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TRANSNATIONAL TECHNOLOGY TRANSFER NETWORK for BLACK SEA BASIN

KTU 1955 KARADENIZ TECHNICAL UNIVERSITY

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CENTRE FOR RESEARCH & TECHNOLOGY HELLAS

BATTI

UNIVERSITAS GALATIENSIS

# MANAGEMENT OF TECHNOLOGICAL COLLABORATION

## BATTI’s presentation

# Table of Content

# Abbreviations or acronyms

**ICTs** - **Information and Communication Technologies**. This term encompasses a wide range of technologies that facilitate the storage, retrieval, manipulation, transmission, and receipt of information. ICTs are crucial in various sectors, including business, education, healthcare, and government

**GDP** - **Gross Domestic Product**. It is a key indicator used to measure the economic performance of a country. GDP represents the total monetary value of all final goods and services produced within a country's borders in a specific time period, usually annually or quarterly

**SMEs** - **Small and Medium-sized Enterprises**, refer to businesses that maintain revenues, assets, or a number of employees below a certain threshold. The exact definitions can vary by country, but generally, SMEs are classified based on their size and contribution to the economy

**CBPR** - **Community-Based Participatory Research**. It is an approach to research that involves all stakeholders (e.g., researchers, community members, and organizations) in the research process, emphasizing collaboration and mutual benefit. CBPR is often used in public health, social sciences, and community development to address issues that affect specific populations or communities.

**R&D** - **Research and Development** - It refers to activities undertaken by businesses, governments, or institutions to innovate, develop new products, improve existing ones, or enhance processes.

**IP** - **Intellectual Property**. This refers to creations of the mind, such as inventions, literary and artistic works, designs, symbols, names, and images used in commerce. Intellectual property rights allow creators to protect their innovations and ideas, incentivizing creativity and innovation.

**4IR** - **Fourth Industrial Revolution**. This term refers to the ongoing transformation of industries through the integration of advanced technologies, such as artificial intelligence (AI), the Internet of Things (IoT), robotics, blockchain, and big data analytics. The Fourth Industrial Revolution builds upon the digital advancements of the Third Industrial Revolution, which focused primarily on information technology.

# Abbreviations or acronyms

**ICT** - **Information and Communication Technology**. This term encompasses a broad range of technologies used to manage and communicate information. ICT includes hardware, software, telecommunications, and the internet, facilitating the storage, retrieval, transmission, and manipulation of data.

**GCC** - **Gulf Cooperation Council**. The GCC is a regional intergovernmental organization comprising six Arab states in the Persian Gulf: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

**AI** - **Artificial Intelligence**. AI refers to the simulation of human intelligence processes by machines, particularly computer systems. This includes the ability to learn, reason, and self-correct. AI technologies are increasingly being integrated into various sectors, driving innovation and efficiency.

**IoT - Internet of Things**. The Internet of Things refers to the network of interconnected devices and systems that communicate and exchange data with each other over the internet. These devices can range from everyday objects like household appliances to industrial machinery, all equipped with sensors, software, and connectivity capabilities.

# Introduction to Technological Collaboration

## Management of Technological Collaboration

**Objective:** Equip participants with knowledge and skills for managing technological collaboration.

**Definition:** Technological collaboration involves using advanced tools and platforms to facilitate partnerships for shared goals.

**Relevance:** With the **Fourth Industrial Revolution (4IR)**, collaboration is crucial for efficiency and innovation.

**Focus Area:** E-collaboration and its role in **supply chain integration**.

# Introduction to Technological Collaboration

## What is Business Collaboration

**Impact of Digital Technologies:** The rise of **ICTs, digitalization, and IoT** has transformed collaboration across industries.

**Expansion of E-Business:** Digitalization has reshaped how companies operate and interact in various markets.

**Supplier Collaboration:** Stronger partnerships with suppliers have become essential for operational success.

**Real-World Examples:** Companies like **Amazon, Dell, and Lenovo** thrive through **unlimited collaboration** and regulatory frameworks.

**Benefits of E-Business:**

- **Improved Information Sharing** along the supply chain.
- **Broader Supplier Integration** for seamless operations.
- **Enhanced Knowledge Sharing**, **Efficiency**, and **Cost Reduction**, leading to better overall performance.

# Rationale and Objectives

## Why collaboration is essential and what this training aims to achieve

**Why collaboration is essential**

- To ensure that universities and industries get to know each other better

- To provide inspiration from successful collaboration examples

**Shift in Collaboration:** Once a **supportive competency**, collaboration is now a **strategic imperative** for businesses.

**Objective of the Presentation:** Explore how **technology** enables value creation and fosters **collaborative environments** within supply chains.

**Definition of Business Collaboration:**

- Involves **two or more organizations**, at least one being a business enterprise.
- **Resource and knowledge sharing** to achieve goals beyond individual capabilities.

**Competitive Advantage:**

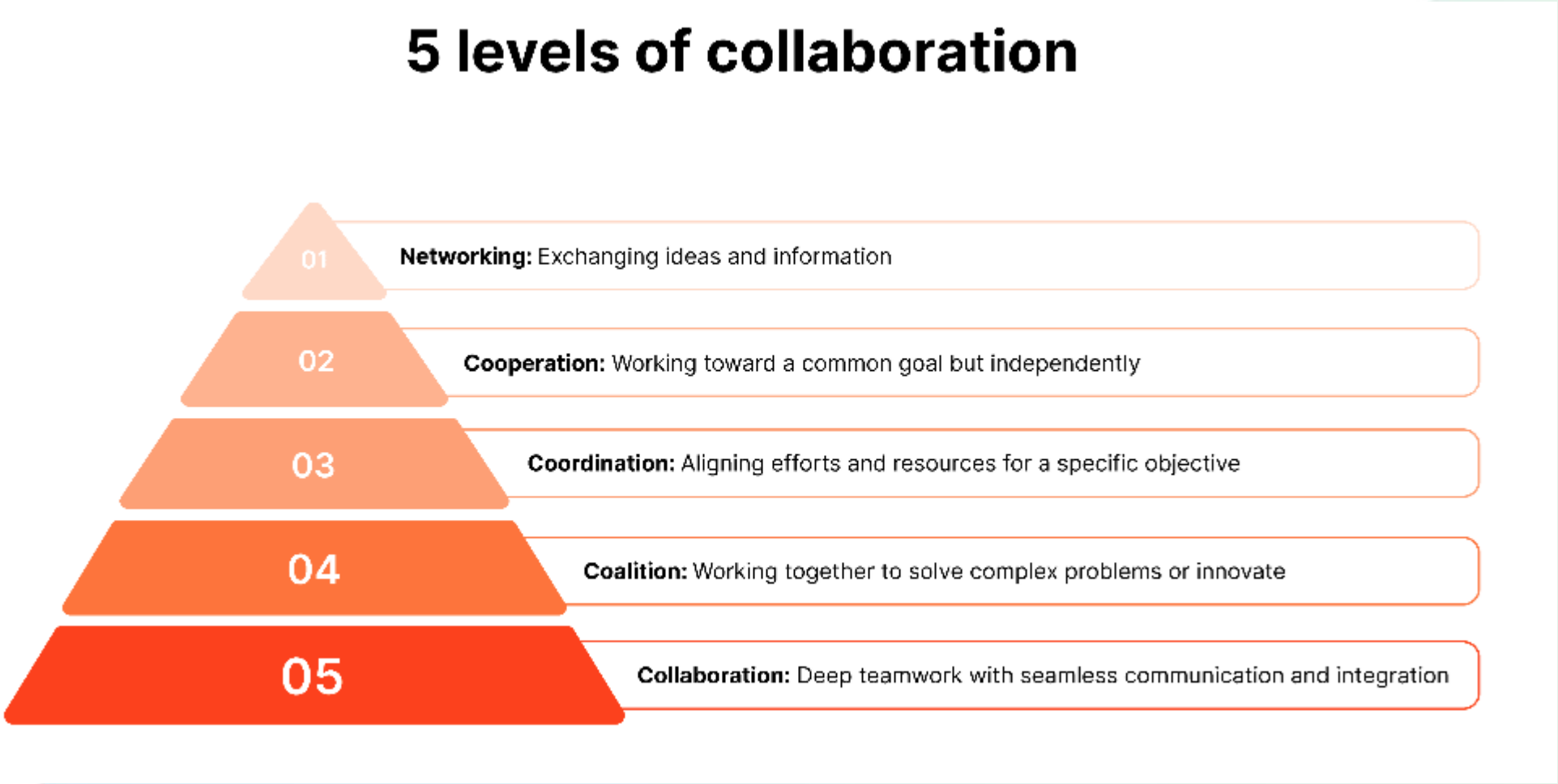
- Collaboration grants **collective access to resources** and **enhanced knowledge-sharing**.
- Strengthens a company's position in **a rapidly evolving business landscape**.

**Growing Focus on Supply Chain Collaboration:**

- **Managers prioritize supply chain optimization** to stay competitive.
- The **approach to achieving competitive advantage is evolving**, with a greater emphasis on integrated collaboration.

# Key Concepts: Collaboration Levels and Strategies

## 5 level of collaboration




*Source: https://www.hyland.com/en/resources/articles/digital-collaboration-communication*

# Key Concepts: Collaboration Levels and Strategies

## 5 level of collaboration

**Levels of Collaboration:**

**1. Networking**

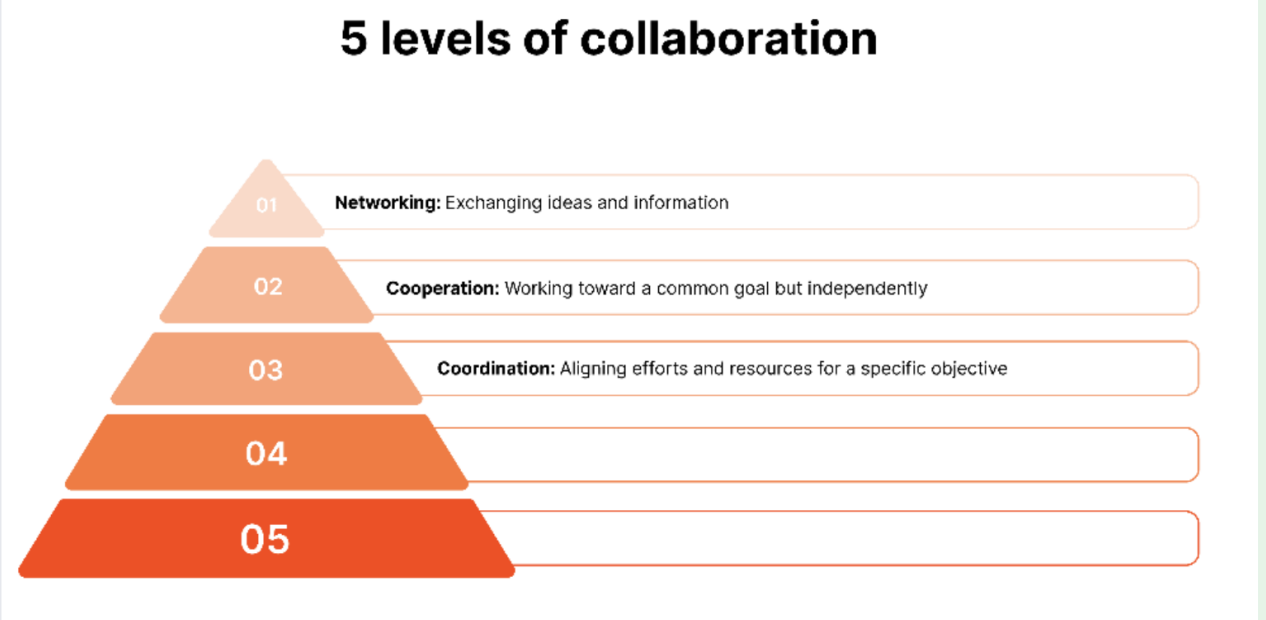
1. Basic exchange of **ideas, contacts, and resources**.
2. No structured goal or shared objective.
3. **One-sided communication**, often without interaction or response.

**2. Cooperation**

1. More structured collaboration with a **common goal or objective**.
2. **Interdependence and two-way communication** exist, but individuals still work independently.

**3. Coordination**

1. Collaboration becomes **structured and organized**.
2. Teams **synchronize efforts, align resources and timelines**.
3. Uses **formal communication tools** like email and project management software.



# Key Concepts: Collaboration Levels and Strategies

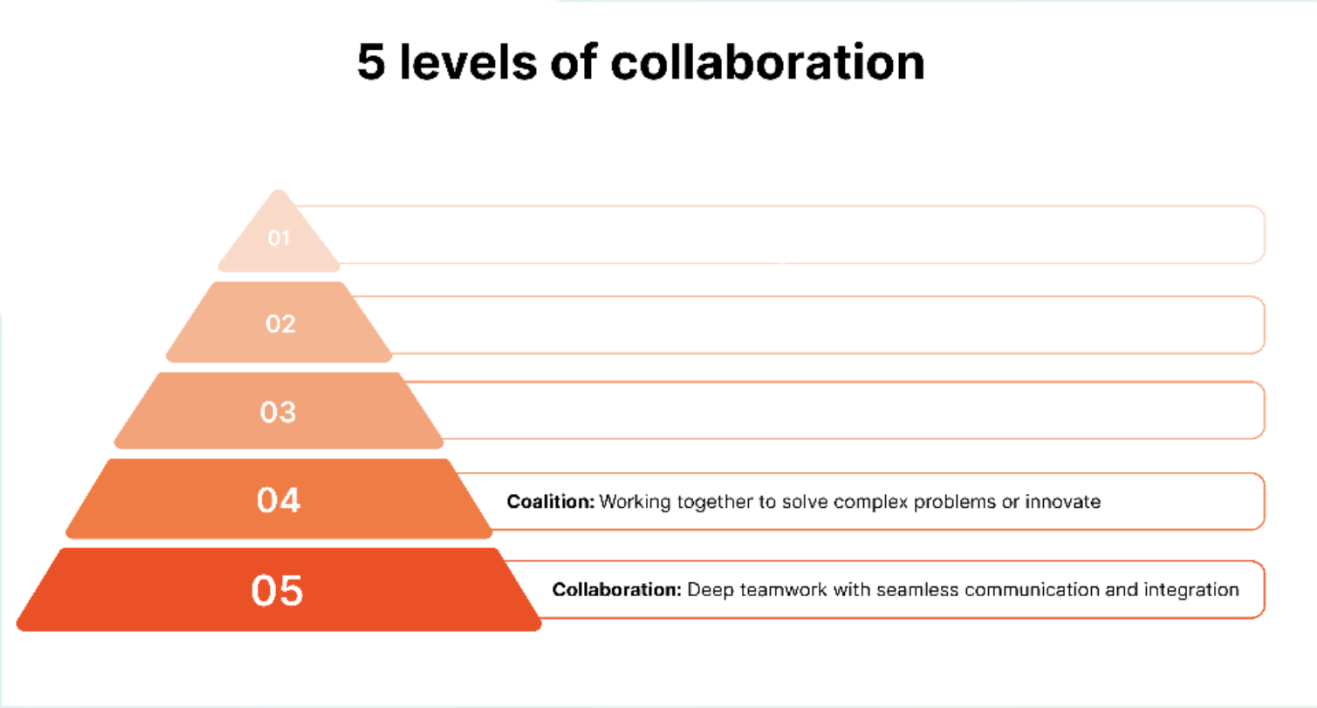
## 5 level of collaboration

**4. Coalition**

1. Involves **multiple departments or organizations** working together on a shared goal.
2. **Joint decision-making** and **knowledge sharing** to solve complex problems.
3. Leverages collective strengths and resources.

**5. Collaboration (Pinnacle Level)**

1. **Highest level of teamwork**, requiring **trust, communication, and integration**.
2. Well-defined roles and responsibilities.
3. **Real-time collaboration** using **digital tools** for agile decision-making and problem-solving.



# Key Concepts: Collaboration Levels and Strategies

## An in-depth breakdown of the stages of collaboration

**Three key themes** emerged during the analysis of open code labels from data containing the words 'Association' and 'Collaboration':

**(1) The macro forces that make collaboration necessary,**

**(2) The processual nature of collaboration**

**(3) The commercial implications of collaboration.**

For brevity, limited evidence from the interviews is presented, but more evidence is available upon request from the authors.

# Themes from Research

## Theme 1 – Macro forces requiring collaboration

- **Technology accelerates globalization**, allowing companies to compete globally.
- **Global integration** happens through mobile phones, social media, and IoT.
- **Employees seek global experiences** to solve problems, co-create, and innovate.
- **Globalization removes barriers**, facilitating the free movement of goods, services, capital, and technology.
- **Opportunities arise for innovation, research, and collaboration** across borders.
- **Big data, IoT, and AI enhance competitiveness** in the global market.

- **The rise of the 'knowledge society'** – data and information are now key forms of capital.
- **Creativity in demand generation is declining**, with technology driving new products and services.
- **Business intelligence and analytics shape new business models** and redefine customer expectations.
- **Digitalization challenges strategic objectives**, impacting business models and creating technological opportunities.
- **Innovation fuels demand**, while customers actively influence the innovation process.
- **A multi-generational workforce is essential**, requiring companies to develop an intergenerational workplace culture.

# Key Concepts: Collaboration Levels and Strategies

## Theme 2 – The process nature of collaboration

**Business Development**

- Drives international growth through improved processes and innovation.

- Encourages the development of competitive business models.

**Role of Technology**

- Facilitates collaboration with customers and partners.

- Enables new digital business models for competitive advantage.

- Supports integration within global business ecosystems.

- Investment in digital technologies boosts performance and sustainability.

**Digital Transformation**

- Essential for adapting to changing markets.
- Creates new collaboration opportunities and strategic flexibility.

**Innovation and Market Demand**

- Ideas fuel technological progress and new product development.
- Companies must innovate to stay competitive and relevant.

**Strategic Shifts**

- Movement from product/service-driven models to data-driven strategies.
- Big data is increasingly used for smarter, faster decision-making.

**Phases of Strategic Cooperation**

- **Initiation** – Define shared goals and intent to collaborate.
- **Development** – Clarify roles and build mutual trust.
- **Implementation** – Actively share resources and coordinate actions.
- **Evaluation** – Assess effectiveness and identify improvements.
- **Sustainability or Closure** – Decide on continuing or concluding the partnership.

**Success Factors in a Changing Economy**

- Clear strategic priorities.
- Strong market awareness.
- Adaptability to shifting economic conditions.

# Key Concepts: Collaboration Levels and Strategies

## Theme 3 – Impact of work on collaboration

- **Tech giants like Amazon, Google, and Apple thrive** due to technology-driven innovation and high product demand.
- **Companies must continuously innovate** to stay competitive in a changing global economy.
- **Competitiveness is multifaceted**, relying on systems, technology, knowledge, partnerships, and unique offerings.
- **The strategic focus is shifting** from product/service-based to information-driven business models.
- **Big data enables smarter decision-making**, shaping new business models.
- **To remain competitive, companies must prioritize adaptability**, market awareness, and strategic clarity.
- **Sustainable systems drive profitability and long-term success**, helping companies innovate and expand.
- **These systems support product and service development**, market expansion, and stronger supply chain interactions.
- **Smart devices enhance system reliability**, enabling new products, processes, and solutions through remote communication.
- **Innovation is key to competitive advantage**, acting as a catalyst for product development and market growth.
- **Innovation impacts all aspects of business**, from models and structures to processes, systems, and product offerings.
- **Developing distinctive competencies** through innovation strengthens market position and sustainability.

# Real World examples

## Real-world examples illustrating successful collaboration

- **Recent 'black swan' events, like COVID-19, have increased cross-sector collaboration projects.**
- **Example: Airbus, McLaren, Ford, and Siemens collaborated with medical companies** (Penlon & Smiths) to rapidly boost emergency medical equipment production in the UK.
- **Demand-driven collaborations arise from urgent business opportunities**, often with tight timeframes, regulatory hurdles, and limited market players.

## Importance of University Industry Cooperation (UIC)

**Strategic Purpose**:

Form partnerships to develop innovative products, technologies, and solutions.
Aligns academic research and knowledge with industry needs.

**Mutual Benefits**:

Universities contribute research capabilities and infrastructure.
Industry provides expertise in production, commercialization, and marketing.
Collaboration boosts knowledge transfer, innovation, and competitiveness.


**Role of Digital Platforms**:

Enable real-time resource sharing and flexible collaboration.
Accelerate innovation and product development cycles.

**Challenges and Barriers**:

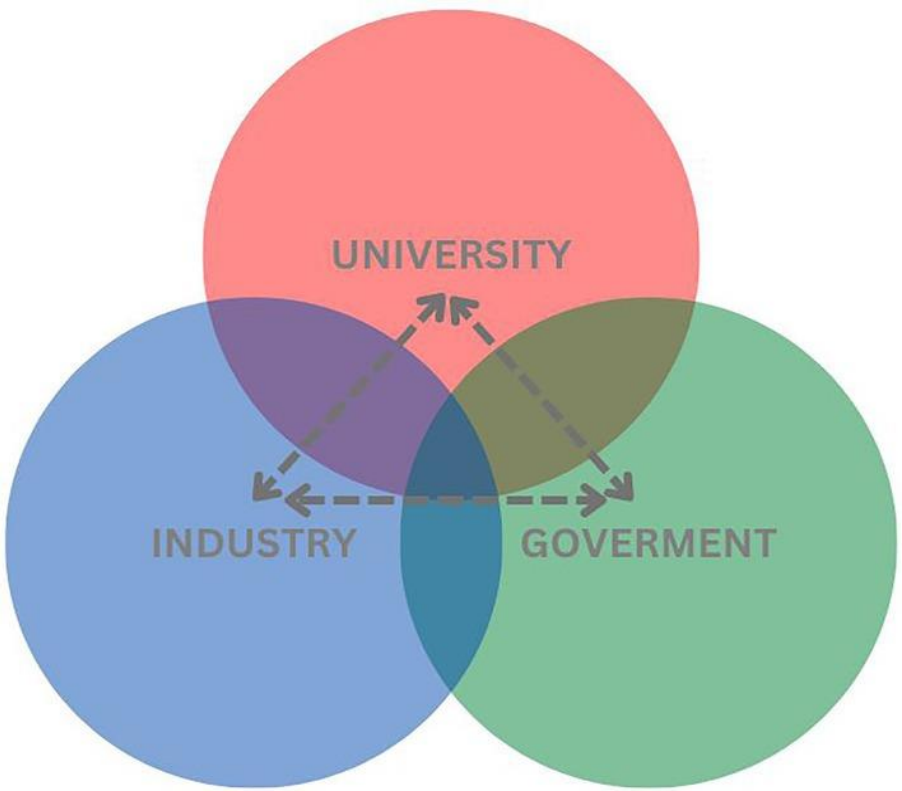
Academic collaboration often does not influence career progression or evaluations.
Trust issues between academia and industry remain a significant barrier.

**Influencing Factors**:
Success depends on characteristics such as gender, age, education, motivation, and academic discipline.

# Case studies

## Importance of University Industry Cooperation (UIC)

- **Challenges in university-led entrepreneurship initiatives in the GCC** include leadership issues, skills gaps, curricular constraints, and regulatory barriers.
- **Sustainable development requires cross-sector collaboration**, involving politics, industry, science, and civil society.
- **Arab nations are enhancing education and scientific research** through regional science, technology, and innovation plans.
- **Priority research areas include biotechnology, nanotechnology, and renewable energy.**
- **International collaboration and engaging Arab scientists abroad** are essential for advancing innovation and research.
- **Key Qatari research institutes** (Qatar Biomedical Research Institute, Qatar Environment and Energy Research Institute, etc.) are collaborating with universities and foundations to drive entrepreneurship and innovation in Arab nations.



# Case studies

## Initiation of Communication and Relationships

- **Foundation of Collaboration**:

Trust-based relationships are essential for long-term sustainability.

- **Initiating Cooperation**:

Structure the cooperation model to reflect mutual interests and responsibilities.

- **Community-Based Participatory Research (CBPR) Approach**:

Promotes equal partnerships between academic researchers and community members.

- **Common Challenges**:

**Misconceptions**:

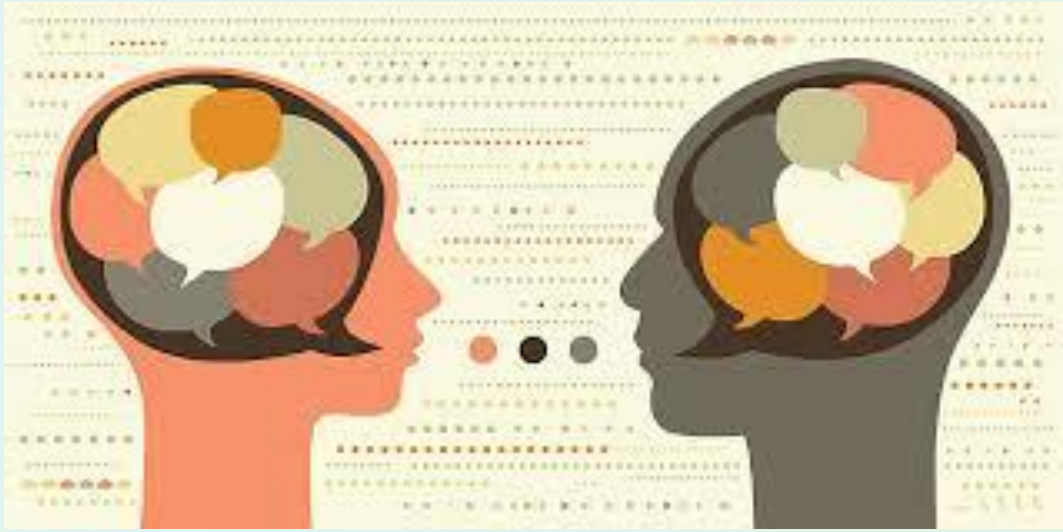
**Power Imbalances**:

- **Limited Community Involvement**:

Leads to mistrust and weakens collaborative efforts.

- **Importance of Power-Sharing**:

Academics must be willing to let communities contribute meaningfully at all stages.



## Initiation of Communication and Relationships

- **Community engagement may be limited**, with community members often acting as passive participants rather than active partners.
- **This limited engagement can damage relationships**, leading to general distrust between academics and community stakeholders.
- **Community members frequently view academics as untrustworthy**, perceiving a lack of commitment to the community's welfare.
- **Distrust is further exacerbated** when academics withhold information on immediate benefits and outcomes, undermining reciprocity and trust.

# Case studies

## Initiation of Communication and Relationships

- **Securing long-term funding and resources is challenging** for academics engaged in community-based research due to extra time and resource burdens.
- **These challenges reduce competitiveness in grant applications**, resulting in limited access to communities and fewer opportunities for effective engagement.
- **Academics are now expected to broaden their boundaries** by building bridges with the wider community to achieve better research and innovation outcomes.
- **This literature review provides insights** into the common challenges, situations, and pitfalls in establishing and sustaining community-academic collaborations.
- **Building fair, transparent, and trusting relationships** with communities can improve the quality, sustainability, and future potential of collaborations.

# Case studies

## Developing, Promoting and Managing technological network partnerships

**R&D management involves high uncertainty:**

- Launching new products carries inherent risks.
- Future market developments and conditions can unpredictably affect profitability.

**Contract selection varies by process type:**

- **New processes** are generally more costly and time-consuming.
- **Incremental processes** can be developed quickly and at lower cost.
- Payment terms must reflect the R&D requirements and market volatility.

**Adaptation and competency building are essential:**

- Companies must evolve as industry convergence redefines traditional firm boundaries.
- Acquiring new competencies is crucial in a rapidly changing, technology-driven market.

**Technology-based convergence expands collaborative opportunities:**

- Increased collaborative arrangements boost a company's technological and market knowledge.
- Emerging business ecosystems—including suppliers, distributors, and technology providers—accelerate innovation, productivity, and product delivery.

# Case studies

## 6 best practices for successful technology transfer

Adopting proven technology transfer tactics is crucial for optimizing efficiency and streamlining the process. These best practices can be applied across various sectors, saving time and resources, enabling faster commercialization, and maximizing the impact of innovative technologies. **Six tips can help develop a comprehensive transfer plan for better technology transfer.** Here's your text transformed into bullet points with key takeaways:

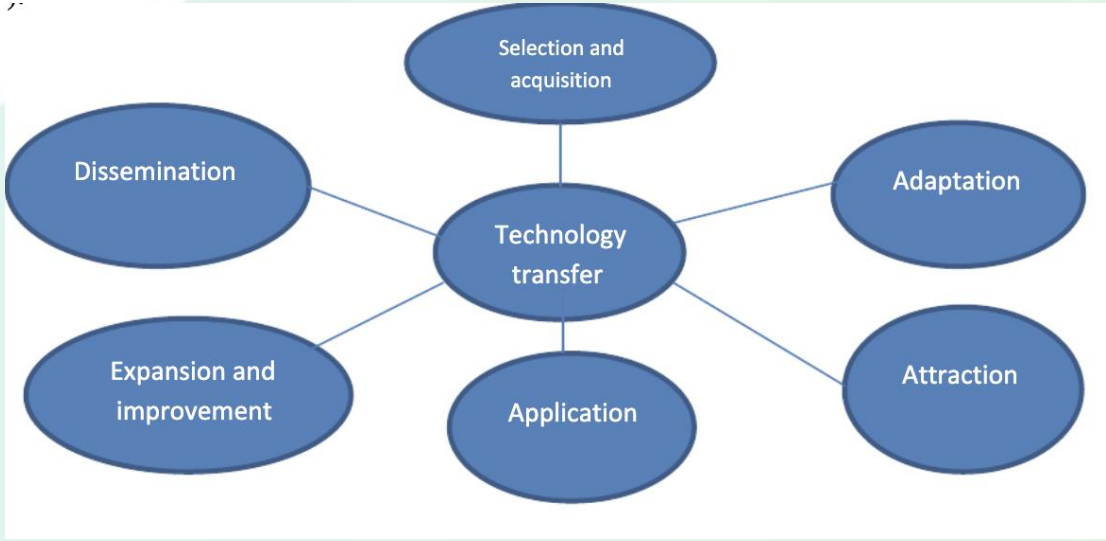
**Six Essential Tips for a Comprehensive Transfer Plan:**

**1. Build Strong Industry Relationships**

- Enhances efficiency in the transfer process.
- Leads to flexible patent licenses and additional research funding.
- Promotes free communication, resource sharing, and practical solutions through diverse skills and perspectives.

**2. Establish a Clear Intellectual Property (IP) Policy**

- Guides effective technology transfer and innovation commercialization.
- Addresses risk management and protects new IP rights.
- Simplifies ownership and licensing priorities.
- Encourages collaboration through centralized platforms (e.g., LoftOS) that list proposals and opportunities.



## 6 best practices for successful technology transfer

**3. Simplify the Licensing Process**

- Standardize contracts and reduce review cycles.
- Bundle patents into targeted portfolios for flexibility and geographic focus.
- Utilize non-exclusive licenses to broaden entrepreneurial opportunities.
- Foster a system centered on accountability, transparency, and speed.

**4. Conduct Patent Portfolio Analysis**

- Assesses the value of inventions and identifies strengths and gaps.
- Guides prioritization of technologies and partnership opportunities.
- Maximizes the potential of inventions for successful commercialization.

**5. Invest in Digital Infrastructure**

- Facilitates efficient, collaborative, and secure technology transfer.
- Supports research sharing, virtual transfers, and large-scale data processing.
- Utilizes digital tools (e.g., shared drives, project management platforms, video conferencing) to boost collaboration and innovation.

**6. Understand the Technology Transfer Lifecycle for Successful Commercialization**

- Involves comprehending market demand, partner identification, and contract complexities.
- Digitizes and centralizes the process, automates workflows, and streamlines collaboration.
- Emphasizes networking to maximize the value of intellectual property.

# Managerial implication

## What is this

**Managerial Implication:**

- Refers to the practical consequences or actionable insights derived from research, analysis, or specific situations.
- Helps managers understand how findings or decisions can impact management practices and influence organizational strategies.

**Decision-Making:**

- Managerial implications guide better decision-making based on data, research, or prevailing circumstances.
- *Example:* If a market study indicates increased product demand, the implication might be to allocate additional resources to production.

**Strategic Planning:**

- They assist in shaping long-term strategies by identifying key insights from research or trends.
- *Example:* If evidence shows that remote work boosts employee productivity, a strategic implication could be to invest in remote work infrastructure.

# Managerial implication

## What is this

**Resource Allocation:**

- Insights can indicate the optimal allocation of time, money, or personnel.
- *Example:* If a department is underperforming due to outdated tools, the implication may be to prioritize technology upgrades.

**Behavioural Changes:**

- Managerial implications often suggest adjustments in leadership style or communication methods to enhance team performance and goal achievement.

**Practical Example:**

- If a report finds that customer satisfaction significantly increases when response times are under two hours, the managerial implication is that managers should invest in customer support training, tools, or processes to ensure faster response times.

# Managerial implication

## Practical insights for leaders to foster collaboration

**Continuous Business Portfolio Review:**

- Companies must regularly realign their business portfolio to remain competitive.

**Internal & External Collaboration:**

- Assess collaboration with both internal stakeholders and supply chain partners.

**Technological Impact:**

- Advances in 4IR and ICT enable collaborative efforts in component/system manufacturing and design.

**Management's Role:**

- A collaborative management structure is essential to foster an environment that capitalizes on technological opportunities.

**Leveraging Capabilities:**

- Collaboration is a powerful tool to leverage organizational strengths for a competitive advantage.

**Supply Chain Benefits:**

- A collaborative approach benefits the entire supply chain by creating a supportive, interconnected environment.

# Managerial implication

## Practical insights for leaders to foster collaboration

**Clear Communication Strategy:**

- Essential for keeping stakeholders informed and integrating new ideas.
- Should include well-defined goals and key performance indicators (KPIs).

**Collaboration Risks:**

- A large network of stakeholders increases exposure to cyber threats.

**Technology Impact Awareness:**

- Managers must ensure all stakeholders understand how software and hardware updates affect shared information.

**Business Continuity & Recovery:**

- Shared continuity plans and recovery strategies are crucial for all stakeholders to maintain operational resilience.

# Conclusion

**Enhanced Resources Through Technological Cooperation:**

- Collaboration with industries, research facilities, governments, and non-profits drives innovation and growth.

**Key Factors for Success:**

- Strong governance structures, effective IP management, organizational culture, funding, and conflict resolution are essential.

**Role of Advanced Technologies:**

- Blockchain and AI can enhance trust and transparency among collaborators.

**Challenges in a Rapidly Advancing Society:**

- Organizations must adapt to new technological and societal challenges.

**Recommendations for Maximizing Innovation:**

- Invest in **digital infrastructure** to support collaboration.
- Build **trust and flexibility** among stakeholders.
- Align efforts with **sustainable** and long-term growth strategies.

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