Properties of innovation management and innovative solutions portfolio planning

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Abstract: *Innovation management is the process of making decisions in an ever-changing environment, constantly studying innovative programmes and reviewing them both in general and in parts. An innovation leader recognizes that his or her activities are surrounded by uncertainties, both internal and external. He is never immune to the emergence of unforeseen technical problems, the need to reallocate resources, new assessments of market opportunities. The system for planning and managing innovative technology in management must be sufficiently flexible. The most comprehensive and flexible innovation management systems are primarily focused on the development of prospective products as well as the transformation of innovation management functions.*
Keywords*: INNOVATION MANAGEMENT, PLANNING, FLEXIBLE INNOVATION MANAGEMENT, COMPANY'S ACTIVITIES*

1. Introduction

Innovation management is the process of making decisions in an ever-changing environment, constantly studying innovative programmes and reviewing them both in general and in parts. An innovation leader recognizes that his or her activities are surrounded by uncertainties, both internal and external. He is never immune to the emergence of unforeseen technical problems, the need to reallocate resources, new assessments of market opportunities. The system for planning and managing innovative technology in management must be sufficiently flexible.

In the context of innovation management, a project must start with a clearly defined objective, which, like the end result, depends on the needs of the market [1, 3]. First and foremost, it is the relevant segment and its characteristics, represented by size, acceptable price, technical efficiency requirements and product take-up time. Products should be defined by their efficiency, price and date of appearance. These characteristics are interrelated and therefore some iterative process is needed to refine the purpose.

With particular care it is necessary to consider what technical level of product is required for the particular market segment likely. Too many parameters can increase research and development. (R&D) and production costs as well as development time and thus reduce profitability.

The initial definition of a project should focus on the market need and its satisfaction, not on decisions about the type of final product. The definition of the project should be short, not limiting the freedom of employees to find new solutions. At the same time, formulate clear objectives, standards for technical, cost criteria and development time. The innovation portfolio can be filled with a variety of projects: from large to small, near completion and in the early stages of development.

Limited resources will need to be allocated to each project. Some projects will be terminated during implementation, their components will vary in number and resource requirements, etc. As a consequence, the process of drawing up plans and modifying R&D plans is continuous. The number of projects included in the portfolio is determined by two factors: the size of the projects and the total R&D budget. The structure of the portfolio is determined by its manageability by management and the corporate R&D policy.

As the number of projects increases, the likelihood of at least some of them being completed effectively increases. Moreover, it is easier to 'pair' small projects with each other in the R&D process using available private resources (e.g. pilot production facilities). However, small projects usually have a moderate profit potential, resulting in products with limited market prospects. This is hardly equivalent to a company's marketing policy.

The ultimate success of any project is as much determined by technical and market strengths as it is by the quality of project management. Good governance is a critical resource for most companies and should not be scattered across many projects. Indeed, these are most often divided into phases, and the art of management lies in staggering their launches over time to ensure the effectiveness of the entire portfolio.

Innovation Portfolio Management (IPM) is an amalgamation of activities that facilitate every company to select, build, and market a new flow of initiatives. The kind of flow that fuels business's short term and long-term goals. Innovation portfolio management is a tool to transform strategic objectives into innovation activities that are project-based. On the basis of risk profile, an innovation portfolio gives a framework to convert roughly produced ideas into real investment opportunities [7, 8].

Moreover, the innovation portfolio is a time management tool too. It helps in assessing the time required to complete to start a new initiative [2, 8]. Also, it can be used to reflect on potential opportunities that can be judiciously used as leverage in technologies, markets, and products or services. Portfolio management is also the perfect way to manage the success of innovation. The success of innovation is most of the time measured by dividing the total number of successfully implemented innovation projects BY the total amount of started projects. The main goal of portfolio management is to measure and optimize the performance of innovation projects [7].

2. Managing innovation in personnel management

Qualified staff is a major resource for any company or organisation. The constant search for innovations that will enable qualified assessment of the effectiveness of activities and personnel management is the basis for successful business development.

A personnel management system is created at the moment when any company starts to operate, if it plans to become successful and has the necessary qualities that are inherent in any innovation. Personnel management is an administrative function within an organization that oversees the hiring, organization and support of employee positions. A branch of human resources, personnel management focuses on recruiting the right individuals to fit a position and supporting those already working for the company. This area also functions as a tool for evaluating the hiring process and gaining insight into employee satisfaction. Personnel management professionals work to provide the resources and tools staff members need to thrive in their work environment every day [7, 8]. Types of personnel management:

- Strategic.
- Tactical.
- Operational.

Personnel management can be broken down into several elements as listed below:

1. Job analysis: This function of personnel management determines how a position fits into the overall company framework. It's a measure of the role and not the employee.
2. Strategic personnel planning: Also called strategic workforce planning, this element involves hiring the most qualified individual to fit a necessary role in an organization. It ensures that hiring processes are consistent, fair and effective.
3. Performance appraisals: Identifying how employees are evaluated is the function of this element of personnel management. Using this element, professionals in personnel management decide how often employees are

assessed and the methods used to rate employee performance.

4. Benefit coordination: Determining the type of benefits employees receive and planning for their distribution is an essential part of personnel management. This element also involves choosing plans such as personal health care benefits.
5. Continuing education: To keep staff involved in growing their career and investing in their workplace, personnel management oversees employee development through continuing education. This may include offering seminars, learning lunches or arranging for staff to attend professional conferences.
6. Pay and salary distribution: Another part of the operational activities of personnel management staff is to ensure employee payroll functions correctly. It may also involve setting pay scales or job levels.
7. Attendance and leave: Managing personnel also means overseeing time off for sick and personal days. This function also involves leaves of absence or short-term disability.

The emergence and development of a system goes through all phases of the innovation process, which corresponds to key economic laws. All transformations are aimed at increasing the efficiency of employees and thus the success of the company as a whole.

A study of the HRM system itself as an innovation should be conducted with a focus on these criteria [1, 4]:

1. Personnel development and career management: curricula are designed in conditions of mismatch between qualification requirements and actual competencies of employees, therefore individualization of the learning process is necessary in order to obtain the most effective result at the minimum cost.
2. Building an incentive system: traditional incentive factor- It is the employee's salary which is determined by the value of a particular job. In addition to this, a rewards system is also prevalent, which involves a variable wage component that is determined by each employee's monthly contribution to the work of the department and the organization as a whole.
3. Shaping corporate culture: if every employee is aware of the core values and mission of the company, it has a positive impact on the effectiveness of his work and the process of transferring these values is the corporate culture.
4. Developing a competency model: This innovation is intended to regulate the multifunctionality of a multitude of workplaces and competently build a technological chain that avoids conflicts and focuses on quality and efficiency of work.
5. Computer technology in management: software products not only allow to keep records of personnel according to various parameters, but also to generate the necessary reporting documents, which can be easily transferred in electronic form.

At the heart of innovative approaches to personnel management is the consideration of the characteristics of human resources:

- Humans are intelligent beings who respond to external influences emotionally and meaningfully rather than automatically, so the interaction between the organisation and the employee is reciprocal.
- People strive for continuous improvement and development, thus improving the quality of each enterprise.
- On average, a person's work activity lasts from 30 to 50 years, which means that the relationship between employees and the company can be characterized as long-term.
- People choose their work intelligently, they are guided by certain goals and in return they expect their ideas to be realised. The further course of cooperation depends on how satisfied the employee is with the interaction with the organization and vice versa.

Innovation or innovation is the result of creative activity aimed at the development, creation, distribution and profitable use of new types of competitive products, modern technologies, the introduction of new organizational forms and management methods. Innovation is characterised by the efficiency of investment in the development of the economy, providing cost savings or creating the conditions for such savings.

The role of innovation continues to grow. In most industrialised countries, the number of people involved in scientific development, research and experimental processes doubles approximately every ten years. A decisive factor in scientific and technological progress is the high rate of technical renewal of production, the introduction of high-efficiency products and technologies. The most important feature of innovation is therefore the novelty of consumer characteristics, with technical novelty playing a secondary role.

The methodology for systematically describing innovation in a market economy is based on international standards. A group of national experts on science and technology indicators has been set up to coordinate the collection, processing and analysis of information on science and innovation within the Organisation for Economic Co-operation and Development (OECD). Innovation management is a system for managing innovation, the innovation process and the economic relationships that arise from this management.

Innovation management is based on the following basic points: the purposeful search for an idea that serves as the basis of this innovation; the organization of the innovation process to create this innovation; this involves carrying out an organizational and technical complex of work to turn the idea into an innovation; the process of promoting and introducing the innovation to the market, which requires a creative approach and active action of salespeople. The foresight function in innovation management covers the long-term development of changes in the technical, technological and economic state of the management object as a whole and its individual parts. The result of forecasting is a prognosis, i.e. an assumption about the possible direction of the respective changes. The hallmark of innovation forecasting is the alternative nature of the technical and economic indicators included in the process of innovation creation. Alternativeness implies the need to choose one solution among mutually exclusive options.

3. The use of innovation management in the company's activities

The need for innovative enterprise development places new demands on the organisation, content and methods of management activities. The organisation of innovation management in an enterprise is a system of measures aimed at rational integration of all its elements into one innovation management process. The innovation management organisation combines the above elements of the innovation management process into a single system.

Table 1. *The process of innovation management organisation in the enterprise*

Stage 1	Defining the goal of innovation management.
Stage 2	Choosing an innovation management strategy.
Stage 3	Definition of innovation management techniques.

Stage 4	Developing an innovation management programme.
Stage 5	Organisation of work on the implementation of the programme.
Stage 6	Control over the implementation of the planned programme.
Stage 7	Analysis and evaluation of the effectiveness of innovation management techniques.

The organisation of innovation management is already laid in the creation and implementation of the innovation, i.e. in the innovation process itself. The innovation process serves as the basis of the force on which the effectiveness of the use of innovation management techniques will depend. The important stages in the organization of innovation management are the development of an innovation management program and the organization of the work to carry out the planned work. An innovation management programme is a set of measures agreed in terms of timing, outcomes and financial support to achieve a set objective.

An integral part of innovation management is the organisation of work on the implementation of the planned action programme, i.e. the determination of certain types of activities, the volume and sources of funding for this work, specific implementers, deadlines, etc.

Innovative economy is the economy of a society based on knowledge, innovation, on benevolent perception of new ideas, new machines, systems and technologies, on readiness for their practical implementation in various spheres of human activity. In the innovation economy, under the influence of scientific and technological knowledge, the traditional spheres of material production are transformed and radically change their technological base, because production that does not rely on new knowledge and innovation proves unviable in the innovation economy. The most significant features of the innovation economy include [52]:

- Any individual, group of persons, enterprise anywhere in the country and at any time can obtain any necessary information about new or known knowledge, innovations on the basis of automated access and telecommunication systems.
- Modern information technology and computer systems are produced, shaped and made available to every individual, group of persons and organizations, thus ensuring the implementation of the previous paragraph.
- Infrastructures are in place to ensure the creation of national information resources in the quantities needed to support the ever-accelerating pace of scientific and technological progress and innovative development;
- A process of accelerated automation and computerisation of all spheres and sectors of production and management is underway; radical changes in social structures are taking place, resulting in the expansion and activation of innovative activity in various fields of human activity.

Given that innovations are currently a necessary factor for increasing the competitiveness of a company, it is necessary to focus on measuring and evaluating their performance. Measuring innovation performance covers a wide range of entities, from simple innovation projects to the entire economy. Different existing levels and categories of innovation activities to be measured must be defined and partially extended to all significant levels of performance measurement.

4. Conclusion

Each proposal for an innovation plan should be based on a selected variant of a comprehensive business strategy, respecting the strategy of cost-effectiveness, based on scientific, technical and economic information. Innovation is crucial to a company's business strategy. They make it possible to win new markets and market segments, to reduce production costs, which creates the prerequisite for lowering prices and increasing market share.

Innovations in the company are largely based on developmental changes in production and on the market, they lead to the expansion of the production process. The term innovation can be understood as the introduction of "something new" into the current activities of the company. These are new knowledge, technologies, products, but also their various improvements and combinations.

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