

Analysis of Relation Between Economic Innovation Models and R&D Function

Dinh Tran Ngoc Huy¹, Pham Anh Dung^{2*}, Le Ngoc Nuong³, Le Thi Han⁴, Dinh Tran Ngoc Hien⁵ & Pham Hung Nhan⁶

¹International University of Japan, Japan - Thammasat University, Thailand - Ho Chi Minh University of Banking, Vietnam. ²Faculty of Business and Management, Apollon University, Montana, US. ³Department of Law and Economic Management, Thai Nguyen University of Economics and Business Administration (TUEBA), Vietnam. ⁴Ho Chi Minh University of Banking, Vietnam. ⁵Technological University, HCM City, Vietnam. ⁶Political School of Ca Mau Province, Vietnam. Corresponding Author (Pham Anh Dung) Email: dungphamster@gmail.com*

DOI: <https://doi.org/10.46382/MJBAS.2024.8315>



Copyright © 2024 Dinh Tran Ngoc Huy et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Article Received: 19 June 2024

Article Accepted: 27 August 2024

Article Published: 29 August 2024

ABSTRACT

The goal of this article focuses on **Analysis of Relation between Economic Innovation Models and R&D Function** in recent years. Method: Methodology includes Qualitative research method: synthesis and inductive methods. George, M., et al. (2009) mentioned some variables can be considered for R&D such as: R&D expenses, R&D personnel and patents of new tech. We also expand SWOT model by adding Value part analysis on it. Results: Authors stated opportunities **for values adding including but not limited to:** R&D will emphasize more the vital roles of technological change in improving productivity and growth; levels of R&D will influence benefits/values of global commerce among countries; as well as R&D might consist of: basic- applying- empirical.

Keywords: SWOT; Factors; R&D; Economic innovation; Technological change.

1. Introduction

At the present time in globalization era, roles of science and tech shows in making changes through innovation and via that mechanism, it enables to maintain sustainability, growth, etc.

Griffin, et al. (2022) mentioned that Consequently, when such firms seek external debt financing for their R&D investments, providers of debt finance may demand to see confidential information about the success of extant R&D investments and the potential success of proposed R&D projects. If the firm wishes to keep this information proprietary, this information asymmetry problem may discourage debt financiers from financing future R&D activities.

Hence authors choose this topic of **Analysis of Relation between Economic Innovation Models and R&D Function** 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.

2. Summary of Previous studies

Moreover, Han, L.T. (2024) 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
Carter	1960	Incorporated some dynamic elements with a formal consideration of

		the role of investment in embodied technical change.
Griliches	1967	Most studies of product function have been handled under one or more traditionally maintained hypothesis of constant returns of scale, neutrality of technical progress and profit maximization with competitive output and input markets.
Griffith & Reenen	2002	Particularly, There is also strong evidence that R&D spillovers from industrialized countries to developing countries have positive effects on the TFP growth of the latter.
Savvides & Zachariadis	2003	In a more recent study shows that both domestic R&D and foreign direct investment increase the domestic productivity and value added growth.
George & Stylianos	2009	Innovation activities contribute essentially to the regional dimension and growth. The technological infrastructure and innovation capabilities affect not only the regional growth, but also the whole periphery and economy as well. There are a lot of problems and questions regarding the measurement of innovation activities at a regional level.
Apa, et al.	2021	Absorptive capacity is therefore an all-important input to expand the innovation capacity and to maintain the sustainability trajectory of the innovation landscape.

Source: Author Synthesis.

Hence we choose this topic: **Analysis of Relation between Economic Innovation Models and R&D Function.**

3. Methods

3.1. Methodology

- **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.

3.2. Main findings and discussion

Overview of domestic research situation

First of all, from past researches, we can see that: there are both positive and negative effects of R&D, for instance, some scientists can consider drawbacks of R&D such as: high cost or expenses and sometimes it does not bring any benefits Whereas it is not deniable that R&D has several positive externalities such as: ‘stand on the shoulders’,

there is also the possibility of some others being negative ('fishing out hypothesis', 'stepping on toes effect', 'creative destruction', etc.) (Stokey, 1995, Jones and Williams, 2000). More positive and negative aspects of R&D we will analyze more in SWOT analysis part (which is presented below).

Moreover, R&D variables stated in below



Figure 1. Three pillars of innovation (Source: Agrawal, 2022)

Next, we see below:

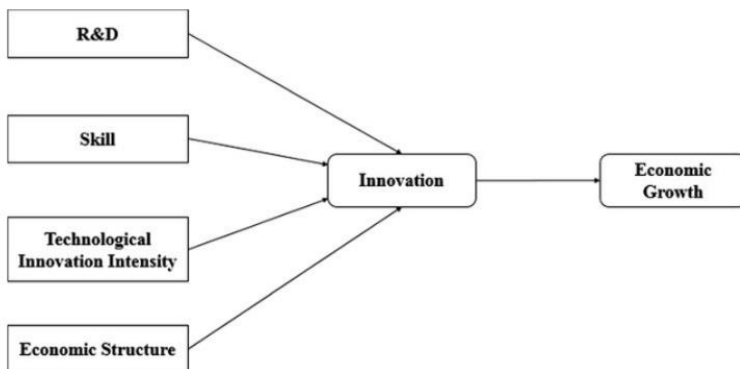


Figure 2. Path analysis for R&D (Source: Haq, et al., 2020)

And also we refer to:

```
. reg Transactionvolume GDP
```

Source	SS	df	MS	Number of obs	=	68
-----+-----				F(1, 66)	=	98.10
Model	1.1818e+09	1	1.1818e+09	Prob > F	=	0.0000
Residual	795131654	66	12047449.3	R-squared	=	0.5978
-----+-----				Adj R-squared	=	0.5917
Total	1.9770e+09	67	29506981.5	Root MSE	=	3470.9

Transaction~e	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----+-----						
GDP	.0065475	.0006611	9.90	0.000	.0052277	.0078674
_cons	-2791.061	797.7783	-3.50	0.001	-4383.877	-1198.246
-----+-----						

. reg Transactionvolume Marketcapitalization

Source	SS	df	MS	Number of obs	=	68
-----+-----						
				F(1, 66)	=	258.60
Model	1.5750e+09	1	1.5750e+09	Prob > F	=	0.0000
Residual	401972386	66	6090490.7	R-squared	=	0.7967
-----+-----						
				Adj R-squared	=	0.7936
Total	1.9770e+09	67	29506981.5	Root MSE	=	2467.9

Transaction~e	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----+-----						
Marketcapit~n	.0031371	.0001951	16.08	0.000	.0027476	.0035266
_cons	-1610.881	455.974	-3.53	0.001	-2521.262	-700.4993

. reg Transactionvolume Marketliquidity

Source	SS	df	MS	Number of obs	=	68
-----+-----						
				F(1, 66)	=	174.40
Model	1.4342e+09	1	1.4342e+09	Prob > F	=	0.0000
Residual	542759003	66	8223621.26	R-squared	=	0.7255
-----+-----						
				Adj R-squared	=	0.7213
Total	1.9770e+09	67	29506981.5	Root MSE	=	2867.7

Transaction~e	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----+-----						
Marketliqui~y	.1888035	.142966.8	13.21	0.000	.1602592	.2173477
_cons	-1890.956	560.9239	-3.37	0.001	-3010.877	-771.0359

Figure 3. Simple R&D model for stockmarket (Source: Author Analysis)

3.3. SWOT analysis

Table 2. SWOT analysis and Values

Values	<ul style="list-style-type: none"> -R&D: emphasize more the vital roles of technological change in improving productivity and growth. -Levels of R&D will influence benefits/values of global commerce among countries. -R&D might consist of: basic- applying- empirical.
Strengths	Weaknesses
-The deep level of R&D will affect commercial	

<p>activities (and of enterprises).</p> <ul style="list-style-type: none"> -R&D will improve productivity, market expansion. -R&D will change process of firms. -Coming from technological science R&D. 	<ul style="list-style-type: none"> -Using many old technologies. -Somehow new technological change does not bring any success.
<p>Opportunities</p> <ul style="list-style-type: none"> -Technological innovation will bring or improve productivity, esp. In long term econ growth/development. -Positive economic growth (average 5.2% last 3 years). -Linkage with universities and research institutes. -Taking advantage of young scientific researchers. 	<p>Threats</p> <ul style="list-style-type: none"> -Low productivity, still lack of high qualified laborers. -High, intensive capital foreign firms.

Source: Author Analysis

Cost for developing trade facilitation measures: there are some types of trade facilitation cost, such as: Regulatory and legislative costs, Institutional and organizational costs. Human resources and training costs, Equipment and infrastructure costs, Operational and maintenance costs,... However, most developing countries that have implemented trade facilitation have seen the benefits exceed the costs (OECD, 2005).

Labor resources and the cooperation between the government, relevant ministries and agencies, and businesses. Sometimes, developing countries don't have people skilled and with good knowledge about trade facilitation, or people working in relevant agencies are not willing to change, to develop trade facilitation programs. Consequently, facilitating trade in developing countries may be taken slowly and long.

Figure 4. Trade facilitation barriers for developing markets (Source: Nga, L.T.V., et al., 2021)

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

4. Conclusion

Expanding international cooperation in economic construction and development is a great and consistent thought of Ho Chi Minh. He believed that: "common progress depends on the development of internationalism; and civilization is only beneficial when international relations are expanded and strengthened" (source: Ho Chi Minh: Complete Works, vol. 1, p. 14. The Indigenous Peoples' Problem, L'Humanité newspaper, August 2, 1919).

Through that, we see that Ho Chi Minh paid great attention to the role of the interest factor in the economy, and at the same time always used the ethics of the collective owner to promptly adjust conflicts of interest, creating a

harmonious combination between common interests and individual interests, so that the state, cooperatives and members all benefit.

Also above simple R&D model for stock market shows us that when GDP increases, market transaction volume will also increase with p -value < 0.05 .

Furthermore, scientists may consider using more complex variables (for instance, taking GERD instead of GDP), for regional statistics, George, M., et al. (2009) also stated that technological progress also associated with long run econ growth, and in literature there are various explanations for the slow down in productivity growth for OECD nations case. The first source comprise of: tech opportunities declined or new tech application not successful. Second source consists of: change in industrial elements (employment, capital accumulation and resource utilization).

And it is necessary to research and promulgate regulations on safe lending policies to limit risks. This need proper lending policy or vital roles of banks (TD Thang, DTN Huy, PA Dung, LN Nuong, DTN Hien, 2024).

Declarations

Source of Funding

This study did not receive any grant from funding agencies in the public, commercial, or not-for-profit sectors.

Competing Interests Statement

The authors declare no competing financial, professional, or personal interests.

Consent for publication

The authors declare that they consented to the publication of this study.

Authors' contributions

All the authors took part in literature review, analysis and manuscript writing equally.

References

- [1] Duong Thi Ngu, Do Thu Huong, Dinh Tran Ngoc Huy, Phung Thi Thanh & Dongul, E.S. (2021). Language teaching application to English students at master's grade levels on history and macroeconomic-banking management courses in universities and colleges. *Journal of Language and Linguistic Studies*, 17(3): 1457–1468.
- [2] Adegbile, A.S., et al. (2021). Environments for joint university-industry laboratories (JUIL): micro-level dimensions and research implications. *Technol. Forecast. Soc. Change*, 170: 120888.
- [3] Do Thu Huong, Dinh Tran Ngoc Huy, Nguyen Thi Hang, Pham Thi Huyen Trang & Duong Thi Ngu (2021). Discussion on Case Teaching Method in a Risk Management Case Study with Econometric Model at Vietnam Listed Banks - Issues of Economic Education for Students. *Review of International Geographical Education*, 11(5).

- [4] Dat, Pham Minh, Mau, Nguyen Duy, Loan, Bui Thi Thu, & Huy & Dinh Tran Ngoc (2020). Comparative China Corporate Governance Standards after Financial Crisis, Corporate Scandals and Manipulation. *Journal of Security and Sustainability Issues*, 9(3). doi: 9770/jssi.2020.9.3(18).
- [5] Dinh Tran Ngoc Huy (2015). The critical analysis of limited South Asian corporate governance standards after financial crisis. *International Journal for Quality Research*, 9(4).
- [6] Duong Thi Tinh, Nguyen Thu Thuy & Dinh Tran Ngoc Huy (2021). Doing Business Research and Teaching Methodology for Undergraduate, Postgraduate and Doctoral Students-Case in Various Markets Including Vietnam. *Elementary Education Online*, 20(1).
- [7] Dolde, W., & Tirtiroglu, D. (2002). Housing price volatility changes and their effects. *Real Estate Economics*, 30(1): 41–66.
- [8] Dinh Tran Ngoc Huy (2012). Estimating Beta of Viet Nam listed construction companies groups during the crisis. *Journal of Integration and Development*, 15(1): 57–71.
- [9] George, M., & Stylianios, D. (2009). Economic innovation: A review in theory and models. *European Research Studies*, 12(3).
- [10] Fabiano, G., et al. (2021). R versus D, from knowledge creation to value appropriation: ownership of patents filed by European biotechnology founders. *Technovation*, 108: 102328. doi: 10.1016/j.technovation.2021.102328.
- [11] Haq, et al. (2020). From R&D to Innovation and Economic Growth: An Empirical-Based Analysis from Top Five Most Innovative Countries of the World. doi: 10.1007/978-3-030-23898-8_23.
- [12] Hooi, H.L. (2012). Wealth Effect of Credit-Price Effect? Evidence from Malaysia. *Procedia Economics and Finance*, 1: 259–268.
- [13] Huang, Y.K., & Ge, X. (2009). House prices and the collapse of stock market in mainland China? - An empirical study on house price index. Pacific Rim Real Estate Conference, Sydney, Australia.
- [14] Jakob, E., et al. (2017). Innovation policy: What, why, and how. *Oxford Review of Econ. Policy*, 33(1): 2–23.
- [15] Kearl, J.R. (1979). Inflation, mortgage, and housing. *Journal of Political Economy*, 87(5): 1115–1138.
- [16] Ibbotson, R., & Siegel, L. (1984). Real estate returns: a comparison with other investments. *AREUEA Journal*, 12: 219–241.
- [17] Ito, T., & Iwaisako, T. (1995). Explaining Asset Bubbles in Japan. National Bureau of Economic Research Working Paper Series, No. 5358.
- [18] Hayton, B. (2020). Vietnam: Rising Dragon. New Haven: Yale University Press.
- [19] Kakes, J., & Van den End, J.W. (2004). Do stock prices affect house prices? Evidence for the Netherlands. *Applied Economics Letters*, 11: 741–744.

- [20] Kamada, K., Hirata, W., & Wago, H. (2007). Determination of Land-price Movements in Japan. Bank of Japan.
- [21] Kim, H.M. (2023). Foreign direct investment and urban growth in Vietnam: spatial, economic, and demographic perspectives. Retrieved: <https://www.tandfonline.com/doi/full/10.1080/10225706.2023.2244946>.
- [22] Kim, H.M. (2020). International Real Estate Investment and Urban Development: An Analysis of Korean Activities in Hanoi, Vietnam. *Land Use Policy*, 94(104486): 1–10.
- [23] Ho Chi Minh Complete Works (1957). The appeal on the occasion of May 1 published in Nhan Dan Newspaper, Issue 1150, May 1, 1957.
- [24] Ho Chi Minh Complete Works (1961). Speech "Building people of Socialism" at the Conference on training leaders at all levels throughout the North in mid-March 1961.
- [25] Ho Chi Minh Complete Works (1958). The article Revolutionary Ethics published in Hoc Tap Magazine.
- [26] Ho Chi Minh Complete Works (1919). The Indigenous Peoples' Problem, L'Humanité newspaper, August 2, 1919.
- [27] Ho Chi Minh Complete Works (n.d.). Reply to an interview with Mr. Walter Briggs.
- [28] Ho Chi Minh: Complete Works (n.d). Volume 6, Page 46, Reply to an interview with Mr. Walter Briggs.
- [29] Nga, L.T.V., et al. (2021). Reforming specialized inspection procedures to improve business environment in Vietnam for trade facilitation implementation. *Management*, 25(1).
- [30] Nguyen Trong Diep, Nguyen Xuan Hai & Dinh Tran Ngoc Huy (2023). Environmental Law and Policies for Problems in Construction Sector. *Int J. of Scientific Research in Science, Engineering and Technology*, 10(3).
- [31] Nguyen Xuan Hai (2023). Risk Management and Productivity Improvement in Construction Sector – Case in Vietnam. *International Journal of Scientific Research in Science and Technology*, 10(4).
- [32] Nguyen Xuan Hai, Dinh Tran Ngoc Huy, Le Ngoc Nuong & Nguyen Trong Diep (2023). Further Analysis on Risk Management and Solutions to Improve Productivity and Safety in Construction Sector - and Environment Protection Law in Construction Activities. *Scholars J. of Economics, Business and Management*, 10(7): 156–164.
- [33] Nguyen Xuan Hai, Dinh Tran Ngoc Huy & Le Ngoc Nuong (2023). Environment Protection and Regulations in Industrial Cluster (IC) Development - A Case in Hanoi Vietnam. *International Journal of Rural Development, Environment and Health Research*, 7(4).
- [34] Nguyen Tuong Van (2023). Finance for residential real estate and implications for monetary policy management in Vietnam. <https://www.sbv.gov.vn/webcenter/portal/m/menu/trangchu/ddnhnn/nctd/>.
- [35] Myers, S.C., & Majluf, N.S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *J. Financ. Econ.*, 13: 187–221. doi: 10.1016/0304-405x(84)90023-0.

- [36] Griffin, P.A., et al. (2022). Proprietary costs: Why do R&D-active firms choose single-lender financing?, *Account. Rev.* doi: 10.2308/tar-2018-0158.
- [37] Tran Thi Kim Chi (2023). Real estate market and macroeconomic stability in Vietnam. *Review of Finance Online*, (2).
- [38] Thang, T.D., Huy, D.T.N., Dung, P.A., Nuong, L.N., & Hien, D.T.N. (2024). Measurement of Successful Management and Leadership via a Multi Factor Model on Bank Profit-A Case of BIDV. *European Economic Letters*, 14(1): 567–579.
- [39] Thang, Tran Toan, Thi Song Hanh Pham & Bradley R. Barnes (2016). Spatial Spillover Effects from Foreign Direct Investment in Vietnam. *The Journal of Development Studies*, 52(10): 1431–1445. <https://doi.org/10.1080/00220388.2016.1166205>.
- [40] Vincent, et al. (2022). The Impact of R&D Innovation Success on the Relationship between R&D Investment and Financial Leverage. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(3).
- [41] Vera, I., et al. (2016). Model of Innovation-Oriented State Economic Policy. *European Research Studies*, 19(1).