

Factors Limiting Policy Recognition of the New Innovation Approaches

Noor Rizawati Nasir , Asnul Dahar Minghat

*Perdana Centre of Science, Technology, and Innovation
Razak Faculty of Technology and Informatics, Universiti Teknologi Malaysia*

Abstract

There is a growing body of literature in the field of new innovation approaches, which importance has also garnered the interest of policymakers around the world. Various policy initiatives have been introduced, and some of them have proven to be successful, reaching millions of people worldwide. The primary motive of implementing these initiatives is to generate more effective and sustainable solutions to cater to the increasingly complex socio-economic challenges. However, despite the significant contributions, previous studies revealed that these innovations received comparatively less attention in public policy as compared to conventional innovations, resulting in limited prioritisation in public policy agenda. Therefore, the purpose of this paper is to explore the factors behind the low policy recognition of new innovation approaches. Based on the literature review carried out, several factors limiting the policy recognition have been identified, in which, to some extent, have consequently limited the potential of such innovations to thrive. The role of the government, particularly the policymakers, is to respond to current issues and chart future directions supported by other stakeholders. Henceforth, their commitment to developing more balanced policy measures is indeed imperative to optimise the benefits of innovations to society and tailor them to the Sustainable Development Goals.

Keywords: *innovation, new innovation approaches, policy*

1. Introduction

The world today is facing the magnitude of formidable challenges, including poverty and inequality, which can result in various socio-economic problems. In some parts of the world, these challenges have become more apparent in the past few years. The efforts to grow a sustainable and inclusive future are becoming even more difficult. Although the global poverty rate has successfully halved from the 1990s, five years ahead from the Millennium Development Goals' (MDGs) target, the World Bank pointed out that people who live in extreme poverty remain unacceptably high globally [1]. Following this event, ending extreme poverty poses a significant challenge in efforts to achieve the Sustainable Development Goals' (SDGs) target and requires more significant efforts [2]. According to the World Bank, there are still major globally poor concentrated in some parts of the world [1].

Over the years, in pursuance of the ongoing socio-economic issues, governments worldwide have increasingly placed innovation agenda as one of the essential policy agendas to achieve sustained economic growth and well-being through the provisions of various policy and support measures. Investments in innovations have resulted in various developments, including the introduction of the latest technological innovations in various areas, such as transportation, education, and agriculture, which have helped to ease people's way of life. However, despite the worldwide's recognition of the innovation role as the key driver to economic growth and social improvements [3], the current trends demonstrate that the improvements appear to be insufficient and uneven. The scholars generally accepted that inequality is the result of innovation and technological change in which the benefits have been widely said to be unevenly spread, contributing to increasing inequality [4], [5]. The conventional approach to innovation brings negative distributional

effects in which only small parts of the society benefit from the innovation, but the taxpayers share the costs [6].

Responding to this, several new forms of innovations have been introduced and implemented to cater to the gaps by paying closer attention to benefitting the excluded members of society in a fair manner. In parallel with the 2030 Agenda for Sustainable Development, where inclusion and sustainability are central to growth, these innovations combined the new and traditional approaches to cater to social issues. Among the commonly cited new innovation approaches in the literature are grassroots innovation, social innovation, inclusive innovation, and frugal innovation. In principle, the fundamental notion of these innovations is that they promote fairer sharing of innovation benefits through which they involve diverse ways of doing and utilising Science, Technology, and Innovation (STI) in addressing social needs [7]. These innovations have also increasingly given more persuasive words in public policy agenda in many countries, where various policy measures have been introduced and implemented worldwide in pursuit of addressing the varying socio-economic challenges.

Notwithstanding, it is generally accepted in the literature that these new innovations received much less recognition as compared to conventional innovations for profit or economic purposes in public policies. The predisposition has resulted in a considerable lack of prioritisation of these new innovation approaches in the public policy agendas. Indeed, this also illuminates why there is a lack of policy climate that could enable such innovations to flourish, in which several scholars have identified a number of implementation issues occurring at the local level. In this regard, it is necessary to comprehend what contributes to this shortcoming. Therefore, the main aim of this paper is to explore the factors that limit policy recognition towards new innovation approaches. To attain the stated objective, several relevant previous studies were reviewed.

This paper is organised into four main sections. The first section briefly describes the relevant concepts followed by the discussion of theoretical perspectives in section two. Next, section three provides a review of the previous studies pertinent to the topic. In the following section four, a discussion with several policy recommendations is provided. Finally, section five concludes the article.

2. Literature Review

2.1. Innovation

Innovation is a term that is defined in various ways with no distinct definition attached to it. As per [8], innovation can never be accurately defined. Nevertheless, the core concept of innovation is ‘novelty’ [9]. Conventionally, the analysis of innovation was most often in the perspectives of the newly created or improved products and processes that are driven by scientific knowledge and technology [10]. Schumpeter, one of the fathers of modern innovation theory, puts the term innovation as the combination of new elements, namely, (i) introduction of a new good; ii) introduction of a new method of production; iii) opening of a new market; iv) conquest of a new source of supply or new materials or manufactured goods, and v) carrying out of a new organisation of any industry [11]. The OECD and Eurostat define innovation “the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation, or external relations” [12]. Briefly, in [13] describe innovation as the “successful exploitation of new ideas.”

OECD and Eurostat outline four types of innovation, namely, (i) product innovation is the introduction of a good or service that is new or significantly improved concerning its characteristics or intended uses; (ii) process innovation is the implementation of a new or significantly improved production or delivery method; (iii) organisational innovation is the implementation of a new organisational method in the firm’s business practices, workplace

organisation, or external relations; and (iv) marketing innovation is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion, or pricing [12].

Innovation is subdivided into two strategic approaches. One is incremental innovation, and the other is radical innovation. Incremental innovation refers to the innovation that is built on existing knowledge and resources or the adaptation of the existing categories [14], [15]. This type of innovation does not involve significant modifications of the existing product and is less dramatic. Radical innovation, on the other hand, refers to an innovation that involves a substantial change from the original practice, aimed for systemic change. It can be either disruptive, the innovation that disrupts the existing patterns of production, consumption, and distribution, or generative, which means that ideas and innovations are further generated in their wake [14].

2.2. New Innovation Approaches

The new innovation approaches aimed at better addressing the unmet challenges where the market and traditional approaches failed to address. These new approaches of innovation primarily accentuate the development of novel solutions to achieve equal social and economic benefits across society, in which the marginalised can have equivalent access to affordable services and products that are previously unattainable. The innovative solutions can either be developed for or by the marginalised themselves by empowering them. The combination of the new and traditional approaches of innovation diverges from the conventional top-down approach where the governments, private sector, and organisations work to provide solutions to the neediest and bottom-up, with people from the bottom of the pyramid can also contribute to community development.

Among the frequently cited new forms of innovations in the literature are social innovation, grassroots innovation, inclusive innovation, and frugal innovation. The following briefly outlines the terms' concepts and definitions offered by several scholars;

Social innovation – Driven by the desires to cater to the unresolved social issues due to market and state failures, social innovation is defined by TEPSIE as “the new approaches to addressing social needs. They are social in their means and in their ends. They engage and mobilise the beneficiaries and help to transform social relations by improving beneficiaries' access” [16]. Briefly, in [17] describes social innovation as the “innovations that are social in both their ends and their means.” The term social innovation is regularly used interchangeably with social enterprise and social entrepreneurship [18].

Grassroots innovation – in [19] suggest the term grassroots innovation as the innovative solutions developed by people who are active in grassroots settings for sustainable development. In [5] describes the term as the innovation developed by the low-income groups as the innovators, which often occurs from and focuses on local development. Briefly, in [20] depicts this type of innovation as “innovation for the poor by the poor.” This innovation typically commenced by individuals, especially the poor in the informal economy and beyond the mainstream innovation setting.

Inclusive innovation – It refers to the initiatives aimed at serving the welfare low-income groups, including the poor and the excluded groups, directly [15]. Inclusive innovation also deliberately refers to the “inclusion within some aspects of innovation of groups who are currently marginalised” [21]. Whilst grassroots innovation is an innovation developed by low-income groups, inclusive innovation is the innovation with the low-income groups as the target consumers [5].

Frugal innovation – The term frugal innovation is frequently used the same way with inclusive innovation and sometimes used interchangeably [22]. It is commonly referred to as the modification of existing technologies, products, or services to supply the lower and

middle-income groups at a lower price so that they are able to purchase [15]. In [23] describe this innovation as the systematic effort to curtail the dispensable and affluence characteristics of the products created, aimed at the high-income market.

3. Theoretical Perspective

In discussing the factors influencing the adoption of a policy, the theory of diffusion of innovation by Everett Rogers serves as the underpinning theory employed as the basis. This theory is commonly employed to explain the patterns of adoption, explicate the mechanism, help to calculate whether and how innovation is successful, and determine the consequences [24].

Diffusion involves the widespread adoption of innovation [14]. From Rogers's perspective, diffusion of innovation is “the process in which an innovation is communicated through certain channels over time among the members of a social system”. Rogers suggests four key elements to the diffusion of new ideas, namely, innovation, communication channel, time, and social system [25].

The process of diffusion occurs along a particular process starting from knowledge, followed by persuasion, decision, implementation, and end with the confirmation. As per [26], this process involves information seeking and processing where an individual is encouraged to eliminate uncertainties about the advantages and disadvantages of an innovation. The two most critical processes are knowledge and persuasion. Knowledge refers to the individual's first exposure to innovation but has a lack of knowledge about innovation with no inspiration to search for more information concerning innovation. Knowledge can be obtained from communication channels such as the mass media. In continuation, based on the knowledge presented, an individual is convinced to accept or reject the innovation and continues to gain more information related to such innovation before a decision is made. This stage is the persuasion stage where an individual shapes his or her attitude towards the innovation based on the knowledge he or she gained.

In terms of adoption, Rogers identifies five attributes that influence adoption, namely, relative advantage, compatibility, complexity, trialability, and observability [25]. According to Rogers, the relative advantage, compatibility, trialability, and observability are attributes that influence the adoption of innovation more rapidly. Meanwhile, the complexity attribute negatively influences the decision to adopt innovation and serves as an important obstacle to the adoption of innovation [26].

Rogers classifies five innovation adopter categories, namely i) innovators - willing to take risks, high social status, financial and closest contact to sources and other innovators; ii) early adopters - having the highest degree of opinion leadership and more discreet in adoption choices; iii) early majority - adopt an innovation after some time that is significantly longer than the first two categories; iv) late majority - having a high degree of skepticism about innovation; and v) laggards - showing little to no opinion leadership that typically have an aversion to change agents. Policymakers, in this context, fall in the category of early adopters as they hold the leadership role in the social system. Henceforth, as the role models, their attitudes towards innovation is critical that can influence the diffusion process [26].

4. Support for New Innovation Approaches

Appropriate attention and sufficient support are necessary for the effective adoption and implementation of a policy on innovation. However, the deprivation of adequate recognition on the potential of the new innovations would result in the lack of priority in the broader policy agenda. The adoption of such innovations would also be limited as the

provisions of the environment that can enable the implementation may not be well put in place.

Evidence from other studies suggests that the governments' have insufficiently embraced and recognised the new innovation approaches as the source of innovation despite having the capability to provide value to a more significant segment of society [27], [28]. Partly, the lack of recognition could be due to the new innovations being viewed as less compelling than the conventional ones with an economic value.

In contradiction to the conventional approaches of innovation, the output of the new ones is fundamentally different from the traditional linear model of innovation and innovation with underlying motives to generate profit or economic value [29], [30]. These innovations, too, are driven predominantly by the motivation to meet the needs of the people rather than for-profit maximisation, such as in business innovations. Some may involve economic activities and values, but the end goal is to provide social value and serve the society.

In terms of support, the new innovation approaches have also gained little for them to grow and prosper. In [31] asserted that strategies to support social innovation are typically absent as compared to the innovation in business and technology at the national level. A study by [32] found that as compared to technological innovation for commercial activities, support for social and not-for-profit innovation appears to be limited. The arguments aligned well with a more recent study by [33] in which they studied inclusive innovation in Brazil, Russia, India, China, and South Africa (BRICS). The authors also found that no specific public policy that supports innovation for inclusive development is available. These arguments imply that the innovation trajectory remains on mainstream innovation, overlooking beyond any trickle-down effect of economic innovations to society [33].

4.1. Factors Limiting Policy Recognition

In the previous section, several past studies established that new innovation approaches received less support from the government as opposed to conventional innovation. The following sub-sections highlight a few factors that have been associated with the failure in producing the intended outcomes based on these studies.

4.1.1. Lack of definitions and unclear boundaries

This area of study is an evolving area of research with a plethora of definitions found in the literature [34]. Thus far, there is no standard and universal definition of the terms that have been established [35]. In fact, the differences of the existing definitions merely reflect the contexts and perspectives where the terms are used [36], [37], and interpreted differently across diverse research fields [38]. The scholars generally agree that confusion does exist over the terms and concepts, thus defining them is a challenging task as the terms and concepts are considered as weakly understood [39] and fuzzy [40], [41].

The accuracy and distinctive descriptions, with explicit boundaries of the relevant concepts, assist the policymaking and implementation process in many ways. One of them is that it allows everyone involved to have a common understanding of the subject matter, which later can influence the decision-making process. Besides, the clarity of the terms' definitions and boundaries could help the policymakers to develop sets of standardised criteria that are important for the policy implementation process from end to end. In this regard, the absence of this not only restricts the policymakers to develop policy measures but also from providing the support needed for such innovations to thrive.

4.1.2. Lack of learning culture

In [42] asserted that due to the nature of innovation that involves an experimental process, the culture of the policy has yet sufficiently matured to recognise it as a positive process. This issue, hence, hindering the potential of such innovations from receiving equal attention in the policy agenda. Securing risks is a significant challenge, particularly under the challenging financial climate, and therefore such policy experimentation is considered not a priority. For some governments, they are very thoughtful in supporting such innovations, where there are possibilities of failures and successes. Thus, the governments tend to leave the innovations to the market to decide on what should be adopted. Being averse to risks impedes the openness to learn from failures [32], and this is common in innovation.

Though the new innovations are mostly incremental in nature where they do not involve a significant departure from the existing, the existing policy culture is yet to be sufficiently matured in recognising such innovations. The lack of climate inevitably signifies that the current culture fails to recognise the potential contribution of such innovations to nation's development.

4.1.3. Absence of data and information

Scholars agreed that data and information on the new innovation approaches seem to be lacking. In [43] pointed out that the lack of information has resulted in the dearth of data and measurement. Besides, in particular to inclusive innovation, in [39] asserted that there is a gap of robust data to support the development of an evidence-based policy agenda. As per [17], the lack of required data to assess the innovation impact in the social innovation sector is attributable to, among others, the absence of definition.

The availability of data and information is central in decision-making as they serve as pieces of evidence needed by the policymakers to provide answers to any arising issue before appropriate policy decisions are made to cater to those issues. Better and more quality data could, in turn, result in improved policy decisions and facilitate transparency and accountability of government policy. As per [44], the unavailability of credible data would be risky for policy implementation, evaluation, and formulation of new policies on public sector innovation.

4.1.4. Outcomes are hard to quantify

The difficulty in quantifying outcomes of the new innovation approaches serves as one of the reasons that limit the supports needed for such innovations. In [32] contended that an innovation that is not technical is hard to quantify, especially concerning its potential savings as it is not aligned with the existing policies, regulations, institutional frameworks, and infrastructures. In [17] also maintained that the impact of social innovation is difficult to be measured and financially quantified. Moreover, in [43] asserted that insufficient information has resulted in the lack of measurement of social innovations in Latvia. In the same vein, in [18] argued that when it comes to non-financial effects, investing in such innovations is, to some extent, complicated by the common difficulty to quantify the effects of investment.

Quantifying outcomes is critical to ascertain whether any policy intervention has successfully achieved the intended policy objectives and created a positive effect on the target group. However, these innovations' projects are often intangible, complicated, hard to quantify, and may emerge over time [45]. The subjective values of such innovations where the end goals are to address social challenges somehow limit the capacity and capability to quantify the outcomes and may lead to a variety of interpretations.

4.1.5. Lack of measurement framework

In terms of measurement of such innovations, there exists the misalignment of conventional innovation indicators. These new innovations aimed at addressing social issues, but the current statistical and measurement frameworks do not address these types of innovations [46], [47]. This is because innovations for social is multitudinous, unlike the technological innovations that can be measured with growth. As per [48], the lack of common frameworks has affected the development of indicators. In terms of the mechanism for evaluating the effectiveness of such innovations, the lack of measurement framework might inhibit the development of programmes at the policy level [33].

This fact has sparked the upsurge need for specific indicators to be developed that not only focus on the input or output, but also the impact measurement. A consistent and standardised measurement that captures multiple dimensions, particularly in combining social and economic elements, could help to compare the performance and, in the end, assist the policymakers in deciding what kind of supports should be provided. In these recent years, there have been increasing efforts to develop the impact measurement framework for such innovations.

4.1.6. Insufficient skills and competencies

Several scholars agreed on the existing issue of the lack of competencies required among the policymakers. The inability to see the loopholes in the existing provisions hinders the initiation of such initiatives [31]. Specifically, in developing countries, in [7] asserted the existence of limited skills required for the development and implementation of the policy amongst the specialist and non-specialist policymakers. As of the authors, the priorities are different from one country to another. Besides, the replication of one country policy instrument may not fit the others. These include the set of skills needed to cater to stages of the innovation system and complementary policies [7]. In [49] pointed out that in developing countries, particularly, the imitation of policy strategy and instruments serves as one of the problems to which it is supposed to be addressing the country-specific issues. In addition to this, a study by [50] found that distributive implications of innovation policy are often ignored by the policymakers. The necessary capabilities are also found to be lacking in supporting and promoting such innovations as a mechanism for inclusive development [33].

Policymakers' prominent role is to respond to current issues and chart future directions, which also include planning for financial investments and resource allocation. As they are the main actors in policymaking, sufficient skills, and competencies among the policymakers are imperative to identify the policy gaps. The absence of such competencies could lead to ineffective policy development and implementation.

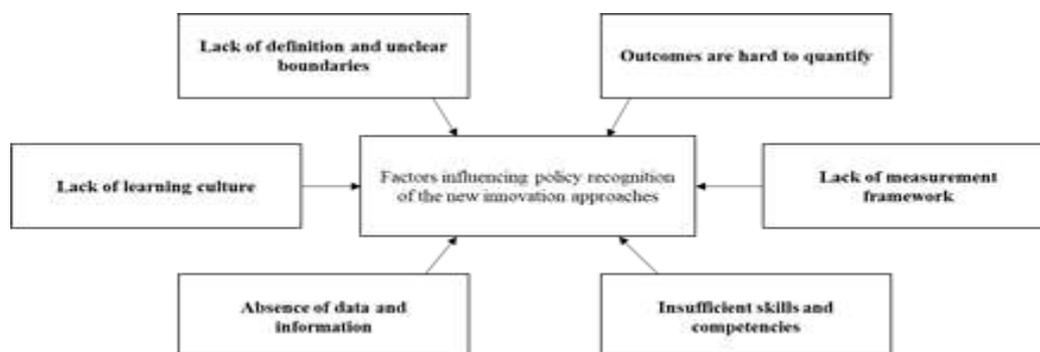


Figure 1. Factors influencing policy recognition of new innovation approaches

5. Discussion

Based on the reviewed literature, several significant factors limiting policy recognition towards the new innovation approaches have been identified. All six factors identified have a substantial influence on policy recognition towards the new innovation approaches. Generally, the factors identified revolve around two main issues, namely i) the lack of understanding of the role and potential contributions of the innovations in addressing social challenges and ii) insufficient learning culture and competencies which relate to individual attributes. These have consequently resulted in the lack of prioritisation of such innovations in the public policy agenda.

It is accepted in the literature that among the critical hindrances to innovation are uncertainty and risks [51]. In policymaking, the uncertainties and risks related to the feasibility of the policy, with the lack of information and knowledge about future events, as well as, the unclear return on the investment being made, make people become more complacent and not eager to change the status quo. These facts serve as the brake on any innovation to thrive. Moreover, when it comes to innovation that aims at attending social challenges, it is seen as unappealing enough as other existing policy measures are attending to such issues in other sectors. This, henceforth, explains why the existing support seems to be piecemeal, and the climate appears to be less encouraging for such innovations to flourish.

For an innovation to be accepted and diffused, information must be communicated through channels over time. Partly because the potential of such innovations has yet to be widely communicated despite having existing initiatives on the ground, carried out in the informal settings, have proven to be successful in solving community problems. Some of the solutions, though localised, with proper support, can be replicated elsewhere and provide maximised social impacts. In this regard, the availability of data and information is indeed, the critical elements influencing the recognition and adoption of the policy. However, this is hampered by the absence of the standardised definition of the terms making the capacity to develop suitable indicators and measurement framework a challenging task. As per Rogers, visibility of innovation results will positively influence the rate of adoption [25]. In this regard, the foremost measure that needs to be undertaken is the development of standardised definitions and boundaries of the concepts to allow the development of indicators and measurement framework.

Moving on, policy recognition is also influenced by the policy learning culture among the policymakers and their capabilities to make use of the information to develop a balanced policy measure. A fundamental change of the policymakers' mindset and attitude towards innovation is imperative to encourage the culture of policy experimentation and openness to failures. The policymakers act as role models that have the capacity to influence other members in the organisation to innovate. Their willingness and commitment to innovate would enable the learning culture through policy experimentation. By experimenting, the policymakers could consider what works and what does not and develop appropriate measures for mitigating risks.

Nevertheless, the ability to develop such measures requires policymakers with adequate skills and competencies. It is central to have sufficient human capital who possess the capacities and capabilities to optimise the available data and information, as well as, resources in designing policies to best benefit the people. The possession of relevant knowledge and skills-set by the policymakers would enable them to aptly utilise the data and information coupled with the resources they have to prioritise policy agenda. Subsequently, by considering the wide range of positive and negative impacts of innovations on various social issues, as well as, adapting to the worldview perspectives, the policymakers would be able to propose policy measures and interventions that can benefit the society members equally.

Furthermore, the policymakers are responsible for consulting with stakeholders not only to obtain buy-in and promote sharing of resources but also to minimise the possibility of failure that may take place via the selection of the best course of actions based on the inputs given by the stakeholders. As Rogers has mentioned, individuals should be informed about the consequences of an innovation, both its advantages and disadvantages. Hence, one of the central elements of innovation effectiveness is the accuracy of information communicated to everyone involved. In this regard, the policy should embark more engagement with community representatives as these innovations directly involve the local community and enable the optimisation of the available resources, including financial, technical knowledge, and experiences. The private sectors should actively be engaged to open up for marketing opportunities in efforts to help the community enhance their product and reach the market. The academia, as well, is equally important. The research output could also benefit the community members in improving their well-being.

6. Conclusion

Albeit the worldwide's increasing recognition on the potential of the new innovation approaches to cater to the pressing global challenges, the previous literature shows that they have a different position in public policy as compared to the economic and technological innovations. This fact has resulted in the limited prioritisation of the new innovations directed towards addressing social challenges as part of the public policy agendas. Based on the review of the literature carried out, the factors identified revolve around the issues of lack of understanding in the potential contributions of such innovations and insufficient learning culture and competencies which relate to individual attributes. Undoubtedly, the government has a vital role to play in creating an environment that can foster these innovations by recognising them as solutions to socio-economic challenges facing it. Though the innovations may start small, with appropriate measures, they could multiply and spread, thus, provide a more substantial impact on society. Policymakers are the leading actors in policymaking and have a substantial influence on others in promoting innovation culture. In this regard, the recognition of innovation highly depends on the willingness and commitment of the policymakers, which then influences their decision-making. Therefore, to maximise the new innovations' potentials, the policymakers should actively consult the relevant stakeholders, particularly those who are directly affected by the policy and those who have resources, experiences, and technicality, as well as, tacit knowledge to identify the needs in developing policy interventions. A more balanced approach in public policy is vital for equal sharing of the innovation benefits.

The authors acknowledge that some limitations may arise from this paper. However, the discussion above would help to shed light on some areas that are relevant to public policy.

References

- [1] World Bank, "Global Monitoring Report 2015/2016: Development Goals in an Era of Demographic Change", Washington DC, World Bank, (2016).
- [2] World Bank, "Poverty and Shared Prosperity 2018: Piecing Together the Poverty Puzzle", Washington DC, World Bank, (2018).
- [3] World Bank, "The Innovation Policy: A Guide for Developing Countries", Washington DC, World Bank, (2010).
- [4] S. Borrás, and C. Edquist, "Conceptual Underpinnings for Innovation Policy Design: Indicators and Instruments in Context", OECD Blue Sky Conf. III, Ghent, Belgium, (2016).
- [5] C. Paunov, "Innovation and Inclusive Development," OECD Publishing, Paris, (2013).
- [6] A. Schwachula, M. V. Seoane, and A. Hornidge, "Science, technology, and innovation in the context of development An overview of concepts and corresponding policies recommended

- by international organisations”, ZEF Working Paper Series, No. 132, University of Bonn, Center for Development Research (ZEF), (2014).
- [7] UNCTAD (United Nations Conference on Trade and Development), “New Innovation Approaches to support the implementation of the sustainable development goals,” UNCTAD, Geneva, (2017).
- [8] S. J. Kline, and N. Rosenberg, “An Overview of Innovation”, In Landau R., Rosenberg N. (Eds). *The Positive Sum Strategy: Harnessing Technology for Economic Growth*. National Academy of Science, Washington DC, (1986), pp. 275–305.
- [9] B. Å. Lundvall, "National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning", *Learning Economy and the Economics of Hope*, Anthem Press, London, (1992).
- [10] F. Gallouj, L. Rubalcaba, M. Toivonen, and P. Windrum, “Understanding social innovation in services industries, *Industry and Innovation*”, 25(6), (2018), 551-569.
- [11] J. A. Schumpeter, “Capitalism, socialism and democracy”, Unwin University Books, London, (1942).
- [12] OECD and Eurostat, “Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data”, Paris: OECD, (2005).
- [13] F. Steward, S. Liff, and M. Dunkelman, "Mapping the Big Green Challenge", NESTA Research Report, NESTA, London, (2009).
- [14] J. Grice, A, Davies, P, Robert, and W, Norman, “Social Innovation Overview: A deliverable of the project: ‘The theoretical, empirical and policy foundations for building social innovation in Europe’”, European Commission 7th Framework Programme, European Commission, DG Research, Brussels, (2012).
- [15] OECD, “Innovation policies for inclusive development: Scaling up inclusive innovations,” Paris, Organisation for Economic Cooperation and Development, (2015).
- [16] TEPSIE, “Social Innovation Theory: A Guide for Researchers,” (2014), https://iupe.files.wordpress.com/2015/11/tepsie-research_report_final_web.pdf.
- [17] A. Hubert, “Empowering people, driving change: Social innovation in the European Union”, European Union, Bureau of European Policy Advisors (BEPA), London, (2010).
- [18] J. Caulier-Grice, L. Kahn, G. Mulgan, L. Pulford, and D. Vasconcelos, “Study on Social Innovation”, Young Foundation, Social Innovation eXchange (SIX) and Bureau of European Policy Advisors, London, (2010).
- [19] A. Smith, and A. Stirling, “Innovation, Sustainability and Democracy: An Analysis of Grassroots Contributions”, *J. Self-Governance Manag. Econ.*, 6(1), (2018), 64-97.
- [20] A. K. Gupta, “Innovations for the poor by the poor”, *International Journal of Technological Learning, Innovation and Development*, 5(1/2), (2012), 28-39.
- [21] C. Foster, and R. Heeks, “Conceptualising inclusive innovation: Modifying systems of innovation frameworks to understand diffusion of new technology to low-income consumers”, *European Journal of Development Research*, 25(3), (2013), 333–355.
- [22] G. Zanella, X. Fu, P. Mohnen, and M. Ventresca, “The Creation and Diffusion of Innovation in Developing Countries: A Systematic Literature Review”, *Journal of Economic Surveys*, 30(5), (2016), 884–912.
- [23] J. Chataway, R. Hanlin, and R. Kaplinsky, “Inclusive innovation: An architecture for policy development”, *Innovation and Development*, 4(1), (2014), 33–54.
- [24] B. D. Medlin, “The factors that may influence a faculty member's decision to adopt electronic technologies in instruction”, Phd thesis, Virginia Polytechnic Institute and State University, Blacksburg, (2001).
- [25] E. M. Rogers, “Diffusion of Innovations”, Free Press, New York, (1995).
- [26] E. M. Rogers, “Diffusion of Innovations”, Free Press, New York, (2003).
- [27] M. Ornetzeder, and H. Rohracher, “Of solar collectors, wind power, and car-sharing: Comparing and understanding successful cases of grassroots innovations”, *Global Environmental Change*, 23(5), (2013), 856–867.

- [28] J. Reynoso, J. Kandampully, X. Fan, and H. Paulose, “Learning from socially driven service innovation in emerging economies,” *Journal of Service Management*, 26(1), (2015), 156–176.
- [29] OECD, “Fostering Innovation to Address Social Challenges. Workshop Proceedings”, Paris, OECD Innovation Strategy, (2011).
- [30] E. Pol, and S. Ville, “Social innovation: Buzz word or enduring term?”, *Journal of Socio-Economics*, 38(6), (2009), 878–885.
- [31] G. Mulgan, “The Process of Social Innovation”, *Innovations: Technology, governance, globalization*, 1(2), (2006), 145–162.
- [32] N. Bergman, N. Markusson, P. Connor, L. Middlemiss, and M. Ricci, “Bottom-up, social innovation for addressing climate change”, *Energy transitions in an interdependent world: What and where are the future social science research agendas*, (2010), pp. 1–27.
- [33] C. U. Daniels, O. Ustyuzhantseva, and W. Yao, “Innovation for inclusive development, public policy support and triple helix: Perspectives from BRICS”, *African Journal of Science, Technology, Innovation and Development*, 9(5), (2017), 513–527.
- [34] J. Caulier-Grice, A. Davies, R. Patrick, and W. Norman, “Defining Social Innovation,” A deliverable of the project: “The theoretical, empirical and policy foundations for building social innovation in Europe”, (TEPSIE), European Commission-7th Framework Programme, Brussels: European Commission, DG Research, (2012).
- [35] A. D. Bruin, “Towards Advancing Understanding of Social Innovation”, In *Challenge Social Innovation*. Franz HW., Hochgerner J., Howaldt J. (Eds.), Springer, Berlin, (2012), pp. 367–377.
- [36] D. Baturina, and G. Bežovan, “(Social) Innovation Impact - Review of Research”, European Union, Brussels, (2015).
- [37] J. Cunha, P. Benneworth, and P. Oliveira, “Social Entrepreneurship and Social Innovation: A Conceptual Distinction,” In *Handbook of Research on Global Competitive Advantage Through Innovation and Entrepreneurship*. Luís M. Carmo Farinha, João J. M. Ferreira, Helen Lawton Smith, Sharmistha Bagchi-Sen (Eds.), IGI Global, Pennsylvania, (2015), pp. 616–639.
- [38] J. Kováčová, “Phenomena of Social Innovation: Practical Attempts from Slovakia”, *International Journal of Social Sciences*, IV(4), (2015), 30–41.
- [39] R. Kaplinsky, “Innovation Knowledge Development Early 21st Century in Low and Middle Income Economies”, (2013).
- [40] M. Pansera, “Frugality, Grassroots and Inclusiveness: New Challenges for Mainstream Innovation Theories”, *African Journal of Science, Technology, Innovation and Development*, 5(6), (2013), 469-478.
- [41] W. Voorberg, V. Bekkers, and L. Tummers, “Embarking on the Social Innovation Journey: A Systematic Review Regarding the Potential of Co-Creation With Citizens”, *Spec. Interest. Gr. Innov. Chang. PUBLIC Serv. Dep.*, no. 320090, (2013), pp. 1–44.
- [42] G. Seyfang, and A. Smith, “Grassroots Innovations for sustainable development: Towards a new research and policy agenda”, *Environmental Politics*, 4016(4), (2007), 584-603.
- [43] L. Dobele, “Factors Which Influence the Development of Social Innovation in Latvia”, *International Conference “Economic Science for Rural Development”*, (2015), pp. 226–238.
- [44] R. I. Ramli, N. Abu-Hassan, A. S. Arifin, and A. N. Jasmi, “Implementation of Policy Initiatives to Foster Public Sector Innovation in Malaysia: The Need for Measurement”, *Journal of Science, Technology and Innovation Policy*, 3(1), (2017), 23-29.
- [45] Y. Hernandez, and K. Cormican, “Towards the effective management of social innovation projects: Insights from project management”, *Procedia Computer Science*, 100(100), (2016), 237-243.
- [46] T. M. Gamito, and L. Madureira, “Shedding light on rural innovation: Introducing and applying a comprehensive indicator system”, *Regional Science Policy & Practice*, 11(2), (2019), 251–277.
- [47] OECD, “Measuring Innovation: A New Perspective”, OECD Publishing, Paris, (2010).

- [48] A. Unceta, J. C. Spila, and J. G. Fronti, "Social innovation indicators", *Innovation: European Journal of Social Science Research*, 29(2), (2016), 192-204.
- [49] C. Chaminade, and R. P. Pérez, "The challenge of alignment and barriers for the design and implementation of science, technology and innovation policies for innovation systems in developing countries", In *Research Handbook on Innovation Governance for Emerging Economies*. Stefan Kuhlmann and Gonzalo Ordóñez-Matamoros (Eds.), Cheltenham: Edward Elgar Publishing, (2017), pp. 181–204.
- [50] A. Zehavi, and D. Breznitz, "Severing the Innovation-Inequality Link: Distribution Sensitive Science, Technology and Innovation Policies in Developed Nations", *Institute for New Economic Thinking-OECD Annual Conference*, (2015), pp. 1-33.
- [51] J. A. Berdegú, "Pro-Poor Innovation Systems: Background paper", *International Fund for Agricultural Development (IFAD)*, Rome, (2005).