MANAGEMENT OF PROCESS AND PRODUCT INNOVATION

Srdjan Milićević
Faculty of Management, University Metropolitan in Belgrade, Serbia, srdjanmilicevic1@gmail.com

Abstract: The promotion of innovation occupies one of the central places in almost every review of the priorities of modern business management. However, managing innovation processes in a company is not a simple activity, even when incremental product and process improvements are taken into account, not to mention innovations that could bring the company a lasting competitive advantage in the market over time. Although the innovation process may at first glance seem like a spontaneous activity with no expressed need for management, there are many contexts within which they take place, and in which effective innovation management is of utmost importance for the quality of business performance. First of all, there are numerous uncertainties and risks as inevitable companions of all innovation processes. Also, there is the complexity and potential unusability of innovation solutions. Precisely due to the influence of these factors on innovation activities in companies, the number of companies that have managed to create continuous innovation superiority over others is not large.
The management of innovation processes and innovations starts from the long-term business goals of the company. The goals are based on a strategic analysis of the environment, primarily market and technical environmen, so that the resulting value is an adequate response to the requirements of the environment. Based on the strategy, a plan is defined for the development and mobilization of resources and capabilities required for the implementation of the innovation process aimed at achieving the desired goals. Assessment of resources and capabilities refers to the necessary resources and competencies, time and budget necessary to achieve the goals.
Innovation is a highly uncertain activity. Some innovations have some uncertainty about the applicability of new solutions. For others, uncertainties related to consumer reactions to new products and services come to the fore. In most cases, there are uncertainties generated by the size of the resources required or the time required to valorize the innovation commercially.
The innovation process is multifactorial in nature. It implies a high degree of integration of activities within the company, and very often between different companies. In modern conditions, the innovation process is supported by increasingly powerful information and communication technologies. The functions in the company that are basic for the innovation process and innovation management are: production, marketing, research and development. Innovation is successful if its use enables the company to constantly grow. Innovation management in the company includes planning, organizing, coordinating and controlling innovation processes and innovations.
Keywords: innovation, innovation process, innovation management.

1. INTRODUCTION

Commercial valorization of knowledge into innovation in this century is one of the key factors of company growth and development (Cvetanović, & Novaković, 2019). Thanks to the improvement of innovation, some economic entities have managed to create a completely new type of competitive advantage (Filipović, & Nikolić, 2017). It is based on the innovative ability of companies, which is also a key source of profit for the most successful companies in global relations (Skarzynski, & Gibson, 2008).
Innovation is becoming more complex. This is true not only for radicals but also for incremental innovations (Cvetanović, Nedić, & Despotović, 2019). Radical innovation represents a technological shift that has the potential to completely replace products and industries with new ones. In contrast, incremental innovation includes fine-tuning and relatively small improvements to existing products and processes (Cvetanović, & Nedić, 2018) (Table 1).

Table 1. Incremental and radical innovations

Type of innovation	To do better - incremental	To do differently - radical
Product - service offered to end users	Modified / improved version of a service already on the market - example - increased volume of additional services in the telecommunications system	Radical change - online retail
Process – a way of creating and providing a service	Reducing delivery costs through optimization of office work, reducing costs through renting, six sigma access, etc.	Radical change in the route of the process - moving sales over the Internet, instead of face-to-face contact or sales in supermarkets, etc.

Positioning - target market	Opening new market segments, e.g. insurance companies offer a special line of insurance for students.	Radical change in approach - for example, the opening of new markets for travel through low-cost airlines - travel innovation.
Paradigm - emphasizes the business model	Changing the business model - leaving insurance agents and offering insurance directly to clients or online.	Radical changes in thinking - change of production from product to service.

Source: Tidd, & Bessant, 2018.

Innovation management must take into account the fact that innovation does not come from inherent individual genius, but from perceiving the world in an unusual way. Like any other form of management, innovation management has four functions: planning, organizing, coordinating (leading) and controlling.

2. PROCESS AND PRODUCT INNOVATION PLANNING

Planning means looking to the future and making decisions that will enable the achievement of a certain goal. The mistake that many companies make is joining without an action plan that is a prerequisite for success. Instead, they use strategies that have yielded results in the past and strive to implement themin a better way (Milisavljević, 2017).
Appropriate goals must be set in order to achieve the desired result. Therefore, it is necessary to identify and select activities in order to achieve the desired goals. Two planning techniques, often associated with generating innovation, are project management and development funnel (Smith, 2015).
Project management is a planning technique that is mostly used in the management of innovation processes. The project management approach focuses most on whether projects are completed on time and within budget. It consists of five basic steps: setting goals, identifying activities or tasks to be carried out, estimating the duration of activities, determining the sequence of activities and linking them to the comprehensive project model, and compiling a project plan that will define the sequence of activities throughout the project (Smith, 2015).
The project, as a rule, implies the development of new products or services, and their placing on the market before the competition. The activities which should be done are part of the innovation process that includes tasks such as design, testing, investigation, etc.
The development funnel, or cyclone as it is sometimes called, is a structured approach that leads from an idea or ideas to a successful market launch of a new product or service. This principle is very simple. It starts with a large number of ideas which are then filtered so that a relatively small number of them are eventually developed and launched as a commercial product or service. Ideally, there would be a large influx of ideas, where the funnel's throat would be deliberately wide to support the emergence of as many new products and services as possible. The narrowed part of the funnel is a filtration process, where a large number of ideas are reduced to a much smaller number.
Ideas that are not technically feasible, too expensive to produce, or lack commercial potential are successfully removed by scanning. The result is a significantly smaller number of acceptable ideas that can be quickly put into the process of developing a new product. The goal is to support the concepts of potentially profitable ideas. Applying the development funnel technique, a portfolio of development projects that can be important for business should be created. In most cases, this will ensure a steady influx of new products placed on the market (Cvetanović, & Nedić, 2018).

3. ORGANIZING PROCESS AND PRODUCT INNOVATIONS

In management, organizing is a phase that refers to arranging the structure of the internal form of the organization. More precisely, this means finding groups of people (departments or teams) that enable more efficient work. Structures that facilitate conventional work activities, such as manufacturing, do not necessarily contribute to the advancement of innovation in organizations. The quality of organization as a function of innovation management affects: communication channels (between individuals and groups of individuals), information inflows, labor relations, practice, business environment, corporate culture. Business relationships and business practices must be flexible and able to cope with the uncertainty and unpredictability of innovation processes (Smith, 2015).
There are many problems that large corporations face when creating innovations. This includes lack of resources, technological shortcomings as well as insufficient routine and culture of creation. Numerous organizational models are available to address some of these issues. A separate business unit is a structure in itselfalthough it exists within a company. It stands side by side with existing business units and it is difficult to distinguish it from them. This type of structure corresponds mainly to projects that involve a short period of time due to the fact that the separated

business unit is expected to meet the profitability criteria. Also, it is likely that the innovation will be profitable because the organization must be confident in the relatively rapid realization of profits.

In a more extreme form, a department that is narrowly specialized in creating innovations can be formed within the company. The goal is to form an organization within the existing business entity, while the newly created organizational units are characterized by a high level of entrepreneurship and dynamism.

Departments for independent business ventures are separate organizations that can take the form of new companies with the basic goal of enabling the fastest possible promotion of innovative processes and products. In addition to greater autonomy, the department for independent business ventures should have the advantage of multiplegoals. Without interference in the form of corporate or internal policy, employees should be characterized by a greater degree of cohesionin such a department, and accordingly, employees will be able to focus exclusively on innovation processes and innovation.

4. COORDINATION OF PROCESS AND PRODUCT INNOVATIONS

Coordination consists of setting guidelines and visions that others follow. When it comes to innovation, it is clear that visions must have such a character that it is something that is important for the whole company. One way is to create roles within the organization that individuals can fit into. People who have the role of project managers must create a social climate that will be more conducive to innovation. More specifically, speaking of motivation, there are several schemes and practical solutions implemented by some companies, which are designed to give employees (and others) a chance to express their creativity by participating in the development of new products and services and innovation of production processes.

There are quite a number of well-known and widely used project leader roles. Such is, for example, the role of the CEO, which is exercised by a person who is able to take overall responsibility for the management of a company. In addition to day-to-day control of the entire company, the CEO must be able to steer the company toward some longer-term goals by projecting a vision of what the company should look like in the future.

As there are a number of well-known managerial positions in management, there are, or should be, several managerial positions specific to innovation management. Some of these roles are formally regulated, in the sense that they are specific jobs held by individuals to whom these roles have been assigned. On the other hand, there are also informal places where there are no specific titles and where the roles themselves are not clearly defined; instead, they are roles that individuals have taken on at their own discretion. These leadership positions, both formal and informal, include: project leader, product champion, godfather and guardian (Smith, 2015).

The role of project leader is formally assigned to a person. He or she are in most cases natural leaders, but they are also people who are familiar with the project. Naturally, project leaders must have good technical knowledge, but they must also have other knowledge and experience in order to be able to coordinate and make the best proposals for different functions, all with the aim of successful market commercialization of innovations. The project leader must be someone who does not go into too much detail, but is able to preserve a certain perspective, so as not to lose sight of the ultimate goal - successful innovation. Consequently, a project leader often possesses a mix of abilities and talents combined with communication and motivation skills to impose a multidisciplinary sense of direction on his team along with the analytical qualities needed to ensure effective organization and management.

The idea of a product champion first appeared in the early 1960s. New development projects, especially those that take place within large companies, often run into problems because any innovation in principle calls into question accepted ways of doing business and already established skills. Managers may feel some kind of pressure associated with a lack of technological knowledge, as well as potential changes in the management structure of the company. In this way, innovation can come into direct conflict with pre-existing interests. In large corporations, it is often the case that systems and procedures, whose role is to test new ideas, represent significant obstacles on the path to innovation.

In order to be successful in their role, product champions must have political support within the company. What is even more important is that the product champion must identify with the innovation. He or she must perceive innovation as their "child" who needs protection and support at all times. Also, they must be people who are well acquainted with the structure of the organization. They need to know how to handle every situation and be aware of where the power lies in one company. In the end, the product champion must have the attributes of a leader who will be able to communicate with people in order to win them over to his side, i.e. in favor of the realization of innovation.

A figure calledagodmother is probably the most informal of these four roles. At first glance, it may seem that this is not a leading figure, but rather a person behind the scenes, who serves to provide political support to all those who have a stake in innovation with their unique ability to "pull the strings". In order to be successful, a godfather must use his power and influence within one company. Accordingly, this is the role most often played by one of the

leading executives, most often one of the board members. This role consists, above all, in supporting innovation (and employees engaged in innovation activities) and providing protection for the implementation of the project, especially given the possible conflicts with the executive and adversary forces in the company. These forces may include people who are strongly opposed to risk or do not believe in the potential of innovation (those who hold the view that nothing is "invented here"). These are usually people who have difficulty seeing future opportunities or those who have reason to believe that their jobs are at risk. In addition to the role of protector, the godfather can take a proactive view, and it may require the removal of potential barriers, whether human or other. It can also mean providing access to certain resources. This means financial resources, but also human resources, equipment or work premises. In the end, the godfather can only act as a moral support to the innovation team. The participation of one key person in the company playing the role of godfather can be vital for maintaining a high level of motivation of the innovation team.

In the most elementary sense, the guards store the acquired knowledge. In rare cases, it is knowledge that is formal and codified, and most often it is the so-called tacit knowledge. Often the knowledge of the guardians is very limited and their power lies in what they know about others or more specifically about the knowledge that other people possess. Guardians are also very skilled at making connections in the business world. Such skills are most often of a social nature and enable individuals to make the best use of the informal structure of a company. Finally, it is also important to note that security guards very often play the role of a bridge between different parts of a company. This does not have to be connected with knowledge or skills. Instead, culture, background, or social connections may be important. When motivated, individuals secretly work on the development of new projects based on their own ideas, it is about the so-called outlaw. Covert research of this type does not refer to radical innovations, but to those potentially lucrative innovations that consist of improving and refining already existing products / services and processes. However, there are exceptions in this case as well. Sometimes the rejection can lead to the development of completely new products that represent a significant step forward from the existing product range of a given company.

Idea programs are programs adjusted to employees, designed to encourage employees to come up with new ideas. They represent a somewhat more developed program of suggestions created by all employees. The first such programs include the one made by Eastman Kodak in 1898 (Fairbank & Williams, 2001). Lately, however, the focus has been on ideas that can bring some innovation. Generally speaking, idea programs encourage employees to come up with conceptual solutions that the company then takes into careful consideration. If the idea is accepted by the company, the employee is rewarded accordingly. This program and similar ones often result in innovations in the production process. This is because employees are on site to assess the production process itself, point out its shortcomings and suggest improvements.

Generally speaking, highly innovative companies have a corporate culture that promotes and values: orientation to ideas outside the company, enabling communication, openness to new ideas, the ability to question existing ingrained ideas, tolerance for failure, and constant evaluation and consideration (Smith, 2015). Speaking of ideas outside the company, we consider the company's connections with external actors (e.g. customers, competitors, professional groups, scientific sources, etc.) as well as its willingness to respond to signals and suggestions from these sources. This type of external orientation is in conflict with narrow-minded organizations in which the prevailing opinion is that nothing "is invented here". A culture that enables communication is usually one in which there are strong side links of the company, and in which communication takes place continuously and without difficulties. In this way, people with different points of view are continuously in a state of questioning their own views, which enables the transfer of knowledge and information. It is important that there is a sense of freedom where individuals have the opportunity to experiment and try different things. This usually means people who are willing to constantly come up with new and different ideas, and who are characterized by the ability to accept a variety of ideas. Questioning the existing idea comes down to the fact that things must not be taken for granted. Namely, the need for constant review of the status quo is necessary. Assumptions are constantly being questioned and employees are actively looking for new and better ways to do their job. Since innovation is not always successful, a culture of acceptance and tolerance of failure is of great importance for encouraging other innovations. Failure in particular must be devoid of blaming, and the most important fact is to find out exactly what went wrong. In the end, constant considerations deserve attention, where individuals do not go to reckless courts too quickly, but instead look for evidence and then carefully re-examine it.

Promoting these features, however, does not guarantee successful innovations. Corporate culture is very important and it is an indisputable fact that some conditions are more favorable for innovation breakthroughs compared to others. In organizations where the corporate culture is such that employees are largely involved in innovation, they are less likely to encounter many insurmountable obstacles along the way.

If corporate culture enables and stimulates innovation and can be determined in terms of management, then it requires adequate leadership. When leadership comes from the highest instances in the company, it potentially has a strong impact on the development of a corporate culture that is receptive to innovation. Companies that have a reputation for innovative organizations cultivate the nature of the corporate climate, or culture, and the role that culture plays in promoting and stimulating innovative activities. However, this is not an easy task. The unwritten nature of a company's culture makes it difficult to analyze and less susceptible to change. Some companies have survived and developed thanks to the creation of very diverse value systems that are an integral part of company policy open to innovation.

5. CONTROL OF PROCESS AND PRODUCT INNOVATION

Planning and control techniques used in the management of innovation projects are closely related activities. The development plan, for example, serves both as an aid to planning and as a way of controlling and structuring the flow of new ideas and discoveries.

Similarly, a phased planning process supports both planning and control. However, it differs from the formal project development plan because its primary function is to establish a degree of control over the entire innovation process, as well as over the multidisciplinary teams employed within it.

Innovation projects are structured by being divided into precisely defined phases. After each phase comes the point of assessment, i.e. evaluation. These phases are integrated into a systematic process designed to transfer the idea of product innovation from idea to marketing. The phased innovation process is designed to remove potentially unsuccessful innovations like a filter at the very beginning of the development process before embarking on the use of more extensive resources. Rejection takes place at the end of each phase where there are three choices - continue, wait or suspend (Smith, 2015).

In addition to the importance of making decisions at the end of each phase, it is equally important who makes those decisions. Here is one of the main characteristics of the innovation process in stages. These decisions are made by representatives of all functional disciplines in the process. This essentially means that the project cannot be continued if the technical and commercial departments do not agree in making decisions. This part of the process is essential. It not only serves to prevent costly modifications and changes in the later phases of the project, but also ensures the active involvement of all those involved in the business, while avoiding the so-called a "silo" mentality where all decisions are made in isolation and not on an integrated basis.

In this way, the control provided by the project in phases not only removes insufficiently strong and sustainable projects, but the very structured nature of the process ensures a clear overall overview and control of the project so as not to omit some vital activities. These activities can be described as "initial", and we link them to the early stages of the project, such as a preliminary market assessment. Another dimension of the discipline provided by the project in stages is the degree of control over the people involved in the whole project. Although this process is not without its weaknesses,it undoubtedly means a great contribution to an integrated approach to new product development, especially when it comes to high-risk projects where the degree of uncertainty can make decision-making very difficult.

6. CONCLUSION

The emergence of innovation almost always implies a certain degree of creativity. Understandably, management can never make people creative, but it can help create conditions conducive to creativity through proper leadership and organization. Innovation management must take into account the fact that innovation does not come from inherent individual genius, but from perceiving the world in an unusual way.

Like any other form of management, innovation management consists of the activities of planning, organizing, coordinating (leading) and controlling. Planning means looking to the future and making decisions that will enable the achievement of a certain goal. Organizing as a phase of innovation management involves choosing an internal structure or configuration that takes care of the creativity and flexibility necessary for the smooth running of innovation processes. The phase of coordination (leadership) refers to setting guidelines for employees whose task is the implementation of innovation activities. The fact that innovation is associated with a high degree of uncertainty, is one of the key reasons that makes control necessary. The high degree of uncertainty, together with the multidisciplinary nature of the teams in charge of development and the nature of the innovations themselves, means that control is much needed to create an overview of the success of an innovation project.

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