Preconditions for the Management of Invention-Innovation Diffusion Process

Zdenka Zenko, Faculty of Economics and Business, University of Maribor, Maribor, Slovenia
Matjaz Mulej, Faculty of Economics and Business, University of Maribor, Maribor, Slovenia

ABSTRACT

This paper contributes to improvement of innovation management. An idea to be developed into an innovation needs a successfully managed whole invention-innovation-diffusion process. Innovation management remains a complex process. Managers with their specialist’s narrow viewpoint can hardly be holistic enough. The difference in knowledge, educational level and specialization among entrepreneurs in SME and researchers in institutions contributes to the difficult cooperation among them. With dialectical systems theory the most important viewpoints can be selected and with the law of requisite holism the innovation management process can become manageable and successful. To support diffusion of inventions their cooperation should be based on ethics of interdependence. Inventions become innovations when purchased and used in social systems as a result of IIDP. Many crises were identified after 2008 and socially responsibly behaving management could be one of the possible solutions.

Keywords: Dialectical Systems Theory, Diffusion of Innovations, Innovation, Invention, Management, Requisite Holism

INTRODUCTION, SELECTED PROBLEM AND VIEWPOINT

Managers today feel enormous pressure due to rapid changes in global environment. Since SMEs are the vast majority of company forms in Europe today, they lack human and other resources for innovation management knowledge. Dialectical thinking supports the more holistic understanding of their goals and managing their tasks. Our experiences and research support this statement (Mulej, 2007b; Likar, 2008; Mulej, Potocan & Zenko, 2010). Due to increasing specializations and related selected narrow viewpoints, the unwanted side effects result.

Mulej and Kajzer (1998) developed the theory of requisite holism, latter we discovered it is a law. University of Maribor, Faculty of Economics and Business has innovation management M.A. and Ph. D. programs since 1987 and innovation topics as a course in the only MBA program we know of. From the vast research done by lecturers and students of these courses we can conclude that the dialectical system of selected viewpoints supports the successful management of invention-innovation-diffusion process (IIDP). We have not found this in the studied literature and our paper should contribute to this research area.

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**BRIEF INTRODUCTION INTO SYSTEM THEORIES**

Bertalanffy (1979) as father of general systems theory supported the theory of total holism as worldview. He found such holism in nature. We cannot achieve total holism with existing related theories and methods. Dialectical systems theory introduces a step of selection of only the most important viewpoints into consideration. We select the viewpoints for observation of objective reality based on our specialization, experiences, cooperation and they derive from objective needs and possibilities. From these viewpoints the necessary elements and their interrelatedness are included into observation of objective reality. The number of elements (parts) and their interrelatedness (connectedness, mutual influences) determines how close to holistic approach we will come. Due to the characteristics of the vast number of elements and their relations the complexity and complicatedness increases. Such dialectical systems are very difficult to be managed. A system as simplification (Mulej et al., 2008) includes less viewpoints, elements and relations. It is further away from objective reality and closer to be manageable (Mulej, 2007b, Mulej & Zenko, 2004). All the viewpoints not included in our system still exist in reality. They need to be included and managed in other dialectical systems (Table 1, middle part) or they cause unwanted or unexpected side effects. Since it is not possible to manage a system including all viewpoints and it is too dangerous to left too many aside, with requisite holism as by Mulej and Kajzer (1998) we can include all essential interdependent viewpoints.

Our recent world wide crises proves that despite our very developed civilization we need to immediately change our way of understanding the problems and making better governance and management decisions. For sustainable development our innovative behavior needs to include ethics of interdependence and social responsibility (Zenko & Mulej, 2011; Duh & Strukelj, 2011).

**CREATIVITY AS SOURCE OF INNOVATION**

Innovative solutions for complex problems require systemic thinking and acting. Less than 4.5% (Business Week, 2005) of invention projects succeed also in the best managed organizations. Ideas disappear before they are developed into suggestions. Many ideas are never expressed or recorded. Management should create and enhance creative culture for supportive environment to develop ideas into useful as a result of the invention-innovation-diffusion process.

The creative processes need to be managed (Sarotar Zizek, 2008). Creativity is also a human need as defined by Maslow. Pecjak (2001) found many common characteristics of the creative people: non-conformism, originality, flexibility, ingenuity, fluidity of thought, elasticity, perseverance and connection between creativity and humor. They see ordinary things in extraordinary way. They need stimulating environment to develop and express their creativity. For ideas to become innovations we need to combine at least four methods of thinking:

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**Table 1. The selected level of holism of consideration of the selected topic between the fictitious, requisite, and total holism**

| Fictitious holism (inside a single viewpoint) | Requisite holism (a dialectical system, DS, i.e. synergetic network, of essential interdependent viewpoints) | Total = real holism (a system, i.e. synergetic network, of totally all viewpoints) |
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