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Risk Management in the Innovation Project

Abstract. The object of this research is to recognize the sources of risk in innovation projects and to determine whether they could be managed better. Due to the variety of opinions and theories over the nature of risk, reaching an agreement about risk management is difficult. This will be a major problem if any effort is made to proactively manage «risk» in naturally «risky» areas such as innovation. Some risk management could be valuable, but perhaps too much, or inappropriate risk management might repress the creativity that is core to innovation. It is necessary and valuable to consider the process of innovation from conceptualization to commercialization, how uncertainties are formed, how they are managed in that context, and how the techniques of risk management can be further deployed to improve the success rate of innovation projects.

Key words: innovation, management, risk, analyzing risk, project.

Introduction

Establishing something new is the essence of product innovation. Since this process necessarily involves risk, an early risk identification and management is required in innovative firms. So the purpose of this paper is to explore methods for managing risk in the innovation projects. In the meantime, the proposal method for managing the risk in specific kind of innovation will be explained more.

Methods

Different approaches have been proposed to risk management in general, however the extent to which they are relevant for managing innovation is uncertain. Thus, during this paper, the general model of innovation and the process of risk management for managing the parameters, which create the risk in these projects, are explained. Strategic and Capability Risk Analysis that focuses on identifying, analyzing, and prioritizing risks to achieve strategic goals, objectives, and capabilities is used.

Main body

Innovation is the main source of economic growth and a key source of new employment opportunities as well as providing potential for realizing environmental benefits. One of the most impor-

tant arguments is that, in the global economy, where economic actions can be more cheaply carried out in the low-wage economies such as China, the main way in which the other economies can compete and survive, is to find new and better products and processes, In other words, to innovate.

According to the Oxford Dictionary of Economics 'innovation refers to the economic application of a new idea. Product innovation involves a new or modified product; process innovation involves a new or modified way of making a product'. According to Afuah (2003) innovation is the employing of new knowledge to provide a new product or service that the customers want. In another words, it is invention + commercialization. Van de Ven (1986) describes innovation in terms of a new idea, which may be a recombination of old ideas, a plan that challenges the present order, a formula, or an exclusive method which is perceived as new by the involved individuals.

Joseph Schumpeter provides a classic definition of innovation as the development of new ideas (which he called «inventions») into products and processes, which are then spread across the market in a process he called diffusion. Innovation, as we shall use the term, encompasses the full chain from basic research to the diffusion

of ideas, goods or services across an economy. Schumpeter envisaged this occurring in a linear way, in the sense of a distinct time sequence. In reality, these different stages overlap and interweave, as parts of a complex system that feeds back to and influences future developments. Nonetheless, this model provides one starting point for thinking about innovation.

Literature provides different categories of innovation classified by type, degree, competence,

impact, and ownership. Innovation can be considered in both manufacturing and service sectors of different sizes (small, medium and large). Although there is a difference between these two sectors, the general definition and process of innovation are the same. Services have their own characteristics different from manufacturing.

Each innovation projects (in all manufacturing or service industry) may have five following stages (figure 1).

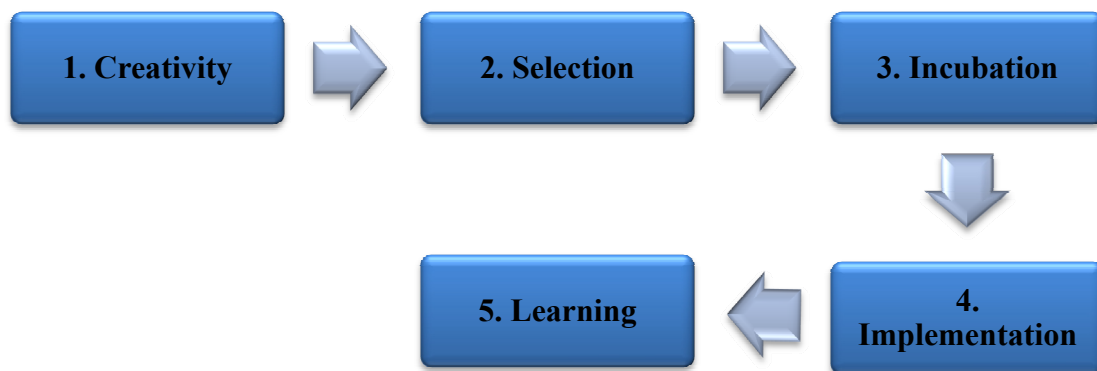


Figure 1. Stages of innovation projects

On the Figure we can see 5 stages of innovation projects: 1. Creativity. On this stage we are searching the external and internal environment and processing relevant signals about threats, opportunities and also ideation. Second stage – selection is preliminary assessment and deciding by considering a strategic view of how the organization can be best developed; to know which of these signals to respond to. Incubation – is transacting to the actual product development and producing the prototype production. Implementation – is translating the potential idea into something new and launching it in an external or internal market. The last stage, learning – is learning from progressing and building their knowledge base and improving the ways in which the process is managed.

For companies in order to launch new products speedily and successfully, taking risk is essential. The ability to identify and manage risk is considered to be vitally important in risky innovation. According to the standard definition of risk, it is «the combination of the frequency or probability of occurrence and the consequence of a specified hazardous event». Some former writers in the field drew a distinction between uncertainty and risk. A

risk situation is defined as one in which a probability distribution for consequences is made on a meaningful basis, agreed upon by the set of relevant experts, and therefore it is «known». Uncertain situations arise when an agreement among the group of experts cannot be gained, so there will be an undefined probability distribution on the set of outcomes.

In order to represent the different aspects of risk in an accurate way, it is important to consider risk as systemic. According to them the categorization of risk is: Political, Customer, Partner and Supplier, People, Reputation, Market and Financial.

Risk aspects of the enterprise may be considered under the following major headings: Property and personnel, Marketing, Finance, Personnel and production, Environment. So with paying attention to the different sources of risk and purpose of this paper, the best categorization of them, which suits for this study, could be found as follow:

- Environment (government policy, exchange rates, availability of skilled labour, weather, culture)
- Technical (new methods, technologies, materials)
- Resources (staff, materials, finance)

- Integration (software modules, new & old systems)
- Management (multiple parties' experience, use of project management techniques, HRM, set the tight goals, product transition management, organization structure, organization behaviour)
 - Marketing (customer, competitors)
 - Strategy

Risk management means «the process of understanding the nature of uncertain future events and making positive plans to mitigate them where they present threat or to take advantage of them where they present opportunities». By considering that one of the main features of innovation will al-

ways be «risk», risk management needs to facilitate innovation rather than stifle it. A methodical approach to risk management enhances the ability of an organization to manage risks at all stages. The important purpose of risk management is to improve project performance by means of systematic identification, appraisal and management of project-related risk. A systematic approach to risk management has to encourage decision-making inside an organization which is more controlled, more consistent and yet at the same time more flexible.

All risk management systems have the four following phases (figure 2).

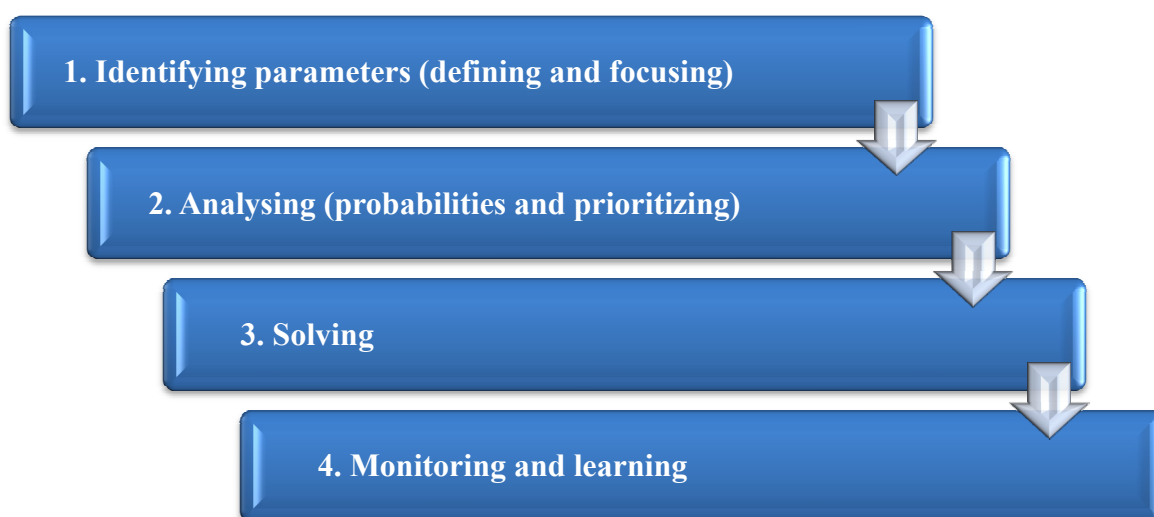


Figure 2. Phases of risk management systems

Method which will be used in this research consists of four phases. In following, the summary of different stages of this method (how they work) will be described and in next section the case application will be explained for analyzing the risk. It should be emphasized that various parameters like kind of innovation, industry and company have an effect on method, so therefore different methods may be appropriate for different conditions. Consequently this general method should be calibrated with different situations.

For the first phase of risk management -Identifying Parameters- some of the parameters can be selected as parameters that create risks based on the kind of industry, size of companies, the countries which the companies are located in and situation of company.

In the second phase -Analyzing- the company should estimate probabilities of events and the impact of their consequence and also prioritize these different risk factors in order to solve them, because, the company cannot solve all the risks (limited resources, time etc.) and also the innovation is inherently risky, and if the company wants to manage all risks, it may cause to stifle the innovation.

In phase three, the company should find different methods for solving these risks in different stages of innovation and in phase four, the company should monitor the process and also learn for future risk management system.

Conclusion

On the one hand companies need innovation to endure in the market competition but on the other

hand one of the most important aspects of innovation is risk. If the companies do not consider the risk, the project will be failed and if they apply a lot of risk management systems, these methods could stifle the innovation. This research attempts to pro-

vide the system for managing the risk in the innovation projects and also to create a method for prioritizing different risks factors and to manage the most important ones in second stage of this risk management system for some kind of innovation.

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