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eInnovation: The importance of context

eInnovación: La importancia del contexto

I. INTRODUCTION

The origins of the word ‘*innovation*’ are unclear; the exact meaning of the word is equally unclear. However, our understanding of the word, its meaning and the process of innovation (as we know it) have evolved over time. In the 1950s when there was a huge focus on re-building economies, post World War 2, the emphasis was on organisation theory and the development of industrial output through scientific management. During the 1950s and 1960s, the driver of economic growth was seen as innovation through scientific endeavour; that science, research and invention led to engineering and manufacturing and ultimately sales. The thinking at that time was that ‘whatever was made was sold’, that consumers would purchase goods regardless. The concept of marketing came to the fore in the 1970s, at that time it was seen that the demand for products and services was led by consumer needs. Therefore in the 1970s and 1980s it was considered that it was markets that drove economic development and the requirement for innovation to meet consumer demands.

It was not until the 1990s that convergent thinking about the concept and ‘actuality’ of innovation began to take place. It was then that researchers in domains such as economics, economic geography and social science began to consider, research and write about innovation as a more integrated and iterative process of creating economic wealth through meeting market demands. With the emergence of the world wide web (www) in the 1990s and particularly the exploitation of the www by technology entrepreneurs during the Dot-Com Boom of the late 1990s the concept of innovation became democratised, it was no longer the remit of large corporation and heavily funded research centres. Today in the 21st Century, innovation is ‘in the hands of the masses’; because today



EXECUTIVE SUMMARY

Today, innovation is 'in the hands of the masses'; because it is driven by a combination of advances in technology, global communication, connectivity, consumerism, sustainability, societies and social conscience. To survive, in such economies, enterprises and other organisational entities need to consistently and continuously innovate. Innovation, however, is constructed from a set of tendencies and not a final condition in itself. These tendencies are geographically, organisationally and societally different and uneven. Different contextual settings lead to different innovations. This new era of innovation extends the impact of technologies and digitisation in dynamic unanticipated ways leading to paradigm shifts that force us, collectively and individually, to ensure benefits for the many, rather than the few. Therefore, innovation must be established as a 'way of thinking' a 'way of doing' no matter the context.

The key message to be extracted from this paper is that innovation is very much dependent on context. It is dependent of the context of the firm, government policy, absorptive capacity of citizens and on the processes in place to develop human capital.

RESUMEN DEL ARTÍCULO

Hoy en día, la innovación está "en manos de las masas"; porque está impulsada por una combinación de avances en tecnología, comunicación global, conectividad, consumismo, sostenibilidad, sociedades y conciencia social. Para sobrevivir, en esas economías, las empresas y otras entidades organizativas necesitan innovar de manera coherente y continua. La innovación, sin embargo, se construye a partir de un conjunto de tendencias y no de una condición final en sí misma. Estas tendencias son geográfica, organizativa y socialmente diferentes y desiguales. Diferentes entornos contextuales conducen a diferentes innovaciones. Esta nueva era de innovación extiende el impacto de las tecnologías y la digitalización de formas dinámicas imprevistas que conducen a cambios de paradigma que nos obligan, colectiva e individualmente, a garantizar beneficios para muchos, en lugar de para unos pocos. Por lo tanto, la innovación debe establecerse como una "forma de pensar" y una "forma de hacer" sin importar el contexto.

El mensaje clave que se debe extraer de este documento es que la innovación depende mucho del contexto. Depende del contexto de la empresa, de la política gubernamental, de la capacidad de absorción de los ciudadanos y de los procesos en vigor para desarrollar el capital humano.

innovation is driven by a combination of advances in technology, global communication, connectivity, consumerism, sustainability, societies and social conscience. To survive, in such economies, enterprises and other organisational entities need to consistently and continuously innovate. We must establish innovation as a 'way of thinking' a 'way of doing' no matter what your business or organisation is: be it a large, small or micro-enterprise; public or private sector entity; for profit, not-for-profit, or social enterprise.

2. THE CONTEXT OF INNOVATION

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Innovation is not a singular concept nor is it geographically or organisationally bound. Rather innovation is fuzzy and evolutionary and is probably more dependent on societal constructs than merely on technology alone. No matter how advanced technology becomes, its use will be limited by the absorptive capacity and capability of the society in which the technology is being implemented. This may explain why there is such diversity in innovation across countries and across regions within countries (for more in depth and insightful views and experiences about this phenomenon of the contextualisation and diversity of innovation see Diversities of Innovation (Hilpert, 2019)).

Heretofore economic commentators and researchers attempted to define innovation as a set of characteristics or steps in a linear process that can be propagated at ease from one jurisdiction to another or from one company (or organisation) to another in the same jurisdiction. Therefore, for decades, policy makers and policy implementers have been attempting to find "best in class" innovation processes and trying to emulate these leading innovation regions, such as Silicon Valley, within their own regional domains. However, a single "best in class model" fitting all regions does not exist; and, by extension, a single ideal pathway for regions to design and implement a 'best in class' regional innovation system does not exist (Welter, Kolb, O'Gorman, Bugge, Hill, Peck, and Roncevic, 2008; Bugge, O'Gorman, Hill, and Welter, 2010). Rather innovation is constructed from a set of tendencies and not a final condition it itself. These tendencies are geographically, organisationally and societally different and uneven.

Different contextual settings lead to different innovations. Regions (and therefore countries) are on different technological, innovation and economic development trajectories ranging from the poorest underdeveloped regions in emerging economies to the well-endowed regions in mature economies. For example, from a “western civilisation” perspective, one could say that the first industrial revolution of the mid-18th Century was driven by entrepreneurs, capitalists and visionaries that saw the need of providing commodities to meet the needs of expanding societies that had the means to avail of these commodities. This necessitated new ways of thinking, new innovations. Innovations which led to the harnessing of steam to power large machines to create mass production and jobs, or the harnessing of steam to mobilise society at a faster pace using steam-engine trains and steam-ships, or the harnessing of water to generate electricity. The second industrial revolution, also known as the *technological revolution*, from the mid-19th to early 20th Centuries, built not alone on increasing outputs generated by the first industrial revolution, but also creating new products and services as well as new methods for generating and delivering these services to consumers. All this demanded new forms of innovation leading to increased levels of automation, greater degrees of mass production and a huge increase of uneducated, unskilled labour forces. The innovation system during the second industrial revolution could best be described as a ‘closed loop innovation system’. Because innovations were tightly coupled to industry sectors driven by advances in science and engineering. On the other hand, the third industrial revolution, a product of the late 20th Century incorporating the Information Age, was based on ‘manufacturing going digital’, the convergence of technologies, the almost total disappearance of manual labour, and the emergence and growth of the ‘highly educated, intelligent worker’, can best be categorised as the advent of ‘open innovation systems’. Of course none of this could happen without an evolutionary change in the conceptualisation and application of innovation.

Technological advances within the Information Age led to the democratisation of innovation. Also Open Access to knowledge and in the creation of that knowledge by citizen scientists and engineers has created what O’Gorman, Donnelly and Ritter (2019) refer to as ‘disruptive innovation ecosystems in regions’. However, no longer is disruptive innovation the prerogative of the ‘innovation-rich’ and

KEY WORDS

Innovation, Education, Absorptive Capacity, Societal Changes.

PALABRAS CLAVE

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'knowledge endowed' regions. It is borderless and trans-regional and therefore it is also available to 'innovation-poor' and 'knowledge unendowed' region (O'Gorman, Donnelly and Ritter, 2019). Hence, emerging and underdeveloped economies can leapfrog into the *fourth industrial revolution* by being co-conspirators and collaborators in the co-creation and implementation of disruptive innovation. Thus, in the early decades of the 21st Century, as society and economies embark on the fourth industrial revolution, the conceptualisation and application of innovation has evolved to be something totally different than in the past.

Unlike the previous industrial revolutions, the fourth industrial revolution is embedded in intelligence rather than brute mechanical strength. Therefore it needs a paradigm shift in the innovation and commercialisation process. Heretofore, it was the preserve of the scientists, engineers and industrialists to design and develop new products and services. But all that changes because the relationship between producer and consumer becomes much more complex. In the first instance, the social and environmental impact of new products and services has led to a focus on responsible innovation and social innovation. The emergence of the 'prosumer' where the consumer becomes involved with designing or customising products for their own needs is changing the innovation process. Consequently, what was [once] innovative will not continue to be so, because becoming [innovation] mature is a permanent process associated with new technologies and innovation [as well as ever-changing societal demands] (Hilpert, 2019, p.3).

This is a very important point and begs the question how can local/regional societal needs be addressed without embracing the diversification of innovation and the need to include dimensions of innovation beyond boundaries (territorial, institutional and societal) of control? Also it must be considered that, in a globalised world where information is more freely available than ever before, societies evolve at different paces on different trajectories, and therefore what 'has been' innovation in one society can be perfectly adaptable and innovative in a different society. However, "technologies [and innovation] can contribute to socio-economic development only where they find appropriate contexts" (Hilpert, 2019, p.5).



3. THE MEANING OF INNOVATION

According to O’Gorman and Donnelly (2016), “it is not the innovation itself that is key, rather it is the process and location of innovation and the commercialisation and internationalisation of research outputs that matters” (p.264). They also contend that innovation is a process of co-creation, co-design, and co-implementation of solutions to meet societal needs whereby society (including the consumer) must be an integral dimension of the innovation process. In basic terms, innovation is the deliberate application of information, imagination and initiative to derive different values from different processes and/or resources. This is, in essence, the basis of the phenomenon of the diversification of innovation. From a technology perspective innovation is the generation and conversion of new ideas into new products and services. In a business sense, innovation is the application of new processes to increase productivity and profitability and satisfy customers’ increasing needs and expectations.

As regards the societal domain, innovation can be considered as the adoption, and adaptation, of technologies and processes to improve the wealth and well-being of citizens. For example, one innovation that was the application of information, imagination and initiative, which has totally transformed industry, business, economies, society, communications, and the way we live, think, behave, work and interact with each other, is the World Wide Web. What Tim Berners-Lee wrote in 2000 can be considered as a ‘modern day’ definition of innovation. He wrote:

“The vision I have for the Web [www] is about anything being potentially connected with anything. It is a vision that provides us with new freedom, and allows us to grow faster than we ever could when we were fettered by the hierarchical classification systems into which we bound ourselves.....it brings the workings of society closer to the workings of our minds” (Berners-Lee, 2000, p.1).

As stated earlier, it is the combination of tendencies and elements (concepts, materials, technologies, and so on) combined with location, societal need and the absorptive capacity of society that really makes innovation happen. Therefore, in the opinion of the authors of this paper, innovation is not constant. It is malleable, it is fluid. Innovation is contextual and situational dependent. These are reasons why there is such a diversification of innovation between countries and regions. But just as fluids can be “defined



unambiguously as a material that deforms continuously and permanently under the application of a *shearing stress*, no matter how small” (eFluids, 2016) so too can innovation. However, in the case of innovation, the shearing stress can be considered the tensions between scientists, inventors, innovators, investors, profiteers, industry, educationalists, governments and society.

4. INTERPLAY BETWEEN INNOVATION AND SOCIETAL CHANGE

Innovation plays a major role in the economic and social development of most countries; it is considered as the main source of economic growth, productivity improvement, foundation of competitiveness, welfare progress and therefore crucial for poverty alleviation (Ghazal and Zulkhibri, 2015). In general, economic geographers, regional studies scientists, economists and researchers of the impacts of innovation agree that innovation in regions is very much dependant on a region’s economy, industry mix, governance, human capital, levels of education, infrastructure, levels of investment in R&D and innovation, and the cohesiveness of collaborative arrangements between the region’s stakeholders (local/regional government, industry, Higher Education Institutions, and civil society organisations (CSOs)). According to Ghazal and Zulkhibri (2015), “the state of innovation and research and development (R&D) in selected developing countries can be characterised by large disparities among different geographic regions in terms of knowledge, information, research and scientific capacities” (p.237); and “.....[the] poor outcome in innovation and R&D [in regions] is partly attributed to the low quality of higher education and curricula, lack of infrastructure, dependency on natural resources, lack of comprehensive R&D policy, and brain drainage” (p.238). This also explains why there is such a diversity in innovation between countries and even between regions within countries, and/or between urban and rural areas within a given region or country.

However, the concepts of innovation that have been emphasised most by policy makers, researchers, economists and other commentators has been on the creation and diffusion of new technologies and knowledge mostly for the benefit of profit and economic gain via the commercialisation process with industry. Nevertheless, through such a process there are gains for society, for example through the creation of new jobs, and increases



in earning and spending power. Society also gains from the development and commercialisation of new technologies in that some of these technologies lead to advances in medicine, surgical procedures and healthcare in general. Equally, societies and the economies in which they learn, work, rest and play, gain from these technological advances in that citizens are more educated and information is more freely available at all levels of society. Advances in technologies related to logistics and transportation have enabled people to be more, physically and mentally, globally focused and have greater reach beyond where they were born, live and work. Consumerism is endemic which adds to a continuous evolutionary cycle of economic gain, re-investment in innovation and the generation of new knowledge and technologies. But with all these evolutionary, and revolutionary, gains chaos and complexity have also increased exponentially. Not alone does it appear to be the case that consumers play a passive role in economic development (Schumpeter, 2003), but it also seems that society at large plays a passive role in the evolution of innovation and technological advances.

Advanced technologies and the increased speed of access to and dissemination of information facilitates people in general to be more globally aware and more educated than ever before. As a result, the nature of work, the way we work and use our leisure time, as well as the processes of production and delivery of goods and services has changed completely. This scenario affects all organisations be they in manufacturing, education, tourism, public sector, social enterprises, or whatever. Because whereas once upon a time these organisation served local markets, consumers can now receive most products and services from almost any location outside of their local communities (be they local, regional or national). Therefore, in order to survive in today’s economies, organisations/enterprises need to continually innovate. They need to clearly identify the drivers of those parts of the economy that enable the provision of appropriate goods and services to consumers. In the words of Peter Jelkey, IKEA Country Manager for Ireland and the UK, ‘innovation is not only about technology nor is sustainability only about environmental issues, rather the focus of IKEA is to be sustainable into the future by continuously innovating our offerings to our customers to address their ever changing needs’¹.



5. INDUSTRY IS NO LONGER WHAT IT USE TO BE

Since the 1990s, component miniaturisation, the advancement of computer technology and software development, the uptake of the world wide web (www), the focus on the 'knowledge economy' and 'knowledge workers', and the investment in innovation have all converged and changed the paradigm of work, research, education, leisure, and living irrevocably. The shape of industry has changed. For example, in developed economies in particular, many employees originally referred to as low-skilled blue-collar workers are now white-collar workers working in call centres, or as software developers, or code writers, and the like. The advancement in technology, speed of data transfer and the availability of data is such that the philosophy and thinking in relation to technology and work is that "today knowledge navigators are finding innovative ways to transfer information at dramatically lower prices" (Ogden, 1993, P.xvii). Because of this upheaval Handy (1995) introduced us to the career portfolio and 'empty raincoat' paradigm:

"...to me that empty raincoat is the symbol of our most pressing paradox. We are not destined to be empty raincoats, nameless numbers on a payroll, role occupants, the raw material of economics or sociology, statistics in some government report. If that is to be its price, then economic progress is an empty promise. There must be more to life than to be a cog in someone else's great machine." (pp.1,2)

As we zoom into the 4th Industry Revolution (Industry 4.0) where the focus is ever increasingly on new forms of technological innovation to increase the use, speed, manipulation and management of information (through the Internet of Things) for citizens in general these words are probably even more apt today than in 1995.

In advanced mature and developed economies, mostly because of the cost of labour, mundane, repetitive, low-skilled jobs are being automated. However, knowledge and the use of knowledge are key factors in today's working environment, regardless of the economy. Even trades such as plumbing, electrical work, and car mechanics depend on knowledge and hi-tech skills. Therefore, the role and delivery of education also needs to change in order to supply industry with the knowledge workers it needs. One may consider that these concepts are not applicable in low-cost and emerging economies and that such economies, because of their cheap labour base, are best suited to mundane, repetitive, low-skilled jobs. However, because of advances in communication technology nearly all citizens in nearly all countries have access to knowledge. Hence, as stated above emerging and underdeveloped economies can leapfrog into the *fourth industrial revolution* by



being co-conspirators and co-collaborators in the co-creation and implementation of disruptive innovation and new markets.

6. EXTENDING THE BOUNDARIES OF UNIVERSITY BEYOND THE CLASSROOM

Traditionally, Higher Education Institutions (HEIs) have been repositories and guardians of knowledge in society; this stance is reflected in their seemingly elitist and disengaged characteristics. However, the democratisation and massification of higher education across Europe has forced HEIs to review their role and reposition themselves. For example, because knowledge is more available and less controlled or controllable, HEIs must now co-ordinate and facilitate efforts to manipulate knowledge and create new knowledge (the basis of innovation), rather than merely guard existing knowledge.

Lester and Piore (2004) summarised four main areas in which universities contribute to industrial transformation: (a) education and training; (b) adding to the stock of codified knowledge through publications in technical journals, patents, software and hardware prototypes; (c) increasing local capacity for scientific and technological problem-solving; (d) providing space for open-ended conversations about industry development pathways and new technological and market opportunities. These actions can be more meaningful and appropriate to regional economic development if universities expand their reach beyond the classroom; if universities revert to being more proactive in the education roles as opposed to being reactive to immediate industry needs. In order to ‘future proof’ societies within regions, entrepreneurial universities need to be proactive in (i) facilitating the identification of future education needs of both industry and society in their region; (ii) blurring of the ‘boundaries of learning’ between academia, industry, government, and society. This will only be achieved if entrepreneurial universities take on the role and responsibility to work with an extended constellation of Quadruple Helix (QH) actors in co-designing, co-developing, and co-implementing learning and education solutions addressing societal needs.



7. KNOWLEDGE AND THE ABSORPTIVE CAPACITY OF SOCIETY IS SITUATIONAL

How regions progress and develop their innovation capacities and capabilities is very much dependent on a country’s or region’s enterprise and innovation policies, investment (from public

and private funds) and the absorptive capacity of its citizens and regional/national institutions. However, as pointed out by Oughton, Landabaso, and Morgan (2002), many regions/countries are incapable of absorbing or capitalising on the public funds they receive to enhance the innovation process and practices in their regions/countries. This ‘innovation paradox’ of societies not being able to absorb the investments (knowledge as well as monetary) they badly need to improve their innovation capacities and capabilities has been studied by many researchers and policy makers since 2002 (see for example De Bruijn and Lagendijk 2005). The conclusions from all this research are still mixed, complex, and paradoxical.

Innovation has become more global and dispersed than it used to be. As a result, the dynamics of innovation have changed dramatically over the last three decades. According to Dutta and Lanvin (2013), for real local and regional innovation progress to occur, critical region-specific dimensions need to be identified, explored and measured. Dimensions such as examining the strengths and weaknesses of local industries and knowledge institutions, access to finance and to markets within and outside national borders, and the knowledge pool and absorptive capacity of the region’s/country’s human capital. It is this milieu and interaction between different elements of the milieu that generates new opportunities for innovation and new markets. Remember, “firms, organisations and institutions, as well their interactions, differ substantially across regions and countries. This implies that policy responses to systemic imperfections will [always] be country specific” (OCDE, 2011, p.230). It is this richness of diversity between regions that yields an even broader breadth of *Diversities of Innovation* (see Hilpert, 2019) across sub-regions, regions and countries. As such, the co-creation and use of knowledge is situational, dependent on regional nuances and the absorptive capacity of society in any given region. Organisations (both public and private sector) that can respond to these changing region-specific characteristics will be sustainable, flourish and grow.

Education is an essential dimension in enhancing the absorptive capacity of regions (and countries) resulting in greater levels of innovation capacity and capabilities of regions and countries. According to Donnelly and Weber (2017) it will become increasingly necessary for education systems to evolve and equip individuals with the skills and flexibility required to be employed or create employment in the digital economy. However, the speed at which this can happen in any given region is both situational and contextual; it is very much dependent on the maturity of enterprise and educational policies



in that region, as well as on the maturity of industry itself and the levels of educational attainment of citizens in that region. Donnelly and Weber continue that it is not only machinery and labour that are important when investing in R&D; another significant, if not the most significant, factor of production [and innovation] is knowledge that was acquired in the past. For example, a researcher makes use of knowledge that he or she created previously and combines it with other researchers’ knowledge. This concept, if managed properly by policy makers, can enhance a region’s image as an innovation hub and/or regional innovation system (RIS). Because, as suggested by Bellini and Pasquinelli (2016), “in place branding the reference to innovation is, indeed, crucial: places are branded as ‘the’ location where innovative activities can flourish, either because of previous performance or because of emerging favourable conditions” (p.79). Bellini and Pasquinelli also suggested that “in the absence of [place] branding innovation policies may result in socially and politically weaker policies, since they are unable to strategically promote the engagement of the regional community in the process of change” (p.87). This certainly appears to have been the case in Ireland after the death of the Celtic Tiger in 2008 and the emerging economic recovery post 2011. Between 2008 and 2011 Ireland’s economy seemed to be on a never-ending downward spiral. A change in government in February 2011 yielded a new Programme for Government, the prime focus of which was on innovation and job creation. Through a series of government instigated “good news stories” about new jobs, new enterprises and new markets the economy began to recover. With the results that in 2019 there are more people in employment than ever before in the history of the state and the level of unemployment, down to 4.9%, is nearly as low as it was during the height of the Celtic Tiger.

Donnelly and Weber (2017) stated that different types of knowledge play different roles in the production and innovation process. For example, the more theory-driven knowledge from universities is traditionally generated with the specific purpose of making it freely available; and on the other hand the more application-driven knowledge generated in a corporate [enterprise/industry] R&D department is often kept secret or commercially protected. The first of these knowledge domains takes the form of a quasi-public good whereas the knowledge generated by an enterprise can be more readily appropriated to generate new products or processes.



8. RELEVANCE OF THE CONTEXT OF INNOVATION TO BUSINESS

A critical point to note from this paper is that innovation is a response to meeting a market need. Innovation is *a way of doing business*; it is not external to an organisation; it is not a group of people working in one part of an organisation in isolation of all other members of that organisation. Innovation is the role of everybody working in a given organisation. But innovation, and the embedding of a culture of innovation in an organisation, needs to be led. In the case of micro-enterprises and SME (together these organisations make up more than 95% of the industry stock in most economies, and generally employ up to 65% of the working population in that economy), the innovation process needs to be led by the owner/manager and the executive team.

The first realisation of owner/managers and their executive teams is that they need to understand the context of their business environment. This context includes understanding their market, the needs of their market, the community they serve, as well as understanding (and resourcing for) the technology and human capital they need to supply their markets and service their communities. The owner/manager and the executive team need to acquire the ability to see the connection between innovation and the value drivers of the business at hand, rather than viewing innovation as an activity to be undertaken for its own sake.

The second realisation is that owner/managers and the executive teams need to appreciate that the results of digitalisation and continuing emergence of disruptive technologies means that their business models need to change. The traditional tried and test business models are no longer fit for use in today's flexible, digitised, knowledge intensive local/global markets.

The third realisation is for owner/managers and their executive teams (and indeed policy makers) to embrace the fact that the migration of the economic value of innovation from product platforms to more complex innovative consumer led services developed on open source platforms has provided greater opportunities for enterprises in less developed regions to transform themselves into innovation leaders. A key factor in delivering such an environment is the optimisation of the quadruple helix (QH) model based on open innovative government structures and citizen entrepreneurship. Industry needs to accept an active role in this QH engagement process.

The fourth realisation for owner/managers and executive teams of micro-enterprises and SMEs is that they need to be comfortable with the fact that their contribution to the education process and



increasing the human capital of the region within which they operate is essential. Their contribution to the learning process in a region is as important as large enterprises, multinational national enterprises (MNEs), government and HEIs. Traditional concepts of education are rapidly changing to reflect this with greater emphasis on life-long learning experience. There is a move away from skills development to providing citizens with the tools to access, understand and apply knowledge for the economic and social benefit of society. Supporting the free flow of people and knowledge across traditional national boundaries the creation of regions of innovation. Micro-enterprises and SMEs have a significant role to play in the continuous co-creation co-dissemination of knowledge and skills.

In summary, in the words of Hilpert (2019), “skills and education are related with societal dynamics and social change creating particular situations” (p.6). As regards innovation, “industrial societies are more than just a description of a societal context or social structure” (p.6). In other words innovation is contextual and situational. Therefore focusing on the broader aspects of innovation within public and private sector organisations, will lead to the continuous socio-economic development of regions.

9. CONCLUSION

The key message to be extracted from this paper is that innovation is very much dependent on context. It is dependent of the context of the firm, government policy, absorptive capacity of citizens and on processes in place to develop human capital. Enterprises and organisations be they for profit, not-for-profit, social enterprises or public or private sector entities need to be fully aware of the drivers of innovation pertinent to their organisations. Understanding and addressing these drivers of innovation is what makes organisations relevant to the consumers of their products and services. Without relevance, there is no guarantee of sustained commerce. But relevance, just like innovation, is buoyant and ever-changing – it is contextual and situational. Hence the importance of understand the *Diversities of Innovation* (Hilpert, 2019a).



REFERENCES

- Bellini, N., and Pasquinelli, C., 2016, Branding the innovation place: Managing the soft infrastructure of innovation, in Hilpert, U., Ed, *Routledge Handbook of Politics and Technology*, Routledge, Oxfordshire. pp 79-90
- Berners-Lee, T., 2000, *Weaving The Web*, Butler and Tanner, Great Britain
- Bugge, K-E, O’Gorman, B., Hill, I., Welter, F., 2010, ‘Regional Sustainability, Innovation and Welfare Through an Adaptive Process Model’, in Joseph Sarkis, James J. Cordeiro, and Diego Vazquez Brust, (Eds.) *Facilitating Sustainable Innovation through Collaboration: A Multi-Stakeholder Perspective*, Springer, The Netherlands, pp 77-96
- De Bruijn, P., Lagendijk, A., 2005, Regional innovation systems in the Lisbon strategy, *European Planning Studies*, 13(8), 1153-1172
- Donnelly, W., Weber, M., 2017, The creation and impact of open innovation ecosystems for the digital markets of the future, *Research, Innovation and Science Policy Experts Open Knowledge Markets Report*, European Commission, Brussels (pending)
- Dutta, S., Lanvin, B., [Eds], 2013, *The Local Dynamics of Innovation*, [on line] Available from http://www.wipo.int/edocs/pubdocs/en/economics/gii/gii_2013.pdf [accessed October 2016]
- eFluids, 2016, *Characteristics of fluids*, [on line] Available from https://www.princeton.edu/~asmits/Bicycle_web/fluids.html [Accessed November 2016]
- Ghazal, R., Zulkhibri, M., 2015, Determinants of innovation outputs in developing countries Evidence from panel data negative binomial approach, *Journal of Economic Studies*, 42 (2), 237-260
- Handy, C., 1995, *The Empty Raincoat*, Arrow Books, London
- Hilpert, U., 2019, About socio-economic development, technology and government policy: Diversifications of innovation, in Hilpert, U., Ed, *Diversities of Innovation*, Routledge, Oxfordshire, pp 3-32
- Hilpert, U., 2019a, [Ed], *Diversities of Innovation*, Routledge, Oxfordshire
- Lester, R.K., and Piore, M.J., 2009, *Innovation - The missing dimension*, Harvard University Press, Boston
- OCDE, 2011, *Economic Policy Reforms 2011: Going for Growth*, OECD Publishing, [on loine] <http://dx.doi.org/10.1787/growth-2011-en> [accessed October 2016]
- Ogden, F., 1993, *The Last Book You’ll Ever Read*, Macfarlane, Walter and Ross, New York
- O’Gorman, B., Donnelly, W., 2016, Ecosystems of open innovation: Their applicability to the growth and development of economies within small countries and regions, in Hilpert, U., Ed, *Routledge Handbook of Politics and Technology*, Routledge, Oxfordshire. pp 262-278
- O’Gorman, B., Donnelly, W., Ritter, M., 2019, *A dynamic approach to developing and implementing disruptive innovation ecosystems in regions*, in Research, Innovation and Science Policy Experts publication, EU Publications, Brussels [pending]
- Oughton, C., Landabaso, M., Morgan, M., 2002, The Regional Innovation Paradox: Innovation Policy and Industrial Policy, *Journal of Technology Transfer*, 27(1), 97-110
- Schumpeter, J.A., 2003, *Capitalism, Socialism and Democracy*, Taylor and Francis, London (Original work published in 1943)
- Welter, F., Kolb, S., O’Gorman, B., Bugge, K.E., Hill, I., Peck, F., Roncevic, B., 2008, How to make regions (more) innovative, in U. Fueglistaller, T. Volery, W. Weber (Hrsg./Eds.): *Innovation, Competitiveness, Growth and Tradition in SMEs*, Papers presented to the Rencontres de St-Gall 2008, Beiträge zu den Rencontres de St-Gallen 2008, KMU-Verlag HSG ISBN 10: 3-906541-26-6 ISBN-13: 978-3-906541-26-6



NOTES

1. Paraphrased from an interview with Peter Jelkeby on the Morning Ireland radio show on 20th November 2019

