Journal of Asian Multicultural Research for Economy and Management Study
ISSN: 2708-9711
Vol. 5 No. 4, 2024 (page 01-07)
DOI: https://doi.org/10.47616/jamrems.v5i4.543

The Relationship between R&D and Economic Innovation

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Received: September 4, 2024 Revised: October 5, 2024 Accepted: November 12, 2024

Abstract

This article focuses on analyzing opportunities analysis and The Relationship between R&D and Economic Innovation in recent years. The methods include qualitative research method, synthesis and inductive methods. We also expand SWOT model by adding Value part analysis on it. This study stated opportunities for values adding including but not limit to R&D promoting for growth of industries and economy, promoting bilateral agreement, energy saving, effectiveness enhancing, and opportunities applying biology technology serving country development as well as taking advantage of young scientific researchers.

Keywords: SWOT, Factors, R&D, Growth, Innovation

Introduction

Nowadays in developing countries such as Vietnam. The role and contribution of science and technology activities are demonstrated in many aspects (Lefebvre & Dvir-Ginzberg, 2017; Birdi et al., 2016). First of all, scientific research with the role of providing scientific and practical arguments has made an important contribution to the process of orienting development and promulgating policies, creating breakthrough developments in all sectors and fields of industrial production, domestic trade, import and export and international economic integration.

Many new issues with profound and wide impacts on the development of the industry have been quickly included in the content of scientific research, clear arguments for the policies and guidelines issued by the Ministry and the Government, becoming major decisions, contributing to creating a boost for the goal of sustainable growth of the industry (Dwivedi et al., 2021; Freeman, 1991). For example, research on policies on localization of industrial products starting from the 2000s, research on policies on energy saving and efficiency in the context and challenges of environmental protection and climate change response, policy research to support the negotiation process, participation in multilateral and bilateral free trade agreements (Hess, 2007; Zhang & Wen, 2008; Truffer & Coenen, 2012).

Therefore, this study will recognize there are many opportunities and challenges that come from strengths and weaknesses of R7D activities that serve for economic innovation. While the opportunities will come from the efforts of government policy innovation, as well as commitment from investors (local and foreign) (Mazzucato & Perez, 2015; Kim & Li, 2014).

Hence authors choose this topic of The Relationship between R&D and Economic Innovation and our paper is organized with introduction, previous studies, main findings, discussion and conclusion.

Analysis of Latest Research where the Solution of the Problem was Initiated

Summary of Previous Studies

In particular, Reslan et al (2022) and Rahla et al. (2021) mentioned that realization of a circular economy is paramount to solving global challenges in resource scarcity, sustainable manufacturing, and supply chain uncertainty. A Circular Economy (CE) is an economic system hallmarked by linearity reduction, decoupling of economic growth and resource depletion, and favoring regenerative models that consider sustainability (Hessel et al., 2021; Jansson & Sjöbohm, 2022; Catalini & Menclossi, 2019).

It appears that stock markets can stimulate economic growth in several ways. First, stock markets play an important role in allocation of capital to corporate sector which result in an increasein real economic activities (Wurgler, 2000; Shahbaz et al., 2008; Black & Gilson, 1998). Moreover, Zhang et al. (2024) and Brunner & Meltzer (1990) also analyzed and mentioned that there will be many macro factors including money supply and loans from banks that affect the market. Next, we also look at below table:

Table 1. Previous Studies

Authors	Year	Content, results
Thalassinos et al.	2012	The use of positive world experience by adopting corporate governance for example, providing that it is adapted to conditions of economic development in each country, will improve efficiency of state economic policy.
Havlicek et al.	2013	Current models of innovation-oriented state economic policy are simultaneously aimed at all enterprises; however, those instruments that are effective in relation to innovation oriented enterprises, i.e. those that use innovations in their performance, turn out to be ineffective in relation to tradition-oriented enterprises, i.e. those enterprises that do not implement innovations into their activity.
Kline & Rosenberg	1986	The subsequent improvements in an invention after its first introduction may be vastly more important, economically, than the initial availability of the invention in its original form.
Borras	2004	Innovation policy, in the sense of policies affecting innovation, consist of a range of different policies (and policy instruments) that have been introduced at various points in time, with different motivations, and using a variety of labels including, increasingly, innovation policy. Some of this may have to do with terminological shifts.
Dumitrescu et al.	2023	Results showed a strong connection between the dynamics of the financial system and that of the

		real economy. In addition, the impact of financial factors on the economic cycle tends to be much stronger and more significant in the case of developing countries, compared to developed ones. In this regard, it was recommended that fiscal and monetary policies should be coordinated to generate the expected effect on the economy.

Source: Author Synthesis

Hence, we choose this topic: The Relationship between R&D and Economic Innovation.

Methods

Qualitative research method: We also uses comparison and synthesis method, combined with analytical and inductive methods, whereas we take advantage of historical (combined with) dialectical materialism method for our qualitative analysis. Quantitative research methods: Authors use scientific results as reference.

Results and Discussion

Overview of Domestic Research Situation

First of all, Edler & Fagerberg (2017) mentioned three types of policy instruments in particular (all of which existed well in advance of the theoretical perspective justifying their existence): (a) Especially for basic research, for which commercialization opportunities lie far into the future and are highly uncertain, private firms lack incentives to invest. The state therefore needs to invest in the public production of knowledge, in, say, universities and other public research organizations to safeguard innovations based on science in the future; (b) Subsidizing R&D in private firms is another option as this may induce the firms to undertake more R&D than they otherwise would have done (in the literature this is dubbed "additionality"). Moreover, Vera et al. (2016) stated in below.

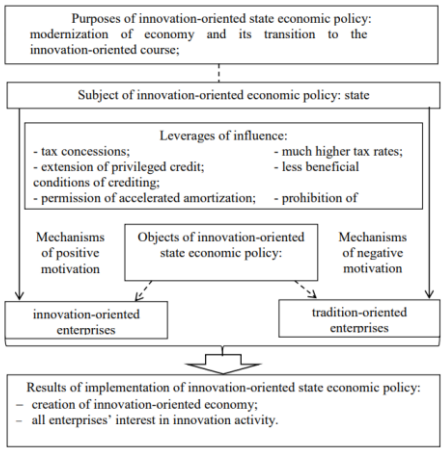

Figure 1. Innovation Policy Related to Tax System

Source: Vera Et Al, 2016

Last but not least we see below model: George et al. (2009) stated: The term R&D covers three activities: basic research, applied research and experimental development. Basic research is *"experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundation of phenomena and observable facts, without any particular application or use in view".*

Applied research is also *"original investigation undertaken in order to acquire new knowledge".* However, it is directed primarily towards a specific practical aim or objective. Experimental development is *"systematic work, drawing on existing knowledge gained from research and/or practical experience, which is directed to producing new materials, products or devices, to installing new processes, systems and services, or to improving substantially those already produced or installed"*.

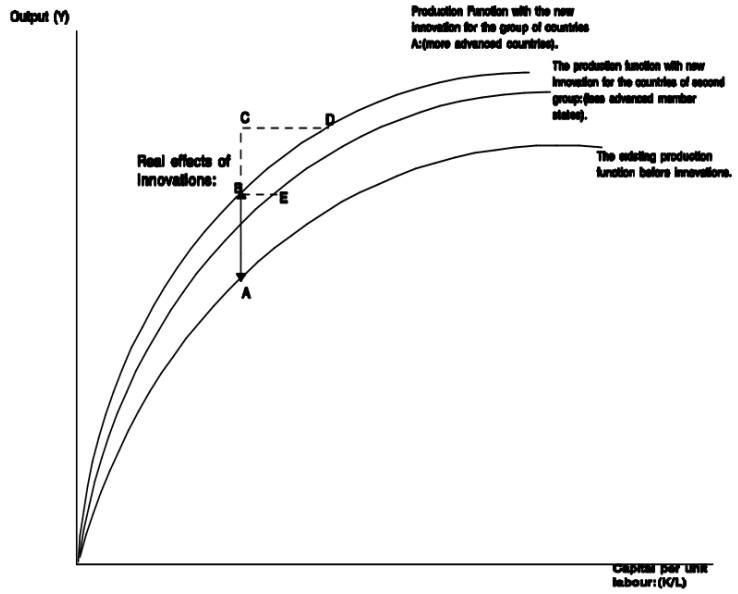

Figure 2. Production Function and Tech Change

Source: George et al., 2009

SWOT Analysis

Table 2. SWOT Analysis and Values

Values	- R&D: promoting for growth of industries and economy - Promoting bilateral agreement - Energy saving, effectiveness enhancing
Strengths - The domestic economy intend to to keep stable (positive) GDP growth and the central bank tries to manage or control inflation well - M&A opportunities in market still rise	- Weaknesses - There are global impacts from US-China commercial war, Covid 19 and Russia - Ukraina war - Using many old technologies
Opportunities - Positive economic growth (average 5.2% last 3 years) - Develop new economic models on cycle economy, green economy, sharing economy, digital economy, chip industries, robotic, etc. - Applying biology technology serving country development - Taking advantage of young scientific researchers	- Threats - Low productivity, still lack of high qualified laborers - The impacts from global economic recession might be extent (not only one impact , but combined global impacts) - Developed/advanced markets use 3-5% national budget for research (source: vanlanguni.edu)

Source: Author Analysis

Quantitative results

Next, we see an example of model for stock market development as follows:

```
. regress Stockmarketfluctuation Totalvolume  Capitalization GDP stockmarketsize
>  Liquidity
```

Source	SS	df	MS	Number of obs	=	68
				F(5, 62)	=	3.38
Model	4.5725e-07	5	9.1450e-08	Prob > F	=	0.0092
Residual	1.6777e-06	62	2.7060e-08	R-squared	=	0.2142
				Adj R-squared	=	0.1508
Total	2.1350e-06	67	3.1865e-08	Root MSE	=	.00016

Stockmarket~n	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Totalvolume	1.21e-08	1.45e-08	0.83	0.410	-1.70e-08	4.11e-08
Capitalizat~n	2.14e-11	6.82e-11	0.31	0.754	-1.15e-10	1.58e-10
GDP	-2.07e-10	1.08e-10	-1.92	0.059	-4.22e-10	8.36e-12
stockmarket~e	-.0195805	.0229817	-0.85	0.397	-.0655202	.0263592
Liquidity	.0000415	.0000562	0.74	0.462	-.0000707	.0001538
_cons	.0003329	.00009	3.70	0.000	.0001529	.0005129

Figure 3. Vietnam Trade Facilitation Indicators based on TFA

Source: Made by Authors

Although specialized inspection has been reformed and highly appreciated by the business community, there are still some shortcomings presented in SWOT analysis above.

Conclusion

The conclusion of this study explained that the Ministry of Industry and Trade is actively working to improve the efficiency of science and technology organizations by aligning their operations with the needs of industry and business. The initiative encourages the formation of affiliated science and technology companies and encourages a proactive approach to market engagement, including securing research contracts and providing consulting services. By focusing on technology application, production management, and innovation, the Ministry aims to strengthen the relationship between research organizations and companies. The emphasis on developing products that add value and enhance competitiveness is critical to promoting Vietnam's brand in the market. As a result, there has been a marked increase in the participation of the business sector, as evidenced by the increasing share of partner funding from companies involved in technology application and transfer. To further support this growth, it is important to establish regulations that ensure safe lending practices, minimizing risks for banks and companies. Implementing a strong lending policy will play a critical role in facilitating the financial support needed for businesses to innovate and grow, ultimately contributing to overall industrial development and enhancing the country's economic resilience.

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