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A New Approach to Defining Innovative and Technical Activities

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Abstract: The basic thesis of this research is that innovation systems have a significant role in determining technological evolution. The formation of a new innovation system and changes in current innovation systems are described as co-evolving with the process of technological change. As a result, greater understanding of the dynamics of innovation systems is required. Traditional innovation system analysis methodologies, which primarily focus on the structure of innovation systems, have proven insufficient. As a result, we suggest a framework that focuses on a number of processes that are critical for high-performing innovation systems. These procedures are known as 'innovation system functions.'. We present a way for comprehensively mapping the processes that occur in innovation systems and result in technological progress after describing this framework and embedding it in current literature. This method is known as process analysis or history event analysis. Exemplifications are drawn from the empirical field of Sustainable Technology Development. We shall present A New Approach to Defining Innovative and Technical Activities in this paper.

Keywords: Innovative, Technical, Activities, Traditional, Technological, Sustainable Technology, Systems, Central Idea, Nations, Sectors.

I. INTRODUCTION

The idea of a technological innovation system emerged as part of a larger theoretical school known as the innovation system approach. The essential premise behind this approach is that determinants of technological progress can be found not just in particular enterprises or research institutes, but also in a larger societal structure in which firms and knowledge institutes are located. [1]

Since the 1980s, studies of innovation systems have highlighted the impact of societal institutions on technological progress, and hence on long-term economic growth, within nations, sectors, or technological disciplines. [2] The notion of the technical Innovation System emphasises that boosting knowledge flows alone will not result in technical development or economic performance. This knowledge must be utilised in order to generate new business prospects. This emphasises the importance of individuals as sources of innovation, which is sometimes overlooked in more macro-focused, nationally or sectorally driven approaches to innovation systems. Second, the Technological Innovation System method frequently emphasises system dynamics. The emphasis on entrepreneurial action has led scholars to view a Technological Innovation System as something that must be built up over time. [3]

When we use the term "technological change" in this work, we do not mean technology development in the broad sense, but rather technology development in interaction with the system in which it is embedded. This collaborative and interactive approach is referred to as the innovation process. A successful combination of hardware, software, and orgware, where orgware refers to the many components of the innovation system, can be defined as an innovation. Accelerating innovation is critical since it is a significant factor of long-term economic growth and development. Increasing national innovation speed is a difficult process, but changing innovation direction is much more difficult. [4] The need to shape innovation processes is proven by the fact that, aside from the benefit of generating economic growth and societal benefits, existing technology use frequently has severe detrimental side effects.

These undesirable side effects are frequently associated with the impact of technology on the natural environment. The relationship between technology and the environment is complicated and contradictory. On the one hand, technologies consume resources and harm the environment. On the other hand, innovations can lead to more efficient resource usage, less environmental stress, and even environmental cleanup. [5]

Innovation isn't necessarily about ground-breaking breakthroughs or game-changing technologies. In reality, minor changes in corporate strategy or mindset can be just as effective as new technologies and game-changing breakthroughs. However, as research indicates, innovation might be simply a matter of perspective—and a process of ongoing reinvention. And organisations of all sizes and backgrounds can use its key concepts to succeed more frequently in the future. [6]

Some of the ideas discussed in this paper are novel, while others are older but have gone unnoticed. In the literature, there is no agreement on a typology of new models or approaches to innovation. Recognising the limitations of categorising distinct innovation approaches and the complications that arise from the ambiguous use of terms, this study does not compartmentalise emerging innovation approaches into falsely distinct models, but rather discusses them on the basis of the following broad themes: [7]

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- **Mission-Oriented Innovation:** Organising networked research initiatives at the national and international levels, as well as incentive mechanisms that might guide innovation towards specific technological, environmental, or social goals.
- **Pro-Poor and Inclusive Innovation:** Extending the beneficiaries of innovation and building on concepts for bottom-of-the-pyramid innovation (Prahalad, 2004). This focuses on pro-poor innovation (mainly in the private sector), which can serve markets previously disregarded by traditional innovation by using fresh concepts, low-cost labour and materials, and massive sizes of production. It also includes ideas introduced by marginalised communities under resource constraints. [8]
- **Grass-Roots Innovation:** Including grass-roots innovation movements among the actors in the innovation process. The strategy strives to practise socially inclusive innovation in both technology and service delivery.
- **Social Innovation:** Moving from technology innovation to social innovation. This strategy focuses on organisational innovations and new social practises aimed at improving human well-being (for example, in business models, production practises, finance, and the delivery of public services).
- **Digitally Enabled Open and Collaborative Innovation:** Encouragement of open, digital partnerships. These approaches to invention draw on and recombine diverse sources and kinds of knowledge, particularly through digitally enabled open collaboration. [9]

The impact of digital technology has also been felt by the crucial process of technological business development - innovation. The usage of current supercomputers, robotic complexes, virtual reality technologies, and so on in science, research, and manufacturing has resulted in considerable changes in the system of innovative activity organization. [10] Digital technologies speed up the flow of information, lower the cost of acquiring and exchanging information, and serve as a foundation for implementing the open innovation

paradigm. In turn, innovations have an impact on the digital economy. [11]

II. REVIEW OF LITERATURE

In the global South, there is rising acknowledgment of the richness of dynamic experimentation with various problem-solving approaches. Some of the new innovative techniques discussed in this study, such as pro-poor and grass-roots innovation, have their roots in developing nations (Radjou et al., 2012). [12]

Innovation occurs not just in rich countries, but also in underdeveloped countries, in both formal and informal organizations, as well as on farms (Zanello et al., 2013). [13]

The former is most closely associated with theories about the bottom of the pyramid (Prahalad, 2004), which was originally a top-down management technique aimed at developing new markets for multinational corporations among the lowest segments of the population. Here the focus is on innovating with regard to low-cost products that can serve untapped markets with new commercialization and distribution strategies. [14]

III. OBJECTIVES

- Innovating everywhere: enabling innovation from anywhere by empowering innovation teams with transparent and collaborative tools.
- In essence, innovation is about creating something new.
- Innovation can be simply a matter of perspective—and process of constant reinvention.

IV. RESEARCH METHODOLOGY

This study's overall design was exploratory. Simply creating a product is insufficient to compete in today's competitive economic market. Adopting a culture of producing profitable Innovation models will propel your company to the top of the market.

Despite the high risk, the advantages outweigh the risks. While implementing innovation, the company should focus on a unified approach to market needs, technology, and cost-benefit analysis. As a result, using a systematic approach and employing tried-and-true methodologies results in long-term innovation models. [15]

V. RESULT AND DISCUSSION

A technology, or the information it encodes, is rarely ingrained in the institutional architecture of a particular nation or region, because the relevant knowledge base for most technologies derives from multiple geographical places all over the world, especially in modern civilization. A similar argument can be made regarding the importance of a purely sectoral demarcation. Thus, by starting with a specific technology, the technological system approach cuts across both the geographical and sectoral aspects. [16] Consider the development and dissemination of solar cells, which is dependent on technological advances produced in research centres and universities around the world. As a result, the solar cell innovation system overlaps with elements of national innovation systems focused on solar cell research. In turn, global spread is heavily influenced by various national policy regimes that encourage the use of solar cells through investment subsidies or feed-in regulations. Again, in terms of stimulating institutions for

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solar cell spread, the solar cell innovation system overlaps with numerous national innovation systems. [17] Furthermore, due to rivalry for silicon wafers, the production circumstances for solar cells are heavily reliant on the microelectronics sector. Silicon wafers are manufactured for the microelectronics industry, but the excess is sold to solar cell producers.

High growth rates in the microelectronics sector result in silicon scarcity and increased solar cell pricing. Furthermore, the use of solar cells is heavily reliant on the housing industry, particularly architecture. Solar cell-friendly architecture can have a significant impact on the potential for solar cells in the building environment as well as their energy output. Thus, the diverse national innovation regimes and sectoral innovation influence the technological advancement, pricing, and spread of one technology. [18]

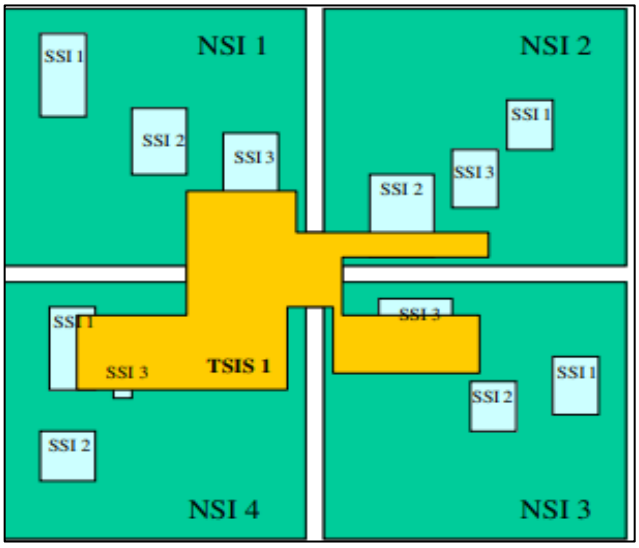

Figure 1: Boundary relations between National, Sectoral, and Technology Specific Innovation Systems. [National Systems of Innovation, NSI]

The 4 Types of Innovation:
The four types of innovation, often known as the four degrees of innovation, describe reoccurring patterns of how businesses can innovate. Depending on the market and technology, the innovations address different difficulties.

1. Incremental Innovation:
Incremental innovation refers to the gradual but continual development of existing technologies, goods, or processes in order to maintain an existing client base and a certain level of strategic positioning.

The first, inner horizon of the Three Horizons of Growth paradigm is incremental innovation as part of a balanced growth portfolio. According to the 70-20-10 Rule of Innovation, it should account for around 70% of resource allocation. [19]

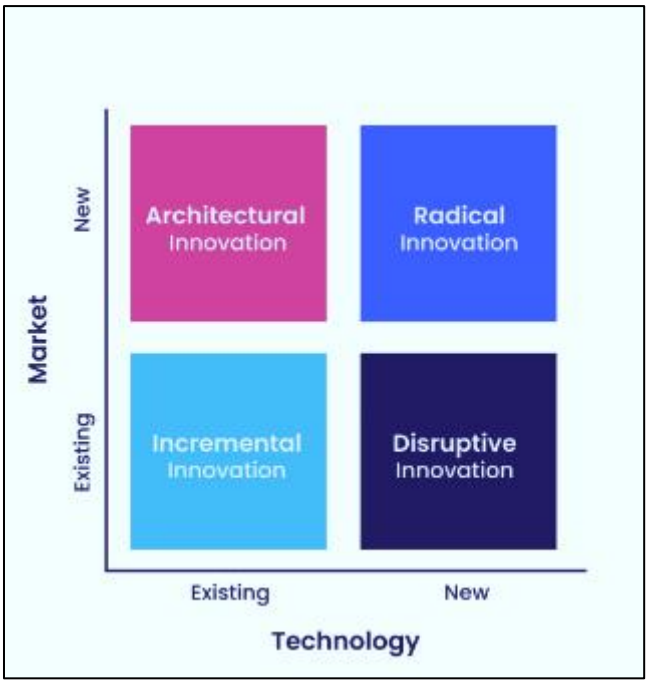

Figure 2: Incremental Innovation

2. Disruptive Innovation:
Disruptive innovation generates new technology, products, concepts, or business models that fuel transformation. It profoundly alters an existing industry, spawn's new markets and value networks, displaces traditional practises, and eventually results in new customer expectations. Disruptive innovation, when compared to incremental innovation, constitutes the third, outer horizon of the Three Horizons of Growth concept and should account for around 10% of resource allocation.

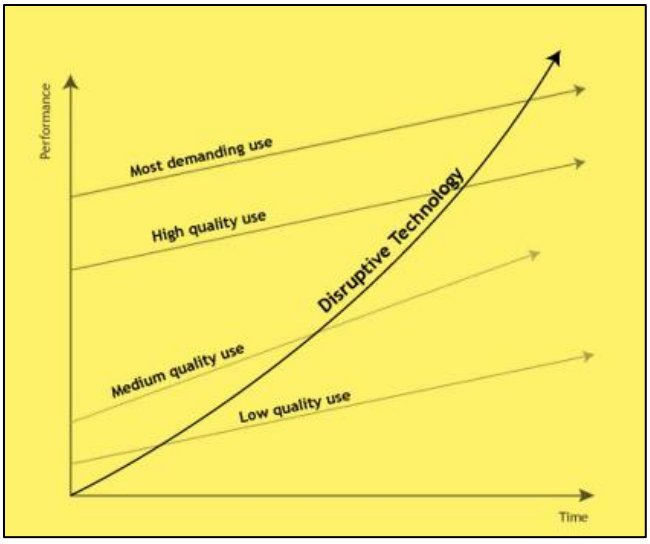

Figure 3: Disruptive Innovation

Architectural Innovation:
Architectural innovation entails changing existing product components, such as technology, for a new market and purpose. Because an already existing technology is used

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elsewhere, this form of innovation usually has a lower risk level.

Radical Innovation:

The fourth form of invention is radical. It is all about creating technology, goods, or services that completely replace existing offerings and open up a new market. [20]

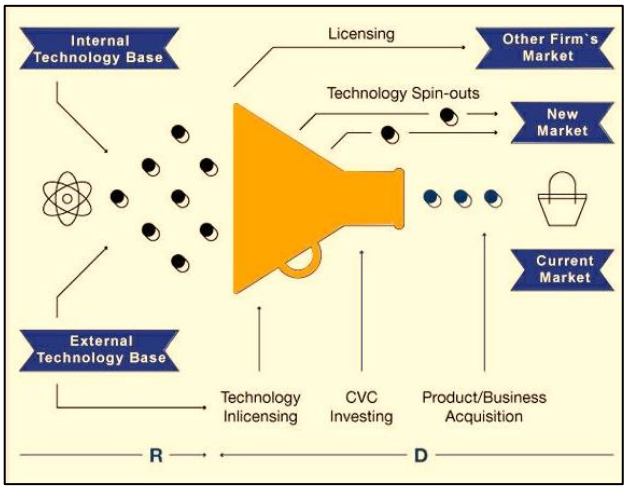


Figure 4: Open Innovation

According to Chesbrough, "open innovation is the use of purposeful inflows and outflows of knowledge to accelerate innovation internally while also expanding markets for the external use of innovation."

It seeks technological advances by fusing internal and exterior ideas. The funnel depiction depicts starting with a vast pool of ideas and then narrowing down to the best pick of the idea. And then executing the best market innovation. So, read this blog to gain a thorough understanding of Open Innovation. [21]

Open Innovation Method Framework:

We've chosen a slightly modified version of Roland Harwood's innovation method framework (or matrix), in which different approaches are classified by two criteria, each on its own axis.

The degree of openness is represented on the X-axis. This is divided into three distinct levels:

Open Inside: Internal ideation, involving only employees of the company.

Outside in: Sourcing ideas externally to solve problems or improve existing capabilities.

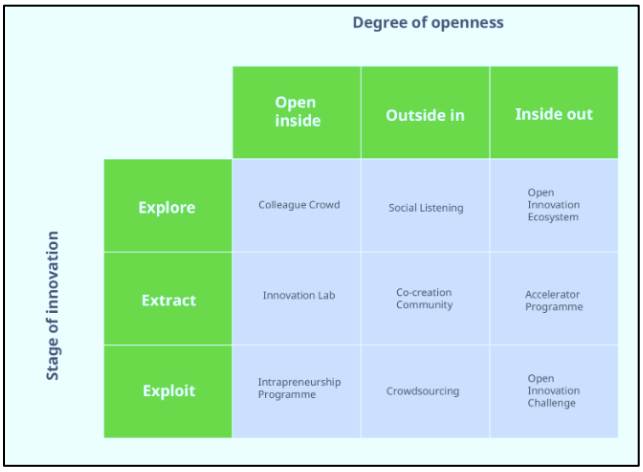
Inside Out: Sharing ideas and intellectual property with the outside world in order to establish new commercial prospects collectively.

The stage of innovation is represented on the Y-axis by the following stages:

Investigate: Gathering insight to map unmet customer demands.

Extract: Working with others to create and develop ideas for unmet needs.

Exploit: Developing actionable business plans based on prospective concepts that have been developed.



As we can see, due to three levels of openness and three stages of invention, this framework has nine possible slots into which approaches can be classified. Harwood provides examples for each of the nine categories in this approach paradigm. [22]

VI. CONCLUSION

When policy initiatives seek to encourage or influence the direction of technological progress, understanding how the relevant technology-specific innovation systems are already working is a necessary first step in defining the best policy strategy. The next phase is to create and implement policy efforts to improve the operation of the innovation system (systemic instruments). This can be accomplished by boosting weak functions or removing impediments to proper system functioning. To improve the rigour and usefulness of this approach, further development of the functions of innovation systems approach is required, based on both theoretical and empirical research into the dynamics of innovation systems-processes at the macro and micro levels, as well as policy research into the implications for policymakers, policy concepts-and-instruments.

Further development of the functions of innovation systems approach, based on both theoretical and empirical research into the dynamics of innovation systems–processes at macro and micro level, as well as policy research into the implications for policy makers, policy concepts–and instruments, is necessary to improve the rigor and usefulness of this approach

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