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RESPONSIBLE INNOVATION

Summary

Innovation is very important for the development of economies, competitiveness of companies and sustainable growth of countries and regions. However, sometimes it occurs irresponsible. Medicines cause people die, internet is a kind of threat for the data protection, some environmental innovation don't protect the environment. All these cases force us to think in terms of responsible innovation creation and implementation. The aim of this article is to present the emerging concept of responsible innovation and encourage for the discussion and research in these terms.

Keywords: innovation, responsible innovation, knowledge creation, social responsibility.

Introduction

Innovation is about change and this can take place along a spectrum of increasing novelty, from simple incremental improvements (eg. doing what we do but better) through to radical, new to the world changes. The risk involved in innovation vary, as do the benefits, but it is clear that even sustaining growth through incremental innovation is not going to happen by accident. Any organization might get lucky once but in order to be able to repeat the success there is a need for some kind of organized, structured approach to managing the process (Trott 2008, pp. 24–25). The key is to find answers to two key questions: where can we innovate and how can we innovate.

Economic development is rooted in rupture and not equilibrium. The competition that really counts today is competition by innovation, applied to existing prod-

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ucts and services. It does not have a marginal role but is central to progress. This type of competition acts through creative destruction.

The agent of this competitive struggle is an entrepreneur. He has very specific qualities that are rarely combined in an individual: vision of potential progress; a sufficient appetite for risk and determination to implement; and an energy and power of conviction to bring about the necessary assistance and resources.

Today, enterprises themselves play the role of innovator. They become “collective entrepreneurs” (De Woot 2016, p. 1). If successful companies are observed over period of five to ten years, not one of them has failed to adapt, transform, renew. All have evolved, and all have innovated in their products, in their markets or in their processes and their organization. Under the pressure of competition, the company is obligated to adopt this logic of innovation, creativity and change. Its long-term survival depends on it.

The companies have considerable power to act and to direct the development process. They master and use most of the key resources of economic creativity. Today, the most dynamic and powerful global players are businesses. In fact, they are among the only organizations that have managed to simultaneously cross all globalization thresholds: size, time horizon, complexity, resources, information and networks. Through their competitive strength, companies have adapted faster than other institutions, for example: political, social, legal, educational. This puts them in a strong position for the conquest of strategic choices, resources, direction and pace of growth. Thus, innovative companies have real power over the development of countries and regions, which clearly raises the question of their social responsibilities. As a driving power of growth, using a very influential tool – science and technical creativity - they may become dangerous. Even according to some business people, if techno-science will be abandoned to its own dynamics and competitive logic and exposed to a free economic system, it is possible that the “brave new world” (De Woot 2016, p. 60). The aim of this article is to present the emerging concept of responsible innovation.

1. Challenges for Twenty-First Century Innovation

R. Owen, J. Bessant and M. Heintz describe three megatrends which are opening up the frame of innovation management (Owen, Bessant, Heintz 2013, pp. 9–21). They offer significant opportunity to those able to reframe, but may also pose threats to existing players unless they are able to deploy dynamic capability in reconfiguring their approaches. These challenges – which the authors call „spaghetti”, „Sappho”, and „sustainability” – are examples of a much broader range of issues which are emerging along the innovation frontier and which require us to rethink our approaches to innovation management.

The Spaghetti Challenge is about knowledge as a driving force of innovation process. At the heart of the innovative process is an engine which runs on knowledge. The fuel for innovation is different kinds of knowledge – about technological possibilities, market needs, legal options, financial issues, political enablers and constraints, and a host of other diverse knowledge sets. The innovation process works by weaving the various standards of this “knowledge spaghetti” into something which creates value (Bessant, Venables 2008).

Knowledge Sharing, which is very popular nowadays, is closely connected with open innovation concept (Chesbrough 2003). Opening up the innovation search activity and reframing from closed to open models is clearly a rich source of new opportunity but exploiting it will depend on building new innovation management capabilities – and letting go of some well-established ones. Amongst the challenges which moving to open innovation poses are:

- Intellectual property management – in an open innovation world how do creators of knowledge appropriate the gains from their investments in creating knowledge?,
- Connectivity – how are the rich new linkages which social and technological change make possible enabled? Who/what are the mechanisms for broking and bridging between different knowledge worlds, and how can skills for doing this be developed?,
- Networking-building – research has shown that effective team is not simply a collection of individuals but the result of complex dynamics around “*forming, storming, norming and performing*” (Tuckman, Jansen 1977). In the same way, new knowledge networks need to be constructed but this raises challenges of “*finding, forming and performing*” (Birkinshaw et al., 2007).

The Sappho Challenge is about bringing stakeholders into the frame. A significant stand of research concerns the concept of user-led innovation (Von Hippel 2005). Users are rarely passive in the innovation process – they are often frustrated with the available solutions and sometimes that frustration drives them to create their own alternative solutions. Without doubt user-led innovations a powerful force – especially when it engages a community of such frustrated innovators.

A well-documented and important source of innovation is the emergence of powerful communication technologies which enable active co-operation of user communities in co-creation and diffusion has accelerated the trend towards more active engagement of users (Dahlander, Gann 2010).

Another aspect of opening up the involvement space is the considerable untapped potential of employees within organization. Employees involvement is widely recognized as a key source of innovation. The real potential of high involvement innovation comes when employees can begin to act as internal entrepreneurs, not

just contributing to “do better” incremental innovation but also suggesting ways of moving in more radical directions.

The Sustainability Challenge encourages the concept of innovation for sustainable development. Innovation for sustainable development highlights the problem of dynamic capability in that it forces companies to learn new approaches and let go of old ones around the core search, select and implement questions. By its nature innovation for sustainable development involves working with different knowledge components – new technologies, new markets, new environmental or regulatory conditions, and so on – and companies need to develop enhanced absorptive capacity for handling this (Zahra, George 2002). In particular they need capacity (and enabling tools and methods) to acquire, assimilate, and exploit new knowledge and to work at a system level.

Below there are some examples of changing context for innovation (Owen, Bessant, Heintz 2013, p. 11):

- Acceleration of knowledge production – OECD estimates that around \$750 billion is spent each year (public and private sector) in creating new knowledge – and hence extending the frontier along which breakthrough technological developments may happen,
- Global distribution of knowledge production – knowledge production is increasingly involving new players, especially in emerging markets, so there is a need to search for innovation opportunities across a much wider space. One consequence of this is that “knowledge workers” are now much more widely distributed and concentrated in new locations,
- Market expansion – traditionally much of the world of businesses has focused on the needs of around 1 billion people since they represent wealthy enough consumers. But the world’s population has just passed the 7 billion mark and population – and by extension market – growth is increasingly concentrated in non-traditional areas like rural Asia, Latin America and Africa. Understanding the needs and constraints of this “new” population represents a significant challenge in terms of market knowledge,
- Market fragmentation – Globalization has massively increased the range of markets and segments so that these are now widely dispersed and locally varied - putting pressure on innovation search activity to cover much more territory, often far from traditional experiences – such as the bottom of the pyramid conditions in many emerging markets or along the so-called long tail – the large number of individuals or small target markets with highly differentiated needs and expectations,
- Market visualization – The emergence of large-scale social networks in cyberspace poses challenges in market research approaches – for example, Facebook with 800 million members is technically the third largest country in the world by population,

- Rise of active users – Although users have long been recognized as a source of innovation there has been an acceleration in the ways in which this is now taking place – for example the growth of Linux has been a user-led open community development. In sectors like media, the line between consumer and creators is increasingly blurred – You Tube has around 100 million videos viewed each day but also has over 70 000 new videos uploaded every day from its user base,
- Development of technological and social infrastructure – Increasing linkages enabled by information and communications technologies around the internet and broadband have enabled and reinforced alternative social networking possibilities. At the same time the increasing availability of simulation and prototyping tools has reduced the separation between users and producers.

2. The responsibility gap dimensions of responsible innovation

As many actors are involved in the innovation process, irresponsible outcomes are seldom the result of one single, irresponsible actor. More typically, irresponsible innovation is reflected in practices where stakeholders were unaware of the importance of the innovation's societal context, or where stakeholders interactions were unproductive in the resolutions of conflicts.

Historically, where free markets have failed to manage so called externalities of innovation, our response has been one based largely on governance through mechanisms of regulation, that is, legal instruments of authorization and control, which are often underpinned by methods of probabilistic risk assessment and evaluation. The products of innovation may be retrospectively subjected to regulation once they have been developed, marketed, and introduced into society, if and when there is evidence of undesirable or harmful impacts. Governance of this kind can also have a prospective dimension, through a process of adaptive learning. It may be introduced or amended to safeguard society and the environment from known impacts, with the aim of preventing these from occurring again. This has led to stringent regulatory governance in certain areas of innovation, such as medicines, where the harmful consequences of some medicines (thalidomide, diethylstilbestrol) were important catalyst for regulatory development.

Regulatory protection may be not the only way to solve the problem. Responsibility gap may be identify in companies' social responsibility programs and actions. It may be involved in the innovation management process.

R. Owen, J. Bessant and M. Heintz suggest that to innovate responsibly entails a collective and continuous commitment to be (Owen, Bessant, Heintz 2013, pp. 38–39):

- Anticipatory – describing and analyzing those intended and potentially unintended impacts that might arise, be these economic, social, environmental, or otherwise. Supported by methodologies that include those of foresight, technology assessment and scenario development, these not only served to articulate promissory narratives of expectation but to explore other pathways to other impacts, to prompt scientists and innovators to ask “what if...?” and “what else might it do?” questions,
- Reflective – reflecting on underlying purposes, motivations, and potential impacts, what is known and what is not known; associated uncertainties, risk, areas of ignorance, assumptions, questions and dilemmas,
- Deliberative – inclusively opening up visions, purposes, questions and dilemmas to broad, collective deliberation through processes of dialogue, engagement, and debate, inviting and listening to wider perspectives from public and diverse stakeholders. This allows the introduction of a broad range of perspectives to reframe issues and the identification of areas of potential contestation,
- Responsive - using this collective process of reflexivity to both set the direction and influence the subsequent trajectory and pace of innovation, through effective mechanisms of participatory and anticipatory governance. It should be iterative, inclusive and open process of adaptive learning, with dynamic capability.

3. Responsible Innovation – Definition and Framework

Responsible Research and Innovation (RRI) according Rene von Schomberg² is a transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products in order to allow a proper embedding of scientific and technological advances in our society (Owen, Bessant, Heintz 2013, p. 63).

There is a significant time lag between the occurrence of technical invention (or planned promising research) and the eventual marketing of products resulting from research and innovation process. The societal impact of scientific and technological advances are difficult to predict. Even major technological advances such as the use of the internet and the partial failure of the introduction of GMOs in Europe, have not been anticipated by governing bodies. Early societal intervention in the research and innovation process can help avoid technologies fail to embed in society and/or help ensure that their positive and negative impacts are better governed

² European Commission, Directorate General for Research and Innovation, Belgium.

and exploited at much earlier stage. Two interrelated dimensions can be identified: the product dimension, capturing products in terms of overarching and specific normative anchor points and a process dimension reflecting deliberative democracy.

The normative anchor points should be reflected in the product dimension. They should be:

- Ethically acceptable – in an EU context this refers to context to a mandatory compliance with fundamental values of the EU charter on fundamental rights (right for privacy, etc.) and the safety protection level set by the EU. This may sound obvious but the practice of implementing ICT technologies has already demonstrated in various cases that the fundamental right for privacy and data protection can and has been neglected. It also refers to the “safety” of products in terms of acceptable risks,
- Sustainable – contributing to the EU’s objective of sustainable development. The EU follows the 1997 UN definition of sustainable development, consisting of economic, social, and environmental dimensions, in mutual dependence. This overarching anchor point can become further materialized under the following one,
- Socially desirable – socially desirable captures the relevant, and more specific normative anchor points of the Treaty on the EU, such as “Quality of Life”, “Equality among men and women”, and so on. It would be consistent with the EU treaty to promote such product development through the financing of research and development actions. RRI would not need any new policy guidelines, but would simply require a consistent application of the EU’s fundamental values to the research and innovation process, as reflected on the Treaty on the EU.

As it was mentioned above RRI may have two dimensions: product and process dimensions. Product dimension means that products should be evaluated and designed with a view to these normative anchor points: with a high level of protection to the environment and human health, sustainability, and social desirability. Process dimension means – the challenge here is to arrive at a more responsive, adaptive, and integrated management of the innovation process. A multidisciplinary approach, with the involvement of stakeholders and other interested parties, should lead to an inclusive innovation process whereby technical innovators become responsible for the innovation process through a constructive input in terms of defining societally-desirable products. The product and process dimensions are naturally interrelated. Implementation is enabled by five mechanisms: technology assessment and foresight, application of the precautionary principles, normative/ethical principles to design technology, innovation governance and stakeholder involvement and public engagement.

Conclusions

The need for responsible innovation is visible and important. Living in the world of constant innovation development and having in mind human rights and safety needs we have to think in terms of this kind of innovation management process. The aim of this article was to present the overview of the concept of responsible innovation. The author of the article intended to start knowledge exchange in this vital and delicate field and maybe an academic discussion. Despite, Poland is not in a group of the most innovative countries, responsible innovation framework may create a new research area in Polish companies.

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Streszczenie

Innowacje są istotne z punktu widzenia nie tylko rozwoju gospodarki, ale także podnoszenia konkurencyjności przedsiębiorstw i zrównoważonego rozwoju państw i regionów. Czasami jednak zdarza się, że innowacje okazują się tworamii nieodpowiedzialnymi społecznie. Przynoszą szkody społeczeństwu. Weźmy chociażby pod uwagę niektóre innowacje w zakresie leków czy chociażby rozwiązania internetowe, które zamiast chronić dane użytkowników, zagrażają im. Kolejnym przykładem mogą być niektóre innowacje w zakresie ochrony środowiska. Wszystkie takie przypadki zmuszają do myślenia w kontekście odpowiedzialnego tworzenia i wprowadzania innowacji dla dobra całego społeczeństwa. Celem artykułu jest dokonanie prezentacji koncepcji odpowiedzialnych innowacji i sprowokowanie do refleksji nad tym problemem.

Słowa kluczowe: innowacje, odpowiedzialne innowacje, tworzenie wiedzy, społeczna odpowiedzialność.

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