Promoting the Impact of Research for Society: Quality Management of Research for QOL

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Abstract

It is expected that science should make significant impact for society. However, nowadays the science impact issue gain new topicality and new conceptualization. Traditionally, research and researchers are evaluated by means of the 'scientific impact' of research output, i.e. publications in peer-review journals. However, strong critical discourse arise about aforementioned traditional system which cannot judge the "merit" of a paper or predict its impact in the social context. The political decisions strongly obligate to develop ways to value and draw attention to the importance of societal impact of science. The article authors call for discussion to conceptualize impact of research attributing with indicators of quality of life of individuals and communities. The article authors consider quality management as an approach/methodology for enabling research to make significant impact which might be attributed with quality of life. Quality management enables to broaden research assessment. Universities have long-lasting tradition rely on transcendental and internal science experts' evaluation. In particular, user-based and value-based concepts of quality management empower to drive research process oriented to society interests from early stages of idea development. Innovations are another significant force which fosters new approach to research impact.

This paper is based on the systemic analysis of scientific literature, normative documents content analysis, meta-anlysis of research data, interviews and discussions with experts. In addition, the article authors employ personal experience of consulting and administrative work in the field of quality management.

Keywords
scientific research; quality management; impact to society; quality of life

Introduction

It is expected that science should make significant impact for society, but usually scientific research is evaluated by such measures, as 'scientific impact' of research output, i.e. publications in peer-review journals, etc. Therefore critical discourse arise about aforementioned traditional scientific research evaluation system. The article calls for discussion to conceptualize impact of research attributing with indicators of quality of life of individuals and communities. The article authors consider quality management as an approach/methodology for enabling research to make significant impact which might be linked with quality of life measures. Quality management enables to broaden research evaluation. Value-based concepts of quality management empower to drive research process oriented to society interests from early stages of idea development. Innovations are another significant force which fosters new approach to research impact.

This paper is based on the systemic analysis of scientific literature, normative documents content analysis, meta-anlysis of research data, interviews and discussions with experts. In addition, the article authors employ personal experience of consulting and administrative work in the field of quality management.

First chapter of the paper defines key approaches of quality, scientific research quality and quality of life (QOL). Second chapter reveals methodological framework of the topic and discusses it in more detail.

1. Quality management of scientific research as a driver for quality of life of society

Before the analysis of the topic it is necessary to describe key definitions that are commonly used in discourse of quality of scientific research. Term 'Quality' could be defined in several ways, as: value for money, excellence, process / product quality, attractive quality (Kano model), etc. Also *quality* is subjective meaning, because different stakeholders – government and business people, habitants, scientists, students and others evaluate different qualitative aspects of the science. Therefore practical and scientific discussions on quality of science lasts for decades.

Another aspect of science quality is happiness that could be analysed as scientists' happiness, and societys' happiness. According Di Tella et al. (1999), "governments have taken the happiness of their citizens as the fundamental guiding principle for their actions". But some key economical indicators that have been used by economists - GDP growth, income distribution, unemployment and inflation they call "surrogate measures", as these measures do not guarantee overall happiness. Authors give an example of the problem: "Suppose there is a policy that increases GDP x% but worsens income distribution y%. How are we to know if we should adopt it? How do we know if the cost in terms of unemployment of reducing the inflation rate by z% is worth paying? More broadly, is it possible to construct "happiness estimates" that are useful to evaluate policy alternatives of this sort?".

Keeping in mind discussions and critiques of measures and indicators of QOL, they should be analyzed holistically before using them for science quality evaluation.

Science quality as Value for money. The meaning of scientific research 'value' depends on subjective needs of different stakeholders – government, citizens/society, businesses, etc. There are cases when value for government differ from value for businesses. As an example of some differences in opinions could be current discourse on health sector priorities in Lithuania (and partly worldwide as well) – one group of stakeholders makes political pressure to increase spending on R&D in medicine that tackles health problems, while other stakeholders are fostering healthy life culture to reduce share of medicine clients, as national

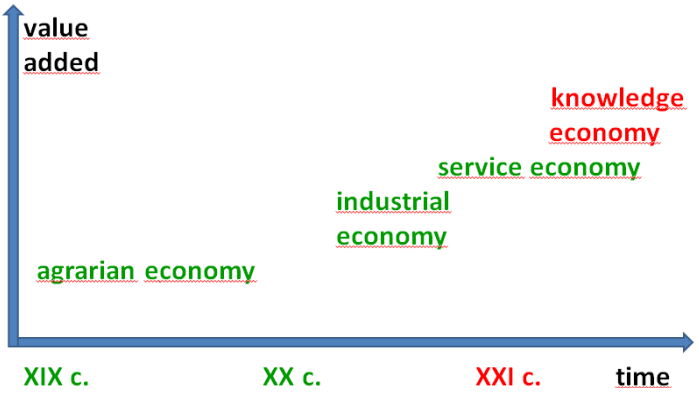
budgets faces problems to cope with current megatrends of ageing society and rising spending on medicine. Therefore it is necessary to consider not only economic value (e.g. incomes from medicine), but social value (e.g. healthier society) as well.

The impact of scientific research and R&D to indicators of quality of life of individuals and communities. It is considered that quality management as an approach/methodology for enabling research to make significant impact which might be attributed with quality of life. Quality management approach enables to broaden research assessment. Universities have long-lasting tradition rely on transcendental and internal science experts' evaluation (i.e. science / academic community evaluates it's own members) therefore other groups of society usually nor understand nor feels the "products" of the science. On the other hand, user-based and value-based concepts of quality management empower to drive research process oriented to society interests from early stages of idea development, and continuing to innovations that are significant driver for better quality of life. In Lithuania it is quite significant shift in science quality paradigms from science for scientists to science for society's quality of life.

According to official statistics, Lithuania spends roughly 0.8% of GDP on R&D, compared with about 2% in the EU. The estimated numbers could be not precise, but it shows some trends in spending on R&D. The biggest share – about 3/4 of Lithuania's expenditure is the state investment, the rest comes from business. In economically highly developed countries, this ratio is the opposite, because business spends major part for the R&D comparing to the state spendings. Also the structure of spendings is different comparing EU, US, China and Japan. EU spends more on fundamental research while other economies spends more for applied science. If considering simplified liberal attitude to the scientific research then ROI (return on investment) could be as a key indicator for spending on R&D. But ROI in applied scientific research is more visible and faster, comparing to those investments spent for fundamental research.

Over the last centuries Lithuanian economy policies changed from agrarian to industrial, then after the fall of Soviet Union it's industrial system collapsed, and services started to dominate; nowadays strong efforts are allocated to foster knowledge economy (see Figure 1). The change of policies relate to increase of value creation by nation, and at the same time increase of government budgets to strive for better quality of life of society.

Figure 1. The change vector of economic policies



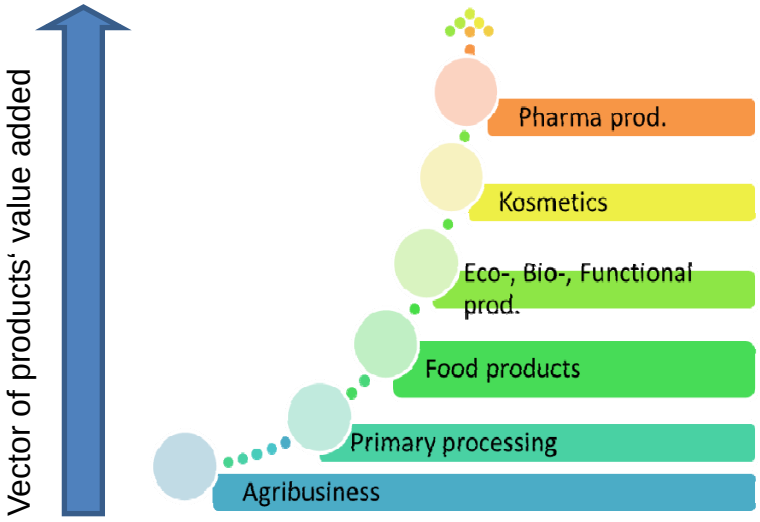
Source: developed by authors

The discussions of how fast to achieve efficient knowledge economy make us think about the factors that drives such economies. One of significant factor is to have "critical mass" of active scientists working under the same scientific issues. In Lithuania attraction "poles" of

these groups usually are those people who do research in the same scientific direction or branch (according to national science classification system).

Science quality for scientists. Well organized research management and administration system in the universities and research institutes is strong precondition for knowledge economy. Such a system could produce new knowledge that is necessary for the progress of science. Therefore the attribute of science quality could be an absorption capacities of knowledge users – scientists that work in applied areas i.e. if fundamental results are well recognized world-wide then is higher probability, that it will attract more scientists in applied areas. As example of increase in value added that makes impact to quality of life could be changes in use of natural resources (see Figure 2).

Figure 2. The increase of value added of knowledge intensive products: agri- and food sector



Source: developed by authors

Traditionally, research and researchers are evaluated by means of the 'scientific impact' of research output, i.e. publications in peer-review journals. However, strong critical discourse arise about aforementioned traditional system which cannot judge the "merit" of a paper or predict its impact in the social context. Instead of measuring mainly bibliographical data, the size and qualities of scientific teams could be evaluated as well. Also the ways to value and draw attention to the importance of societal impact of science should be developed.

2. Methodological framework for discussion about the links between quality of scientific research and quality of life

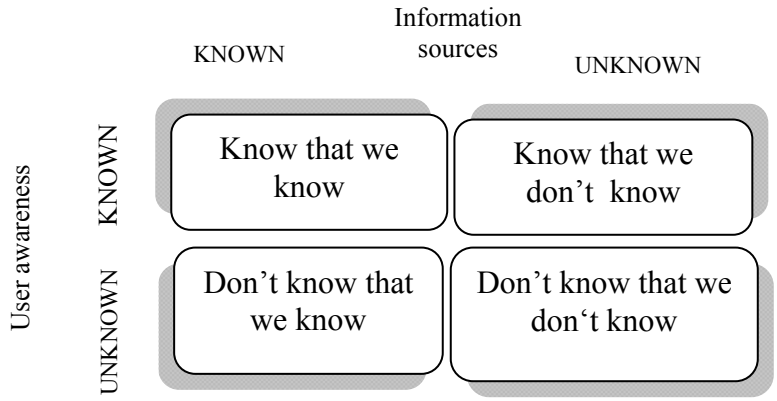
We face with rapidly growing variety of sources about quality of life as follows: scientific literature, statistical data, pictograms, etc. However, growing amount of materials and sources about quality of life do not always help for people awareness about their quality of life. On the other hand, societies and policy makers rise discussion if spending for scientific research is a burden or privilege. In authors' opinion, change in quality of life could be an important argument while discussing on quality of scientific research.

Scientific research generates knowledge, therefore authors of the paper propose to use the known-unknown matrix (see fig.3).

The known-unknown matrix approach is consistent with the idea of social constructionism which states that people beliefs are more important than facts (fig. 3). The paradox that

Easterlin noted in the U.S. was that at any particular time richer individuals are happier than poorer ones, but over time the society did not become happier as it became richer. One reason is that individuals compare themselves to others. They are happier when they are higher on the social (or income) ladder. Yet when everybody rises together, relative status remains unchanged. A second obvious reason is that the gains have not been evenly shared, but have gone disproportionately to those at the top of the income and education distribution.

Figure 3. The known-unknown matrix



Source: Bammer, 2010

A third is that other societal factors – insecurity, loss of social trust, a declining confidence in government – have counteracted any benefits felt from the higher incomes. A fourth reason is adaptation: individuals may experience an initial jump in happiness when their income rises but then at least partly return to earlier levels as they adapt to their new higher income (World Happiness Report, p. 4).

2.1. Know that we know perspective

The concept of quality of life (QOL) is becoming increasingly important in the evaluation of health and social services, medical policy, and medical intervention (Li et al., 1998, p. 149). Moreover, the term "quality of life" has acquired a status in research and in politics as the ultimate, overriding value, a standard by which political decisions and the effectiveness of medical treatment may be judged and in relation to which other values should be considered to be means, not ends, in themselves (Naess, 1999, p. 116). Therefore, the need for instruments that enable for measuring QOL is huge and constantly growing. Angel Gurría, Secretary General of the OECD, noted that "Improving the quality of our lives should be the ultimate target of public policies. But public policies can only deliver best fruit if they are based on reliable tools to measure the improvement they seek to produce in our lives" (2011; quoted by Happy Planet Index: 2012 Report, p. 6). In recent decades the measurement instruments for QOL has extended and encompass almost all fields of human life.

International bodies have created some widely recognized measures (e.g. UN Human Development Index, OECD Better Life Index, The Gallup Worldwide Quality of Life Survey; Quality of Life Index) to assess quality of life. Moreover, the World Values Survey (WVS), the European Social Survey (ESS), European System of Social Indicators (EUSI), World Development Indicators (by the World Bank) provides information about quality of life.

UN Human Development Index aims encourage global, regional and national debate on social development. For better accountability, quality, transparency and consistency of data each year are made some adjustments in the index, while seeking their comparability in the long term. Data reliability is increased through the involvement of a greater number of

national and international statistical institutions. The Human Development Index - a comprehensive, showing the average value in three important areas: a long and healthy life, knowledge (competence), and a decent standard of living. Following indicators are used to measure them: the average life expectancy, the average years of schooling in years, the average expected duration of education in years, the gross national product.

OECD Better Life Index aims to encourage countries to adopt policies that improve the economic and social well-being of people. Reports on the activities of this organization are designed for national institutions to enable them to better navigate the twists and turns of social policy and welfare of the inhabitants of different countries and the world. Although the concept of "good or better life" everyone can interpret in their own way, therefore for the unification the OECD created a composite index of a better life. It consists of 11 criteria: income, employment, housing, health, balance work and personal life, education, social networks, civil society, the environment, personal security and subjective well-being. The website includes information is presented graphically in the form of flowers with 11 petals of different colors and sizes. Each country "has" his own, unique flower color that symbolizes a certain criterion (index), and its size - the value of this parameter.

The Gallup Worldwide Quality of Life Survey. In 2006, the Gallup Organization established a survey system that uses uniform methodologies to gather information about various aspects of the quality of life in more than 140 countries around the world (World Poll Questions, 2008). Additionally, the World Poll asks questions in specific regions that measure opinions about issues that have great impact on certain areas of the world as follows: Asia, former Soviet countries, Middle East and North Africa, Latin America, Sub-Saharan Africa, Muslim countries.

Another efforts were put to create specific instruments for assessing quality of life in a particular domains such as work (e.g. quality of life). In recent decades the measurement instruments for QOL has extended and encompass almost all fields of human life. J. Ruževičius and D. Akranavičiūtė (2007, p. 2) indicate eight QOL domains as follows: health related QOL, quality of working life, mental QOL, material QOL, family QOL, quality of social life, leisure QOL, environment-related QOL.

The number of QOL evaluation incentives, and large number of related scientific articles show that there is a place for scientific research on evaluation of QOL and it's relations to quality of scientific research.

2.2. Know that we don't know perspective: the subjective well-being and emotions

Many researchers use approaches to emphasize the individual's subjective perception of life quality, such as ratings of happiness, well-being, or life satisfaction, which has been recognized as a key component of QOL in the last decade (Li *et al.*, 1998, p. 150). As a complementary indicator to the objective ones the subjective well-being (SWB) account has been developed in recent two decades. Well-being generally includes global judgments of life satisfaction, and feelings ranging from depression to joy. In many studies the main dimension of SWB it is happiness; and often words 'happiness' and 'well-being' are used interchangeably. For instance, in the World Happiness Report (2012) the word "happiness" is used in an equally general way with SWB as 'happiness' does help to focus thinking, and attracts attention more quickly than does "subjective well-being."

Subjective well-being is the measurement of people's own self-reported assessment of their own lives and how it is going. What makes these measures subjective, is not the self-reporting itself, but rather the aspects that a person is reporting on are subjective in nature, for example life satisfaction, emotions, purpose and meaning in life (Hick, 2011).

Although the concepts of well-being have been understood as important aspect of quality of life for a long time, it is only really only in the last 20 years or so that a growing body of

evidence has shown that this approach can be measured in a valid and reliable manner. (Hick, 2011)

For many researchers one the strongest driver is the passion, and one of the important reward are the results of the scientific research. In both areas we are dealing with emotional aspects of science and innovations. Many international business cases show that emotional part of the product is very important e.g. IT industry giants' former statements: IBM – International Business Machines (eliminating large consumers – children, adults that do not belong to business), and Apple - "We're looking for the most original use of an Apple since Adam" – computers and software designed for pleasant emotions.

The use of the emotional aspects of quality at research, scholars and practitioners began to study in more detail at the end of the twentieth century Kansei Engineering (emotional engineering) as scientific and industrial movement began. The Japanese term *kansei* associated with the writings of the German philosopher Alexander Baumgarten "Aesthetics" (1750). He laid the foundation for *kansei engineering*, whose purpose - to investigate the structure of emotion that determines human behavior. The word *kansei* differently interpreted and used in many studies, involving not only design, but also with other scientific areas. It has semantic concepts load sensitivity, feeling, aesthetics, emotions and love.

Concluding the discussion above we could note that scientific research and innovations for better well-being and emotions, and emotions as a driver for scientific research are both important measures for scientific research quality from product and process point of view.

2.3. Don't know that we don't know perspective: strenghten societies' awareness

When interacting with people, we can often observe that decisions in favor of the quality of life and happiness are based on the certain living moment. Some of these decisions have positive impact on us and our lives, while others may not or be even harmful. At the time of making decisions, we often think that there are a big number of possible solutions. However, the potential of decisions can be divided into two major groups – those decisions that lead to *being* and those of *non-being*. Bearing in mind these two alternatives, we observe, that the way to achieve quality of life should be changed. Typical sequence to achieve quality, as it is stated in majority of quality management research is: a) to identify *all needs* of the stakeholder, and b) to satisfy *all expressed and intended needs and expectations* of the stakeholders. Authors of this article propose the improved sequence for achieving genuine (sustainable) quality based on genuine needs of stakeholder, then the process of achieving quality also shall be changed: a) to identify all needs of the stakeholder, b) to question and segregate genuine needs from those implied by others (e.g. mass media), and c) to satisfy only stakeholder's genuine needs.

In this case scientific research would help members of society to find balance and priorities between different types of needs, because current economy models works to generate more products and to enlarge consumer segments. But expansion in consumerism does not guarantee life satisfaction or even more problems cause for societies.

2.4. Don't know that we know: holistic approach

What sorts of QOL data are needed to support better institutions and policy choices? How can the results of QOL research be used to design and deliver better policies? For instance, one of the dimensions of QOL happiness is considered something to be pursued individually rather than as a matter of national policy. Happiness seems far too subjective, too vague, to serve as a touchstone for a nation's goals, much less its policy content. (World Happiness Report, 2012, p. 6).

It is important to understand contextuality of QOL concept. World Happiness Report (2012, p.7) states that it is no accident that the happiest countries in the world tend to be high-

income countries that also have a high degree of social equality, trust, and quality of governance. In recent years, Denmark has been topping the list. And it's no accident that the U.S. has experienced no rise of life satisfaction for half a century, a period in which inequality has soared, social trust has declined, and the public has lost faith in its government.

More recently this has also been recognized by the European Commission, with the President, Jose Manual Barroso, stating with reference to GDP, "we can't measure the challenges of the future with the tools from the past". Knowledge base about phenomenon of quality of life is huge and continues to grow rapidly. However, together with growing base of knowledge there is growing awareness about limitations of knowledge of phenomenon of quality of life.

It is time to assume that quality of scientific research could be evaluated by research and innovations impact to rise QOL. But at the same time the QOL as an object of scientific research should be clarified.

Conclusions

Recent policies of Lithuanian science and economy shows strong convergence, supporting by necessary funding schemes in order to achieve better quality of life (QOL) in the country. Despite the clearness in direction the target – QOL is unclear itself – still hard discourse is on because of significant variation in interpreting the concept of QOL and the role of scientific research in this context. Because of ambiguity in the object and pluralism in opinions there are still no consensus in society and academic community about the science quality, value and impact to QOL.

Quality management of science research should be different comparing the one's in business because we face with hardly defined goal. As an analysis approach 'known-unknown' matrix could be employed to evaluate interrelations between quality of scientific research and QOL. Research administration processes, considered as support to researchers could be supported with conventional quality management concepts and tools.

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