



Tom 33/2021, ss. 37-47

ISSN 2719-4175

e-ISSN 2719-5368

DOI: 10.19251/ne/2021.33(3)

[www.ne.mazowiecka.edu.pl](http://www.ne.mazowiecka.edu.pl)

---

**Rudra Prasad Ghimire**

provost@janusandal.no

Honorary Research Fellow, Fil. Dr. Jan-U. Sandal Institute, Finstadjordet, Norway

ORCID ID: <https://orcid.org/0000-0002-2908-1006>

## **ROLE OF INDEPENDENT SCIENCE FOR INNOVATION**

### **Summary**

This study opens the horizon of role of independent science in business innovation and profit. The main focus is to diagnose spectrum of independent science in its applications. By the scientific review, role of independent science generates the database of truth in figures, sense of relationship of a variable without the fund and association with the institutions. The contribution of independent scientist functions in every part of planet. Independent science serves at all level of opportunities, innovation and profit. Some of the organization enjoys the fund for research but independent science does not take care of fund. Independent science encourages freedom of research, prediction, expression of truth. Independent science creatively solves the problem scientifically. Independent science reveals influence of body of knowledge, which is beneficial for the state-of-the-art development for the possession of yields. The consequences of independent research acumens into expertise benefactions play a role in economic growth with engagement and origination. In addition, artificial intelligence, machine learning, data science and automation have been altering the agility of resources accessible. Scientific innovation creates the gear force of business. Therefore, the role of autonomous science keeps first trundle innovation altitude and second wheel as cost of risk undertaken by tycoons. The self-regulating scientist contributes his or her edification, insight knowledge to alleviate insufficiency, joblessness and income disparity of diverse cohort at different timeframe. Sustainable development depends upon dynamics of independent research innovative outcomes.

Independent science can explore a kind of system to catch fact via scientific route. Thus, the significance of independent science represents the asset of scientific motion self-sufficiently for the advancement to the public scientifically.

**Keywords:** Independent Science, Innovation, Change and Development

JEL classification: O31, O35

*Role of independent science is a modeling of scientific research. In modern days, its competence has opened the root to provide the novel research, innovation and development at all in the world. The value of independent science improves performance in innovation of wisdom, knowledge and technological endowments. Independent science has changed the life of people in the experiment. The development of independent science has secured journey for innovation modernly. The growth of science has been realized from the sustainability and efficiency of independent science. Independent scientist thrives role of independent science successfully. The independent science can be used for future developmental science and changing dynamics of development. The main aim of this investigation is to find the role of independent science for research and development. This paper is based on scientific review of importance of independent science for innovation. The responsible independent science creates the value for social change at any time. Impressive achievement in social life can be determined by efficiency of scientific research plan. Independent scientist may equip by policy, competence, skills and time rather than required fund. The contribution of independent scientist can have well devotion to reach in the scientific truth. Historically, independent scientists conveyed the religion of independent science at different time frame with border scope. Independent science can solicit a kind of way to find truth via scientific process. Thus, the significance of independent science embodies the virtue of scientific mobility independently for the betterment of the people scientifically chasing profit and innovation diversion.*

## INTRODUCTION

Independent science is a part of science that generates body of knowledge for productive system of nature. An independent scientist (modern gender-neutral term historically also known as gentleman scientist) is a financially independent scientist who pursues scientific study without direct affiliation

to a public institution such as a university or government-run research and development body (Segen, 1992). The role of independent science may increase or decrease at different time. Increment in government and private sector research fund can narrow the scope of independent science. Research depends upon funds but independent scientific research does not depend on fund. Doing a research is a costly phenomenon incorporating administration, training, going to field, writing proposal, accepting, processing etc. Funding research may control the direction of research project where as independent researcher can expand the horizon of research without fund. Funding researcher may not have ownership of intellectual property. Inventor may loss of intellectual property of funding research. To do funding research work, expenditure on scientific equipment is needed which can increase extra financial burden. It is clear that independent research can contribute to innovation and development. Funded researcher may contribute in the field of independent science after completing the research project. Funded researcher can have synergic effect towards independent science after the retirement of job. Independent science has greater role in the society. Independent scientists keep research more innovative scientifically. “The ‘Special Theory of Relativity’ was given by Einstein some ten years later, when he discovered another theory, which he called the General Theory of Relativity. In the General Theory, Einstein proposed a new law of gravitation, and modified Newton’s law of gravitation” (Singh, 2005). The contribution of theory of relativity has a great meaning in technology and innovation. This theory is an out comes of scientific thinking and discovery.

The contribution of Einstein had not had sufficient fund for research. Independent science has greater scope since contributions of ancient’s philosopher to modern scientists have great value in independent science, education and globalization. In the ancient time, “Alexander the Great is often understood to be the first statesman to attempt a “universal state,” owing in large part to his philosophical education under Aristotle. Alexander informs many of his depictions in popular culture, and influences his appropriation in contemporary discourse on globalization” (Liebert, 2011). Alexander had no research fund to be a great scientist for noble contribution in the world research. Fact delivery and truth identification build science independent with a great deal of struggle and interest of scientist. “The real motive for protection of freedom of speech is not the keen interest in truth but the fact that the public is commonly more interested in the struggle between truth and falsehood than

it is in truth itself” (Coase, 1974). The truth only can serve to independent science. The people’s living gets the positive change when truth leads their struggle. The transformation can be resulted from the continuous effort of freedom of speech of public.

Independent science has body of knowledge as an outcome of innovation, technology, productivity, organization development, economic growth and profit. Independent science proposes knowledge for the innovation. “The “radical” innovations create major disruptive changes, whereas “incremental” innovations continuously advance the process of change proposing; I) Introduction of new products. ii) Introduction of new methods of production. iii) Opening of new markets. iv) Development of new sources of supply for raw materials or other inputs. v) Creation of new market structures in an industry” (Schumpeter, 1934). Innovation part is thought of new and newness in product, methods markets and structure that depends on knowledge. “Innovations are such changes in production functions, in the schedules indicating the relation between the input of factors of production and the output of products, which make it possible for the firm to increase the discounted value of the maximum effective profit obtainable under given market condition” (Lange, 1943). Production function results the outcome of innovation in the form of profit. “Firms which introduce innovations that are a world first (innovations which have the highest degree of novelty) are more likely to use a larger variety of sources of information to develop or improve their products or manufacturing processes than firms introducing innovations that are a first at the national level or a first for their firm” (Amara and Landry, 2005). Firm is a driver of innovation at the national level and its own sphere. Innovation begins from firm formally and industries survive for a long time. “How firm size, market structure, profitability and growth influence innovative activity in small to medium sized Australian manufacturing businesses. Regression analysis is conducted to determine the factors that affect subsequent innovative activity for the full sample of businesses, as well as for sub-samples of firms from high and low-technological opportunity industries. Most variables, including size, Research and Development (R&D) intensity and market structure and trade shares are found to be conducive to further innovative activity for the full sample and for high-tech firms. For low-tech industries, fewer variables are significant” (Bloch and Bhattacharya, 2004). For the both high tech and low tech industries, innovation expose that a major factors of R&D, market structure, trade share ruling sustainably. A widely tested model where R&D leads to

innovation and innovation leads to productivity improvements (Crepon, Duguet and Mairesse, 1998). R&D is a source of innovation developments and improves production level. Technology drives the R&D world to promote innovation.

The relationship between innovation and profits have often moved from a view of profit seeking as the motivation behind investment in innovation and technology, both in industry models (Klepper, 1997). Invention as a new idea, a new scientific discovery or a technological newness (which has not been implemented and diffused), while innovation refers to a tradable application of an invention, as a result of invention integration into economic and social practice. Innovation is regarded, therefore, being a result of a process that starts with an idea genesis and continues with its materialization (Malerba, 1997). The change is the rule of dynamics of materialization for a profit. The total effect of innovation related efforts varies from one period or one country to another but; in general, increasing demand stimulates innovation in industry, particularly product innovation, with positive impact on employment (Pianta, 2006). With these, literature possesses that the role of independent science comes into the society and contribute to the innovation. In addition, the role of innovation has become a source of social and economic prosperity. Independent science promotes innovation. Sustainable economic growth occurs when innovation take place. Innovation is a factor of different economic opportunities. The leaders must think innovative activity at any time of their administration. Independent science boosts up research and development, which has power of production, employment, environmental conservation, business and stimulates innovation. The knowledge of R&D amplifies the productivity as a major contribution of independent scientist. Besides, technology unlocks the competitiveness too progressively with the knowledge of independent science offer.

The 21st century is based on knowledge, information and innovative economy. Organizations' success depends on employees' knowledge, experience, creative activity and qualification and emphasis is placed on continuous learning and research and development (Hamel & Green, 2007; Senge, 2007; Barták, 2006; Collinson, 2005; Bartes, 2009). This era is a time of innovation, and becomes stimulus by attributes of human capital. Even though the theoretical base is humongous and points in one direction that the entrepreneur is an agent in the social system, whose role is undisputable, the theories of the entrepreneur do not constitute anything that can be used as

a political handbook (Sandal, 2011). In the social mechanism, entrepreneurship leads economic and political change. This is even more important in the case of small organizations because, in comparison to large organizations, they have a reduced innovative autonomy and they do not usually collaborate with technological centers (Romero & Martinez-Roman, 2012). In all advanced economies, Higher Education Institutions (HEI) are expected to play a key role in promoting innovation, entrepreneurship and structural change (Ankrah & Al-Tabbaa, 2015). Education policy incubation boosts up the innovation for empowerment. The point is the development of innovation, entrepreneur and entrepreneur skills among students and academic staff, encouraging entrepreneurial culture and developing inter-relationships among groups of entrepreneurs, innovators, venture capitalists, business incubators, policy actors, etc. (Guerrero et al., 2016). Stakeholders of entrepreneurship can contribute to culture of production and productivity. The turn to such large-scale socio-technical transitions calls for a better understanding of the broader societal interactions beyond the R&D and innovation policy domain. Moreover, whereas science and technology-based (STI) innovation policies prioritize R&D support and innovation system policies emphasis on networks, clusters, industry-university collaborations, etc., the new mission-oriented and socio-technical transitions policies acknowledge the importance of other types of social and civic actors in innovation (Fagerberg, 2017; Mazzucato, 2017). Liberal education and innovative dynamic learning systems have the capacity to move more individuals from their dependency on the state to a brighter future with independent freedom. Innovation is made by people for people, while democracy is both the creator and the creation of that process (Sandal, 2017). Education and democracy is the environment to make the world more productive. Independent freedom fruits innovation largely. Since 1997, the Bologna project (also called the Bologna decree) has taken over most of the higher education in Europe, focusing on educating the younger generation to fit into the job market. The educational system is by its nature static (Sandal, 2017). Education system matters for younger generation opportunities. Training is required to the new generation along with education.

Digitalization and its effect on R&D and innovation processes so far. There is little doubt that transformative digitalization technologies, which permeate and alter the entire fabric of our societies, also change the way modern R&D and innovation is conducted, from agenda setting, to experimentation, to knowledge-sharing processes and public engagement (Nolan & Guellec,

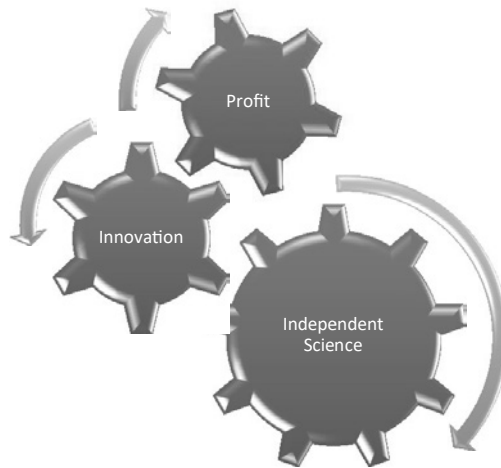
2019). Role of R&D and digitalization are playing vial role in knowledge advancement. Digitalization has a broad aspect of synergy effect in people engagement. The investment and support of technology startups are effective ways of increasing employment and innovation (Choi, Sung and Park, 2020). Based on review, previous scholars have taken different aspects playing greater role for innovation. Evenhough, importance of independent science has not been invented for the improvement in an innovation. In the independent science, the main truth is investment for profit and technological innovation creates opportunity of innovation in production function. Hence, with this literature on the role of independent science, there is lack of investigation on the role of independent science therefore this study searches into what is the dynamic role of independent science for innovation.

## **RESEARCH METHODOLOGY**

This study has reviewed the literatures of role of independent science for innovation. In this research paper, some of the review of independent science of innovation for social entrepreneurship is carried out. This study has followed qualitative research method in the field of social entrepreneurship as role of independent science.

## **DISCUSSION**

The dynamics of independent science is a wheel runs for the series of invention into innovation, which can induce profit. Independent science big wheel has two small wheels in one hand there is profit and on the other there is innovation. Technology harnesses the production and productivity via innovation. R&D gears the management of all aspect of wheels in this modern age. Education as well as freedom belongs to the people for their betterment of life style innovation. Policy of transformation opens the path of independent scientist devotion.



**Figure 1. Dynamics of independence science wheel**

*Source: Author invention, 2021*

The figure 1 shows dynamics of role independence science wheel in border frame runs rightly balancing the innovation wheel and profit wheel to a smaller size than independent science. Two sides' wheels of both components such as innovation and profit can have capacity of resource endowments and productivity channel, which retains rate of profit margin and innovation junction. Independent science reflects power of body of knowledge, which is useful for the innovative development for the ownership of returns. The results of independent research insights into technology endowments play a role in economic growth with employment and innovation. Besides, artificial intelligence, machine learning, data science and automation have been changing the mobility of resources available. Technological innovation will support future entrepreneurs. Therefore, the role of independent science keeps first wheel innovation promotion and second wheel as a price of risk undertaken by entrepreneurs. The independent scientist contributes his or her education, wisdom knowledge to alleviate poverty, unemployment and inequality of different generation at different time. So, sustainable development depends upon dynamics of independent research and innovative outcomes.

## CONCLUSIONS

Reviewing the role of independent science, independent science stages innovation and profit in the way of innovation dynamics and innovativeness



system. Independent science provides quality of truth for business society to accelerate and profit. Role independent scientists have greater impact on social as well as developmental sector and commercial enterprise growth. Freedom of speech, democracy and innovation shapes the world of independent science. 'People in this country have had enough of experts' (Clarke and Newman 2017). All living creatures are the stakeholders of the independent science. Particularly, human being is the main partner of independent science. Independent research depends on independent science preserving the facts for business innovation and profit accumulation. Without fund and association, science comes throughout the business world in order to generate multiple opportunities and profit, which serves the society forward. Independent science maintains excellence of knowledge and wisdom of innovation. Hence the main aspire of independent science is to foster intellectual honesty, commitment, fairness, responsibility in order to create scientific environment which have broad positive impact on multidimensional aspect of people's affaire in the diversion of profit and innovation. More often business needs truth which invented by independent scientist for sustainable development and growth of business. Finally, business confidence guarantees the profit and rule of innovations locating role of independent science.

## **Acknowledgments**

This scientific article was created at the Fil. Dr. Jan-U. Sandal Institute, Finstadjordet, Norway under the supervision of Prof. Fil. Dr. Jan-Urban Sandal, Executive Director and Owner at the Fil. Dr. Jan-U. Sandal Institute (Excellence in Science and Education).

## **Conflict of interests**

The author declares no conflict of interest.

## **References**

- Amara, N. & Landry, R. (2005). Sources of information as determinants of novelty of innovation in manufacturing firms: evidence from the 1999 statistics Canada innovation survey. *Technovation* 2005; 25:245–259.
- Ankrah, S., & Al-Tabbaa, O. (2015). Universities–industry collaboration: A systematic review. *Scandinavian Journal of Management*, 31, 387-408.
- Barták, J. (2006). *Skrytěbohatstvifirmy*. Praha: Alfa.

- Bartes, F. (2009). *Paradigmmainovací a hodnotovúnženýrství*. Brno: VÚT
- Bloch, H. and Bhattacharya, M. (2004). Determinants of Innovation. *Small Business Economics* 22: 155–162.
- Coase, R. H. (1974). “The Market for Goods and the Market for Ideas,” 64 *The American Economic Review* 384–391.
- Collison, Ch. (2005). *Knowledge management*. Brno: Computer Press.
- Crepon, B., Duguet, E. and Mairesse, J. (1998) ‘Research and development, innovation and productivity: an econometric analysis at the firm level’. *Economics of Innovation and New Technology* 7 (2), 115-158.
- Clarke J, Newman J (2017). ‘People in this country have had enough of experts’: brexit and the paradoxes of populism. *Critical Policy Studies* 11:101–116. <https://doi.org/10.1080/19460171.2017.1282376>.
- Fagerberg, J. (2017). Mission (im)possible? The role of innovation (and innovation policy) in supporting structural change & sustainability transitions. TIK Working Papers on Innovation Studies, TIK Centre, University of Oslo.
- Guerrero, M. et al. (2016). Entrepreneurial universities: Emerging models in the new social and economic landscape. *Small Business Economics* 47(3): 551-563.
- Hamel, G. & Green, B. (2007). *The Future of Management*. Boston: Harvard Business School Press.
- J. C. Segen (1992). Dictionary of Modern Medicine.p. 246.ISBN 1-85070-321-3.
- Lange, O. (1943) “A Note on Innovations”. The Review of Economic Statistics, 25:1.pp 19-25.
- Liebert, H. (2011). Alexander the Great and the History of Globalization. *The Review of Politics* 73 p533–560.© University of Notre Dame.
- Malerba, E., Orsenigo, L., (1997). “Technological Regimes and Sectorial Patterns of Innovative Activities”, *Industrial and Corporate Change* 6, 83-117.
- Mazzucato, M. (2017). Mission-Oriented Innovation Policy - Challenges and opportunities, UCL Institute for Innovation and Public Purpose.
- Nolan, A., &Guellec, D. (2019).The digitalisation of science, technology and innovation.An overview of key developments and policies.OECD, DSTI/ STP 14.
- Pianta, M. (2000). *The Employnemnt Impact of Product and Process Innovation*, in M. Vivarelyşi M. Pianta (eds.), *The Employment Impact of Innovation: Evidence and Policy*, Routledge, London.
- Romero, I. (2009). PYMES y cadenzas de valor globales.Implicacioness para la politica industrial en las economiasandesarrollo. *AnálissisEconómico*, 24(57), 199-216.
- Sandal, J-U. (2011). Introduksjontil Joseph A. Schumpeter: Entreprenørprofit – et insitamnt til demokratisk utvikling (Introduction to Joseph Alois Schumpeter: Entrepreneurial Profit - An Incentive for Democratic development). *Ekonomiska Samfundets Tidskrift (The Journal of*

*the Economic Society of Finland*), 1. Retrieved from <http://www.ekonomiskasamfundettidskrift.fi/est/?p=60>.

Sandal, J-U. (2017). Innovation in Education - Dynamic Innovative Learning Methods as Approach to Independent Science. *Ukraine - EU. Modern Technology, Business and Law. Modern Priorities of Economics. Societal Challenges*. Chernihiv: Chernihiv National University of Technology. Retrieved from [http://www.stu.cn.ua/media/files/conference/Part\\_1.pdf](http://www.stu.cn.ua/media/files/conference/Part_1.pdf).

Sandal, J-U. (2017). How innovation maintains and develops democracy. *Economic Annals-XXI Journal* 165(5-6), 23-26.

Schumpeter, J.A. (1934). *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle*. London: Oxford Univ. Press.

Senge, P. (2007). *Pátádisciplína – Teorie a praxeučící se organizace*. Praha: Management Press.

Singh, V. A. (2005). A Revolution in Physics: Einstein's Papers of 1905 Made Simple. Retrived from <https://www.tifr.res.in/~outreach/outreach/einstein.pdf>-39. Science Popularization and Public Outreach Committee Tata Institute of Fundamental Research India.

Cho, H.; Park, J.Y.; Sung, C.S. (2020). How Does Technology Startups Increase Innovative Performance? The Study of Technology Startups on Innovation Focusing on Employment Change in Korea. *Sustainability* 12, 551: 1-14. Retrived from file:///C:/Users/Administrator/Downloads/sustainability-12-00551.pdf. Assessed on 4 September 2020.