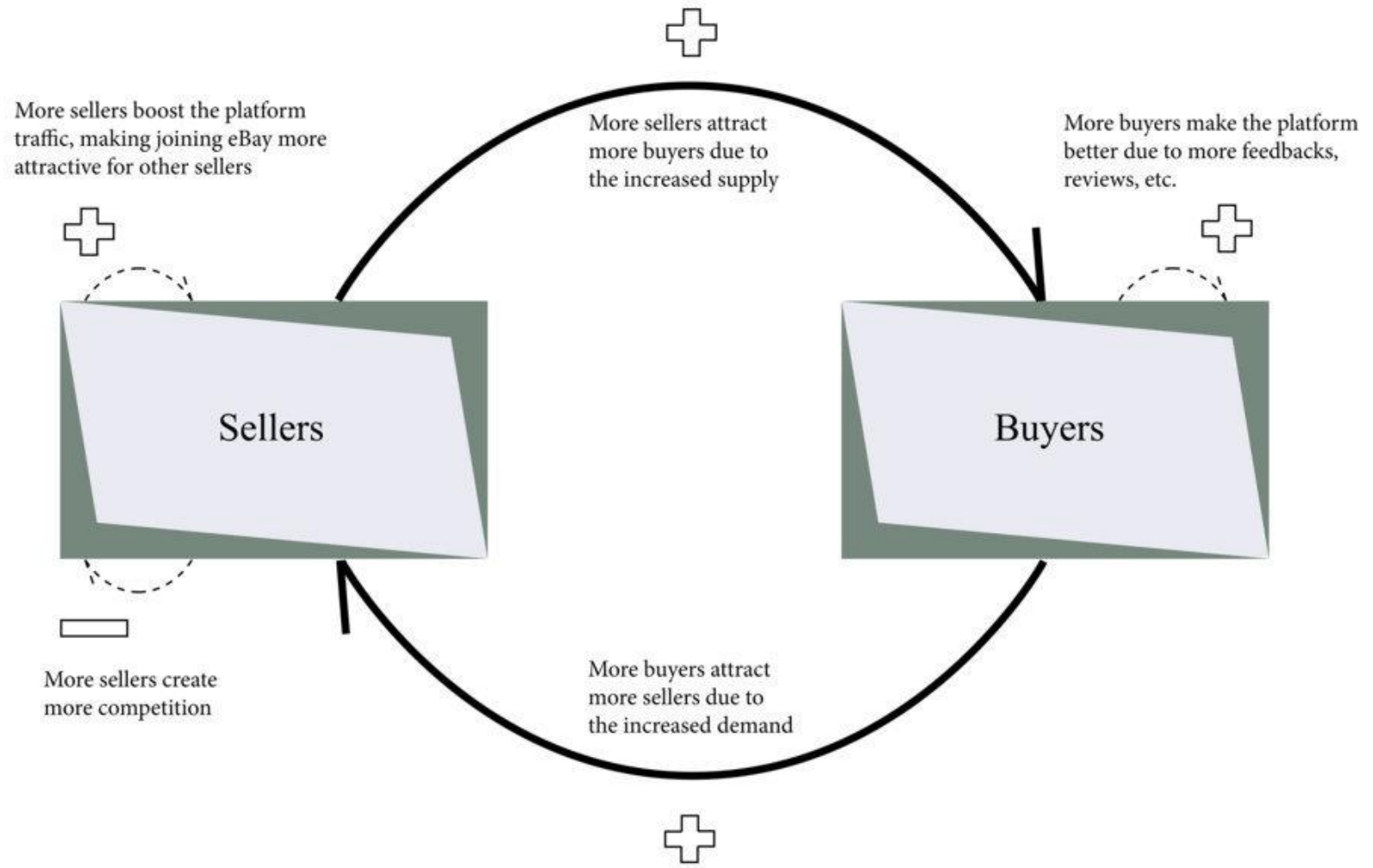
Network effects: social networks

CROSS SIDE ➕
More users attracts more advertisers

SAME SIDE ➕
More users makes the product better, attracting more people

SAME SIDE ▬
Increased competition makes network less attractive to advertisers

CROSS SIDE ▬
More advertisers repels more users
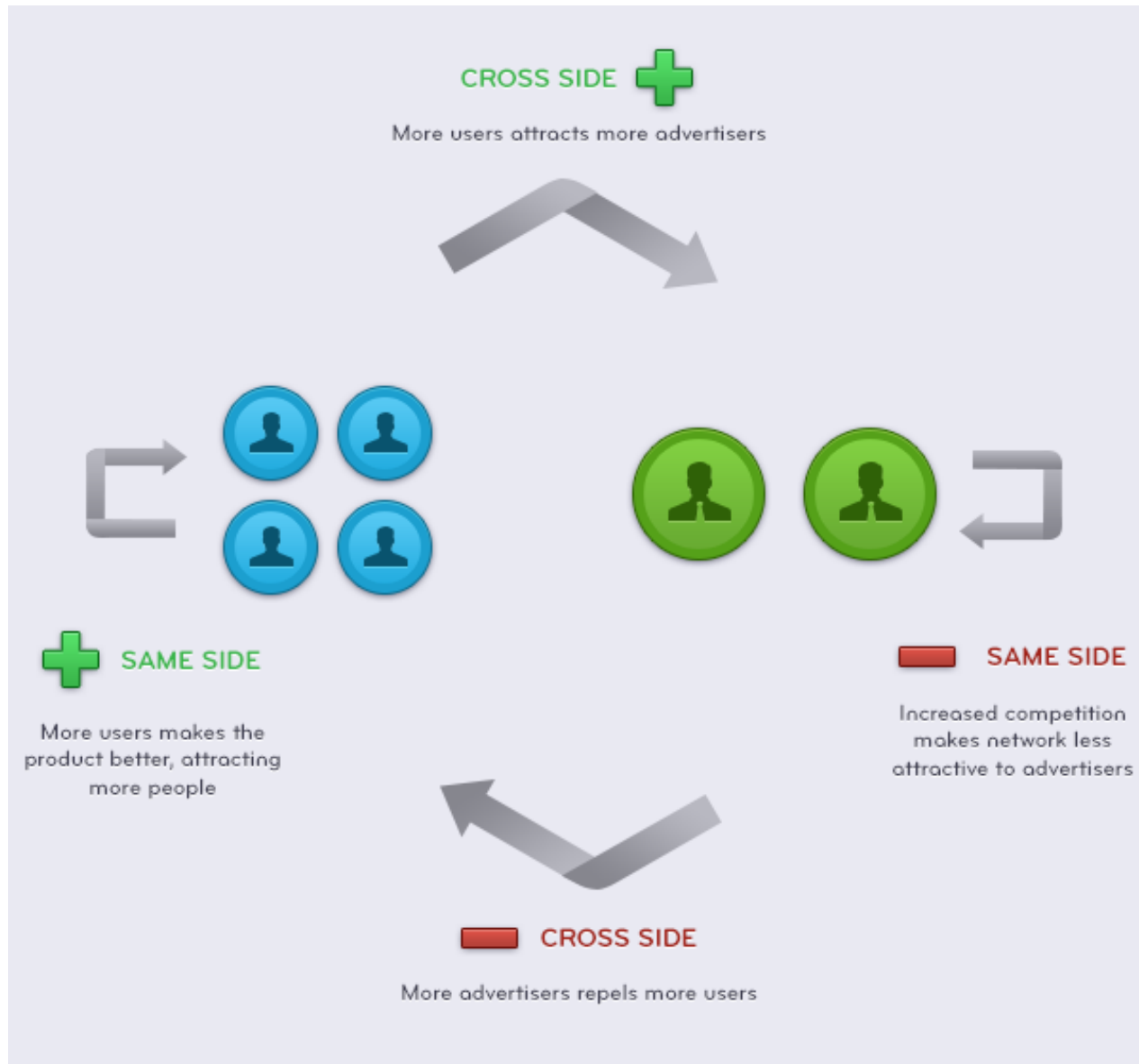
Network effects: possible causes (1/2)

Cause	Description	Example	Nature
Information provision	Each user or customer can provide information that could be useful for other users or customers.	Reviews on TripAdvisor or Amazon, which are provided by users and buyers, drive the future choices of other users and buyers.	The network effects so generated may be either positive or negative, due to the quality of the information provided. When it is truthful, the network effects created are positive; when it is misleading, negative effects originate.
Competition	When transactions are performed between two customer groups, each additional customer in one group represents an additional competitor for customers of that group.	More sellers on eBay mean more competition on that side.	Negative for the customer group that exhibits the effect, while it may be positive for the customer group which perform the transactions with that group and that can benefit from price battles and so on.
Volume/traffic	In some cases, the traffic and volumes generated by more customers can affect the company's offering in ways that do not involve higher probabilities of matching and so on. Instead, fashion and trends of the moment can be the reasons.	Social networks are good examples: when snapchat faced its disruptive growth in terms of user, it became the trend of the moment. Each new user enforced this attractive power related to the trend.	As trends and fashions, this kind of network effects are positive when the trend of the moment is favorable, negative when it changes.
Higher probability of finding a counterpart for a transaction	When customer groups perform transactions between them, the wider the other customer base is, the higher the probability of finding a counterpart to perform the transaction with. It can be exhibited also inside the same customer group in case transactions are performed within it.	More Amazon buyers mean more demand to satisfy for independent sellers that use the Amazon marketplace to sell their products.	Network effects are positive, but they usually come along with network effects related to good behavior, misbehavior and content quality, due to the "social" component of dealing with another customer.

Network effects: possible causes (2/2)

Cause	Description	Example	Nature
Higher probability of finding a counterpart for enjoying the company's offering	When the company's offering has to, or it may, be experienced and enjoyed with other customers, an increased customer base enhances the probability of matching.	More online FIFA players mean a higher probability of finding another player online to play with.	Network effects so generated are usually positive, but they come along with network effects related to good behavior and misbehavior of customers, due to the social experience.
Good behavior and misbehavior	When transactions and interactions exist between customers, positive behaviors and misbehaviors can improve or undermine the company's offering.	In case of frequent misbehaviors by Uber drivers, potential passengers are likely to prefer a taxi rather than Uber.	Positive in case of good behaviors, negative in case of misbehaviors.
Content provision	When transactions exist between customers or in case each user or customer can provide content that could be useful for other users or customers, the company's offering can be affected by this content.	The apps available on the App Store are an example of content provided by a customer group (developers, who are a customer group of Apple).	The network effects so generated may be either positive or negative, due to the quality of the content provided. High quality implies positive effects, while poor quality implies negative ones. The precision of firm controls on the content added by third parties is determinant.
Passion/sense of community	Each customer hopes for the diffusion of it, trying to convince other people to become customers or to join the platform. It is a typical effect when the company's offering concerns an hobby.	Close-knit Xbox players try to persuade other people to buy the console produced by Microsoft, instead of Playstation, for example. Each acquired player is an additional source of customer attraction due to her/his tries of conviction.	It usually generates positive network effects. However, in case the customers feel betrayed by the firm as concerns their passion, the consequent negative network effects would be strong.

Pricing structure

The existence of network effects strongly affects the decision about pricing: serving multiple types of customers, multi-sided platforms have potentially **multiple revenues sources**.

For a multi-sided platform, **subsidizing** certain users can be essential. **The choice of which side subsidize and for how long represents an important strategic issue**.

In a two-sided market, a common situation implies a subsidy-side and a money-side:
- The **subsidy-side** is charged less than it would be in an independent market, charged nothing or is given rewards to participate in order to reach high volumes and make more valuable the platform for the other side;
- The **money-side** is charged more than it would be in an independent market.

MONEY-SIDE

SUBSIDY-SIDE

Writers

Adobe Acrobat™

Readers

Pricing structure

SUBSIDY-SIDE   **MONEY-SIDE**

Readers   Il Sole 24 ORE   Advertisers

Sometimes a **side is subsidized only in the start-up phase** in order to **build critical mass**, sometimes it is charged free, or "negative" prices are **permanently applied**, in order to maximize profits thanks to the monetization of the other side influenced by network effects.

Generally, the **more price sensitive side is subsidized**, while the side that **increases mores strongly its demand as the other side volume grows is charged**. The objective is to **attract enough participants on the money-side** in order to get huge revenues on the money side, which will be inclined to pay handsomely to access to the high volumes on the subsidy-side.

Pricing structure

- The choice of which side subsidize should not be influenced only by the sensitivity to price. As a matter of fact, relevant information is provided by the **sensitivity to quality**, too. **Charging the side that must supply quality**, and not the side that demands quality as in traditional theories, **allows the platform to exclude participants that bring low quality products to the platform**.

- The **video-game industry** relies on **strict licensing** terms and a **high royalty charged to game developers by platform providers** (i.e. Sony, Nintendo, Microsoft). Game developers need to reach high volume sales in order to cover the huge fixed costs and the royalty imposed, so they first need to be assured that **the console has a large user base**, and then they are forced to produce **games of good quality**, because products of marginal quality would not be able to generate enough margin.

- A traditional business unlikely finds any reason for selling its products and services for a price that does not **overcome**, or **at least cover**, the **costs of supplying an additional unit**: it is a cardinal rule. However, **traditional paradigms lose validity in this context**. **Subsidy-side**, indeed, could be **charged at a price below marginal cost**.

Pricing structure: pipeline vs platform

- In a context of classical competition, firm's advantage is built on the **control of scarce and valuable resources**. However, when we move from a **pipeline to a platform**, we face a **shift from resource control to resource orchestration**. While pipeline's assets can be tangible, as mines, and intangible, as intellectual property, the **platform key asset is the network between producers and consumers**, or, more in general, between the sides. The inimitable assets are the **community** and the **resources of members**. These can be both **tangible**, as **cars** for Uber users or **rooms** for Airbnb users, and **intangible**, such as **ideas or information**.

- Another key step is **from internal optimization to external interaction**. Pipelines aim at maximizing the value created along the internal value chain. On the other hand, platform's value depends on enabled interactions between producers and consumers. **Participants persuasion** and **ecosystem governance** become the **key skills** for building a successful platform.

- The last of the three fundamental changes that distinguish platforms from pipelines regards the **focus on value**. **Pipelines aim at the maximization of the customer value, while platforms focus on the value of the ecosystem**, that is expanded circularly and iteratively, paying huge attention to feedbacks.

Governance

- For a platform, resources and ideas sharing by sides are fundamental, as well as the valuable intellectual property that outsiders can bring to the platform.

- Because of it, an **effective governance** is needed: **rules, procedures and policies** adopted in terms of **accessibility** and **customer experience** strongly affect **network effects functioning** and their **exploitation**.

- A good example of **governance limiting negative network effects** is provided by Facebook, which bans users responsible for misbehaviors as racist comments and pornographic content upload. The most famous social network adopts a **banning system** to limit negative network effects deriving from such a conduct.

- Other platforms may adopt a **penalty system** to pursue the same objective. Airbnb fines users who damage rented residences they stay in and refunds damaged renters, safeguarding its upright platform users. Other kinds of policies may be adopted to **boost positive effects**, such as **inciting customer reviews** in cases like TripAdvisor and Amazon.

Governance

- Even if platforms usually **started with a closed architecture and a closed governance**, then, once types of interactions and sources of value have been increased, a shift to an **open approach** may be made in order to exploit the related advantages.

- Indeed, an **open architecture** provides users with the access to platform resources and the related possibility of creating new value sources. **Open governance** implies the **sharing of the possibility of shaping trade rules and rewards division**, otherwise in the hands of the platform's owner.

- However, an **appropriate coordination** between the **architecture openness** and a **reward system** is required to gain the related advantages.

- If the platform has an **open architecture without sharing rewards**, the potential participants have the **ability to join the platform** (due to the open architecture) but not the **incentives** (due to the absence of a reward sharing system).

- On the other hand, potential participants would have the **incentives to join the platform**, but not the **ability**, in case of **open rules and rewards and a closed architecture**.

Governance

- A particular policy of "**without-permission innovation**" can be adopted by platforms to foster value creation by participants. No approval is required for participants to invent things for the platform, but there is a guarantee that the value created will be shared in the platform.

- However, there is a **downside** to openness. Unlimited and unregulated access can destroy value instead. As a matter of fact, interactions may be inhibited in case of "**noise**" spreading. The term refers to misbehavior, excess and low-quality content.

- So, governance rules imply a **trade-off** between **quality and quantity**, determined by their tightness. Cross-side network effects are not strengthened only by the number of interactions, but the quality influences them, too. **Tighter governance rules** imply higher quality, but also higher costs, that can be technological such as security chips for videogame consoles, or operational as the analysis of the participant profiles.

- **Governance rules enhancement can be outsourced to users in some cases**, as rating systems for buyers and sellers used by eBay and Airbnb.

Governance

There are three potential sources of **market failures** which suggest the implementation of **tighter governance rules** that would address the specific source:

1. A multi-sided platform may face "**lemon market failure**" (market break-down enabled by low-quality suppliers that drive out high-quality ones) when there is **not enough information and transparency** about the **quality** of the objects, goods and/or services involved in platform interactions;

2. Platform participants may reduce investments and efforts in the development of high-quality products and services in case of **excessive competition** on their side of the platform. A solution is represented by a **restriction of entries** and **license concessions** to a certain number of producers, in order to guarantee them appropriate returns on investments;

3. Actions and investments made by participants may not have positive **spillover effects** for the platform and the sides, in case of absence of strict governance rules.

Governance

- Governance rules can be modified along the **platform lifecycle**.

- As the literature suggests, a **decentralized governance**, characterized by low control and unrestricted accessibility, may be useful in the **start-up phase** of platforms, guaranteeing a more **rapid user growth**.

- In **maturity stages**, a **centralized governance** based on restrictions and limited accessibility may guarantee **higher quality levels** of interactions, enabling stronger network effects.

Critical issues: antitrust

The possibility of building a dominant multi-sided platform and then exploiting the reached **dominant position** makes multi-sided models of **interest to antitrust authorities.**

In particular, multi-sided models are characterized by **four main distinctive elements** that attract the attention of antitrust analyses:

1. Prices charged on different sides do not reflect costs or demand in the respective side;

2. It is not possible to consider the prices charged on each side in separate ways;

3. Multi-sided platforms need to get on board all the sides in order to survive;

4. Social welfare analysis must account for pricing (e.g. "gig economy" resulting from platformization of economy).

Critical issues: metrics

- Traditional businesses performances are measured through a narrow set of metrics that provides insight to firm's management about the health of the business. Multi-sided platforms, on the other hand, require to pay attention on **a wider set of metrics**, due to the necessity of monitoring the **backbone of the platform**: **interactions** and **network effects**.

- When a user tries to find a match through the platform without finding it, network effects are negatively affected and, probably, negative feedback is generated: management needs to monitor the **interaction failure rate** in order to avoid irreversible damages to the platform.

- Another metrics to track are the **engagement** and the **match quality**. The first one comprehends the **tracking of users that enhance network effects performing value-adding activities**. The second one refers to the **impact (negative or positive) that the quality and rightness of matches have on network effects**.

- **Negative network effects** should be continuously and meticulously monitored, and governance tools and actions promptly implemented to solve the related problems. **Misbehavior** and **congestion** are some examples of factors that negatively affect participation. Privileges withholding and user banishing are possible solution to take into consideration in these cases.

Critical issues: chicken & egg dilemma

- Network effects make multi-sided platforms highly defensible due to the additional strength acquired by the platform for each new user.
- However, there is a **downside**: without one side you will not attract the other one, and vice versa.
- It is defined as the **chicken and egg dilemma** because of its paradoxical condition: *you need customers on one side to attract customers on the other side, but at the same time you need customers on the other side to please customers on the first side*.
- When the platform enables transactions between buyers on one side and sellers on the other side, it needs both of them: the problem is related to the fact that the platform cannot attract buyers if sellers do not join, and vice versa. The platform's value for a customer on the side A is proportionate to the customers on the side B, and vice versa.
- A specific credit card is not attractive for merchants if there are few users using it: no side will join the platform without the other (or others in some cases). It is a key difficulty in the establishment of a two-sided platform that deserves particular attention.

Ignition strategies and tactics

Marquee customers

- Customer relationships should not focus only the most profitable customers or most important ones, but a particular attention should be paid to the ones who enable the **strongest cross-side positive network effects**, too.

- To do so, it is essential to understand who these customers are and if some **marquee customers** exist and who they are.

- An example is provided by **shopping malls**, which sign up the stores that are likely to attract lots of people early on. Doing so, smaller retailers are persuaded to rent space at the mall, knowing that they will be able to exploit the traffic generated by the marquee shops.

Ignition strategies and tactics

Ecosystem seeding

facebook

Due to the chicken and egg dilemma, it might be convenient for a platform to start from a **market niche**. It allows to concentrate on defined customers, with delimited requests and needs.

How narrow should the niche be? The more the platform decides to keep it narrow, the smaller its market becomes. However, there are some advantages coming from a narrower target: the platform has the capability to address better and more specifically the customer preferences, and a smaller market niche makes easier the achievement of a critical mass.

Consequently, the platform may decide to enlarge the target, enabled also by the strength of the user volumes already attached to the platform. The approach is called "**ecosystem seeding**": starting with a subset of the target customers sufficient to get the platform going. That **subset** is called "**seed**", and it is chosen wisely, with the objective of making revenues soon, limiting the risk for investors. Clearly, **the choice of the seed is crucial**; nevertheless, the final aim is the growth of the platform's value, in terms of customers and functions or applications.

Ignition strategies and tactics

Zig-zag strategy

- In case of positive cross-side network effects, a "**zig-zag strategy**" could be a good option for the platform. **It continuously shifts its focus from one side to the other, trying to attract critical mass in all of them**.

- An example of "zig-zag strategy" is provided by YouTube. The American video-sharing website pushed participation on both sides, fostering with several strategies views and videos upload in an alternating way. When sides provide themselves a content that enriched the platform's offering, or they perform interactions and/or transactions, it may be fundamental to build critical mass in more than one of them simultaneously. YouTube needed to get on board viewers and video content providers at the same time, as both groups need each other to enjoy the company's offering.

Ignition strategies and tactics

Two-step strategy

- When the platform concentrates its efforts on attracting customers on one side, generating the positive cross-side network effects and, then, the efforts are focused on the side supported by those network effects, a so called "**two-step strategy**" is carried out.

- An example is represented by social networks. The first step is a total focus on user attraction and registrations; consequently, advertising space is sold high prices in case a large user base is reached.

- Another example is given by cashback-based platforms. In order to boost a shopping community based on referral and cashback on transactions, the companies side should be built and made pervasive as well as well populated. Such appealing network of offline and online companies will hence attract a wide customer base.

Ignition strategies and tactics

Commitment strategy

SONY

- Sometimes customers of one firm's business model have to make a **significant investment** to receive the company's offering and to take advantage of positive cross-side network effects. In these cases, the firm should **prove** to these customers that there will be a **large customer base** on the business model from which the network effects originate. This **commitment strategy** is totally based on the **capability of the firm to assure that promised customer base**, for instance by specific partnerships or a favorable pricing structure in that business model.

- An example is provided by Sony Computer Entertainment: it designed **PlayStation 4** few years ago. When the console was launched, the firm **persuaded customers** to invest several hundreds of dollars buying the PlayStation 4 thanks to a **strong marketing campaign about future videogames**, that Sony would directly developed, and an **exclusive partnership** with Spotify.

Lavori di Gruppo

Dividendosi in team (max 10 persone per team), scegliere un'impresa:

IMPRESA ESISTENTE

1. **Svilupparne il Business Model Canvas in questo momento;**
2. **In questo momento, l'impresa sta utilizzando la tecnologia con un approccio di IT Strategy o di Digital Strategy? Perchè?**
3. **Utilizzando la Strategy Palette, dove posizionereste l'impresa? Perchè?**
4. **In che modo l'impresa potrebbe passare da IT a Digital Strategy (oppure ulteriormente rafforzare la sua posizione di Digital Strategy)? Portare un esempio di progetto di trasformazione digitale che implementereste.**
5. **Sviluppare il Business Model Canvas a seguito del punto precedente, evidenziando e discutendo le differenze rispetto a quello iniziale.**

STARTUP A PIATTAFORMA

1. **Individuare la Market Friction che la nuova piattaforma andrebbe a risolvere;**
2. **Quali sono le side di client che connette?**
3. **In termini di pricing, quale sarebbe il subsidy-side e quale il money-side? Perchè?**
4. **Quali sono gli effetti di rete (network effect) che coinvolgono i diversi side della piattaforma?**
5. **Che tipo di governance adottereste nella fase di iniziale della piattaforma?**
6. **Quale sarebbe l'ignition strategy che mettereste in atto al lancio? Perché?**

INNOVAZIONE E TRASFORMAZIONE DIGITALE NELLE PMI: CASI

Antonio Ghezzi, Ph.D.
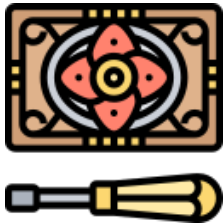
Un'azienda storica fiorentina, fondata nel 1941, che realizza prodotti in legno di design *(Piccola impresa)*

La necessità	Certificare gli elementi di arredo sia dal punto di vista dei materiali utilizzati sia in merito all'utilizzabilità del prodotto
La soluzione	L'impresa si è avvalsa di un supporto esterno per sviluppare servizio basato sull'utilizzo di codici univoci e di chip elettronici anticontraffazione registrati su di un'infrastruttura informatica di blockchain
I benefici	Miglioramento della reputazione e del posizionamento di mercato attraverso la garanzia originalità, qualità e sicurezza dei prodotti. La trasparenza sui materiali impiegati e sul ciclo di vita dei prodotti è cruciale ad esempio per collezioni di arredi particolari come quella dedicate ai bambini

Fonte: sintesi dell'Osservatorio da censimento di fonti secondarie pubbliche

Un'azienda di ceramiche della tradizione vietrese, prevalentemente B2b, che unisce tradizione, ricerca e innovazione *(Piccola impresa)*

La necessità

Valorizzare l'artigianalità del prodotto creando un'esperienza immersiva per il cliente

La soluzione

Tramite il supporto di un ente territoriale appartenente al circuito dei punti impresa digitale, l'azienda si è dotata di una tecnologia di realtà virtuale, che permette di portare «i processi aziendali» all'interno dello showroom

I benefici

Tramite l'esperienza immersiva il cliente può comprendere la storia dietro il prodotto (dall'origine delle materie prime, fasi di preparazione, smaltatura, impasti, composizione).

Fonte: sintesi dell'Osservatorio da censimento di fonti secondarie pubbliche

Un tarallificio a produzione artigianale che opera sul prodotto dalla fase di impasto a quella di confezionamento *(Piccola impresa)*

La necessità

Rendere un processo di produzione artigianale efficiente senza perdere l'elemento di autenticità della lavorazione.

La soluzione

Implementazione di un progetto di IoT applicato a un processo standard di produzione di taralli, creando un gemello digitale. Grazie a questa soluzione, è possibile prevedere le azioni da svolgere in presenza di problemi di qualità o processo.

I benefici

Semplificazione dell'intero processo produttivo; riduzione di difformità e anomalie produttive che possono essere riscontrate con frequenza in un processo di lavorazione artigianale; riduzione degli scarti di produzione.

Fonte: sintesi dell'Osservatorio da censimento di fonti secondarie pubbliche
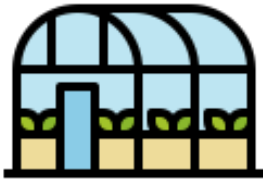
	Una cooperativa di piccolo produttori agricoli agricoli ha dato vita ad un progetto legato a serre 4.0. (Piccola impresa)
La necessità	L'idea alla base del progetto è quella di trasferire le conoscenze individuali degli agronomi, monitorando i parametri più importanti per una pianta sotto la serra attraverso dispositivi IoT.
La soluzione	Realizzazione di un prototipo di serra intelligente su scala industriale nell'ottica dell'industrial internet delle tecnologie 4.0, ovvero realizzare un prototipo che preveda un'interconnessione tra le apparecchiature, e quindi con le quali sia possibile interfacciarsi sia dall'interno che dall'esterno dell'azienda. Progetto finanziato con Bando 1 – 2020 indetto dal centro di competenza MedITech e supportato da uno spinoff dell'università di Salerno
I benefici	Riduzione degli sprechi (in particolare di acqua), aumento della produzione. Inoltre cambia il ruolo dell'agronomo, non più obbligato ad andare. Nuova prospettiva lavorativa per l'agronomo: non più obbligato ad andare tutti i giorni i campo e dotato di un set di dati oggettivi che lo possano accompagnare nelle sue scelte.

Fonte: sintesi dell'Osservatorio da censimento di fonti secondarie pubbliche

Un'azienda lombarda attiva nella produzione di lubrificanti industriali. *(Piccola impresa)*

La necessità	Proporre un servizio completo, efficace ed efficiente per ridurre significativamente i guasti, i ritardi e i costi che gravano sulle imprese, causati da una non adeguata gestione degli oli e dei lubrificanti.
La soluzione	Dematerializzazione delle comunicazioni e di comunicazione completa tra l'azienda e i clienti, attraverso l'introduzione di un CRM. Grazie all' installazione presso il cliente di sensori che controllano H24 la temperatura, l'acqua e la contaminazione dell'olio, in caso di alert, viene inoltrata una e-mail al cliente, al laboratorio e alla centrale operativa. Questo permette un monitoraggio continuo anche da remoto e un intervento immediato.
I benefici	Impatti molto positivo sulle performance economiche dell'impresa. Diminuzione dell'impatto ambientale: la corretta gestione dei lubrificanti, infatti, consente di allungare fino a 4/5 volte la vita degli oli, riducendo sensibilmente quindi le quantità da acquistare, smaltire e gestire.

Fonte: sintesi dell'Osservatorio da censimento di fonti secondarie pubbliche

Caso sviluppo di un dispositivo elettronico

Un piccolo studio tecnico lucana attivo nell'ambito delle rilevazioni geotecniche.
(Piccola impresa)

La necessità	Migliorare le scelte legate al monitoraggio del sottosuolo
La soluzione	Un innovativo dispositivo elettronico (interconnesso al cloud), dotato di applicativo nativo per smartphone, per effettuare misure di resistenza di terra, utile per indagini del sottosuolo con finalità di protezione catodica. Le misurazioni effettuate e inviate in «cloud» tramite approccio IoT consentono una corretta e ottimizzata scelta della profondità cui effettuare la posa dei «dispersori per la protezione catodica delle condotte».
I benefici	Ottimizzazione puntuale delle operazioni di protezione catodica: viene aumentata l'efficacia del servizio. Il posizionamento più efficace delle protezioni catodiche permette un impatto positivo sull'ambiente, sempre maggiore in vista del futuro grazie all'aumento della mappatura del terreno disponibile.

Fonte: sintesi dell'Osservatorio da censimento di fonti secondarie pubbliche

Un consorzio di panifici nella bergamasca, attento a valorizzare la qualità del prodotto (*Micro imprese*)

La necessità	Promuovere l'economia locale, promuovendo il proprio prodotto, mostrando l'origine delle farine.
La soluzione	E' stata sviluppata una soluzione di tracciamento tramite blockchain della filiera della panificazione nella provincia di Bergamo che permette oggi ai panifici locali di mostrare ai consumatori l'utilizzo di farine derivanti da agricoltura locale. Gli agricoltori, i mulini e i panifici della Provincia sono stati abilitati a registrare le proprie transazioni e forniture su blockchain dando così la possibilità ai consumatori alle diverse informazioni.
I benefici	Il cliente può verificare la provenienza, qualità e sostenibilità del pane che compra, favorendo i produttori locali.

Fonte: sintesi dell'Osservatorio da censimento di fonti secondarie pubbliche

Un birrificio veneto, attento a fornire la migliore esperienza ai clienti
(Piccola impresa)

La necessità	Monitorare gli impianti di spillaggio della birra, per anticipare i problemi dei motori refrigeranti delle macchine.
La soluzione	Telemetria degli impianti di spillaggio di birra, vino e bevande dati dall'azienda in comodato gratuito presso i Bar e ristoranti clienti. Il progetto è stato realizzato con la collaborazione di un network diversificato di attori: università. startup innovativa, fornitori tecnologici.
I benefici	Riduzione degli incidenti, soprattutto in orari di punta delle vendite; maggior soddisfazione dei clienti e maggior fidelizzazione. Aumento dell'efficienza per l'azienda: i viaggi dei manutentori non sono più dovuti ad emergenze ma a manutenzioni programmate e ottimizzate nei tempi e nello spazio percorso.

Fonte: sintesi dell'Osservatorio da censimento di fonti secondarie pubbliche

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