



REWIND TRAINING PLANS

System Innovations

REWIND

Relaunching Enterprises through Workers' Innovation
and New dynamics

December 2023



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Contents

Contents	3
List of tables	4
List of figures	4
Introduction to the Module	5
Multimedia resources	5
Learning Outcomes	6
Theoretical part	8
1. What is the Innovation System Approach?	8
1.1 The National Innovation System (NIS)	9
2. Roles of the Actors in Innovation Systems	11
3. Collaborative Research and Development (R&D)	14
3.1 Introduction	14
3.2 Categories of Collaborative Research and Development (R&D)	16
3.3 Benefits of Collaborative Research and Development (R&D)	18
4. Skills alliances between companies	21
5. Public-private partnerships in science, technology and innovation	23
Short Summary	25
Tips	27
Training Activities	28
Self-evaluation exercises	29
References	33

List of tables

Table 1. Abbreviations

Abbreviation	Description
NIS	National Innovation System
R&D	Research and Development
OECD	Organisation for Economic Co-operation and Development
IDB	Inter-American Development Bank
PPPs	Public-private partnerships
STI	Science, technology, and innovation
SMEs	Small-Medium sized enterprises

List of figures

Figure 1: Actors and Linkages in the Innovation System

Introduction to the Module

This module aims at introducing to the VET professionals the concept of the **Innovation System** and its complexities, and analyse the set of relationships among actors in the system, which includes enterprises, universities and research and development (R&D) institutes that drive innovation.

The innovation system is a dynamic and intricate ecosystem where actors from various sectors collaborate, compete, and interact to drive progress and bring about transformative changes. The complexity within this system arises from the roles of the actors, their relationships, skills alliances between companies, R&D institutions, and training centres, as well as the flows of relations between public and private entities. Understanding this complexity is essential for navigating and leveraging the innovation system effectively.

Multimedia resources

- ❖ **“Understanding the National and Regional Innovation Systems”**
https://www.youtube.com/watch?v=ivXeGiibQVs&ab_channel=innovationmasters
- ❖ **“Systems of Innovation Overview”**
https://www.youtube.com/watch?v=rVGoeFAW0FM&t=306s&ab_channel=SystemsInnovation
- ❖ **“Systems Innovation Examples”**
https://www.youtube.com/watch?v=p9cgt8zYggk&ab_channel=SystemsInnovation

Learning Outcomes

At the end of the module, the learner should acquire the following knowledge, skills and competences:

Description of the unit of learning outcomes: This module aims at introducing to the VET professionals the concept of the Innovation System and its complexities, and analyse the set of relationships among actors in the system, which includes enterprises, universities and research and development (R&D) institutes that drive innovation.

LEARNING OUTCOMES			
Actions/ achievements	Knowledge	Skills	Attitudes
Learn about the Innovation System (or System innovation approach), its components and understand how to apply the approach in order to generate innovation in an enterprise	<ul style="list-style-type: none"> - Understanding the Innovation System approach - Gain knowledge on the actors, their roles and their complex relationships in order to achieve innovation. - Understand the 	<ul style="list-style-type: none"> - Systemic thinking skills - Innovative and analytical thinking, not focusing on the "linear traditional" model of creating innovation but rather than 	<ul style="list-style-type: none"> - Apply the system innovation approach in an organisation - Conduct system mapping to initiate innovation



	<p>importance of Research & Development (R&D) to innovation and its interconnection with various actors</p> <ul style="list-style-type: none"> - Understand the importance to collaborative partnerships between companies - Understand the importance of collaboration and partnership of the public and the private sector. 	<p>complex relationships between various actors</p> <ul style="list-style-type: none"> - Systems mapping 	
<p>HandsOn/Guides Learning Hours: 5</p> <p>Self Study Hours: 3</p> <p>Assessment Hours: 2</p> <p>Total Learning Hours: 10</p>			

Theoretical part

1. What is the Innovation System Approach?

The Innovation System or System of Innovation concept has been gaining popularity over the last two decades, endorsed in academia, research and policy making institutions such as the Organization for Economic Co-Operation and Development (OECD), the Inter-American Development Bank (IDB), the World Bank, and various United Nations agencies. However, despite its popularity, the Innovation Systems concept is still emerging.

Since the mid '80s, where the concept was introduced by the emeritus professor of economics B.-Å. Lundvall ('Product innovation and user-producer interaction, industrial development', 1985), there have been a lot of variations of definitions and categorizations of the Innovations systems. Essentially though, an innovation system represents the flow of knowledge among actors in the system, which includes enterprises, universities and research institutes in order to achieve innovation. A network of organisations with complex relationships within an economic system that are directly involved in the creation, diffusion and use of scientific and technological knowledge, as well as the organisations responsible for the coordination and support of these processes. The success of innovation systems depends on the active participation and collaboration of various actors who contribute their unique capabilities and expertise.

The innovation systems approach lies in the complex nature of innovation and how it could be achieved. Overall, the innovation system approach has various features that can be summarised as follows:

- According to the approach, innovation is an interactive process among various actors. Individual organisations rarely possess all the knowledge necessary for the whole process of innovation. As a result, they need to combine scientific, design, engineering and operational

knowledge from different sources.

- According to OECD, “technical change does not occur in a perfectly linear sequence, but through feedback loops within this system”. Therefore, an innovative enterprise is operating within this complex network of co-operating and competing enterprises and other institutions, “building on a range of joint ventures and close linkages with suppliers and customers”.
- Innovation systems approach is that it can be applied to different levels of the economy, at a 'supra-national', regional, national, local or sectoral level.

1.1 The National Innovation System (NIS)

The most well known categorisation of Innovation System, the National Innovation System (referred also as NIS, National System of Innovation) takes the same approach as its base but applies it at a national level. This categorisation is the one that has been mostly analysed, studied and applied by economics professors and various international policy making organisations. The NIS approach reflects the increasing attention given to the economic role of knowledge.

As opposed to the “linear model” where knowledge flows from science and an increase in scientific inputs into the pipeline will directly increase the number of innovations and technologies, in the NIS approach, there is a systemic approach to innovation and technology where ideas for innovation can come from many sources and any stage of research, development, marketing and diffusion.

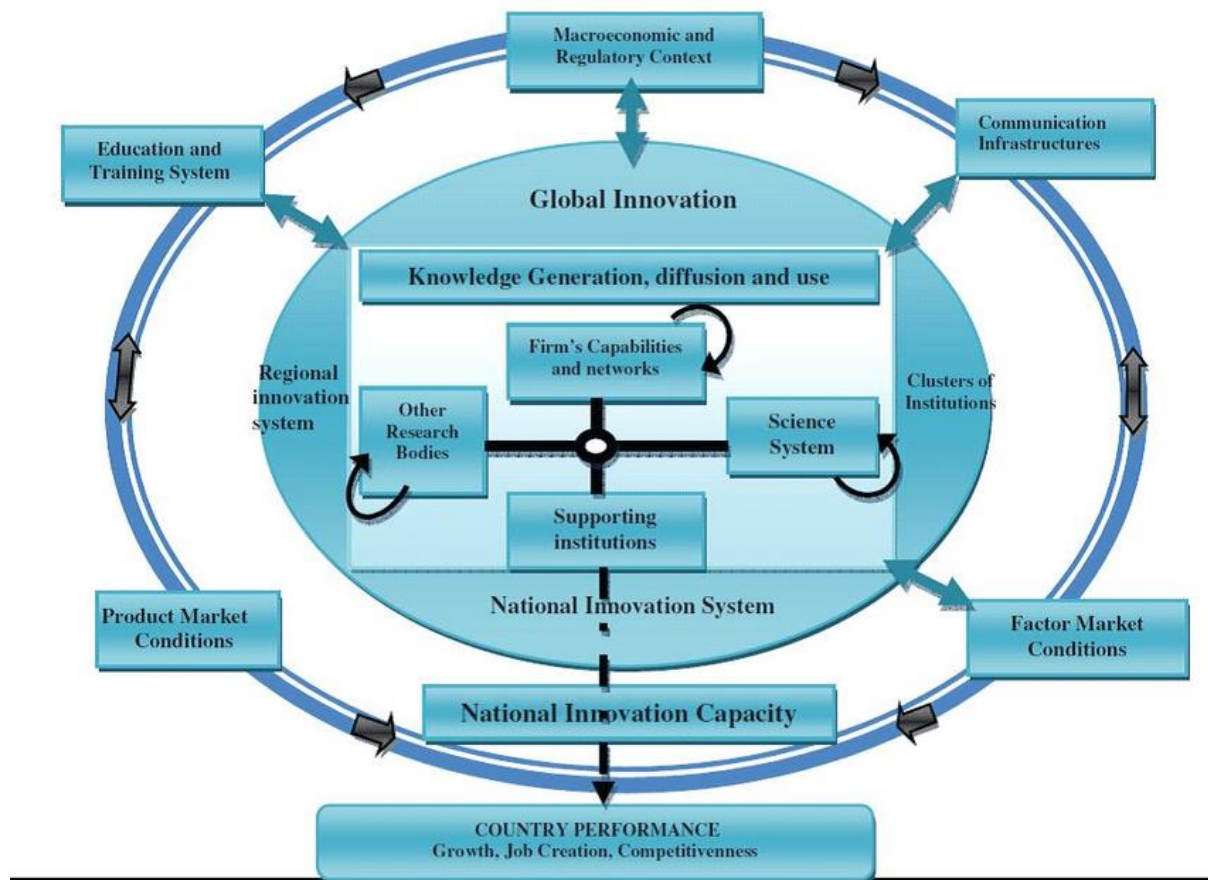


Figure 1: Actors and Linkages in the Innovation System,
Source: OECD (1999).

2. Roles of the Actors in Innovation Systems

Key components of innovation systems are several actors, each one performing different functions in the system. None of these organisations acts in isolation; each is embedded in a web of interrelationships.

Government Actors

Government actors play a crucial role in shaping and supporting innovation systems. They establish policies and regulations that provide a conducive environment for innovation to thrive. Governments often invest in research and development (R&D), fund infrastructure projects, and provide financial incentives to promote innovation. They also act as catalysts for collaboration between academia, industry, and other stakeholders. Furthermore, governments foster entrepreneurship by offering incubation programs and promoting startups, creating a vibrant ecosystem for innovation.

Academic and Research Institutions

Academic and research institutions are key actors in the innovation landscape. They are responsible for generating new knowledge, conducting cutting-edge research, and training the next generation of innovators. These institutions provide a fertile ground for collaboration between researchers, industry experts, and policymakers. They also contribute to technology transfer and commercialization of research outcomes, often through partnerships with businesses and startups. Academic institutions play a vital role in nurturing talent, fostering a culture of curiosity, and pushing the boundaries of knowledge.

Industry

Industry, both large corporations and small and medium-sized enterprises (SMEs), are vital actors in the innovation ecosystem. They are often at the forefront of technological development, translating research and ideas into practical applications. By investing in R&D, industry actors drive innovation, create new products and services, and enhance productivity. Collaboration between industry and other actors, such as academia and government, is essential for knowledge exchange, resource sharing, and technology diffusion. Furthermore, industry actors play a significant role in scaling up innovations and bringing them to market.

Entrepreneurs and Startups

Entrepreneurs and startups are crucial drivers of innovation and economic growth. They bring fresh ideas, disruptive technologies, and agile approaches to the innovation system. Entrepreneurs take risks, identify market opportunities, and develop innovative solutions to address unmet needs. Startups often foster a culture of experimentation and rapid prototyping, challenging established norms and pushing for change. They rely on collaboration with other actors, such as investors, mentors, and incubators, to access resources, funding, and expertise necessary for their success.

Financial Institutions and Investors

Financial institutions and investors play a critical role in supporting innovation. They provide funding through venture capital, private equity, and other investment mechanisms to startups and innovative projects. These actors assess risks, invest in promising ventures, and provide the necessary capital for research, development, and commercialization. Additionally, financial institutions often offer advisory services, mentorship, and networking opportunities, enabling startups to navigate the complexities of the market and scale their operations.

Civil Society Organizations and Non-Profit Actors

Civil society organisations and non-profit actors contribute to the innovation system by advocating for social and environmental goals. They often work on projects with a focus on sustainability, inclusivity, and social impact. These actors play a critical role in raising awareness, driving social change, and ensuring that the benefits of innovation are accessible to all. They collaborate with other actors to address societal challenges, promote ethical practices, and influence policy development.

Conclusion

The roles of actors in innovation systems are diverse and interconnected. Government actors, academic and research institutions, industry, entrepreneurs, financial institutions, and civil society organisations each bring their unique perspectives, resources, and expertise to the innovation ecosystem. Collaboration and cooperation among these actors are essential to create a thriving environment for innovation, driving economic growth, and addressing societal challenges.

3. Collaborative Research and Development (R&D)

3.1 Introduction

Collaborative Research and Development (R&D) has emerged as a vital approach to innovation in today's interconnected world. With the increasing complexity of scientific and technological challenges, companies and research centres are recognizing the power of collaboration to drive breakthroughs and accelerate the pace of discovery. Collaborative R&D brings together the expertise, resources, and perspectives of multiple actors, fostering a dynamic environment where knowledge is shared, risks are mitigated, and collective goals are pursued.

Traditionally, R&D efforts were conducted within the boundaries of individual organisations, often isolated from external inputs and perspectives. However, the limitations of this closed approach became apparent as the intricacy of scientific problems grew and the need for multidisciplinary expertise became more pronounced. Collaborative R&D emerged as a response to these challenges, breaking down the silos and facilitating collaboration between diverse stakeholders.

In collaborative R&D, companies partner with research centres, academic institutions, and other organisations to pool their knowledge, capabilities, and resources. These partnerships often involve joint research projects, co-development of technologies or products, and the sharing of intellectual property rights. By combining the complementary strengths and expertise of different actors, collaborative R&D enables the tackling of complex problems that would be beyond the reach of any single entity.

One of the key advantages of collaborative R&D is the exchange of knowledge and insights. Industry partners bring practical perspectives, market insights, and an understanding of real-world application, while research centres contribute cutting-edge expertise, specialised equipment, and access to academic networks. This collaboration sparks new ideas, encourages cross-pollination of knowledge, and promotes the transfer of best practices, ultimately leading to more innovative and impactful outcomes.

Another significant benefit of collaborative R&D is the sharing of risks and resources. Research and development endeavours often carry substantial costs and uncertainties, particularly in emerging fields or disruptive technologies. By collaborating, organisations can distribute the financial burden, share the risks associated with technological advancements, and achieve economies of scale. This risk-sharing aspect encourages experimentation, enables more ambitious projects, and increases the likelihood of successful outcomes.

Collaborative R&D also fosters a culture of open innovation, where the flow of ideas and technologies extends beyond organisational boundaries. It encourages the establishment of networks, consortiums, and platforms that facilitate collaboration, co-creation, and knowledge exchange. Through these networks, actors from various sectors and backgrounds can connect, learn from each other, and leverage diverse perspectives to address complex challenges.

In conclusion, collaborative R&D represents a paradigm shift in how innovation is pursued. It recognizes the importance of collaboration, knowledge sharing, and risk-sharing in tackling complex problems and driving impactful discoveries. By leveraging the collective strengths and expertise of diverse actors, collaborative R&D holds the potential to revolutionise industries, accelerate scientific breakthroughs, and address the grand challenges of our time.

3.2 Categories of Collaborative Research and Development (R&D)

Collaborative Research and Development (R&D) encompasses a wide range of collaborative approaches and frameworks that facilitate innovation through collective efforts. This chapter explores the categories or types of collaborative R&D, highlighting the different ways in which actors from various sectors come together to drive innovation, share resources, and achieve common goals. By understanding these categories, organisations can better navigate the collaborative landscape and identify suitable models for their specific R&D objectives.

Industry–Academia Collaborations

One prominent category of collaborative R&D involves partnerships between industry and academic institutions. These collaborations bring together the practical knowledge and expertise of industry partners with the theoretical insights and research capabilities of academic institutions. Industry partners often provide funding, access to real-world data, and industry-specific challenges, while academic institutions contribute research facilities, specialised knowledge, and access to talent. This category of collaboration enhances technology transfer, encourages applied research, and bridges the gap between academia and industry.

Public–Private Partnerships (PPPs)

Public–Private Partnerships (PPPs) involve collaborations between public entities, such as government agencies, and private organisations, including businesses, research institutions, and non-profit organisations. PPPs are often formed to address complex societal challenges that require a combined effort and shared resources. These collaborations leverage the strengths of both sectors, with public entities providing funding, policy support, and access to infrastructure, while private entities contribute

expertise, technology, and market insights. PPPs are particularly prevalent in sectors such as healthcare, transportation, energy, and sustainable development.

Cross-Industry Collaborations

Collaborative R&D across industries brings together organisations from different sectors to drive innovation through the convergence of diverse expertise. These collaborations recognize that breakthrough innovations often arise at the intersection of different fields. By combining their unique knowledge, technologies, and perspectives, organisations can develop novel solutions and create new market opportunities. For example, collaborations between technology companies and healthcare providers can lead to the development of advanced medical devices or digital health solutions.

Consortia and Industry Networks

Consortia and industry networks are collaborative frameworks that bring together multiple companies and research institutions within a specific sector or technology domain. These collaborations facilitate knowledge sharing, pre-competitive research, and joint development projects. Consortia often have a shared research agenda, pool resources, and contribute to the advancement of an entire industry or technology ecosystem. By collaborating in this way, organisations can reduce duplication of efforts, leverage collective expertise, and tackle industry-wide challenges.

International Collaborations

In an increasingly interconnected world, international collaborations play a vital role in collaborative R&D. These collaborations involve partnerships between organisations from different countries, enabling the exchange of knowledge, expertise, and resources across borders. International collaborations often address global challenges, leverage diverse

perspectives, and foster cultural exchange. They can be facilitated through bilateral agreements, joint research initiatives, or participation in international research programs and consortia.

Open Innovation Initiatives

Open innovation represents a category of collaborative R&D that emphasises the importance of external inputs and knowledge sharing beyond organisational boundaries. Open innovation initiatives involve actively seeking external partners, engaging with start-ups, entrepreneurs, and other external stakeholders to co-create and share resources. These initiatives often leverage innovation ecosystems, incubators, and open innovation platforms to facilitate collaboration and idea exchange. Open innovation enables organisations to tap into a broader pool of expertise, accelerate innovation cycles, and increase the likelihood of disruptive breakthroughs.

3.3 Benefits of Collaborative Research and Development (R&D)

Collaborative Research and Development (R&D) has emerged as a strategic approach to innovation, offering numerous advantages to participating organisations. This chapter explores the benefits of collaborative R&D, highlighting how it drives innovation, accelerates progress, and fosters knowledge exchange and resource sharing among stakeholders.

Enhanced Knowledge and Expertise

Collaborative R&D brings together diverse organisations, fostering cross-pollination of ideas and interdisciplinary approaches. This exchange of knowledge leads to a deeper understanding of complex problems and enables innovative solutions that may not have been possible within a single organisation.

Reduced Costs and Risks

Collaborative R&D allows organisations to share the financial burden and distribute the risks associated with research and development endeavours. By pooling resources, including funding, infrastructure, and human capital, collaborative partnerships reduce individual costs and enhance risk management.

Accelerated Innovation Cycles

Collaborative R&D leverages collective efforts and resources, accelerating the pace of innovation. Access to a broader pool of knowledge and technologies enables faster development cycles, shorter time-to-market, and rapid implementation of innovative solutions. Collaborative R&D facilitates the transfer of knowledge and best practices, expediting the overall innovation process.

Access to Complementary Resources

Collaborative R&D provides organisations with access to a wide range of complementary resources. Each partner brings unique capabilities, technologies, and resources, allowing for the exchange and integration of different perspectives and approaches. This diversity enhances the quality and robustness of research and development outcomes.

Expanded Market Opportunities

Collaborative R&D often leads to the development of innovative products, services, or technologies that access new markets or expand existing ones. By combining expertise and market knowledge, collaborative R&D identifies market gaps, anticipates trends, and develops solutions that meet customer needs more effectively. It also opens doors to new partnerships and licensing opportunities, expanding market reach.

Strengthened Network and Relationships

Collaborative R&D fosters strong networks and relationships among participating organisations. Engaging in collaborative partnerships establishes connections with stakeholders from different sectors, providing access to diverse resources, expertise, and future collaboration opportunities. Strong relationships developed through collaborative R&D can lead to further knowledge-sharing initiatives and industry consortia.

4. Skills alliances between companies

Skills alliances between companies refer to collaborative partnerships or initiatives aimed at developing and enhancing specific skills within a particular industry or sector. These alliances typically involve multiple companies, educational institutions, and other relevant stakeholders working together to address skill gaps, promote innovation, and improve workforce capabilities. The specific focus areas and objectives of skills alliances can vary depending on the industry and regional context.

However, some common goals include:

Skill Development: Skills alliances aim to identify and address specific skill needs within the industry, often focusing on emerging technologies, digital skills, or other areas in high demand. By collaborating, companies can pool resources, expertise, and knowledge to develop training programs, certifications, and educational materials that align with industry requirements.

Workforce Transformation: In rapidly evolving industries, skills alliances help companies adapt to new technologies, business models, and market dynamics. By partnering with other organisations, companies can share best practices, exchange insights, and collectively invest in retraining and upskilling initiatives to ensure a competent and agile workforce.

Research and Innovation: Skills alliances can foster innovation and research by bringing together industry partners, educational institutions, and research organisations. This collaboration enables the exploration of new technologies, methodologies, and practices, leading to the development of cutting-edge solutions and processes within the sector.

Knowledge Sharing: Collaborative partnerships encourage the exchange of knowledge, experiences, and expertise among participating companies.

This sharing of information allows organisations to learn from one another, adopt successful strategies, and stay updated on industry trends and developments.

Talent Acquisition: Skills alliances can also serve as a platform for attracting and retaining top talent. By working together, companies can enhance their employer brand, offer diverse career opportunities, and create a supportive ecosystem that appeals to skilled professionals.

Skills alliances may be industry-specific, focusing on sectors such as information technology, healthcare, manufacturing, or renewable energy, among others. They can be facilitated by industry associations, government bodies, or independent organisations dedicated to promoting collaboration and skill development.

5. Public-private partnerships in science, technology and innovation

Public-private partnerships (PPPs) in science, technology, and innovation (STI) have several benefits for governments and businesses. These partnerships can enhance research and innovation policies to address changing trends and global challenges. For businesses, collaborating with public research institutions can help solve problems, explore new markets, and create value through cooperation. Governments find PPPs attractive because they can address market and coordination failures in research and innovation and leverage private investment in STI. Furthermore, PPPs play a crucial role in tackling societal challenges such as climate change and energy efficiency.

PPPs take various forms, including collaborative research programs, technology and research centres with public-private funding, innovation procurement, and technology extension and commercialization initiatives. These partnerships extend beyond pre-commercial research and involve joint investments in infrastructure, human resources, technology testing and development, and commercialization efforts. By pooling resources and expertise, PPPs enable a scale of effort that individual firms or institutions would struggle to achieve alone. Partners share risks, rewards, and responsibilities for their joint investments.

The primary goal of most PPPs in research and innovation is to generate broader economic and social benefits by accelerating innovation and technological solutions. These partnerships foster new innovation capabilities, enhance connectivity between national innovation systems, and provide compatible incentives for all stakeholders. They also promote collaboration and cross-disciplinary expertise among government, academic, and industry researchers. Common objectives, mutual benefits, and complementarity of resources are essential prerequisites for forming

rational partnerships. Other motivations include optimising resource utilisation, capitalising on partners' strengths and interdisciplinary cooperation, achieving economies of scale and scope, internalising knowledge spillovers, and increasing opportunities for commercialization of public research.

PPPs play a significant role in innovation programs aligned with national and regional strategies. They are implemented through a top-down approach, where priority areas are defined, and stakeholders from different sectors and actors are engaged. Public resources are then allocated through legally-binding contractual agreements to support these partnerships. Compared to subsidies and tax credits, PPPs offer greater adaptability and flexibility in addressing industry-specific needs and organising innovation activities. By targeting innovation demands and allowing flexibility, PPPs serve as effective tools for demand-side innovation policy.

In most countries, PPPs involve a competitive process for government funding, evaluating participants' contributions, program feasibility, complementarities, governance, sustainability prospects, and the quality of proposed research and innovation agendas. PPPs supported under initiatives like Horizon 2020 must demonstrate added value at the EU level, boost industrial competitiveness, and contribute to sustainable growth. They are also required to present a convincing long-term roadmap for research and innovation activities.

Short Summary

This module aims at introducing to the VET professionals the concept of the Innovation System and its complexities, and analyse the set of relationships among actors in the system, which includes enterprises, universities and research and development (R&D) institutes that drive innovation.

The Innovation System or System of Innovation concept has been gaining popularity over the last two decades, endorsed in academia, research and policy making institutions. The innovation systems approach lies in the complex nature of innovation and how it could be achieved. Overall, the innovation system approach has various features that can be summarised as follows: According to the approach, innovation is an interactive process among various actors.

The roles of actors in innovation systems are diverse and interconnected. Government actors, academic and research institutions, industry, entrepreneurs, financial institutions, and civil society organisations each bring their unique perspectives, resources, and expertise to the innovation ecosystem. Collaboration and cooperation among these actors are essential to create a thriving environment for innovation, driving economic growth, and addressing societal challenges.

Additionally, collaborative Research and Development (R&D) has emerged as a strategic approach to innovation, offering numerous advantages to participating organisations. Collaborative R&D brings together the expertise, resources, and perspectives of multiple actors, fostering a dynamic environment where knowledge is shared, risks are mitigated, and collective goals are pursued.

What is more, to achieve innovation, skills alliances between companies aim at developing and enhancing specific skills within a particular industry or sector. These alliances typically involve multiple companies, educational

institutions, and other relevant stakeholders working together to address skill gaps, promote innovation, and improve workforce capabilities.

Finally, another type of complex relationship between actors is considered to be PPPs (Public-private partnerships) in science, technology, and innovation that have several benefits for governments and businesses. These partnerships can enhance research and innovation policies to address changing trends and global challenges. For businesses, collaborating with public research institutions can help solve problems, explore new markets, and create value through cooperation.

Tips

1. Understanding the typical actors of an Innovation Ecosystem (graphical representation and example of processes)
<https://www.idiainnovation.org/ecosystem-actors>

2. ISO 56000 Innovation Management System for companies: The ISO standard contains all of the elements that is required to set up a structured management system for innovation. It builds on the overarching standard for management systems (called Annex SL) and follows the directives of all standard management systems. This means that the innovation management standard is easily integrated with other management system standards, such as quality management (ISO 9001), environmental management (ISO 14001) or asset management (ISO 55001). Find more here:
<http://hakanozan.net/2019/the-iso-56002-international-standard-for-innovation-management-system-has-been-published/>

You can review each clause of the ISO 56000 for Innovation Management here: <https://www.iso56000.com/>

3. Gain in depth knowledge on Innovation Systems or Systems Innovation approach through specially designed courses such as:
 - a) KIC - The Systems Innovation course: https://store.climate-kic.org/product?catalog=SI_for_EX
 - b) The Innovation System: <https://www.viima.com/the-innovation-system>
 - c) Systems Innovation: <https://www.systemsinnovation.network/posts/21873822>

Training Activities

Activity 1: Systems mapping is a type of modelling that is designed to reveal the underlying interrelationships and structure of an organisation. This is beneficial as it helps us to create a shared overall model of the system, likewise, it helps us to start to understand how system structure creates the observable outcomes.

Watch this video to understand Systems Mapping and its importance:
https://www.youtube.com/watch?v=h6FhY_vlh0&ab_channel=SystemsInnovation

Then, you can create your own System Map to identify relationships and dynamics in the organisation. To create your own System Map, you can use this toolkit: <https://itk.mitre.org/system-map/>

Self-evaluation exercises

1) Which term best describes the complexity of roles in the innovation system?

- a) Interdependence
- b) Specialisation
- c) Complexity
- d) Collaboration

2) What is the primary objective of skills alliances between companies, R&D centres, and training centres?

- a) Increased competition
- b) Intellectual property protection
- c) Knowledge sharing
- d) Cost reduction

3) Which statement best describes the relationship between public and private entities in the innovation system?

- a) Public entities solely fund private entities.
- b) Private entities primarily govern public entities.
- c) Public and private entities collaborate and share resources.
- d) Public entities have no involvement in the innovation system.

4) Which factor contributes to the complexity of actor relationships in the innovation system?

- a) Limited technological advancements
- b) Homogeneous skill sets
- c) Diverse stakeholder interests
- d) Centralised decision-making

5) What is the primary purpose of flows of relations between public and private entities in the innovation system?

- a) Establishing a monopoly
- b) Generating revenue for public entities
- c) Accelerating innovation and knowledge transfer
- d) Maintaining status quo

6) What is the role of R&D centres in the innovation system?

- a) Providing regulatory oversight
- b) Developing new technologies and solutions
- c) Facilitating skill alliances between companies
- d) Enhancing customer experience

7) Which of the following best describes the significance of training centres in the innovation system?

- a) Disseminating outdated knowledge

- b) Impeding collaboration between actors
 - c) Fostering a skilled workforce
 - d) Promoting intellectual property protection
- 8) What is the main benefit of having complex relationships between actors in the innovation system?
- a) Enhanced efficiency and productivity
 - b) Reduced need for collaboration
 - c) Streamlined decision-making process
 - d) Decreased competition among entities
- 9) How do skills alliances between companies, R&D centres, and training centres contribute to innovation?
- a) By restricting knowledge sharing
 - b) By promoting market monopolies
 - c) By fostering interdisciplinary collaboration
 - d) By limiting access to resources
- 10) What is the significance of complexity in the roles of actors in the innovation system?
- a) It hinders progress and innovation.
 - b) It ensures a homogeneous approach to problem-solving.
 - c) It facilitates diverse perspectives and expertise.
 - d) It eliminates the need for collaboration.

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