

**KNOWLEDGE ECONOMY, INNOVATION AND  
ENTREPRENEURSHIP: AN INTEGRATED CONCEPTUAL  
FRAMEWORK FOR ECONOMIC GROWTH**

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**Abstract**

In the context of the transition towards knowledge-based economies, innovation and entrepreneurship have become more important for sustaining economic growth and competitiveness. There has been much written about innovation, entrepreneurship and the knowledge economy as individual entities, but there has been less research that has integrated the three into a single system as these work together. Existing studies have largely concentrated on partial relationships, e.g., innovation and firm performance, entrepreneurship and economic growth, but less attention has been directed to the dynamic and mutually reinforcing relationships between knowledge creation, innovation capability and entrepreneurship. Based on the latest theory and empirical research, this conceptual paper proposes a holistic framework to outline the link between innovation, entrepreneurship and the knowledge economy. The paper proposes that the knowledge economy creates the underpinning environment by way of education systems, digital infrastructure, human capital and institutional support that allows for the generation and utilization of knowledge. In this context, innovation processes are the process of developing new products, services and processes based on knowledge, and entrepreneurship is the process of commercialization of innovations to generate economic value. The research also suggests that innovation and entrepreneurship are in a continuous reinforcing cycle, which is important for improving productivity, competitiveness, employment creation and sustainable economic transformation. The paper offers a theoretical basis for an integrated empirical study and policy development for

knowledge economies in the future by combining these concepts in one conceptual model.

**Keywords:** Digital Transformation, Entrepreneurship, Economic Growth, Innovation, Knowledge Economy.

## **1. Introduction**

The world economy has undergone significant changes in recent decades. In the past, most growth was due to natural resources, labor, and physical investments. But things have changed since today. In today's knowledge-intensive societies, knowledge, ideas, technology, and the capacity to innovate and generate new value are increasingly becoming the driving forces of economies (OECD 2018; Audretsch & Fiedler 2024). This change has led to the phrase 'knowledge economy' which sees information and intellectual skills being a key determinant of economic performance.

### **1.1 Knowledge Economy**

In essence, a knowledge economy is an economy in which the key asset is knowledge (OECD, 1996). This economy is primarily based on people's skills, education, research, innovation, and digital technologies rather than major reliance on factories or machines, or raw materials. In practice, knowledge economies can be observed in nations and sectors that experience rapid technological evolution, high levels of digitalization and ongoing and lifelong learning, development and skill acquisition (Parcero & Ryan, 2024). This is where knowledge is not just information – it is an asset that could enable organizations and nations to remain competitive. There is a clear relationship between innovation and entrepreneurship, and better education systems, innovation capacity and digital capabilities tend to correlate with improved performance in these areas (Li & Gao, 2023).

### **1.2 Innovation**

In this knowledge-driven environment, innovation is a key element. Innovation is the development and use of new or significantly improved products, services, processes or business methods that add value (OECD, 2018). Basically, it is a matter of converting ideas into something beneficial and viable. Schumpeter (1934) viewed innovation as the central mechanism of economic growth and a continual process of 'creative destruction' in which old systems are swept away by new, better ones. Modern research goes beyond technology. Advancing business models, organizational processes and digital solutions are also part of today's innovations (Yu et al., 2022). It enables companies to optimize their processes, remain competitive in the market, and adjust to evolving conditions (Kruglov & Shaw, 2024). In knowledge-based systems, innovation is tightly connected to other activities such as research

and learning capacity and knowledge sharing among companies, higher education institutions and other organizations (Kumar et al., 2024).

### **1.3 Entrepreneurship**

Entrepreneurship is closely related to the concept of innovation. The entrepreneurial process is the act of recognizing an opportunity, assuming risk, and developing a new venture, product or service in an environment of uncertainty (Shane & Venkataraman, 2000). The role of entrepreneurs is important in the economy because they are able to convert ideas into real activities of a business and introduce them into the market (Drucker, 1985). Studies have recently shown that entrepreneurship is the engine which turns innovation into economic results. Innovation creates ideas, entrepreneurship creates products, services, and businesses (Audretsch & Fiedler, 2024). It also has an effect on competition, market growth and fostering constant innovation, particularly in technology-driven and digital sectors (Felicetti et al., 2023). Explain how the Concepts are interconnected. These ideas are interrelated and can function together. Education systems, digital infrastructure, research institutions and supportive policies create the right environment for a strong knowledge economy. It has fostered innovation and entrepreneurship (Parcero & Ryan, 2024). Innovation and entrepreneurship go hand-in-hand at the same time. Innovation opens new opportunities, entrepreneurship transforms them into a viable market solution. These solutions are successful when they help with economic growth and competitiveness (Li & Gao, 2023). Successful entrepreneurship also generates competition and calls for more innovations over time, which results in a cycle of continuous innovations and development. Research Gap and Purpose of the Study Although innovation, entrepreneurship and the knowledge economy are investigated in their own right, the vast majority of studies to date seem to study these fields individually. Some research is concerned with innovation and firm performance, for instance, while others are limited to entrepreneurship and economic growth. Studies that combine the three concepts in an integrated manner are less (Kumar et al., 2024). Due to this lack of consistency, there is a need for a more consistent understanding of how these elements interact with each other. The purpose of this study is to create a conceptual model that integrates the knowledge economy, innovation and entrepreneurship in one. It provides an understanding of how knowledge-based systems foster innovation and entrepreneurship and how innovation plus entrepreneurship contributes to economic growth and competitiveness. The study also offers a theoretical foundation to help guide future empirical work in this area.

## **2. Literature Review**

### **2.1 Innovation**

Innovation is nothing more than making something useful out of new ideas! It may be a new product, enhanced processes, better services or even a new organizational workflow that generates actual economic value. The concept can be traced back to Schumpeter, who termed the process as “creative destruction,” which refers to the gradual elimination of old modes of production by new ones (Schumpeter, 1934). Research more recently goes beyond this traditional approach and considers innovation as more connected and interactive. Rather than occurring on a one-to-one basis in a single company, innovation is now recognized as an emergent phenomenon arising from networks, collaboration and knowledge sharing (Kumar et al., 2024). In this day and age, companies don't innovate without collaborating with others. They are dependent on partnerships, research institutions, digital platforms, and industry ecosystems. Recent research also confirms the relationship between innovation and the effectiveness of organizations in managing knowledge, using digital tools, and building qualified human resources (Yu et al., 2022). In a competitive market, innovation enables firms to remain relevant by enhancing efficiency and ensuring that they can adjust to the ever-changing market environment (Kruglov & Shaw, 2024). Meanwhile, the external knowledge resources and industry connections have become a key source of innovation strength (Li & Gao, 2023).

### **2.2 Entrepreneurship**

Entrepreneurship is about identifying opportunities and responding to them – even when the opportunity is not clear and the future is uncertain. It is about taking chances, marshaling resources and creating something new that can be successful in the marketplace (Shane & Venkataraman, 2000). Entrepreneurship is the essence of transforming ideas into economic activity. Entrepreneurship is the connecting link between the idea and the market, and it's an essential part of understanding what entrepreneurship looks like in today's world. Innovation can develop a new idea or technology, but entrepreneurship is what brings the idea into business, a product or service that can be used by people (Audretsch & Fiedler, 2024). Recent studies also show that entrepreneurship is not a solitary activity. It is influenced by the local context, such as access to knowledge, the availability of digital tools, and supportive institutions (Audretsch & Fiedler, 2024). Entrepreneurial companies are also often the ones driving digital transformation, particularly in knowledge-intensive sectors that are dynamic (Felicetti et al., 2023). In

summary, entrepreneurship is an important component in making innovation economically relevant by introducing it into the market and scaling it up for wider application.

### **2.3 Knowledge Economy**

The knowledge economy is characterized by an economy that grows more through knowledge, skills and information than physical resources (OECD, 2018). In this type of economy, the driving force behind success is the utilisation and sharing of knowledge and not the amount of natural resources a country or company possesses. In practical terms, good performing economies invest largely in education, research, digital infrastructure, and innovation systems (Parcero & Ryan, 2024). These are the factors which assist people and organizations to come up with new ideas and convert them into monetary worth. The manner of the dissemination of knowledge is another key characteristic of the knowledge economy. Ideas are not limited to a single organization or region. Instead, they flow between firms, industries, and even countries, fostering innovation and entrepreneurship (Audretsch & Fiedler, 2024; Li & Gao, 2023). This process is now even more global and faster with the help of digital technologies. The knowledge economy sets the stage for easier growth of innovation and entrepreneurship in simple terms.

### **2.4 Innovation–Entrepreneurship Link**

Innovation and entrepreneurship go hand in hand and are interdependent. Innovation opens new opportunities and entrepreneurship converts opportunities into actual economic results (Shane & Venkataraman, 2000; Audretsch & Fiedler, 2024). At the same time, new ideas can create new opportunities for entrepreneurs to launch their businesses and ventures, and to enter new markets. Entrepreneurship, on the other hand, encourages firms to be more innovative, as a way of adapting to survive and compete. This forms a positive feedback loop between both processes. Entrepreneurial companies are also found to be more flexible and risk-taking, and therefore play an important role in innovation improvements and innovations breakthroughs (Felicetti et al., 2023). Meanwhile, greater innovation within the economy facilitates entrepreneurs' opportunities of noticing and exploiting new opportunities (Li & Gao, 2023). Innovation and entrepreneurship are a two-way cycle, with each enhancing economic dynamism.

### **2.5 Knowledge Economy as an Enabler**

The knowledge economy is important as a supportive pillar for the environment in which innovation and entrepreneurship can flourish. It does so by having good education, digital technologies, research institutes, and

policies. (OECD, 2018) Under this condition, knowledge flows easily and smoothly within and between people, companies, and organizations. These interactions inspire innovations and the development of new businesses (Audretsch & Fiedler, 2024; Kumar et al., 2024). Additionally, digital transformation is a crucial factor, making information more accessible and eliminating knowledge barriers (Felicetti et al., 2023). Thus, the knowledge economy can not only contribute to innovation and entrepreneurship in a passive manner. It is actively involved in their development and interactions.

### **2.6 Research Gap**

Despite the huge amount of research published in the areas of innovation, entrepreneurship and knowledge economy, most research studies are conducted separately on the three areas. Some studies examine the relationship between innovation and firm performance, for instance, and others the relationship between entrepreneurship and economic development. An integrated, clear explanation of how all three function together in one system (Kumar et al., 2024) is missing. However, more needs to be learned about:

- How the knowledge economy can be a catalyst for innovation and entrepreneurship at the same time.
- How innovations are turned into entrepreneurial action.
- The impact of entrepreneurship on the creation and growth of knowledge and the economy in the long term.

This gap is of significance in developing a more coherent framework that links the three concepts in one model.

## **3. Conceptual Framework and Theoretical Propositions**

This section concludes the paper with an attempt to demonstrate the linkages between the knowledge economy, innovation and entrepreneurship. The goal for this is to show them not as separate entities, but as a system in which they constantly interrelate. It also provides insights into the functioning of these relationships and makes clear propositions that can be evaluated in future research.

### **3.1 Development of the Conceptual Framework**

The conceptual framework was developed in the following steps: The concept of the framework is quite straightforward: in current society, knowledge-based systems are becoming increasingly important in economic success. In this kind of systems, the knowledge economy is the foundation that enables innovation and entrepreneurship (OECD, 2018; Audretsch & Fiedler, 2024).

Innovation is the process of making knowledge tangible and valuable, like in the creation of products, services, or enhanced processes. Then,

entrepreneurship assumes the role and takes these innovations to the real market in the form of a viable business venture. Through this innovation and entrepreneurship are linked and they function in a reciprocating manner, knowledge is created, used, and disseminated leading to economic growth and competitiveness (Li & Gao, 2023; Kumar et al., 2024).

The knowledge economy is not merely a context, but it also influences how this entire process unfolds. Digital systems are robust in these countries and regions; education is strong; institutions are effective; and knowledge moves freely. This makes it possible for new ideas to come up, and for people to make business opportunities out of them (Parcero & Ryan, 2024).

### **3.2 Conceptual Model Description**

The relationships in the model can be understood in a simple flow:

Knowledge Economy → Innovation

Knowledge Economy → Entrepreneurship

Innovation → Entrepreneurship

Entrepreneurship → Economic Growth

Innovation → Economic Growth

Feedback loop: Entrepreneurship ↔ Innovation ↔ Knowledge Economy

### **Explanation of Relationships**

#### **1. Knowledge Economy → Innovation**

A strong knowledge environment facilitates innovation to unfold easily and rapidly. Research, skilled workers, and digital tools obviate the amount of effort and cost required to create new ideas (OECD, 2018; Audretsch & Fiedler, 2024).

#### **2. Knowledge Economy → Entrepreneurship**

This gives entrepreneurs more opportunities, as well. In today's digital age, people can more easily recognize market opportunities and make the most of them (Li & Gao, 2023).

#### **3. Innovation → Entrepreneurship**

Innovation is the 'idea side' of the equation, but the ideas need to be transformed into real businesses by the entrepreneurs. Innovative technologies or solutions can be the catalyst for the birth of start-ups and new ventures (Shane & Venkataraman, 2000; Felicetti et al., 2023).

#### **4. Entrepreneurship → Innovation**

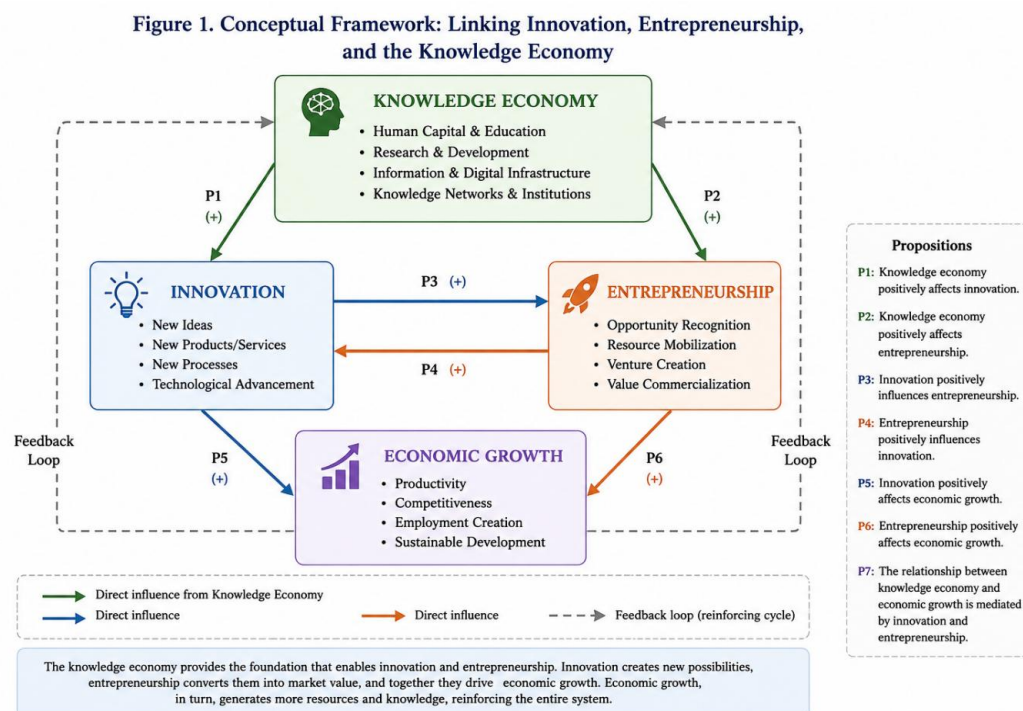
The opposite is also true of the relationship. The more entrepreneurs that enter the market the more competition. This compels companies to continually strive to enhance and create new concepts and ideas, resulting in increased innovation (Kumar et al., 2024).

## 5. Innovation and Entrepreneurship → Economic Growth

Innovation and entrepreneurship are both directly linked to the economic performance. They boost productivity, create new employment opportunities, and enhance market efficiency, all of which are beneficial for the overall economic development (Audretsch & Fiedler, 2024; Kruglov & Shaw, 2024).

### 3.3 Conceptual Framework

The model can be visualized as:



### 3.4 Theoretical Propositions

The framework and literature indicates the following propositions that need to be tested in future:

P1: The stronger the knowledge economy, the more innovative.

P2: Improving knowledge economy leads to more entrepreneurship.

P3: Innovation has a positive impact on the chances of generating entrepreneurial opportunities and new ventures.

P4: Entrepreneurship is useful in commercialising and disseminating innovations in the market. P5: Innovation has a positive effect on economic growth and competitiveness.

P6: The creation of new businesses is a positive factor for the economy and for the provision of employment.

P7: Innovation and entrepreneurship are intermediaries in the relationship between the knowledge economy and economic growth.

### 3.5 Summary of the Framework

In general, the following three elements are united into one system. The starting point is the knowledge economy which is followed by Innovation as a mechanism to convert knowledge into value and Entrepreneurship as a pathway to introduce the value to a market. These three combine to form a worthy cycle that ensures sustainable economic growth and competitiveness.

#### **4. Discussion and Theoretical Contribution:**

The aim of this section is to clarify and provide some insight into the implications of the proposed framework and its relevance to the existing research literature in innovation, entrepreneurship and the knowledge economy. It also shows the role that the model plays in the current theoretical framework.

##### **4.1 Discussion of the Proposed Framework**

The knowledge economy is the main focus of modern economic activities in the framework built in this study. It is not only considered as a supportive condition, but it is also thought of as a condition that enables innovation and entrepreneurship. This concept is consistent with the new philosophy of economic development based on knowledge, skills and information, not just on physical factors (OECD, 2018; Audretsch & Fiedler, 2024). In this context, the concept of innovation is understood as a process of converting knowledge into a new product, service or the better way to deliver a product or service. From these innovations comes entrepreneurship; taking these innovations into the market as real companies and real business solutions. They are a chain of activities which develop ideas, grow them and then generate economic benefits. One important lesson to be learned from this model is that not all innovations result in entrepreneurship. Innovation is normally thought of as the initial step and entrepreneurship the subsequent one. But in actuality it's a mutual thing. Competition in markets, search for new opportunities and re-allocating resources in the direction of new ideas are important aspects of the way in which innovativeness is created by entrepreneurs. This more dynamic view is echoed by recent studies emphasizing the role of entrepreneurial ecosystems in fostering innovation through cooperation and knowledge exchange, which bolster the need for increased innovation acceleration (Kumar et al., 2024; Li & Gao, 2023).

One of the other important points is that there is no single factor that brings about economic growth. Instead, it is the outcome of combination of knowledge production, research and development and entrepreneurship. This perspective does much align with the endogenous growth theory, which sees long run growth as a result of ongoing knowledge building and innovation (Romer, 1990). In this perspective the connection between knowledge and

innovation and their economic impact is mediated by entrepreneurship. A valuable feedback process is also determined by the framework. After a economic growth, there is no sense of isolation. It returns to the pipeline through educational investments, research and entrepreneurship. It creates a chain reaction from knowledge to innovation, from innovation to entrepreneurship and from entrepreneurship to knowledge creation and economic development.

#### **4.2 Theoretical Contribution**

This study makes several important contributions to existing literature.

##### **First, it brings three separate areas into one integrated model**

Research pertaining to innovation and entrepreneurship or the knowledge economy has been conducted separately or in pairs, with few exceptions. For instance, some research centres the relationship between innovation and firm performance, others examine the link between entrepreneurship and economic growth. This study brings these three together in one framework and thus provides a more comprehensive picture of the actual functioning of modern economic systems (Audretsch & Fiedler, 2024; OECD, 2018).

##### **Second, it introduces a more dynamic way of understanding relationships**

This model does not simply assume one-way links between innovation and entrepreneurship but rather depicts their mutual influence in a dynamic and iterative manner. They do not run in a linear fashion. This is in alignment with the newer studies which emphasize on the interdependencies of various forces in an economic development ecosystem operating continuously (Kumar et al., 2024).

##### **Third, it treats the knowledge economy as an active force**

In many of the previous work, the knowledge economy is a backdrop to the situation. This research indicates, however, that it is a major player in driving the process of innovation and entrepreneurship development. Knowledge creation, sharing and use are directly related to the quality of digital infrastructure, educational systems and institutions (OECD, 2018; Parcerro & Ryan, 2024).

##### **Fourth, it connects macro theory with micro behavior**

Endogenous growth theory is our national level explanation of how knowledge and innovation leads to long term economic growth (Romer, 1990). This study adds to this notion by connecting it with entrepreneurial behavior on the individual level as well as the firm level. It explains in simple terms the impact of everyday entrepreneurial activity on wider economic outcomes, making the link between macro theory and theory in practice.

**Fifth, it provides a clear base for future research**

The model is not only theoretical but also in terms of research design. It provides explicit relationships which can be evaluated with actual data. This framework could be confirmed and further developed by studying further factors in future studies related to innovation output, entrepreneurial activity, digital development, and economic growth at country and/or firm level.

**4.3 Summary**

In summary, this study demonstrates that economic growth is not driven by isolated factors; rather, it emerges from the dynamic interaction among knowledge, innovation, and entrepreneurship. The knowledge economy provides the foundational environment, innovation transforms knowledge into value, and entrepreneurship converts that value into tangible economic outcomes. Collectively, these elements constitute an integrated system that promotes sustained and long-term economic development.

**5. Conclusion and Recommendations**

**5.1 Conclusion**

This paper explored the linkage between innovation, entrepreneurship and knowledge economy, and integrated these elements in a single conceptual framework. The main thesis is that the current growth is more and more knowledge-based instead of physical resources-based. Innovation and entrepreneurship rely on the capacity to create, share and implement knowledge, which is the key for economic development. The results suggest that the knowledge economy acts as a broader ecosystem in which these processes become possible, by creating the right conditions and foundations, such as education systems, digital infrastructure, and a qualified workforce, as well as institutional frameworks. In this context, innovation serves as the catalyst that converts knowledge into valuable products, services, processes and organizational practices. Entrepreneurship then translates these innovations into economic value and into the marketplace, making its way into the economy and making a contribution to economic growth. The proposed system also emphasizes that such connections are not one-way but cyclical and reinforcing. An innovation boosts entrepreneurship which provides incentives and opportunities for further innovation. At the same time, the knowledge economy serves as a facilitator to both processes. With economic growth, more resources for education, research and innovation become available, and this, in turn, further boosts the economic system. Overall, this research adds to the literature by synthesizing three related but individually studied concepts: innovation, entrepreneurship and the knowledge economy into one analytical framework. Very applicable view,

which gives a broad picture of the operation of modern economy and its sustainable development.

### **5.2 Practical Implications**

The suggested framework provides valuable inputs to the policy makers, educational institutes, businesses, and entrepreneurs. The results highlight for policy makers the importance of making investments in education, digital infrastructure, research and development and entrepreneurial ecosystems in order to promote sustainable economic growth. Promoting innovation, knowledge transfer and the development of startups can make a huge contribution towards the improvement of economic performance and competitiveness. The research study highlights the need for universities and research institutions to go beyond the production of knowledge. More attention needs to be given to knowledge transfer, industry partnerships, technology transfer, and using research findings to meet societal and economic needs. The results underline the relevance of being adaptable, learning constantly, and innovating for businesses and entrepreneurs. Knowledge-driven markets are increasingly defined by the ability to recognize new opportunities, accept new concepts and turn the concept into a profitable product and service. Companies with innovative capabilities and entrepreneurial attitudes are more likely to have the advantage they need to compete in rapidly-changing economies.

### **5.3 Future Research Directions**

Studies of future can be done on relationships proposed in this framework using quantitative or qualitative or mixed methods research design. Researchers can study the impact of certain characteristics of the knowledge economy on the innovation outcomes, and the role of entrepreneurship as a mediator or moderator between innovation and economic growth. Comparative analysis of developed and developing economies would offer useful information regarding contexts and variations in the relationships between knowledge, innovation, entrepreneurship and economic performance. Furthermore, future studies could also examine the impact of new technologies such as AI, digital platforms, and sophisticated data analytics on building innovation and entrepreneurial ecosystems. Investigation in specific sectors is also needed, especially technology intensive sectors and digital economy, where knowledge creation, innovation and entrepreneurship has an increasing role in the process of establishing competitive advantage and economic growth.

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