

**International Economics**

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**MANAGER'S INNOVATIVENESS  
AS THE BASIS FOR ENTERPRISE  
DEVELOPMENT**

**Abstract**

The article focuses on the phenomenon of innovation, in particular innovative activity of managers, as well as the impact innovations have on the entity in which they are implemented. Theoretically, corporate innovations are an issue of organization and management, while practically, they have significant importance for modern enterprise operation. In recent years, innovation has been among the most popular topics in the scientific discussions, so the scientific literature regarding this concept has expanded accordingly. Suggestions offered in this paper correspond to such a trend, as they attempt to answer the question posed by the author using a research hypothesis based on critical analysis and synthesis of the existing literature and provide logical conclusions.

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### **Problem Statement**

It is clear beyond any shadow of a doubt that we must deepen the debate on the practical importance of innovation in the development of the concept of knowledge-based economy. Creative use of knowledge is always the basis of innovation, while elevation of their existing level brings economic benefits for both businesses and economy. Therefore, managerial innovativeness should be considered not only in terms of internal changes occurring in the organization, but also in the context of the influence from external factors that always accompany enterprise operation in a competitive economy based on knowledge (Michalski, 2014).

The article focuses on the phenomenon of innovation, in particular innovative activity of managers, as well as the impact innovations have on the entity in which they are implemented. Theoretically, corporate innovations are an issue of organization and management, while practically, they have significant importance for modern enterprise operation. In recent years, innovation has been among the most popular topics in the scientific discussions, so the scientific literature regarding this concept has expanded accordingly. Suggestions offered in this paper correspond to such a trend, as they attempt to answer the question posed by the author using a research hypothesis based on critical analysis and synthesis of the existing literature and provide logical conclusions.

The paper aims to determine the essence of innovation and enterprise innovativeness, as well as identify the impact that innovation activities of the manager have on the growth of value and development of the organization.

The research problem adopted in the article can be represented as follows: «What is the essence of innovation and innovativeness, and how does the manager's innovation activity affect the value of the enterprise?»

The article also accepts the working hypothesis of innovation being a key indicator and the basis for the company's growth, whose development largely depends on the personal activities of the manager. Therefore, innovative activity of a manager is an important internal factor in the development of the company in the highly competitive market of the 21st century.

## **Concepts and Components of Innovation. Innovativeness in Enterprises**

In general, we can say that innovation is a process that entails the transformation of existing potential opportunities into new ideas, as well as their introduction into the operation of an organization or an individual's activities. The concept of innovation is associated with the wider use of new knowledge in the process of creating economic benefits. Innovations are, in fact, changes deliberately implemented by people, which are supposed to bring concrete results to the entity that implements them, e.g., economic benefits. They testify to the company's progress and its focus on continuous development under the influence of competitive forces in the market. Therefore, the key feature of innovation is novelty, i.e., the introduction of a new quality into the operation of this organization. Synonymous terms here – «creativity», «originality», «innovation», «beneficial change», or «anticipation of market trends» (Furmanek, 2017). However, although in the material sense innovation is the introduction of a new economic good to the market or the improvement of an existing good, in functional terms innovation is a certain «type of activity, specific category of activity» (Furmanek, 2017), implemented in the overall innovation of the organization.

At the same time, it should be noted that the very term «innovation» is sometimes misused, which leads to the conclusion that innovation can be divided into real and imaginary (Jolly, 2006). This research on this issue will be limited to real innovations that directly affect the growth of the company's value. According to Peter Drucker, a well-known economist and management theorist, real innovation is dictated by certain key determinants. These include, first of all, an organized, rational and systematic desire for change, the use of new forms of sales, expansion or promotion of the organization or the creation of a new market for goods offered to customers. Other determinants of innovation include the intro-

duction of a previously unknown method of producing a certain economic good or a significant and effective modification of an existing method, or the introduction of new ways of organizing internal processes in the enterprise with consequent economic benefits. Another component of innovation worth attention is the straightforward invention of new or improvement of existing goods or services and their widespread introduction into production processes (Drucker, 1992).

A similar position was put forward by the Austrian economist Joseph Schumpeter, who promoted the concept of innovation in management. According to him, innovation is the introduction of a new method of production or a new product (or previously unknown varieties of this product), or a significant modification of production processes or products, performed so that the company can more effectively meet customer needs and more effectively increase its value. Innovation can also involve the acquisition of a new source of raw materials, and a key element in this case is wider organizational change with a significant impact on the company's location. Thanks to the contribution of Schumpeter to the literature, we have the opportunity to test the hypothesis of economic efficiency of innovation. Equally important, Schumpeter noted that innovation is always linked to the need for concrete change, and is often met with resistance from some members of the organization (Musiał, 2018).

The following types of innovations should be distinguished in the basic typology (Stawiarska, 2014):

- product innovations – they are associated with the creation of new products or modification of existing ones, and therefore apply to both tangible and intangible manifestations of the organization's operation;
- process innovations – they relate to changes in the processes of production, sales, distribution and customer service. Sometimes there are also marketing innovations that relate to favourable changes in the process of market service, the use of the Internet in marketing activities of the company, or execution of surveys on customer needs and satisfaction, and implementation of the results of these studies;
- organizational innovations – they relate to changes in the organizational structure and mode of operation of the enterprise;
- technical and technological innovations – related to the development or implementation of devices and techniques used to improve the efficiency of the company, especially in the fields of production;
- financial innovations – relate to new ways of raising funds for long-term development of the organization.

Interpreting the above classification, we can give a few selected examples of innovations to better illustrate the content of this section. In practice, it is possible to see the positive impact of each of the above types of innovations on the

company's performance. For example, product innovation is a source of competitive advantage and increase in the company's market share compared to its competitors, e.g., electric cars have recently been rapidly gaining popularity in the automotive industry. Process innovations, on the other hand, concern the introduction of new ways to improve production. They are used simultaneously with technical and technological innovations, such as advanced ICTs or computer control systems. The transition to customer service via the Internet and Internet marketing due to the need to reduce the corresponding costs are examples of marketing innovation. Organizational innovations lead to more flexible management, influencing the benefits from changes in the organizational structure of the company. Finally, the use of so-called crowdfunding in the implementation of a business project is a financial innovation.

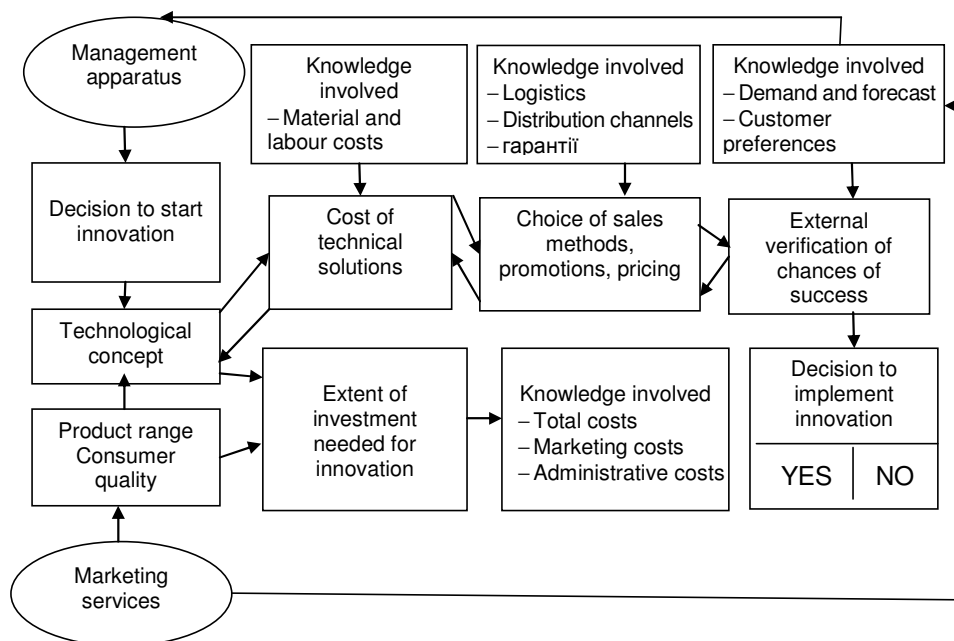
The literature on this topic also contains different classifications of key sources of innovation. Namely, it is noted that an enterprise can create innovations as a result of its own market research or by implementing innovative ideas developed by other enterprises (so-called secondary innovations). Another source of innovation is the generally accepted process of streamlining activities, both in terms of products and processes, embedded in the economics of the entity. Finally, some innovations result from the company's response to certain unexpected events triggered from within it or its organizational environment (Świtalski, 2005).

Another important element in the theory of innovation is the indication that the innovation of the enterprise itself is not something accidental or incidental, but a set of innovative solutions. In other words, the innovation process should be considered a determining factor in the development of enterprises in the 21st century. The innovation process can be defined as «the sequence of actions over time that are necessary for the implementation of a particular innovation concept and its transformation into a new state of affairs (...) This includes both tangible and intangible changes in the elements of the enterprise. Thus, the main event in the process is the introduction of a new product or solution into practice» (Turek et al., 2011). In view of this definition, Figure 1 shows a simplified diagram of the innovation process in an enterprise.

Interpreting Figure 1, it may seem that the innovation process is an extremely complex aspect of managing and controlling the changes taking place in a modern organization. The board, managers and other members of the management staff are responsible for the course of this process. The manager decides when to start and where to direct the work on an innovative solution; they are at the same time responsible for the consequences arising in connection with such work. This process requires a certain amount of knowledge, which can be used by both the manager and employees responsible for implementing changes in the organization. Other key aspects under consideration include costing, logistics, forecasts of supply and demand, and changing customer preferences that will be affected by the introduction of an innovative solution to a particular market. The end result leads to a decision on whether to implement the innovation, which sometimes may end in a refusal to introduce such a change in the company.

Figure 1

**Simplified diagram of the innovation process in an enterprise**



Source: authors' elaboration based on Świtalski (2005).

Innovative activity is one of the most profitable forms of modern enterprise performance. The literature highlights the close connection between the company's innovation and its competitive position in the market: the persistent desire to implement innovative changes leads to improved adaptation to the growing demands of the competitive market in the 21st century (Furmanek, 2017). At the same time, emphasis is placed on the relationship between innovation and stimulating economic development and growth on a macroeconomic scale. In addition, the significant impact of the company's innovations on their ability to meet the needs of consumers and other stakeholders is frequently pointed out. It is also argued that the introduction of innovative changes leads to the development of new qualities which increase the value of the enterprise in the long run (Działak, 2009).

According to Eva Radomska, an economic entity can be considered an innovative enterprise when certain peculiarities appear in its operation. Among the

typical features of an innovative enterprise, the author named the following (Radomska, 2015):

- careful monitoring of changes taking place within and around the organization by management;
- management's openness to new ideas, decisions, products or customer needs;
- willingness to conduct research and development as resources owned by the company allow;
- allocation of fixed financial costs for innovation;
- involvement of clients in determining the product range and market supply;
- use of long-term perspective in forecasting and establishing directions for the company's development;
- study and application of rules of protection of industrial and intellectual property;
- continuous investment in the development of employees as actors of innovative change;
- openness to cooperation with other stakeholders in the environment;
- introduction of innovation activities into the organizational culture and popularization of this culture among employees;
- emergence of new products or technologies in production;
- use of an effective system of incentives that facilitates the involvement of staff in the innovation processes;
- availability of technical and technological means for the acquisition, accumulation, processing and exchange of knowledge in the company, i.e., the availability of effective tools for the economic use of information.

It should be noted that the presented theory of enterprise innovation includes a variety of links that are important in practice for the development of the organization. The listed features of innovation are the most typical ones, so there is certainly a much larger list of other functions. In the described process, a certain pro-innovative attitude of the organization is important, which forms as a result of certain behaviour on the part of management and employees. The growing demands of the market itself are no less important in this case, because they in some way reflect the pressure to innovate today's companies face. The innovativeness of enterprises also depends on many other factors, which are considered in more detail in the next section.

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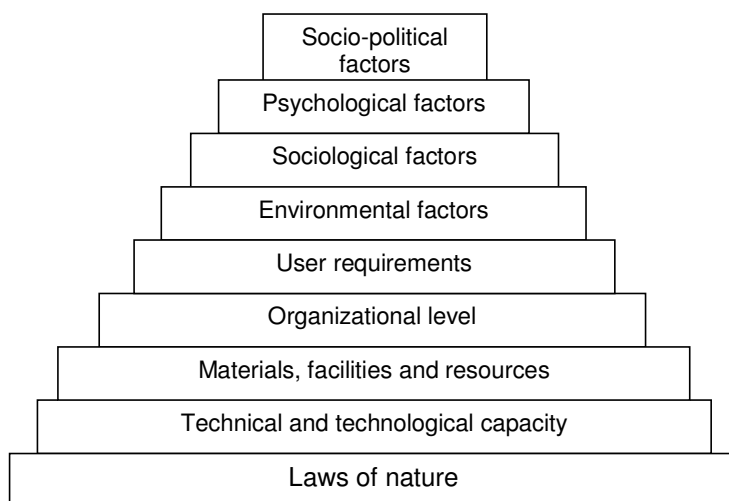
## **Factors of the Innovation Processes at the Enterprise Level**

Undoubtedly, the creation and implementation of innovations in the organization is determined by a number of different factors. The literature presents, for example, the so-called «pyramid» of factors that determine the form of the innovation process. It is shown in Figure 2.

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*Figure 2*

### **Pyramid of factors that determine the form of innovations**



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Analysing Figure 2, it should be noted that each organization has different determinants of the innovation process. The presented classification takes into account both internal and external factors that determine the current and potential innovativeness of the company. The pyramid is based on the laws of nature, as they have a similar effect regardless of the size, type of company or industry in which it operates. Further factors are increasingly narrow in terms of their impact on the position of enterprises seeking to innovate.



The available scientific and technical knowledge determines the capabilities of searching for practical methods of making new profitable decisions for the enterprise. Resources and facilities determine access to specific raw materials, tools, devices or technologies useful for the implementation of innovative changes. The organizational level of the company at which the innovation should be developed and implemented is of equal importance. The specifics of the innovation process may differ slightly in small, medium and large enterprises. Another factor pertains to the requirements of users, i.e., all stakeholders of the company, both internal (managers and employees) and external (customers, investors, etc.).

When creating and implementing innovations, the aspect of value and future profits from innovations, i.e., generally accepted economic factors, cannot be ignored. The extent of scientific knowledge of the manager is one of the main factors determining the overall level of innovation. In practice, scientific knowledge creates opportunities for optimal management decisions. For example, the possibilities of innovative development are significantly expanded through the use of forecasting and modelling, which give a significant advantage in the form of cost savings.

For instance, the ZywSpol animal husbandry enterprise used mathematical modelling of animal nutrition and maintenance, which significantly improved the enterprise's activities and optimized its material costs. The manager used the model to calculate the optimal diets for feeding and keeping certain groups of animals. His hypothesis provided for the possibility of optimizing the set of food products for livestock with the lowest price.

The following symbols have been introduced for calculations:

$i$  – type of nutrient

$n$  – number of nutrient types

$b_i$  – the required amount of the  $i$ -th nutrient for animals

$b_{ih}$  – normative content of the  $i$ -th nutrient per unit of  $h$ -th type of feed

$c_h$  – unit price of feed of  $h$ -th type

$a_h b_h$  – lower and upper limits on the use of the  $h$ -th type of feed

$x_h$  – the amount of feed of the  $h$ -th type

Managers are tasked to identify the  $x_h$  that combine the minimum cost of feed acceptable levels of nutrients in the feed  $a_h \leq x_h \leq b_h$  ( $h = 1, 2, \dots, H$ )

$$\sum_{h=1}^H c_h x_h \rightarrow \min$$

$$\sum_{h=1}^H b_{th} x_h > b_t$$

The obtained model was formed as a linear programming problem, which is solved through the use of the simplex method – it was necessary to determine the optimal diet for feeding animals weighing 30-40 kg with an average daily intake of 300-400 g. Barley, peas, hay flour, and fish meal were used to feed the animals.

The nutrition contents per 1 kg of feed are given in table. 1.

Table 1

**Feed usage data**

Name	Need	Barley	Peas	Hay flour	Fish meal
Unit of feed	1,6	1,2	1,25	0,76	0,8
Digestible protein	200	80	250	200	530
Calcium, g	12	1,2	1,5	13,7	67
Phosphorus, g	9	3,3	4,0	1,7	32
Carotene, m	12	1,6	2,5	101,8	0

Prices for 1 kg: barley – 1.01 zlotys, peas – 1.22 zlotys, hay flour – 2.02 zlotys, fish meal – 4.22 zlotys. The limiting factors are the redistribution of costs: barley 0.2-0.5 kg, peas 0.2-0.6 kg, hay flour – 0.3-0.8 kg, fish meal 0.2-0.6 kg.

To solve this problem, we denote  $x_1$  – as the amount of barley,  $x_2$  – peas,  $x_3$  – hay flour, and  $x_4$  – fish meal in the diet of animals. Then the model is as follows:

$$1,01x_1 + 1,22x_2 + 2,02x_3 + 4,22x_4 \rightarrow \min$$

$$1,2x_1 + 1,25x_2 + 0,76x_3 + 0,8x_4 > 1,6$$

$$80x_1 + 250x_2 + 20x_3 + 530x_4 > 200$$

$$1,2x_1 + 1,5x_2 + 13,7x_3 + 67x_4 > 12$$

$$3,3x_1 + 4x_2 + 1,7x_3 + 32x_4 > 9$$

$$1,6x_1 + 2,5x_2 + 101,8x_3 > 12$$

$$0,2 \leq x_1 \leq 0,5; \quad 0,2 \leq x_2 \leq 0,6;$$

$$0,3 \leq x_3 \leq 0,8; \quad 0,2 \leq x_4 \leq 0,6.$$

To prove our hypothesis, we will translate the current data needed to solve the simplex method:

$$\left[ \begin{array}{cccccccccccc} 1 & 306 & 3 & 1 & 372 & 17111 & 949 & 5141 & 3 & 181 & 69 & 1 & 2 \\ 2 & 625 & 10 & 5 & 0 & 5 & 2500 & 625 & 250 & 10 & 0 & 625 & 625 & 0 & 2 & 0 & 5 \end{array} \right]$$

The resulting target function will look like this:

$$F: \frac{101}{100} \cdot \frac{1}{2} + \frac{81}{30} \cdot \frac{306}{625} + \frac{101}{20} \cdot \frac{3}{10} + \frac{211}{20} \cdot \frac{1}{5} + 0 \cdot 0 + 0 \cdot \frac{372}{5} + 0 \cdot \frac{17111}{2500} + 0 \cdot \frac{949}{625} + 0 \cdot \frac{5141}{250} + 0 \cdot \frac{181}{625} + 0 \cdot \frac{69}{625} + 0 \cdot \frac{1}{2} + 0 \cdot 0 + 0 \cdot \frac{181}{625} + 0 \cdot \frac{69}{625} + 0 \cdot 0 + 0 \cdot \frac{1}{2} + 0 \cdot 0 + 0 \cdot \frac{2}{5} = \frac{319039}{125000}$$

When checking for optimality, we found that there are no positive deltas (table 2). Therefore, the solution for the simple programming problem using the simplex method has an optimal form.

$$x_1 = \frac{1}{2}, x_2 = \frac{306}{625}, x_3 = \frac{3}{10}, x_4 = \frac{1}{5}, F = \frac{319039}{125000}$$

Thus, we have obtained the following solution:

$$x_1 = 0,5, x_2 = 0,49, x_3 = 0,3, x_4 = 0,2,$$

$$F=2,55$$

Therefore, the optimal ratio of feed for animals is as follows: barley – 0.5, peas – 0.49, hay flour – 0.3, fish meal – 0.2.

Table 2

The final simplex table

C	$\frac{101}{100}$	$\frac{61}{50}$	$\frac{101}{50}$	$\frac{211}{50}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ba- sis	$x_1$	$x_2$	$x_3$	$x_4$	$x_5$	$x_6$	$x_7$	$x_8$	$x_9$	$x_{10}$	$x_{11}$	$x_{12}$	$x_{13}$	$x_{14}$	$x_{15}$	$x_{16}$	$x_{17}$	b	Q
$x_1$	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	$\frac{1}{2}$	-
$x_4$	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	-1	0	$\frac{1}{5}$	-
$x_9$	0	0	0	0	-2	0	0	0	1	0	$-\frac{4}{5}$	0	0	$-\frac{250}{25}$	0	$\frac{8}{5}$	0	$\frac{5141}{250}$	$\frac{5193}{12534}$
$x_7$	0	0	0	0	$-\frac{6}{5}$	0	1	0	0	0	$-\frac{6}{25}$	0	0	$-\frac{319}{250}$	0	$-\frac{165}{25}$	0	$\frac{17111}{2500}$	$\frac{9831}{15988}$
$x_3$	0	0	1	0	0	0	0	0	0	0	0	0	0	-1	0	0	0	$\frac{3}{10}$	$\frac{59}{125}$
$x_{10}$	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	$\frac{3}{10}$	-
$x_2$	0	1	0	0	$-\frac{4}{5}$	0	0	0	0	0	$-\frac{24}{25}$	0	0	$\frac{76}{125}$	0	$\frac{16}{25}$	0	$\frac{306}{625}$	-
$x_{15}$	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	$\frac{1}{2}$	-
$x_{13}$	0	0	0	0	$\frac{4}{5}$	0	0	0	0	0	$\frac{24}{25}$	0	1	$-\frac{76}{125}$	0	$-\frac{16}{25}$	0	$\frac{69}{625}$	$\frac{2}{5}$
$x_{12}$	0	0	0	0	$-\frac{4}{5}$	0	0	0	0	0	$-\frac{24}{25}$	1	0	$\frac{76}{125}$	0	$\frac{16}{25}$	0	$\frac{181}{625}$	$\frac{181}{625}$
$x_6$	0	0	0	0	-200	1	0	0	0	0	-160	0	0	132	0	-370	0	$\frac{372}{5}$	-
$x_8$	0	0	0	0	$-\frac{16}{5}$	0	0	1	0	0	$-\frac{27}{50}$	0	0	$\frac{183}{250}$	0	$-\frac{736}{25}$	0	$\frac{949}{625}$	-
$x_{17}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	$\frac{2}{5}$	-
$\Delta$	0	0	0	0	$-\frac{122}{125}$	0	0	0	0	0	$-\frac{403}{250}$	0	0	$-\frac{798}{625}$	0	$-\frac{429}{125}$	0	$\frac{31903}{12500}$	

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## Conclusions

Innovativeness, innovation and management are closely related concepts. The influence of management decisions is reflected in the broader innovation process. The issues raised in this study are important as many organizations in the 21st century are under particular pressure to implement innovative solutions. Focus on innovation is a good standard when it comes to enterprise development (microeconomic approach), as well as a favourable change in terms of national economic development (macroeconomic approach). The conducted analysis makes it possible to formulate several conclusions which address the declared aim and purpose of research.

First, innovation should be recognized as an important element in implementing change in modern organizations. At the same time, there is a noticeable diversification of ways, i.e., areas of innovation in enterprises. The driving force of any innovation is the wider implementation of organizational change. There can be no innovation without the introduction of certain changes.

Second, innovativeness is one of the hallmarks of a company that seeks to increase its value in the long run. It is also a function desired by management and employees, and its emergence has many benefits for the organization. The company's innovativeness is determined by a number of internal and external factors.

Third, the manager plays a special role in the process of creating and implementing innovations in the enterprise. There is a strong connection between the quality of management and the innovative potential of a modern enterprise. The special role of the manager is relevant both in the initial stages of implementation and in monitoring the condition of the company after introduction of innovations. An innovative attitude requires the employment of a person with appropriate traits and competencies.

Fourth, the concept of fifth-level leadership is a relatively new, useful model that explains the influence of the manager on the creation and implementation of innovation in the company in the 21st century. The basis of this concept is the recognition of humility and determination in action as the main determinants of the work of the manager. Level 5 leadership is a model that competes with the traditional directive or autocratic approach of management. Moreover, the above arguments allow us to fully confirm the working hypothesis, according to which innovation is a key determinant of the company's growth. The development of such an organization depends largely on the personal actions of the manager. The innovative activity of the manager is an important internal factor in the development of the company in the highly competitive market of the 21st century. The relationship between management, innovation, and the company's in-

novativeness is multifaceted and important for both the business entity and its environment. Moreover, without proper management (manager) in practice it is difficult for the company to achieve satisfactory results in the process of innovation. A manager who implements fifth-level leadership is a decisive response to the growing demands of the market and the needs of organizations themselves.

Fifth, the extent of scientific knowledge of the manager is one of the main factors determining the overall level of innovation. In practice, scientific knowledge creates opportunities for optimal management decisions. Opportunities for innovative development are significantly expanded through the use of forecasting and modelling, which give a significant advantage by ensuring cost savings.

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