CHAPTER 1
INTRODUCTION TO DIGITAL TRANSFORMATION

1. Digital Transformation (DT): definition

➢ Process of integrating & implementing new technologies in all aspects of society, everyday life & the workplace, with the aim of improving efficiency, competitiveness, and value for customers.
➢ In the context of a company, DT involves the integration / implementation of technologies across de whole value chain and in all departments → change in the way the company operates.
  o Optimizes resources, improves productivity, & allows to adapt products & services to meet real needs of customers
  o Requires a cultural shift across the organization, as it is about:
    ▪ Acquiring the latest technology
    ▪ Changing the mindset of managers and employees
    ▪ Investing in planning and training.
  o Requirement to compete in a rapidly evolving landscape.
  o Benefits: increased agility, improved customer experiences, decision- making, and ability to identify new business opportunities

2. The Evolution from the beginning to now

2.1. A change in the business paradigm

➢ Brands that grow the most anticipate customer needs, move fast, pivot & create emotional connections adding value & playing a significant role in customers life (empowered).

2.2. The evolution

➢ **1900 - Age of manufacturing**: Mass manufacturing makes industrial powerhouses successful.
➢ **1960- Age of distribution**: global connections and transportation systems make distribution key.
  o Traditional awareness, non-personalized, physical shopping/catalogue, uniformity, product orientation, few resources; inventory data, sales & financial data, direct mail.
➢ **1990- Age of information**: connected & supply chains mean who controls info flow dominate.
  o Call-centre, customer survey - customer data, grocery scanner- transaction data, primitive www, third party data)
➢ **2010- Age of the customer**: empowered buyers demand a new level of customer obsession.
  o Behavioural data, social data, environmental data, sensor data, mobile data.
  o **Tools used to understand customers**: customer segmentation, behaviour, transactional analysis, High-Value Customer (HVCs), status, surveys, demography, journey mapping.

Digital transformation: organization adaptation to new user needs in the digital ecosystem.

2.3. Five market imperatives

Delivering on all 5 market imperatives is the key to success in the age of the customer
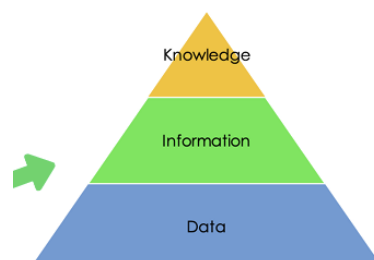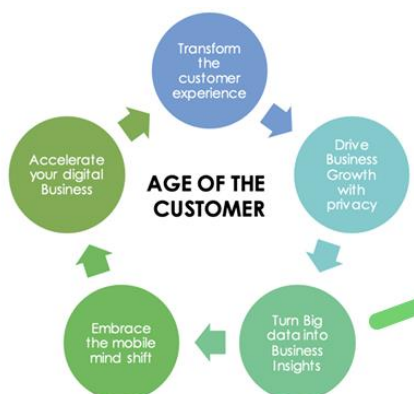
3. The need for companies to adapt to the new Digital Era: Data centric companies

3.1. Organizations adaptation to the new needs of the user in the digital ecosystem

We live in an era of outstanding technological transformation (4.0 revolution) and constantly changes in markets and consumer behaviour.

- ➤ The norm is change and not stability.
- ➤ Companies base their entire business on effectively processing personal data.
  - o Because is the best actual intangible asset
  - o Because data can provide a competitive advantage.
- ➤ These changes represent many challenges for traditional companies.
  - o Have to start competing with new business models that are native to digital, data-centric, and that have brought about a change in each of the industries.

3.2. Data-Centric companies

Organizations that prioritize data as a key asset and focus of on leveraging data to drive decision-making, innovation, & competitive advantage allowing to be proactive not reactive.

- ➤ **Advantages:**
  - o Better decision-making: collecting & analysing data
  - o Improved efficiency: areas for optimization or automation (cost savings).
  - o Improvement of customer experience: personalization
  - o Competitive advantage: anticipate market changes, new trends, and develop innovative products and services.
  - o Improve risk management: potential risks and be proactive to mitigate them.

- ➤ Big Data= Data explosion+ processing capacity + Advanced analytics (descriptive, diagnostic, predictive, prescriptive)
  - o Too complex for traditional analysis to derive insights/value
  - o IA arrives (Analyse/interpret large complex data quickly

4. The impact of Technology on society & Business

- ➤ **Enhancing Legacy Brands' Value**: revitalizing traditional brands with innovative strategies.
- ➤ **A data-driven approach for smarter decisions**: Leveraging data-driven insights.
- ➤ **Improved Communication through Virtual Tools**: both internal and external communications.
- ➤ **Streamlining operations with cloud technology**: productivity/efficiency by cloud-based solutions.
- ➤ **Digital Presence- Key to Growth & Expansion**: from traditional word-of-mouth to digital footprint.

5. Differences between Digitalization, Digital Transformation, and innovation

TERM	Definition	Scope	Goals	Example
Digitalization	The process of converting analougue data to digital	Focused on specific processes or functions within a business	1. Cost savings 2. Process improvements 3. Increase revenues 4. Enhance customer experience	Scanning paper documents to create digital records. - Creation of a new online or mobile communication
Digital Transformation	The integration of digital technology into all areas of a business	A holistic change to the way a business operates	1. Attain a competitive advantage 2. New business models	Implementing Digital tools and strategies to transform the customer experience
Innovation	The introduction of new ideas, methods, products to bring value to a business or its customers	Can involve any areas of a business or its operations	1. Growth 2. Gain market share 3. Improve customer experience 4. Be the first	Developing a new product or service using emerging technologies

6. Pillars of digital transformation: Technology, talent, culture & New Business Models

6.1. Technology

Implementing new technologies, such as cloud computing, artificial intelligence (AI), and the Internet of Things (IoT), to improve business operations and create new products & services.

➢ Necessary to have digital know-how → will let companies obtain higher financial results.
➢ Increase in sales, ROI, market capitalization, & profits.
➢ Executive training schema must include the technologies that fall under the DARQ1 acronym.

6.2. Talent

➢ Having the right people with the right skills and mindset to drive digital transformation.
➢ Executives need to be capable of acquiring skills quickly to implement digital processes.
➢ Market demands skills as collaboration, adaptability, agility, risk decision, creativity,...

6.3. Culture and Integrated strategy

Shift in mindset and organizational culture to embrace change, experimentation and innovation.

➢ Start with the strategy (Chapter 3) is key to succeed: 1) Vision & mission, objective, 2) Embedded digital in overall strategy 3) Anchor around discrete cases 4) Clear tech & data strategy 5) leadership & a change agenda 6) Roadmap with initiative.

6.4. New Business Model

Adapt/create models to advantage digital technologies & new opportunities.

7. Challenges and Opportunities of Digital Transformation

7.1. Challenges
Resistance to change
Lack of digital skills & talent
Legacy systems difficult to integrate
Cybersecurity & data privacy
Uncertainty & financial risks

7.2. Opportunities
Increased efficiency & productivity
Improved customer experiences
Enhanced agility and flexibility
Development new models & revenue streams.
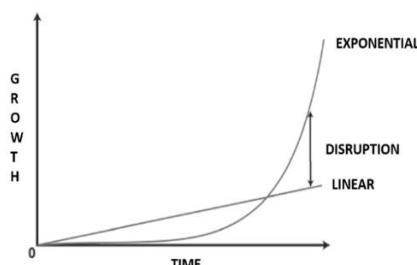Access new markets & global expansion

CHAPTER 2
NEW BUSINESS MODELS & EMERGING TECHNOLOGIES

1. Understanding the differences between traditional and new business models

1.1. Traditional business models

1. Direct Sale
2. Retail
3. Print Advertising
4. Franchise
5. Manufacturig

1.2. Scalability

1.3. New business models

1. E-commerce
2. Subscription Models
3. Sharing Economy (Globally)
4. Sharing Economy (In Spain)

1.4. Advantages

	Traditional Business Models	New Business Models
Flexibility	Can be rigid and slow to change, making it difficult to respond to new challenges.	Are often more flexible than traditional models, allowing companies to quickly adapt to changes in the market
Scalability	Can be limited in their scalability, as they may require significant investments in physical assets and infrastructure.	Can ofen be scaled rapidly, allowing companies to grow quickly without incurring significant expenses.
Customer focus (personalization)	May prioritize internal processes and systems over the needs of individual customers	Tend to be more customer-centric, offering personalized experiences and tailored solutions
Innovation	Can be slower to adopt new technologies or approaches, leading to stagnation and a lack of competitive advantage.	Oen embrace innovation and new technologies, leading to new products and services that can disrupt established industries
Cost-Efficiency	Can be more expensive to operate, as they may require significant investments in physical infrastructure and labor.	Can often be more cost-efficient, as they may rely on shared resources or digital platforms.

1.5. Succes stories in the digital transformation

Real cases: #1 Idealista

New model creates value by transforming data into business insights through tools and techniques:

➤ Focus on real estate market. Real-time real estate information. Valuation of real estate assets.

Real cases: #2 Telefónica

Do not capture data to optimize their business they start to use data to create new businesses:

➤ Telefonica started to place data at the center of Digital Transformation.
   - o Internal transformation: boost Movistar+, improve customer experience, personalization
   - o External transformation: Luca (2015-16), Aura (2017-18), Telefonica TECH (2019-20)
   - o Different industries: Transportation, Retail, Tourism
   - o As an external business is offering unique insights that enable making better decisions
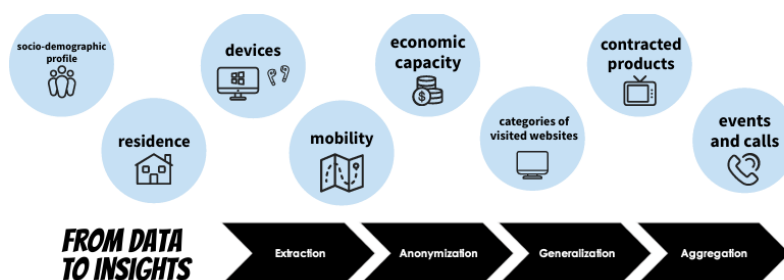
1.6. The risks of not changing

The question is no longer: "Do we have to develop a digital strategy for our business?"

It is rather: "how to successfully adapt my business to this digital world?"

Importance of change and innovation

➤ You need to take risks
➤ You need to adapt   to the changing business climate
➤ You need to open up

2. New digital concepts or technologies and their impact on businesses

2.1. Artificial intelligence (AI)

System's ability to **interpret external data** correctly, to **learn from such data**, and to **use** those **learnings** to achieve **specific goals** and tasks through flexible adaptation.

➤ Any machine (especially computer systems) that exhibits qualities associated with (simulates) human intelligence, as cognitive functions like perception, reasoning or problem-solving.

➤ **Generative AI** - artificial intelligence capable of creating original content. Unlike most AI trained to complete narrow tasks, this can produce outputs that mimic human creativity

➤ Main types of apps: Large Language Models, image/video/voice/music/… generation.

Its impact:

1. Interdisciplinary collaboration → cross-functional teams with mix of skills and perspectives.
2. From decisions made by leaders based on experience and intuition to data-driven decisions: AI will augment intuition with algorithm recommendations to arrive to better answers that either humans or machines could reach on their own
3. From rigid and risk-averse to agile, experimental, and adaptable: a test and learn mentality

Transforming businesses: Automated operations

➤ Enhanced productivity
➤ Adopting a customer centric approach
➤ Informed decision making
➤ Recruitment and talent sourcing

2.2. Machine learning

Ability of computer algorithms to automatically identify patterns through data analysis & continually refine their statistical techniques of prediction & inference by generating new rules without step-by-step instructions from human programmers.

➤ The more data these algorithms process, the more they learn.
➤ Focuses on predictive & prescriptive analytics rather than descriptive or diagnostic analytics.
➤ Types: Supervised Unsupervised Reinforce

Its impact:

Revenue growth: Predicting business outcomes Personalizing customer engagement Improving business strategy (market intelligence & pattern recognition) Gaining competitive advantage	**Time & efficiencies:** Process efficiencies Labour efficiencies Value chain efficiencies
Capital savings: Optimizing productions inputs Maintaining capital assets Quality control	**Investment costs:** Data Human resources Third party vendor

2.3. Blockchain

Distributed ledger technology (database) that records transactions across multiple computers in a way that ensures the data is secure, immutable, and transparent (everyone can add/ see updates).

Each transaction stored in a block → these are linked together in a chain, forming a blockchain.

Benefits:
- Build trust and transparency.
- Improves security, sharing, and use of data.
- Drive business growth.
- Saves time & money, improves efficiency, & reduces fraud risks.
- Securely creates, stores, and shares sensitive information online.
- Consolidates records and eliminates inefficient paper trails.
- Reduces risk of manual errors & oversight.
- Avoids reputational damage caused by mistakes.

Its impact (applications): Cryptocurrencies
- Cars: ensure (cars millage) kms
- Notary (patents)
- Digital voting
- Food industry: supply chain review
- Product delivery (ensure transparency) and shipment (efficiency)
- Smart contracts

2.4. Internet of Things (IoT)

Network of physical objects or groups of objects equipped with sensors, processing capabilities, software, and other technologies. These objects are connected and exchange data with other devices and systems over the Internet or other communication networks.
- Enables the seamless communication, monitoring, and control of these objects, allowing them to interact and share information, leading to enhanced automation, efficiency, and insights in various domains.

Its impact (applications):
- To supervise our health
- At home
- Car, bike and skate sharing
- Fleet tracking
- Others:
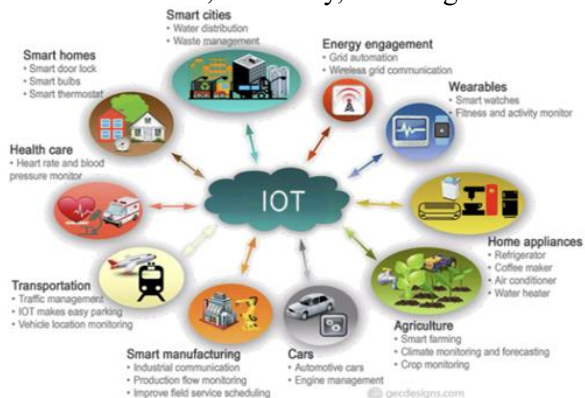
2.5. Extended reality (XR), Augmented reality (AR) and Virtual reality (VR)

Extended Reality (XR): an umbrella term for immersive technologies like Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR).
- Combines the physical (real) and virtual worlds to create mixed reality experiences.
- VR fully immerses users in a virtual environment, AR overlays virtual content to real world.
- XR offers interactive, immersive, & realistic experiences.

Examples of XR applications:
- AR can help surgeons interact with 3D organ images for training.
- VR-based psychotherapy provides addiction treatment in a digital environment.
- XR enhances workplace collaboration, training, and planning

Augmented reality: Combines the real world with overlaid digital elements.
- It allows you to view and experience the physical environment while adding digital elements
- It uses wearable or handheld devices such as glasses or smartphones to overlay digital information in the user's field of vision.
- AR can display additional information such as graphics, text, videos, or virtual objects onto the real environment

 Its impact: Gaming
- Training and education
- Maintenance
- Shopping
- Navigation

Virtual reality: Creates a completely digital environment and immerses the user in it.
- Completely blocks out the physical environment, providing an immersive experience.
- Uses devices such as headsets or head-mounted displays to showcase a virtual world.
- Users can interact with the virtual environment and manipulate virtual objects.

 Its impact:
- Gaming
- Training simulations
- Virtual tours of remote locations
- Virtual therapy.
- Design & Virtual Prototyping
- VR Showrooms

2.6. Robotics
- Robotics focuses on the design, development, and implementation of robots
- Robots are mechanical or virtual devices that are programmed to perform tasks autonomously or with human guidance. They are equipped with sensors, actuators, and advanced algorithms to interact with their environment and carry out specific actions.

Benefits:
- Increased productivity
- Enhanced precision & Accuracy Improved safety for workers
- Ability to work continuously without fatigue, enabling extended operational hours
- Optimization of resource allocation and reduction of waste
- Enhancement of overall operational performance
- Improved efficiency
- Cost savings (e.g.: Labor)
- Handle complex tasks with speed & precision → higher production rates & reduced errors
- Higher levels of quality control
- Improved customer satisfaction through faster and more reliable product or service delivery.
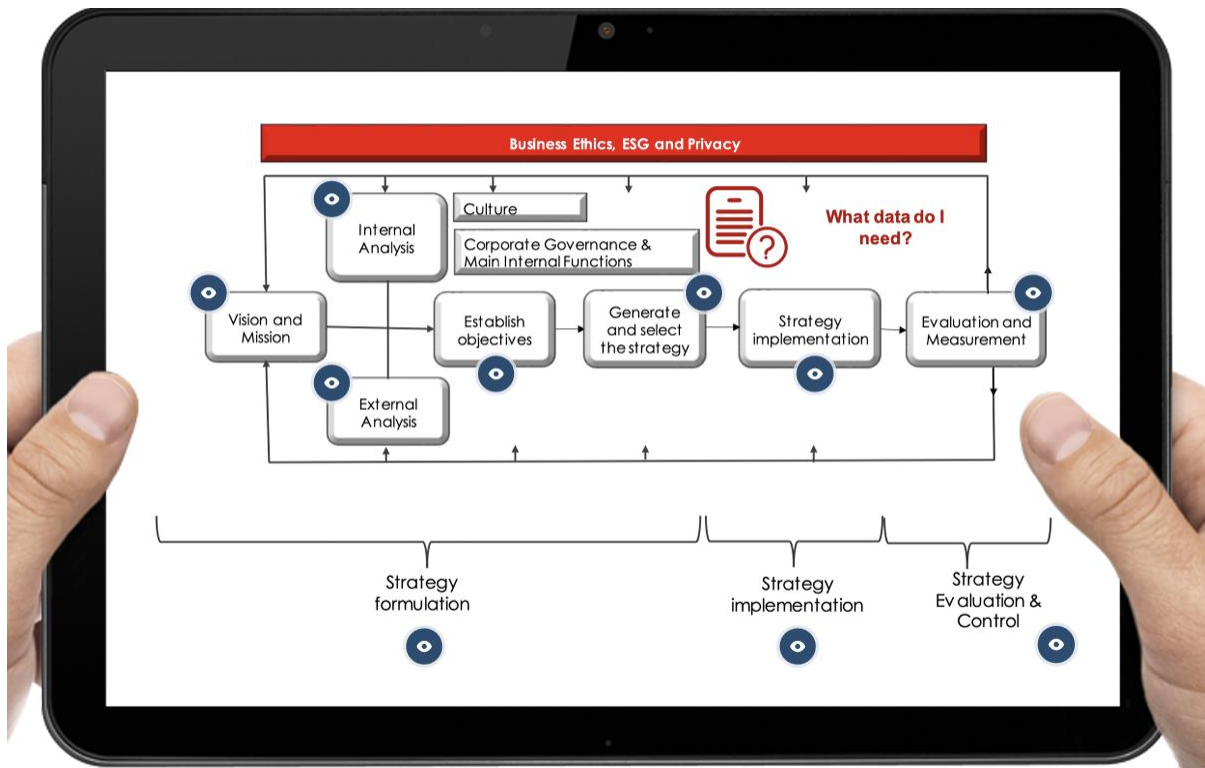
Its impact (applications):
- Manufacturing
- Healthcare
- Agriculture
-
- Logistics
- Exploration and research
- Service and hospital

1. How To Govern A Company. All The Relevant Topics To Acknowledge

Start with the STRATEGY and follow the SMART QUESTIONS

Vision and Mission: Provide direction, focus, and communication while guiding strategic decision-making and inspiring employees to work towards a common goal.

Internal Analysis: Process where all the components that interact within an organization are evaluated in order to identify failures and areas of opportunity.

External Analysis: Macroeconomic, global, political, social, demographic, & technological analysis.

Established objectives: Provide focus, direction, & motivation for an organization and its employees.

Generate and Select the Strategy: Best formulated in conjunction with previous steps of objective setting and internal and external analysis.

Strategy implementation: The activities within a workplace or organisation designed to manage the activities associated with the delivery of a strategic plan.

Evaluation and measurement: Measurement: process of collecting data on specific metrics. Evaluation: process of analyzing that data and using it to make informed decisions about the strategy.

Strategy formulation: Process of using available knowledge to document the intended direction of a business and the actionable steps to reach its goals.

Strategy Evaluation and Control: process of determining the effectiveness of a given strategy in achieving the organizational objectives and taking corrective actions whenever required.

2. Crafting a Clear Direction in the Digital Era

2.1. What is Vision, Mission & Strategy in the Digital Era

Mission, vision, & strategy are essential elements in defining the purpose and direction of a company.

- ➤ They provide a framework for understanding the organization's goals, aspirations, and how it intends to achieve them.
- ➤ A successful business strategy needs to articulate a clear vision and mission.
- ➤ In the current hypercompetitive and hypergrowth marketplace companies have been challenged by changes in the business environment, shorting the shelf life of many strategies.

Vision Statement → "What do we want to become?"

1. Should be ambitious, inspiring, and forward-thinking
2. Outlines the company long term aspirations and desired future state
3. Should be short, preferably one sentence
4. Helps aligning efforts, provides a sense of purpose, guiding strategic decisions
5. Should reveal the type of business the firm engages …
6. …but not with a too narrow scope.
7. Should motivate employees and stakeholders to work towards a shared vision

Mission Statement → "What is our business?"

1. A declaration of an organization's "reason for being", "purpose", "core values"
   - o Guides organizational behavior at all levels & decisions about the business model.
2. Reveals what the organization does, who it serves, and how it creates value.
3. Is essential for effectively establishing objectives and formulating strategies.
4. Should consider the interest and needs of all stakeholders, not just shareholders and owners,
   - o Also customers, employees, the environment and the society, among others.
5. Sets the overall direction of the company.
6. At the heart of the strategic direction of companies (The guiding north star)
7. Long-term roadmap to realize top management´s vision and meet business goals. Concise, memorable, and inspiring.

Mission Statement: in the Digital era characterized by disruption and uncertainty

Mission serves as an anchor for people at all organizational levels.

In this digital era companies must pursue being purpose-driven organizations.

- ➤ People more engaged
- ➤ They know the company´s strategic direction and believe in it
- ➤ Higher performance - Purpose-driven organizations saw 400% more returns on the stock market than the Standard and Poor 500 (Ranger, 2018)
  - o ROI
  - o Improved ESG scores
  - o Gains in market share
- ➤ More attractive for institutional investors

2.2. Characteristics of an Effective Mission Statement

- ➤ Broad in scope
- ➤ Fewer than 150 words in length
- ➤ Inspiring
- ➤ Identifies the utility of a products
- ➤ Reveals social responsibility
- ➤ Reveals environmental responsibility
- ➤ Includes 9 components
- ➤ Reconciliatory: Consider all interests
- ➤ Enduring: Mission must last

9 Mission Statement Components

1. Customers
2. Products or services
3. Markets
4. Technology
5. Survival, growth & profitability
6. Philosophy
7. Self-concept
8. Public image
9. Employees

2.3. Defining the Vision & Mission Statements

Companies are spending time, resources, and money on purpose-driven campaigns as Millennials & Gen z are the largest proportion of the workforce today → known as purpose driven generation, need:

➢ Companies that make a meaningful impact on society and the environment.
➢ Jobs with a purpose that goes beyond the pay check.

Developing Vision & Mission Statements in the AI era

Strategies → Prioritizing three to four strategies max.

➢ Way of implementing the mission and vision.
➢ Involves making choices and setting priorities on:
  o How to allocate resources.
  o How to compete in the market.
  o How to create sustainable value.
➢ Outlines its competitive advantage, target markets, product/service offerings, market positioning, and key initiatives.
➢ Considers various factors such as market trends, customer needs, competitive landscape, technological advancements, and the expectations of stakeholders.
➢ Provides a roadmap for the organization to navigate challenges, capitalize on opportunities, and achieve its long-term objectives

2.4. Stakeholders of a company.

Stakeholder: Individuals & groups of individuals who have a special stake or claim on the company.

➢ **External stakeholders**:
  o Customers
  o Suppliers
  o Distributors
  o Creditors
  o Governments
  o Unions
  o Competitors
  o Environmental groups
  o General public

➢ **Internal stakeholders:**
  o Employees
  o Managers
  o Stockholders
  o Boards of directors

2.5. Challenges Leaders Face in Defining a Purpose-Infused Strategic Direction

➢ **Fuzzy priorities**: lack of clarity about the direction.
➢ **Fuzzy accountability:** lack of agreement /support from senior leadership around the shift in focus, strategy, or value proposition
➢ **Culture clash:** clash between the company´s established culture & the new strategic direction

3. Cultivating and Adaptative Corporate Culture

3.1. Corporate Culture: Definition

It is the "HOW" of any organization

➤ Unique set of behaviours, rituals, symbols, and experiences
➤ Backbone of organizational health and fuels sustained outperformance over time
➤ Influences how employees interact with one another, customers & clients, and the community.
➤ Can significantly impact the company's performance, reputation, and success.

Culture: Secret for successful digital transformation (way of describing the company´s health)

➤ Represents deeper spirit (felt /not seen), Shapes the identity, Holds the organization together

3.2. Cultural challenges and solutions in different funding stages

Corporate culture elements	Start-up	Scale-up	Big corporation
Agility /Adaptability	Emphasis on flexibility, quick response to changes	Balancing agility with defined processes (grow)	Balance stability/adaptability (market position)
Risk-Taking and Innovation	Culture of calculated risk-taking and experimentation	Innovation balanced with scalability and efficiency	Innovation within frameworks and risk management
Collaboration and Communication	Cross-functional collaboration open communication, and idea-sharing	Larger workforce so effective communication channels and goals alignment across teams	Collaboration within hierarchical structures and established channels
Structure and Hierarchy	Flat structure, minimal hierarchy	More defined processes, structures, and hierarchies	Hierarchical with formal decision-making channel
Focus on Scalability	Focus on growth and scalability	Prioritizing scalability and efficiency (competitive edge).	Balancing stability, growth, and market position
Talent Development	Development-oriented culture, attracting and retaining top talent.	Organization expands, attract /retain top talent, supportive, development-oriented culture.	Structured career development programs, training, and nurturing talent.
Performance and Results	Results-oriented culture, setting measurable goals, and tracking KPIs.	Driving performance and achieving results across departments and units.	Emphasis on performance, metrics, and driving efficiency at a larger scale.
Diversity and Inclusion	Recognition diversity value and promotion of inclusivity	Striving for diversity & inclusion, equal opportunities	Emphasis on diversity/ inclusion as part of CSR

3.3. The significance of Corporate Culture in the Digital Era

➤ **Key rule**: Leaders need to adapt to digital changes → must unlearn the old and learn the new.

Link to success: Companies' culture focused performed five times better that non- culture focus.

Speed up decision making: Digital culture fosters autonomy and empowers employees.

Effective for functioning: The higher the complexity & dynamic nature of the environment employees are operating in, the stronger the cultural norms need to be.

3.4. Nurturing the Right Culture for the Digital Era

In the "Digital Age" every business (digital company = digital culture):

➤ Must be digital →companies need to invent totally new, disruptive, digital business models.
➤ We need cross-company collaboration to cover all the aspects of digitalization:
➤ Must make digitalization a company´s guiding strategic & cultural agenda.

4. Corporate Governance & Main internal Functions. Challenges in the Digital Era

4.1. Corporate Governance overview

Corporate Governance is concerned with the structures & systems of control by which managers are held accountable to those who have a legitimate stake in an organization.

➢ Set of principles, policies, and processes that guide an organizations direction & control.
➢ Aims to ensure that it operates in a transparent, ethical, & accountable manner.

Importance:

➢ Helps to mitigate risks and prevent conflicts of interest.
➢ Fosters trust & confidence leading to better performance & increasing shareholder value.
➢ Helps to promote long term value creation and sustainable growth.

Rise of its importance due to:

➢ Separation of ownership
➢ Corporate failures and scandals

➢ Increased accountability to wider stakeholder interests & need for CSR

Levels of responsibility/accountability:

<u>Chain of corporate governance</u>: Interconnected relationships & processes that guide operation, ensure effective management & accountability.

Board of directors	Executive Management Team	Shareholders	External Stakeholders
- Set decisions / goals. - Appoint top executives - Represent shareholders	- Implement board decisions - Manage day to-day - Led by CEO & top executives	- Owners. - Electing board and vote. - Influence decisions.	- Regulators: set regulations. - Auditors: Assess for financial. - Creditors: financing conditions.

Challenges:

➢ <u>Knowledge imbalances</u>: agents know more what can/should be done.
➢ <u>Monitoring limits:</u> difficult for principal to closely monitor agent's
➢ <u>Misaligned incentives:</u> no appropriate incentives → own objectives.

Main representatives / Good practice

Executive Directors	Non-Executive Direcrtors	Chairman of the Board	Committees
Employees on the board → provide operations & strategy insight but their status create interest conflicts	Not involved in day-to-day. - Independent directors - Nominee Directors - Government or Public - Interest Directors - Non independent directors	Non-executive director responsible for leading the board and ensuring that it functions effectively.	Focus on specific areas, such as audit, compensation, and governance

➢ Behaving appropriately given expectations → trust, fluidity, responsibility and performance.
➢ Having time to do their job properly.
➢ Being competent to scrutinise the activities of managers (collective experience is critic)
➢ Operating 'independently' of management. The role of non-executives is crucial

The company's good governance is key for the functioning of the markets. Promotes credibility and stability and helps boost growth and wealth generation.

4.2. Impact of Digitalization on Corporate Governance

Bad Governance leads to Bad Health, Good Governance (and ethical leadership) Pays → Reputation & Governance → Higher price/earnings multiples and other improved metrics

Key elements:

<u>Board composition & expertise:</u> Board knowledge to understand/guide digital strategies effectively.

> Must embrace data-driven approaches to enhance governance practices & decision-making.

<u>Cybersecurity & data privacy:</u> protocols and regulations to safeguard stakeholder's information.

<u>Transparency, accountability & new level of disclosure:</u> provide stakeholders accurate & timely info through digital channels (financial report, real time disclosure & communication platforms).
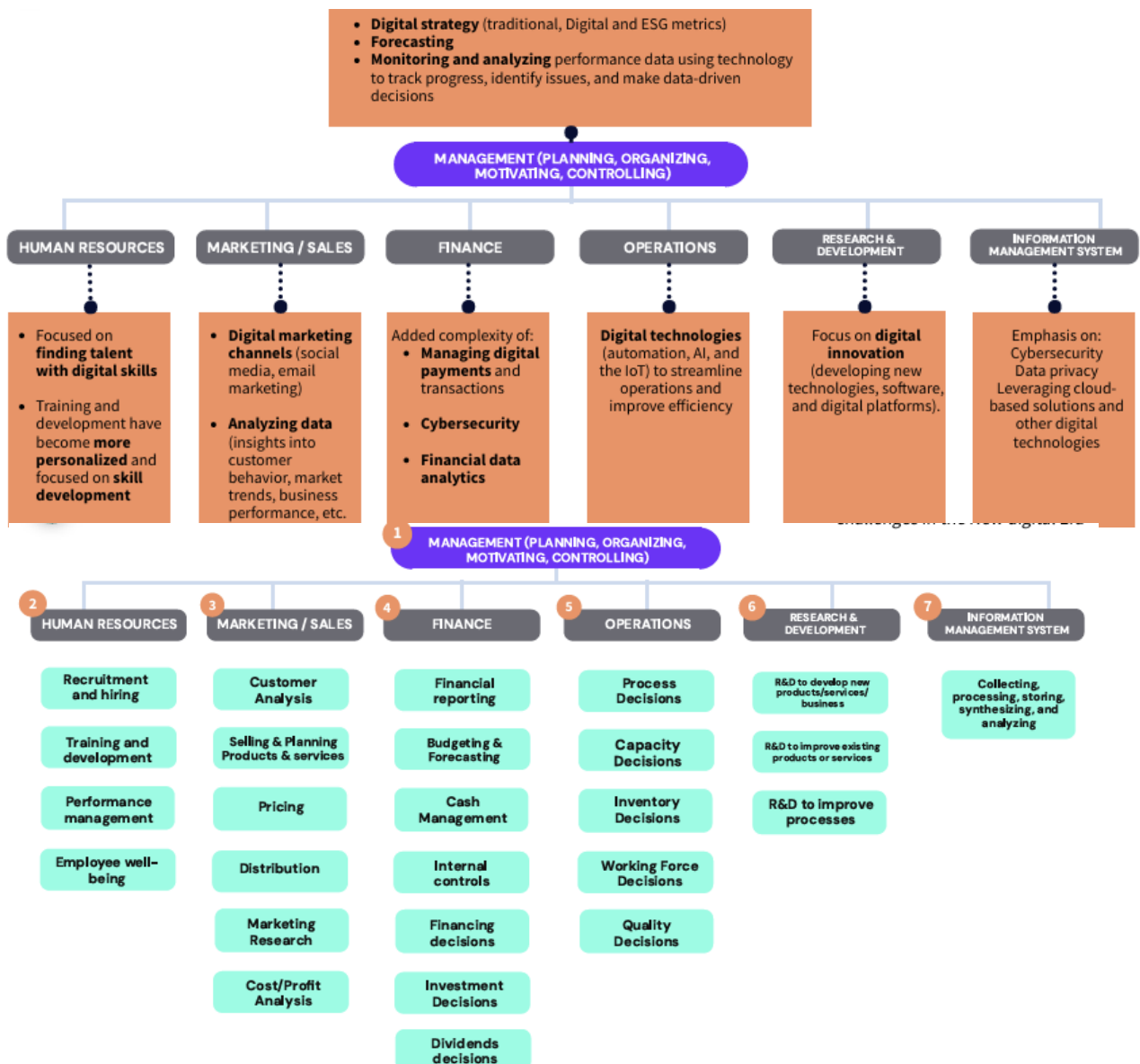
<u>Boardroom dynamics & communication:</u> Virtual meetings, secure board portals, and digital communication tools enhance boardroom dynamics, enabling effective decision-making processes.

<u>Risk management & compliance:</u> prioritize risk management & compliance frameworks to mitigate risks effectively (cybersecurity threats, data breaches, biased algorithms, and regulatory compliance).

<u>Stakeholder engagement:</u> digital channels for stakeholder communication, participation, & feedback.

<u>ESG & compliance:</u> Boards and investors should acknowledge that adhering to ESG criteria and compliance is essential to their organization's expansion and development strategies.

4.3. Basic Functions of a company and challenges in the New digital Era

4.3.1 Management (applies to all functional areas)

Planning	Organizing	Motivating	Staffing/controlling

- Forecasting
- Establishing objectives
- Devising strategies requires to consider the impact of new and emerging technologies, as AI, ML, and blockchain.
- Developing policies
	Organizational design:
	    x Adaptable/Agile.
	    x Cross-functional teams.
	- Job specialization: Digital skills, media management, software development, etc.
	- Span of control is wider
	- Coordination is complex
	- Job design: positive
	- Job analysis: data-driven
		- Empowering employees and facilitating collaboration
		- Decentralized and flexible Communication
		- More diverse and virtual work groups
		- Employee morale is key
		- Job enrichment
			Staffing:
			- Recruitment: talent with digital skills.
			- Training and development: personalized and focused on skill development (See Human Resources)
			Controlling:
			- Monitoring and analysing performance data

4.3.2 Human resources: Department responsible for managing employee life cycle.

➢ Future of Work: The workplace is evolving due to automation, AI, and emerging industries,
➢ Robots will handle repetitive tasks, enabling humans to focus on creativity/problem-solving.
➢ Reskilling: Workers need to adapt by learning new skills, with emphasis on soft skills.

COVID-19 forced leaders to meet unprecedented demands:

➢ Redeploy people
➢ Establish remote workforces
➢ Build needed capabilities

➢ Prop up distressed supply chains, contributes to humanitarian efforts
➢ Uncertainty: fire/furlough / retain.

Harnessing AI to address talent challenge

➢ **Recruitment and hiring:** Screen/assess applicants remotely, reducing in-person interviews.
➢ **Training and development**: Learning platforms critical for remote training (personalized).
➢ **Performance management:** Supports feedback processes & real-time data on performance.
➢ **Employee well-being:** Help monitor employee well-being by identifying potential issues.

Recruitment & Hiring

What are the challenges?
- Large volume of applicants
- Time-consuming screening process
- Difficulty in identifying the best candidates.

AI can help: By automating the screening process of resumes and job applications.

Benefits of using AI-powered tools in talent acquisition:
- Saving time for recruiters
- Identifying top talent more quickly
- Reducing human biases in the selection process.

Tools: screening software, chatbots, and video interviewing tools.

Training & Development

Assesses employee skills and knowledge: Evaluate employee competencies, strengths and weaknesses.

Identifies areas for development and recommends relevant training and development programs: it can make recommendations aligned with their specific needs and goals.

Personalized learning experiences: Simulations or games, to help employees learn in a more engaging and immersive way. It helps employees learn at their own pace and in the format that best suits their learning style.

Performance Management & Team Collaboration

- Used to **identify behaviors that drive improved results**, and they can coach employees to adopt these behaviors.
- **Identifies patterns** and provides insights to improve team collaboration and performance.
- **Automates repetitive** tasks **allowing employees to focus** on more strategic and creative work.
- Can **enhance teamwork** by providing intelligent digital coaching that is personalized for the team´s particular tasks.
- Can **forecast the potential** of performance of teams based on team composition.

Employee Well-being

- **Personalizes employee experience**: recommending training courses based on the employee´s interest and career goals.
- **Real-time feedback and coaching**: AI-powered chatbot can give information about their performance and how to achieve goals.
- **Career development**: career path employees should follow based on their skills and interests.
- **Employee engagement:** Support and feedback. (Chatbot to see how they are doing, provide resources to help with stress or burnout)

Importance of Hyper-Personalized Employee Value Propositions
Business leaders recognize the importance of creating an organizational experience that matches the experiences employees have as consumers. This can lead to significant benefits.
Benefits: Improved employee engagement, productivity and business results.
Challenge: Personalization is important when attracting and retaining employees form varying ages.

Different HR strategies based on the different generations

Baby boomers	Generation x	Generation Y	Generation Z
Monetary rewards Flexible retirement planning & peer recognition.	Values bonuses and stock as monetary rewards Workplace flexibility	Collaborative spaces Cultural diversity feedback	Personalization Work life balance Rewards (mentor/feedback)

Focus an investment mindset on talent
➤ Strong correlation between employee engagement & healthy organizational culture.
➤ Think of various "strategic futures", depending on organizations stage, among other factors, that will: 1. Improve management quality, 2. Boost returns on capital, 3. Support Growth

Managing your company´s Talent: Three Key Actions to take Now
Create the talent strategy: will enable the growth and the transformation of the business
➤ Align talent strategy with business strategy
➤ Identify skills and capabilities needed for growth and transformation
➤ Establish where those skills and workforces are more needed
➤ Develop a roadmap for acquiring and developing talent
Identify employee's behaviour & gauge sentiment:
➤ Identify behaviours that impact business outcomes and customer experience.
➤ Consider engaging a consultant to gauge employee sentiment.
➤ Encourage candour and reveal relevant information
Gather data about your employee´ experience: understand how employees are feeling and performing.
➤ Methods for Collecting Data: Pulse surveys, self-assessments, and multi-rater feedback.
➤ Identify behaviours that have the most impact, helping to achieve business & financial goals.
➤ Importance for Private Equity-Backed Companies: data-driven insights can benefit growth.

4.3.3 Marketing/Sales

Process of defining, anticipating, creating, & fulfilling customers' needs/wants for products/services.

➤ Brand Growth: often start small, then expand through innovation in distribution/packaging.
➤ Global Recognition: Strong branding and diversification →global visibility and dominance.
➤ Marketing Investment: budgets allow for advertising across regions/platforms.
➤ Emotional Branding: Selling emotions (happiness, love, etc.) rather than just the product.
➤ Event-Based Campaigns: Leverage seasonal events to create emotional connections.
➤ Multichannel Strategy: Mix of traditional & digital media broadens reach & engagement.
➤ Personalization: Customizing products/experiences makes brands more relatable/shareable.
➤ Authenticity: Real customer experiences & relatable storytelling build trust and engagement.
➤ Innovation: Creative/disruptive campaigns capture attention and can lead to viral success.
➤ Consistency: While innovating, maintain core values & messaging to build long-term loyalty.

CUSTOMER ANALYSIS
➤ Evaluation of consumer needs and wants.
➤ *In digital → complex process →* involves gather & analyze vast data (accuracy/privacy)
➤ Key aspects to be considered in the digital era:

o *Gather data*
o *Segmentation*
o *Personalization*
o *Predictive Analytics*
o *Customer feedback*

SELLING PRODUCTS AND SERVICES: Several way to sell products:

➤ Traditional ways: advertising; sales promotion; publicity; personal selling; public relations.
➤ Digital era: Digital advertising; coupons/ codes, & loyalty programs; influencer marketing,.

PRODUCT AND SERVICE PLANNING: Easier in Digital Era as there is data available

➢ Test marketing
➢ Product and brand positioning
➢ Warranties & service agreements
➢ Packaging design & development

➢ Determining product options, features, style, & quality through R&D
➢ Deleting old products: product life cycle analysis/ inventory management

DISTRIBUTION

1.Warehousing & Fulfillment: As e-commerce grows, companies adopt technology-driven solutions.

2.Distribution Channels: Companies now leverage digital platforms to engage customers directly.

3.Distribution Coverage: Digital distribution allows companies to reach customers globally.

4.Retail Site Locations: Physical stores remain, but digital storefronts offer a seamless experience.

5.Sales Territories: Companies use data insights to focus on personalized customer segments.

6.Inventory Levels and Location: Digital inventory allow to real-time track inventory and location.

7.Transportation Carriers: Traditional transportation complemented by new technologies (ex. drones)

8.Wholesaling and Retailing: Streamlining distribution with digital solutions to contact customers.

PRINCING

Factors	Traditional	Digital
1. Customer	Demand & behaviour influence pricing	Access to data increasing competitive/ transparent pricing
2. Governments	Impact pricing through regulations and taxes	More challenges, as cross-border taxa, privacy, and stricter transparency
3. Suppliers	Cost of inputs and raw materials directly affects pricing decisions	More data about supplier costs, enabling better pricing and negotiations.
4. Distributors	Can influence pricing through their markups and distribution strategies	Data optimization allows to streamline distribution channels and reduce costs
5. Competitors	Competitor pricing is critical when establishing market prices.	Real-time access allows dynamic response → quickly adjust to market changes.

4.3.4 Finance/Accounting

Accountants and financials differences:

Role of Accountants: manage day-to-day financial operations, including invoicing, bill payments, & tracking performance, ensure accurate financial reporting & help assess the health of a business.

Role of Finance Professionals: focus on long-term financial planning, investments, stocks, and wealth-building strategies; manage assets, create investment portfolios, and develop wealth strategies.

When to Hire: Start with an accountant to manage operational finances, then bring in a finance professional when you have surplus funds to invest and grow wealth.

Key functions:

FINANCIAL REPORTING — Prepare financial statements and reports that provide insight into the company's financial health.

Creating budgets and forecasting future financial performance — BUDGETING AND FORECASTING

CASH MANAGEMENT — Managing **cash flow** and ensuring that the organization has enough liquidity to meet its financial obligations (*Liquidity ratios*)

To prevent fraud and errors. — INTERNAL CONTROLS

INVESTMENT DECISIONS — The allocation and reallocation of capital and resources to projects, products, assets, and divisions of an organization

Determines the best capital structure for the firm and includes examining various methods by which the firm can raise capital. — FINANCING DECISIONS

DIVIDENS DECISION — % of earnings paid to stockholders, Stability of dividends paid overtime, and
• Repurchase or issuance of stock
• Determine the amount of funds that are retained in a firm compared to the amount paid out to stockholders

Changes in the Digital Era

➢ **Increased automation**: automation of financial & accounting processes as data entry, bookkeeping, and analysis led to increased efficiency and a strategic & value-added tasks.
➢ **Real-time reporting**: Allows informed decision-making & better performance understanding.
➢ **Big data analysis**: more sophisticated analysis, such as predictive analytics and trend analysis, leading to better insights and more informed decision-making.
➢ **Cloud-based solutions**: remote work/collaboration → accessibility for finance professionals.
➢ **Cybersecurity risks:** Data breaches and hacking pose a significant challenge for finance departments to ensure the protection of sensitive financial data.

4.3.5 Production/Operations

➢ Activities that transform inputs into outputs (goods and services). (vary in industries/markets).
➢ Largest part of an organization´s human & capital assets & (often) carries the highest cost.
➢ Has high value for the organization to find a **competitive advantage**

Changes in the Digital Era

➢ **Automation of production processes:** robotics, AI, and IoT → efficiency and lower cost.
➢ **Data analytics**: to optimize processes, reduce waste, and improve quality
➢ **Supply chain management**: complex suppliers' networks, distributors, & logistics providers.
➢ **Sustainability**: consider environmental impact of processes, and social/ethical implications.

Functions

	Key Functions	Technologies/Tools
Process Decisions	- Optimize production flow - Predictive monitoring - Facility layout & location - Transportation tracking	- Robotics, AI, IoT - Sensors, ML algorithms, Digital Twins - GIS, RFID
Capacity Decisions	- Capacity planning - Forecasting - Querying analysis - How much we can produce	- Data analytics - Predictive algorithms
Inventory Decisions	- Determine order quantity - Source high-quality products - Order timing based on demand trends	- Data analytics, historical sales analysis - E-commerce platforms - Real-time monitoring
Quality Decisions	- Identify quality issues - Automate quality control - Cybersecurity - Customer feedback	- Big Data analytics, sensors, IoT - Robotics, AI - Cybersecurity measures
Work Force Decisions	- Work design: skilled/non-skilled - Work measuring - Motivation - Work standards	- Performance tracking - Productivity tools

4.3.6 Research & Development

R&D in Spain is called "I+D+I": refers to the systematic process of:

➢ Investigating & development of new products/services, ideas or processes.
➢ Improvement the quality of product/services or processes.
➢ Innovation
➢ Range of activities: Identifying problems, generating ideas, testing hypotheses, designing and conducting experiments, analyzing data, developing prototypes.

R&D strategies must go in line with Corporate strategies & objectives. Breaking organizational silos is a must to communicate and discuss priorities of investment, cost, benefits, risks, rewards.

First decision: first mover

New digital era opened up a vast array of opportunities for R&D across various fields, as:

➢ **Artificial Intelligence & Machine Learning**: Analyze data and make predictions about their customers, markets, and competitors → improving the accuracy and efficiency of algorithms, developing new models, and exploring new use cases for AI.
➢ **Cybersecurity**: R&D, helps identify/mitigate threats, developing new tools and technologies for securing networks and systems, and enhancing user awareness of cybersecurity risks.
➢ **Internet of Things (IoT)**: R&D help in developing new devices, enhancing connectivity & interoperability of existing devices, and exploring new use cases for IoT in various industries.
➢ **Blockchain**: R&D helps improving security, scalability, & networks interoperability, exploring new use cases, and developing new tools and applications that leverage it.
➢ **Virtual and Augmented Reality**: R&D helps improving quality & user experience of applications, exploring new use cases, and developing new tools/ applications that leverage it.

No option for some companies

Some industries must invest in R&D to adapt and survive:

➢ **Clothing:** rapid change in customer needs/tastes, high competition, environmental concerns.
➢ **Mobile:** new technologies, short product life cycle, high competition.
➢ **Pharmaceutical**: new research, investigations, etc.

But R&D is more and more challenging, risky, costly because:

➢ There is an Increase of market **segmentation**.
➢ **Stakeholder** groups are stronger.
➢ **Government** regulations are constantly changing and increasing

4.3.7 Information Management Systen

MIS involves to collect, process, store, synthesize, & analyze data to support decision-making.

➢ MIS encompasses both internal company data and external data from various sources.
➢ Effective MIS ensures accurate, complete, and timely data for informed decision-making.
➢ MIS relies on tools and technology to manage and analyze data.
➢ Objective: to provide meaningful insights to support decision-making
➢ E.g.: Customer Relationship Management (CRM)- helps manage interactions and relationships with customers. Centralize customer data, Track customer interactions, etc.
➢ E.g.: Sales Force Automation - Optimizing sales Processes.

Benefits

1. **Better decision-making** by providing timely and relevant information.
2. **Identification of patterns and trends** in their operations and make informed decisions.
3. **Increased efficiency:** data is easier to analyze & have access, saving time and resources
4. **Better collaboration**: shared information across departments
5. **Competitive advantage**

5. Analyzing the External Landscape in the Digital Era

Internal analysis → Micro (the company)(Culture Corporate Governance Functional Areas)

5.1. Analysis General Environment : PESTEL

➢ Examining external, macro-environmental factors → assess opportunities and threats.

1. **Political**:
   - **Political**: government stability, political risk, corruption, the impact of local, state, and national elections, lobbying and political influence, and unification trends toward greater cooperation and integration among countries.
   - **Governmental**: trade policies, government programs & initiatives, taxation policies, subsidies, grants, public procurement policies, & public-private partnerships.
2. **Economic**: Impacts pricing, demand, and supply dynamics.
   - **Macroeconomic factors**: inflation rates, interest rates, economic growth rates, GDP, exchange rates, and other broad economic indicators.
   - **Customer trends**: consumer spending habits, purchasing power, disposable income, saving habits, and other behaviours that shape market demand.
   - **Market forces**: supply and demand, price fluctuations, market trends, industry growth, market size and potential, and stock market trends.
   - **Labor forces**: unemployment rates, wage rates, availability of skilled labor, unionization rates, and demographic trends in the workforce.
3. **Social**: Important for understanding customer behaviour and workforce availability.
   - **Social**: changes in consumer attitudes & behaviours, lifestyle, entertainment, tastes/ preferences, social media trends, consumer activism, ...
   - **Demographic**: aging population, population size and composition (as race, age, & location), migration patterns (immigration / emigration), urbanization, changing family structures, and rates of births, divorces, marriages, and deaths,
   - **Cultural**: religion and beliefs, traditions and customs, language, values and norms, and shifts in cultural values and preferences.
4. **Technological**: Assess how technology, transform market dynamics, and influence consumer.
   - **Technological advancements**: AI & automation, IoT, 5G, biotechnology, robotics, cloud computing, analytics and big data, and mobile devices.
   - **Disruptive competitors**: companies that leverage innovative technology to transform traditional markets and industries,
   - **Tech-enabled customers**: growing use of technology by consumers in their purchasing decisions and interactions with businesses,
   - **Technology infrastructure**: tech quality/availability, including internet connectivity and cloud services, in the regions or countries where a company operates,
   - **Digital ecosystem**: interdependence of businesses/industries within a digital network, creating opportunities/challenges, as in the collaboration between app developers, platform providers, and mobile device manufacturers in the mobile app industry.
   - **Global connectivity**: increasing interconnectedness of the world through technology.
   - **Cybersecurity threats**: risks can impact reputation, finances, and operations.
   - **Technology workforce**: readiness and expertise of employees to operate technology
5. **Environmental**: climate change, natural disasters, pollution control, resource scarcity, and waste management.
6. **Legal:** consumer protection & labor laws, environmental regulations, intellectual property, patent law changes, trade agreements, and technology-related regulations (as privacy laws)

Garner Hyper Cycle: graphically represents the evolution and adoption of a technology over time.
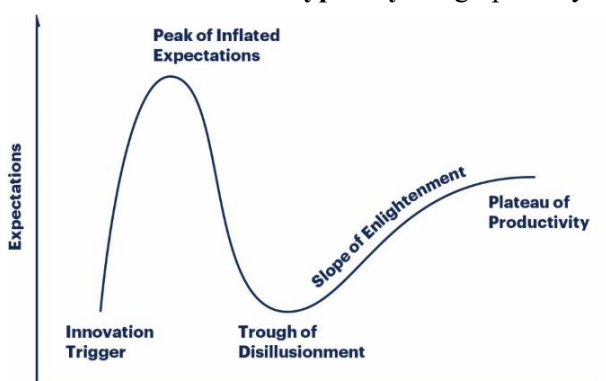
Innovation Trigger: The technology emerges, sparking initial interest but with few real applications.

Peak of Inflated Expectations: Media hype inflates expectations, leading to high enthusiasm and exaggerated impact predictions.

Trough of Disillusionment: Expectations drop as the technology faces challenges, resulting in waning interest and disappointment.

Slope of Enlightenment: Practical applications emerge as users develop a realistic understanding of the technology's strengths and limitations.

Plateau of Productivity: The technology stabilizes, achieves widespread adoption, and is integrated effectively into regular use.

5.2. Analysis of the Industry: Type of Industries & Industry Structure Dynamics

What is an Industry?

➢ Specific sector of the economy composed of companies engaged in similar business activities.
➢ Vary in; size, scope, & complexity, & have own regulations, competitors, & market dynamics.

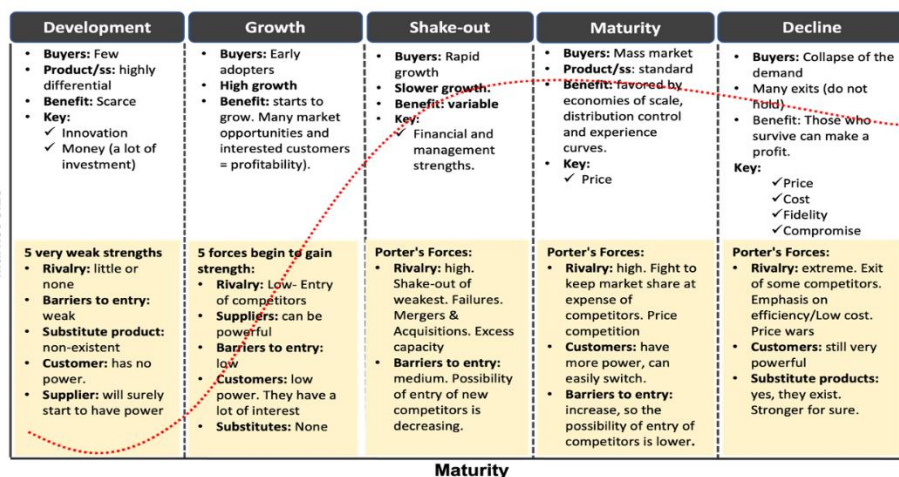**Importance of Classifying Businesses into Industries**

1. Market analysis
2. Competitive advantage
3. Market research
4. Strategic planning.
5. Investment & funding
6. Policy and regulation
7. Collaboration & networking

5.3. Specific Environment Analysis. Challenges in the Digital Era

Meso (Porters 5 forces/ Competence analysis): Framework for analyzing the intensity of competition among firms. Useful for identifying attractive and unattractive industries.

Factor	Traditional influences	Digital era challenges
Competitive Rivalry: Intense competition among players drives innovation but also lead to price wars reduced profits.	- Many firms of similar size & capabilities - Falling product prices / high fixed costs - Consumers can easily switch brands. - High exit barriers - Consumers can easily switch brands. - Frequent mergers and acquisitions	- Increased global competition - Rapid market entry by digital-native firms - Focus on digital customer experience and loyalty through personalized services
Threat of New Entrants: Ease for new competitors to enter industry; affects market stability and existing firms' profits.	- New competitors high if entry barriers low. - Barriers: Economies of scale, technology & know-how, customer/ brand loyalty, capital, distribution channels, regulatory policies, patents, access to raw materials, locations, market saturation, entrenched firms.	- Lower entry barriers with low-cost digital tools and platforms - Data analytics insights for entrants to know customers and market trends. - Ability to scale quickly due to cloud-based technologies & online distribution channels.
Threat of Substitutes: Alternative products limits industry growth/profitability providing customers with other options.	- Many alternatives available to customers to fulfil same needs/functions. - Substitutes easily accessible, affordable, & offer comparable/better quality/performance. - Customers switch product without high cost	- Emergence of new digital substitutes. - Increased importance of user experience and convenience (easy & fast use). - Disruption potential: digital players can emerge quickly and take market share.
Bargaining Power of Suppliers: Suppliers have high power, can dictate terms, affecting costs & profitability for companies.	- Low number of suppliers - Low number of substitute options - Costs of switching is high - Risk of forward vertical integration of suppliers	- Traditional suppliers may be threatened by new digital players due to increased competition with online sourcing platforms - Importance of data and technology with more emphasis on supply chain visibility
Bargaining Power of Buyers: Strong buyer power forces companies to lower prices or improve quality to retain them.	- High volume buying power, they are particularly important (For Siro, Mercadona) - Low switching costs - Well-informed customers - Products are standard and undifferentiated.	- Empowered by social media and online reviews (availability of transparency) - Price comparison and e-commerce platforms (more information) - Demand for personalized experiences

Analysis of the industry in different moments :　　　　　　　　**Radar Diagram**
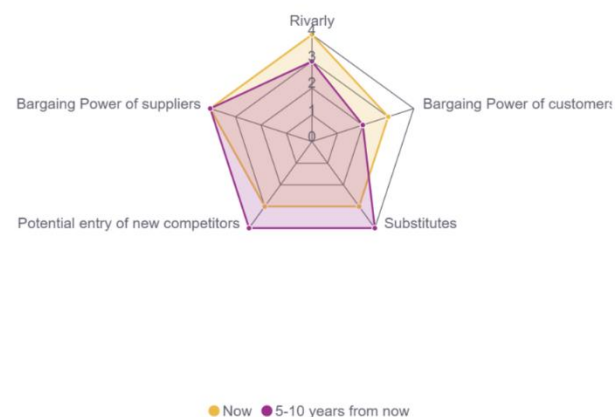
5.4. Analysis of the Competence as part of the External Analysis Some Tools

Market segments: Groups of consumers within a market that share similar needs, preferences, and behaviours can lead to increased customer satisfaction, loyalty, and sales. (Small → niche)

Strategic groups: Groups of companies in an industry that share similar strategic characteristics and business models. Identifies direct/indirect competitors, understand strengths, weaknesses, & position.

	STRATEGIC GROUPS	MARKET SEGMENTATION
Characteristics	• Members of a strategic group **compete against each other.** • Their strategies may be more similar to each other than to other companies in the industry.	Companies within a market segment may be in different industries and compete against each other, and their marketing efforts may be tailored to the specific needs and preferences of the segment.
Importance	• It can help to **understand its competitive. position within an industry.** • It can help to **develop effective strategies**.	• It can help to **identify target customers.** • It can help to **develop effective marketing strategies** to reach them.
Bases for grouping	• Product features • Distribution Channels • Market segment • Geographic location • Price • Etc.	• Buyer behavior • The value of the • Demographics purchase • Psychographics • Etc.
Examples	Luxury car makers, discount retailers, fast food chains.	Millennials, working parents, outdoor enthusiasts.

Strategic Group Mapping (SGM): Identify major areas of competition & who competes with whom.

➢ **Appropriate** for assessing overall competitive landscape (external analysis), industry attractiveness, and visual representation of data.
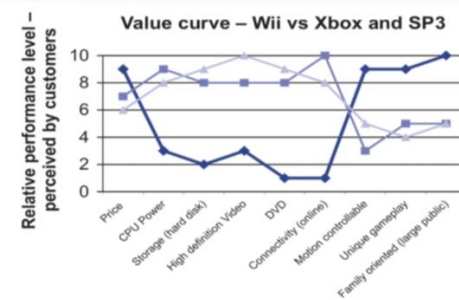
How to build SGM?

1. Main differences: Ex. price, location, product line, external integration, niche, or full-service offerings.
2. Selection of two factors
3. Plot companies according to their axis positions.
4. Observe clusters of companies on the chart.

Strategy Canvas-Blue Ocean (visualization tool)

Compares competitors according to performance on key success factors.

1. **Critical success factors (CSF's):** Sources of competitive advantage
2. **Value curves**: Relative performance of CSF perceived by customers
3. **Value of innovation**: New market space built on poor performance or creation of new CSF.

Market Segmentation & Strategic Groups

	BLUE OCEAN	RED OCEAN
Market Characteristics	• **New market spaces** • Market space is undefined and uncontested	• **No market spaces** • Market space is crowded and oversupplied
Competitive Rules	No established rules of the game	Rules are well defined and accepted
Focus	• Creating new demand • Capturing new markets	• Beating the competition and defending against competitors or taking advantage of their weaknesses • Defending against competitors or taking advantage of their weaknesses
Customer Orientation	• **High** • Emphasis on creating value for the customer	• **Low** • Emphasis on cost or value proposition relative to the competition
Competition	Irrelevant in the short-term	The driving force behind strategy
Profitability	• **High** due to unique value proposition and lack of competition	• **Lower** due to intense price competition and the commoditization of offerings
Innovation	Is a key element of strategy, with a focus on value co-creation and disruptive innovation	Is important, but often limited to incremental improvements in value or cost relative to competitors
Risk	• **High** due to the uncertainty of new market spaces and untested demand	• **Lower**, as the market space is well established, and the competitive landscape is understood

Importance of Ratings for Business Evaluation

- ➤ Ratings provide valuable insights & info for decision-making.
- ➤ Help assess the performance, reputation, and customer satisfaction of a business.
- ➤ Significant for various stakeholders, including customers, investors, and competitors.

Key points:

1. Customer Perception: Ratings reflect customer satisfaction and shape a business's reputation, attracting more customers and building loyalty.

2. Quality Assurance: High ratings signal quality, enhancing brand image and guiding businesses on areas to improve.

3. Decision-Making Tool: Customers use ratings to make informed purchasing decisions, assessing credibility and reliability.

4. Competitive Advantage: Positive ratings help differentiate a business from competitors, attracting more customers and reinforcing market position.

5. Investor Confidence: Strong ratings attract investor interest and partnerships, supporting business growth.

6. Industry Benchmarking: Ratings enable businesses to compare performance with competitors, helping identify strengths and areas for improvement.

7. Feedback for Improvement: Negative ratings provide insights for improvement, allowing businesses to address issues and enhance customer satisfaction.

New challenges for conducting external analysis in the Digital Era

1. Data Complexity: Companies need the right tools to collect analyse and interpret data (big data).

2. Data Privacy & Security: Companies must ensure that they are collecting and storing data in a secure and compliant manner.

3. Rapid Technological Changes: Challenges for business to keep up with new trends and emerging technologies. Be Agile and Adaptable are key.

4. Globalization: There is a need to understand the cultures, regulations, and competitive landscape to succeed in different markets.

5. Misinformation: Risk of misinformation. Challenges to distinguish between accurate and unreliable information. This can lead to incorrect analysis and decision –making.

Digital Era…. Is going to help in

1. Customer Profiling: Analytics can help gather info from different sources about customer.

2. Cluster Analysis: Thanks to Machine Learning and unsupervised Models we can make clusters, dentify similar groups of customers based on preferences.

3. Predictive Analytics: uses statistical algorithms and machine learning models to predict customer behavior and preferences by analyzing data on past customer interactions and purchases.

  Etc.

1. How to measure objectives? SMART, KPI´s and challenges in the digital era

1.1. Strategic objectives and Operational objectives

Objectives	Timeframe	Scope	Alignment	Purpose	Metrics	Responsibility	Risks	Investment
Strategic	Long-term	Broad	Mission & Vision	Overall direction	KPIs	Top level management	High	High
Operational	Short-term	Specific	Strategy	Daily activities	Metrics	Middle/lower-management	Low	Not much

1.2. Smart objectives

Strategic objectives should be SMART and aligned with organization's mission, vision, and values,
and should be designed to help the organization achieve its long-term goals.

S: Specific → clear description of what is needed to be achieved, set real numbers
M: Measurable → include a metric with a target that indicates success, make sure its trackable
A: Attainable → should be challenging put possible with the sources available
R: Realistic/Relevant → know your capabilities/ goal should contribute to larger objectives
T: Time-bound → set deadlines or better yet a timeline of progress milestones

Digital technology impact ins strategic planning and objective setting
To leverage opportunities presented by digital technology and overcome challenges, organizations
must develop strategic objectives that are relevant and responsive to the digital era, as:

1. Investing in new technology and digital skills
2. Developing new products and services that are tailored to digital channels
3. Adapting organizational structures and processes to enable digital innovation

1.3. Identifying key performance indicators (KPIs)

KPI´s: metrics that are used to evaluate how effectively an organization is achieving its objectives.
➢ Allow to measure the success or non-success of our objectives
➢ Help measure progress, identify areas for improvement, and inform decision making

Area	KPI	Definition / Measures	Ratio/calculation
Management	Return of Investment	Efficiency of an investment	$\frac{\text{Net profit}}{\text{Total investment}} \times 100$
	Market share	% of sales in a market captured by a company/product/brand.	$\frac{\text{Companies sales}}{\text{Market sales}} \times 100$
Human Resources	Employee turnover rate	How many employees leave the company	$\frac{\text{Employees leaving in a period}}{\text{Employees in a period}} \times 100$
	Employee Net Promoter Score (eNPS) ✴	Employee loyalty & satisfaction	$\frac{\text{Promoters} - \text{detractors}}{\text{Respondets}} \times 100$
Marketing	Customer Acquisition Cost (CAC)	Cost to acquire a new customer	$\frac{\text{Total marketing spends}}{\text{Number of new customers}}$
	Return Ad Spend (ROAS)	Revenue generated per dollar/euro spent on advertising	$\frac{\text{Revenue generated from ads}}{\text{Costs of ads}} \times 100$
	Customer Satisfaction Score (CSAT)	Customer satisfaction levels	Survey results or feedback scores
	Social Media Engagement	Users' interaction with digital platforms	Varies depending on the application

✴ eNPS calculated by asking employees: "On a scale of 0 to 10, how likely are you to recommend this company as a place to work?" **Promoters (9-10), Passives (7-8), Detractors (0-6)**
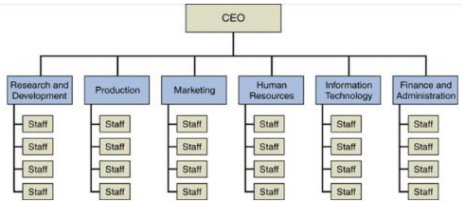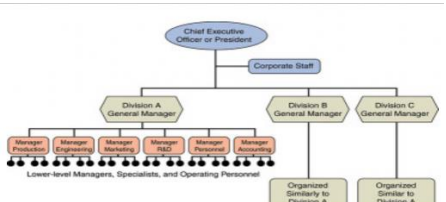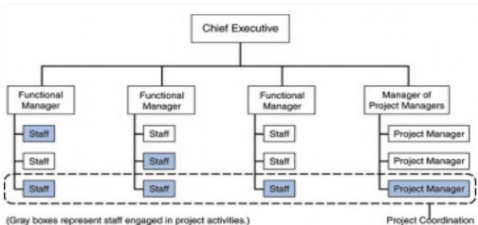
Area	KPI	Definition / Measures	Ratio/calculation
Finance and accounting	Current ratio	Company's ability to pay short-term obligations	$\dfrac{\text{Current Assets}}{\text{Current liabilities}}$
	Days Sales Outstanding (DSO)	Average number of days that a company takes to collect payment after a sale's made	$\dfrac{\text{Accounts receivable}}{\text{Total credit sales}} \times \text{days}$
Operations/ Productions	Total Asset Turnover Ratio	Company ability to efficiently generate sales from its assets	$\dfrac{\text{Sales}}{\text{Assets}}$
	Inventory Turnover	Times a company's inventory is sold and replaced over a specific period.	$\dfrac{\text{Cost of goods sold}}{\text{Average inventory value}}$
	Number of Defects	Flawed products /deliverables that do not meet the quality standards set by the company.	$\dfrac{\text{Number of defects}}{\text{Number of products/services}}$
MIS	Rate of Successful IT Changes	Success rate of IT changes	$\dfrac{\text{Number of succesfull changes}}{\text{Total changes made}} \times 100$
	Active vs. Idle Time Ratio	Time working on the computer (Active Time) vs time is switched (Total Work Time)	$\dfrac{\text{Active Time}}{\text{Total work time}} \times 100$

Challenges: New Data and Techniques to Analyze the data in the Digital Era

- ➢ **Data mining:** Finding patterns and relationships in big sets of data.
- ➢ **Machine learning**: Computer learn from data then make guesses or decisions without us telling it what to do specifically, used for sorting things to groups, predicting values...
- ➢ **Time series analysis**: Data that changes over time to spot trends and unusual data.
- ➢ **Sentiment analysis**: Understanding people's feelings from the way they write or speak.
- ➢ **Network analysis**: We look at complex networks to find patterns and relationships.
- ➢ **Text mining**: Analyze lots of unstructured data, to find patterns and relationships.
- ➢ **Predictive analysis:** uses past data to guess what will happen in the future (ej. forecast sales).
- ➢ **Descriptive analysis**: Summarizes raw data & makes it understandable (insight into past)
- ➢ **Prescriptive analysis**: Uses data & models to find best course of action for a given situation.

2. Organizational Design in the Digital Era

2.1. From traditional organizational structures to new emerging structures

Functional	Divisional	Matrix
Adv: Resource optimization & cost reduction, Increased efficiency & control, Clear career paths in each function	Clear ownership & specific products, Resources dedicated to division´s goals, faster dictions & changes, Supports a customer centric approach	Increased collaboration /communication, High autonomy / employee engagement, Flexibility to work across & achieve common goals, Suitable for complexity
Disadv: Silos & limited collaboration, Slow decision making & adaptation, Limited perspective on how company creates value for customers.	Inter-division communication issues, Function duplication increases cost, Internal competition and politics, Limited collaboration	Many managers cause conflict/confusion, Prioritization challenges & conflicting goals, Complexity in coordination and dependency, Conflicts and office politics when management alignment is lacking.
More like a Vertical	SBU (Strategic Business Unit)	

New emerging: AGILE	
Team Dynamics	• Trust, communication, and collaboration are essential. • Cross-functional, self-organizing teams. • Work in iterative and incremental cycles.
Methodology	Associated with agile methodologies, such as Scrum or Kanban: • Faster response to market changes • Better customer alignment • Increase employee engagement • Open communication within network autonomous teams
Focus	• Customer-centric rather than profit-centric. • Focus on understanding the needs of their customers and creating customized solutions
Structure	• Top-level traditional hierarchy. • Horizontal alignment with independent teams working towards a common vision.
Characteristics	• Rapid decision-making and continuous learning. • Non-hierarchical procedures for flexibility and quick market response.

In response to changing business environment many modern organizations use a blend of these structures - the Hybrid structure (organizations adapt/combine structures as needed).

2.2. Purpose Developing a Digital Organizational Design Strategy

➢ Make structural changes and support collaboration
➢ Decrease cost
➢ Improve productivity
➢ Create opportunities for A-level talent
➢ Enhance decision making and management reporting, or make them faster
➢ Sharpen customer focus with improved levels of services
➢ Streamline business process, such as eliminating non-value-added activities

Poor design → poor organizational health while well design → company scale and grow

Key Considerations for Organizational Design

1. Communication and collaboration
2. Job roles and responsibilities
3. Talent acquisition and development

Indeed, some of the roots of a failed organizational design are:

1. Poor alignment
2. Unclear structure & roles
3. Duplications of individual & organizational capabilities
4. Conflicts in coordination & leadership
5. Inconsistent spans & layers
6. Rigid, tightly defined roles & processes

Principles for Organization Building

1. Alignment of the organizational structure with the company strategy
2. Double-loop learning (better/ fast decision) & Delegate noncritical decisions to employee teams
Most effective way to structure and govern the organization is?

➢ Agile structured
➢ Collaborative
➢ Team-based
➢ Open & Transparent
➢ Minimal Hierarchy
➢ Embedding sustainability

3. Evaluation of a Business in the Digital Era: Business Model Canvas

3.1. The Business Model Canvas:
➤ Explains **how an organization creates, delivers and captures value.**
➤ It describes **the four fundamental areas** of the business: customers, supply (What I offer), infrastructure and financial viability.
➤ It **represents** the **configuration of the organizational structures**, **processes** and **systems** necessary for the implementation of the business strategy

When do we use the Business Model Canvas
➤ Starting a New Business
➤ Product or Service Launch
➤ Pivot or Change in Strategy
➤ Business Review or Audit
➤ Innovation and Ideation

Design of a Business Model

Component	Purpose	Key Questions
Customer Segments CS	Define the target customer groups that will benefit from the value proposition. An organization serves one or several segments.	- Who are our most important customers? - For whom are we creating value?
Value Proposition VP	Define the unique value delivered to customers. Seek to solve problems or satisfy customer needs.	- What value do we deliver to customers? - What problems are we solving? - What needs are we satisfying?
Distribution Channels DC	Determine the means of delivering the value proposition to customers, Delivery	- Through which channels do customers want to be reached? - How are channels integrated and efficient?
Customer Relationships CR	Establish and maintain desired types of relationships with each of the customer segments.	- What type of relationship does each segment expect? - How integrated are relationships into our business model?
Revenue Streams RS	Identify income sources from each customer segment. Results from a value proposition successfully delivery to customers.	- What value are customers willing to pay for? - How would they prefer to pay? - What is each stream's contribution to revenue?
Key Resources KR	Outline assets required to create, deliver, and sustain the value proposition (product or service)	- What resources are necessary for value propositions, channels, relationships, and revenue streams?
Key Activities KA	Describe essential tasks necessary for the successful operation of the business model, develop of key activities.	- What activities are crucial for delivering value, managing channels, and customer relationships?
Key Partnerships KP	Establish partnerships to optimize business model, reduce risks, or acquire resources. Some activities are outsourced & some resources are procured externally.	-- What activities are crucial for delivering value, managing channels, and customer relationships?
Cost Structure CS	Define the most significant costs and expenses associated with the business model (elements are reflected in the costs)	- What are the most significant costs? - Which resources and activities are the most expensive?

Customer Segments
- ➢ **Purpose:** Identify the groups that will benefit from the value proposition.
- ➢ **Heart of the business model**: without (profitable) customers no survival is possible
- ➢ Characteristics of a Distinct Customer Segment:
  - o Unique needs → specific offer.
  - o Specific distribution channels.
  - o Different type of relationship.
  - o Generates varying profitability.
  - o Willing to pay for distinct aspects.

Value Proposition
- ➢ **Purpose:** Define the unique value that addresses customer problems or needs
- ➢ Reason why the customer buys from a certain company and not from another one
- ➢ Can be quantitative (eg. price, speed of service) or qualitative (eg. design, user experience).

1. Newness
2. Performance
3. Customization
4. Getting the job done
5. Design
6. Brand/Status
7. Price
8. Cost reduction
9. Risk reduction
10. Accessibility
11. Convenience/ usability

Channels
- ➢ **Purpose:** Determine how to deliver the value proposition to customers.
- ➢ Communication, distribution, & sales channels comprise company's interface with customers.
- ➢ **Customer Experience:** Channels are touchpoints (customer touch) that impact the experience
- ➢ **Integration:** Should be efficiently integrated & cost-effective / align with customer routines

Customer Relationship
- ➢ **Purpose:** Establish and maintain relationships tailored to customer segment needs.
- ➢ **Goals:** Attract new customers, maintain existing, sales Growth → encourage purchases.
- ➢ **Key Considerations**: Cost-effectiveness & integration within the business model.

Revenue streams
- ➢ **Purpose:** Identify income sources from customer segments.
- ➢ **Types of Revenue:**
  - o Transactional revenues: one-time customer payment (sales)
    - • Asset Sale, Usage Fee, Subscription Fees, Lending/Leasing, Licensing, Brokerage Fees (Intermediation services) and Advertising.
  - o Recurring revenues: Continuous revenue (e.g., subscription)

Key resources
- ➢ **Purpose:** Outline assets needed for value creation and delivery.
- ➢ Different are needed depending on type of model: physical, financial, intellectual, or human.
- ➢ **Ownership:** Resources can be owned, leased, or acquired from partners.

Key Activities
- ➢ **Purpose:** Describe essential tasks (most important actions) for successful operation.
- ➢ **Dependency:** Varies based on the business model and type of value proposition.

Key Partnerships
- ➢ **Purpose:** Establish partnerships to optimize business model, reduce risk, acquire resources.
- ➢ **Types:** Suppliers (Provide essential materials) & Collaborators: (complementary services).

Cost Structure
- ➢ **Purpose:** Define key costs and expenses in the business model.
- ➢ **Types:** Fixed Costs, Variable Costs // Economies of Scale, Economies of Scope
- ➢ **Strategy:**
  - o Cost-Driven: Focus on minimizing costs.
  - o Value-Driven: Focus on providing value over cost reduction.

4. Evaluation of the Strategy in the Digital Era: Balanced Scorecard

BSC: Strategic performance management framework → view of performance in many perspectives.
- ➢ Uses financial & non-financial measures to assess and monitor the strategic goal achievement.
- ➢ Balance between long & short-term financial results and long-term sustainable value creation.

How to Build BSC
1. **Defining** the Business Strategy → It then depends if you adopt the three-bottom line or not.
2. **Build a strategy map**: break down the strategy into the four traditional perspectives / TBL
3. **Choose measures** that will be used to track progress, Resources can then be allocated
4. **Translated measures** to specific accountabilities that can be assigned to managers

The 4 traditional Perspectives
Central Vision: Vision, Mission, Strategy
- ➢ **Purpose:** All align with organization's vision, mission, and overarching strategy.
1. **Financial Perspective:** *How do we look to shareholders?*
   - ➢ Focus: The financial health and profitability of the organization.
   - ➢ Revenue growth, Profit margins, Return on investment (ROI), Cost management, Cash flow
2. **Customer Perspective:** *How do customers see us?*
   - ➢ Focus: Customer satisfaction and organization's ability to meet customer needs / expectations.
   - ➢ Customer satisfaction**,** Retention rates**,** Market share**,** Net promoter (NPS)**,** Brand loyalty
3. **Internal Process Perspective**: *What must we excel at?*
   - ➢ Focus: Internal operational processes → delivering value and achieving financial objectives.
   - ➢ Efficiency, Innovation rates, Product or service quality, Cycle times (production/ delivery)
4. **Learning and Growth Perspective:** *How can we continue to improve and create value?*
   - ➢ Focus: Organizational capacity for innovation, improvement, and employee development.
   - ➢ Employee satisfaction/engagement, Training and skill, Innovation, Knowledge management

Although not part of the traditional framework, the **social and environmental** aspect is sometimes integrated as an additional lens (How do we contribute to societal and environmental well-being?)

Tripple Bottom Line (in the Digital Era)
1. **People (Social value):** *How do our actions impact individuals and communities?*
   - ➢ Employee well-being, flexible work, social projects.
2. **Profit (Economic value):** *How is the organization performing financially?*
   - ➢ Sales growth, profits, ROI, cost reduction
3. **Planet (Environmental value):** *What is our environmental impact?*
   - ➢ Metrics: Pollution reduction, recycling, carbon neutrality.

Benefit
- ➢ Greater social and environmental impact
- ➢ Improved brand reputation
- ➢ Better talent acquisition and retention
- ➢ Creating more sustainable supply chains
- ➢ Improving profits through cost savings

Challenges and opportunities

Challenges	Opportunities
• Data Overload	• Enhanced Analytics Capabilities
• Data Quality and Accuracy (uniqueness)	• Real-time Performance Tracking
• Real-time Decision Making	• Access to Diverse Data Sources
• Complexity of Digital Ecosystems	• Agile Strategy Iteration
• Cybersecurity Risks	• Automation and Efficiency
	• Competitive Advantage

TWO OPTIONS

Perspective	Objective	KPI	Unit of measure	Target	Measurement Frequency	Optimal	Acceptable	Deficient	Responsible
Financial									
Customer									
Internal process *	Can include measures related to waste reduction, energy efficiency, or supply chain sustainability								
Learning and Growth*	Can include measures regarding employee sustainability training, diversity and inclusion initiatives, or knowledge management for sustainable practices.								

Perspective	Objective	KPI	Unit of measure	Target	Measurement Frequency	Optimal	Acceptable	Deficient	Responsible
Financial									
Customer									
Internal process									
Environmental									
Social									
Learning and Growth									

EXAMPLE

Perspective	Objective	KPI	Target	Measurement Frequency	Optimal	Acceptable	Deficient	Responsible
Financial	Increase profitability	Profit growth rate	10% annual growth	Quarterly	10%	8%	5%	CFO
Financial	Increase the ROI	ROI ratio	Increase at least 5%	Year	5%	3%	<3%	CFO
Customer	Enhance customer satisfaction	Customer satisfaction score (CSS)	Achieve minimum CSS of 90%	Quarterly	90%	85%	75%	Head of Customer Service
Customer	Increase market share	% of Market share	Increase at least 10% this year	Semestral	10%	6%	<=6%	Head of Customer Service
Internal Processes	Improve operational efficiency	Process cycle time	Reduce cycle time by 20%		20%	15%	10%	Operations Manager
Internal process	Reduce the number of defects	Number of defect/number of products/services	Reduce from 8% to 5%	Semestral	5%	7%	=> 8%	Operations Manager
Environmental	Reduce greenhouse gas emissions through energy efficiency initiatives.	Total metric tons of CO2 equivalent emitted per year	Reduce carbon footprint by 20% compared to the baseline year	Annual	20%	15%	10%	Sustainability Department or Energy Management Team
Social	Promote employee volunteerism and community involvement.	Total number of volunteer hours contributed by employees	Achieve 500 volunteer hours within the fiscal year	Annual	500	450	400	Corporate Social Responsibility (CSR) Department
Learning and Growth	Foster employee development and innovation	Employee training hours	Provide 40 hours per year	Annual	40 hours/year	30 hours/year	<30 hours/year	HR Manager
Learning and Growth	Achieve 90% satisfaction of our employees the next year	Total number of employees Satisfied with a 4 or 5/Total number of employees surveyed	Achieve a 90%	Annual	90%	85%	<85%	HR Manager

1. Ethics in the digital era

Business ethics: principles of conduct within organisations that guide decision making and behaviour.

- Ethical leadership
- Accountability
- Integrity
- Respect for others
- Honesty
- Respect for Law
- Responsibility
- Transparency
- Compassion
- Fairness/ Inclusiveness
- Loyalty
- Environmental concern

Seven Signs of Ethical Collapse

1. **Pressure to Maintain the Numbers** → undermining integrity and long-term sustainability.
   - Organizations focus excessively on meeting performance metrics, at cost of ethical behaviour.
2. **Fear and Silence** → silence allow issues to persist unchecked.
   - Employees are discouraged from voicing ethical concerns due to fear of retaliation (job loss).
3. **Young and Iconic Leaders** → Lack of dissent & diversity in thought weakens decision-making.
   - Charismatic leaders with media presence surround with inexperienced, loyal subordinates.
4. **Weak Boards:** → Acts as a rubber stamp rather than a check on unethical practices.
   - Board fails to provide oversight due to inexperience, no commitment, or CEO dependence.
5. **Culture of Conflicts** → even minor, private conflicts undermine transparency & accountability.
   - Tolerance for conflicts of interest within organizations, as personal financial ties.
6. **Innovation Like No Other** → unethical decisions under the guise of innovation
   - Organization perceive itself as unique / above standard rules of governance/accounting.
7. **Goodness in Certain Areas** → justify unethical actions by pointing to their "good" contributions
   - Strong records in philanthropy or environmentalism mask unethical practices in other areas

Ethical Challenges in the Digital Era

- Data Privacy and security
- Cybersecurity
- Trust and transparency
- Digital Marketing ethics
- Intellectual property rights
- Algorithmic biases and fairness
- Social media & online reputation management
- Ethical use of emerging technologies
- Global ethical considerations
- Employee digital ethics

Addressing these ethical challenges requires companies to establish:

- Comprehensive ethical frameworks
- Develop strong corporate values
- Promote ethical awareness/education
- Integrate ethical considerations to their strategy & decision-making processes

Transhumanism

Movement that uses science & technology to enhance human abilities → evolving humans to superior species using technology as genetic engineer, brain-computer interfaces, & nanotechnology.
- Aims to redefine what it means to be human & promises a better future for all of humanity
- Future where we can: live longer/healthier, think faster, more creative, & uncover universe.

The ethics of transhumanism

Fundamental questions What does it mean to be human? Are we humans alerting our bodies/minds?
- Reconsider our understanding of identity, consciousness, and free will.
- Technology is shaping our future → cannot be overstated →no boundaries →societal impact

RISKS

Potential for **new class of "superhumans"**
   → increased social inequality
Risk of **loss of privacy** due to data collection.
Potential abuse of **personal autonomy/ freedom.**

BENEFITS

Longer, healthier lives.
Overcoming **biological limitations**
Improve cognitive abilities
   → process info fast / accurately
Enhance our physical performance.

Techno optimism

- ➢ Means believing that technology can make our lives better (good things outweigh the bad).
- ➢ Techno-optimism can be seen in two ways:
  - o Technology makes sure good wins over bad.
  - o Technology simply makes things better and the world a better place.

2. ESG in the digital era

Sustainable Development Goals → 17 goals to transform our world

AI for Social Good

- ➢ Some goals, like **Zero Hunger (SDG 2)**, **Life on Land (SDG 15)**, and **Peace, Justice, and Strong Institutions (SDG 16)**, have many AI use cases despite their low recognition of AI's potential.
- ➢ AI is being actively deployed in areas like **Quality Education (SDG 4)**, **Climate Action (SDG 13)**, **Clean Energy (SDG 7)**, and **Sustainable Cities (SDG 11)**, matching their high perceived potential.
- ➢ **Good Health and Well-Being (SDG 3)** stands out with lots of AI applications, even though its potential is only moderately recognized.
- ➢ Goals like **Gender Equality (SDG 5)** and **No Poverty (SDG 1)** are underexplored, with both low AI deployment and perceived potential.
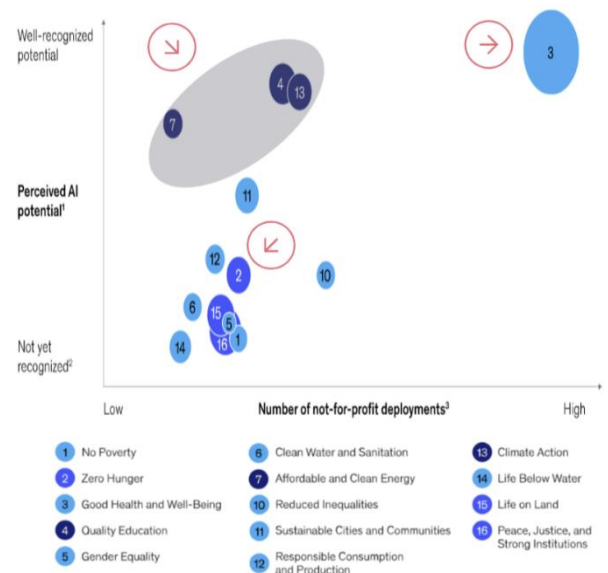

ESG (Environmental, **Social**, and **Governance)**.

Set of criteria used to evaluate the sustainability and societal impact of a company's operations.

Digital ESG: Update to existing ESG model, but for digital world, framework for digital economy:
- ➢ Focuses on leveraging digital capabilities to achieve sustainability while mitigating risks in a world blending physical and digital elements ("phygital")

1. **Beyond-Sustainability**: Thriving, not just surviving, in the phygital world by improving and regenerating systems.
   - ➢ **Goal**: Move beyond reducing harm to actively creating positive environmental and societal impact.
   - ➢ **Focus**: Build systems that enable businesses to thrive in the interconnected physical and digital landscape.
2. **Cross Economy:** Enhanced version of the circular economy that integrates digital elements.
   - ➢ **Goal**: Transform materials, services, and value through digital innovation.
   - ➢ **Focus**: Move beyond recycling & reusing to reimagining value creation using digital technologies.
3. **Digital ESG Criteria:** Framework for achieving Beyond-Sustainability in the phygital world.

   - ➢ **Goal**: Help companies adopt sustainable practices while addressing digital risks.
   - ➢ **Focus**: Provide guidelines to create a lasting, positive impact by embedding digital opportunities into ESG strategies.
   - 3.1. **Digital- E (environmental):** how a company's digital activities impact the environment.
   - ➢ Ej. tech company can optimize servers for energy efficiency/ renewable to power its centers.
   - 3.2. **Digital- S (social):** how a company´s digital activities affect individuals and communities.
   - ➢ Ej. promote digital literacy, ensure data privacy, & provide equal access to digital services.
   - 3.3. **Digital- G (Governance):** how a company manages its digital activities.
   - ➢ Ej. algorithms transparency, data security, & ethical considerations in digital product design.
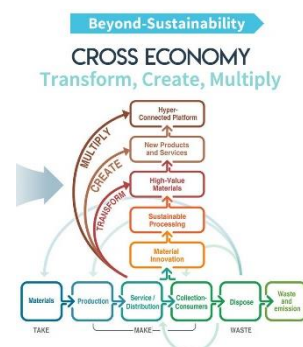
3. Privacy in the digital era

"It is not about access to or encryption of data. It is about ensuring that the information remains private even if it is hacked"

- ➢ Negative side of big data → Risks, particularly **privacy violations**.
- ➢ Vulnerabilities of information systems in terms of unauthorized access to protected data
- ➢ **Security techniques** or **cybersecurity** are crucial for preserving **privacy**.

"Credibility takes years to build, but a few hours to destroy"

- ➢ The damage that an organization can suffer from a security breach in the information systems and the subsequent publication of private data of customers is twofold:
    1. **Loss of credibility** → with direct impact on the income statement
    2. **Legal cases** to which the organization may be subject if customers, in accordance with the law, file the corresponding complain

New Threats

- ➢ **Machine learning (ML)** creates new risks for security and privacy, both through their use in attacks and the way they expose information and generate new data.
- ➢ While creating a comprehensive taxonomy is complex, some examples and types of attacks:

Case Study: Anonymized Data Release (2006)
- **Overview**: Twenty million search keywords from 650,000 users were released for research, anonymized by replacing names with numbers.
- **Flaws**: Queries were linked by user IDs, enabling patterns to emerge.
- **Outcome**: The NYT identified user No. 4417749 as **Thelma Arnold** by analyzing queries.
- **Privacy Risks**: Query content (e.g., locations, hobbies, names) and cross-referencing with public information (e.g., phonebooks) exposed identities.

Three types of privacy attacks
1. **Singularization- Identity Disclosure**: The possibility of extracting certain records (or all records) from a dataset that identifies a person. In this case, an intruder can exploit a small subset of variables to establish the linkage, and once the linkage is successful, the intruder gains access to all other information in the published data related to the specific individual.
2. **Likability - Attribute Disclosure**: The intruder can determine new characteristics of an individual based on the information available in the data. Occurs when adversary obtains info they were previously unaware of and can also occur without identity disclosure.
3. **Inference - Inference Disclosure:** The intruder can determine the value of a person's characteristic with greater accuracy from released data than would have been possible otherwise.

LEGAL FRAMEWORK

Anonymization	Pseudonymization
Encrypting or removing data that could potentially identify a person in a dataset.	Personal data processed so it can't be attributed to a specific person without additional info.
Done to ensure that the individuals referenced in the data cannot be identified.	Replaces/encrypts identifiable data with codes, allowing data to be linked to a pseudonym.
It is understood that it is irreversible, although this aspect must be guaranteed.	Purpose is to enhance data privacy & security while allowing data analysis and processing.

Some regulations
- ➢ General Data Protection Regulation (GDPR) in Europe since May 25, 2018.
- ➢ The Privacy Act 1974 in EE.UU.
- ➢ General Data Protection Law (LGPD). Brazil.
- ➢ Personal Information Protection and Electronic Documents Act (PIPEDA)- Canadá