

## IMPROVING THE COMPETENCIES OF MANAGERS IN THE MEDICAL DEVICES INDUSTRY FROM AN INTERNATIONAL PERSPECTIVE

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**Purpose:** The subject of the presented study concerns the improvement of the competencies of managers in the medical devices industry. The presented research aimed to identify and evaluate the improvement process and forms of improvement used in the analyzed enterprises.

**Design/methodology/approach:** Empirical research was conducted using the diagnostic survey method and survey technique in 2018-2020. The research covered 130 managers representing various medical device industry companies from four selected European countries, i.e., Germany, Great Britain, France, and Poland.

**Findings:** The analysis of the research results showed that 71% of organizations care about improving the competencies of their management staff. The most popular forms of manager development were learning by practice, short training, and mentoring. Most of the surveyed managers felt the need for development.

**Research limitations/implications:** The research was limited to four selected European countries, which does not allow the generalization of the results to the entire population. In the future, more in-depth and extensive research on competency development among managers in the innovative medical device industry will be worthwhile.

**Practical implications:** The analysis of the results of the conducted research makes it possible to develop recommendations for the management and owners of enterprises in the medical device industry regarding the pragmatics of improving managerial competencies.

**Originality/value:** The research findings provide insights into specific trends related to improving the competencies of managers in the medical device industry.

**Keywords:** competence development, improvement methods, managers, medical devices industry.

**Category of the paper:** Research paper.

## 1. Introduction

Contemporary organizations operate in an environment of constant change, influenced by many factors (Hanelt et al., 2020; Aldrich, 2008; Khaw et al., 2022). Among these, the most significant are the processes of internationalization, demographic shifts (such as aging populations and the emergence of multicultural societies), capital flow, unprecedented technological advancements, and extraordinary natural events like floods, earthquakes, tornadoes, and the Covid-19 virus pandemic (Centobelli et al., 2021; Cavus et al., 2021; Brammer, Clark, 2020). These conditions bring both benefits and challenges. Therefore, they necessitate adaptability and continuous exploration and implementation of new solutions to facilitate development, efficient operations, and achieving set objectives effectively.

Within organized life, the highest expectations are placed upon the management cadre. Managers are responsible for efficiently utilizing an organization's resources, including its most valuable asset – its workforce. The outcomes and measurable results of managerial work depend on their skills, knowledge, attitudes, and experience (Shet, Pereira, 2021). Consequently, these factors are primary drivers of a manager's effectiveness, indirectly impacting the organization's overall success (Anwar, Abdullah, 2021).

In the face of the evolving conditions under which businesses operate, the competencies of managers should be continuously developed. Contemporary literature emphasizes that efforts to enhance employee capabilities should be strategically planned within organizational activities (Hamadamin, Atan, 2019) and should have a dual focus: 1) addressing the needs of the specific organizational unit and 2) responding to the needs expressed by employees (Tokarska, 2018). Professional development serves the interests of both employees and employers. Through action, an employee, especially a manager, strengthens their position within their current role and enhances their market value. Employers, on the other hand, with a skilled workforce, elevate the potential of the entire organization (Dachner et al., 2019).

The subject matter of the presented research revolves around improving the competencies of managers. Professional development can be defined as deliberate and planned actions to acquire new competencies that will enable the effective execution of future tasks (Walkowiak, 2007). The improvement process often occurs without a formal plan, naturally focusing on the learner and the learning processes (Rakowska, Sitko-Lutek, 2000). Contemporary literature underscores that continuous improvement requires a manager's open-mindedness toward change and motivation for constant learning and self-improvement (Rytelewska, 2013; Blanchard, Thacker, 2017).

Employees' and managers' improvement and professional development yield numerous benefits for organizations and individuals in enhancing their skills (Mello, 2019). Among the most significant advantages are increased integration with the organization, enhanced motivation and job satisfaction, improved engagement, better communication, reduced

conflicts, increased trust, improved efficiency, organizational adaptability to changing markets, enhanced innovation, competitiveness, and an improved corporate image (Białasiewicz, 2011; Zbiegień-Maciąg, 2006; Hamadamin, Atan, 2019; Azeem et al., 2021).

The focus of this article centers on enhancing the competencies of managers within the medical devices industry. This area of the economy was chosen due to its unique characteristics, characterized by high levels of innovation, developmental potential, and an international scope. Often referred to as industries that "support" the healthcare system, the medical device and pharmaceutical sectors play a pivotal role in safeguarding public health. The effectiveness of achieving objectives related to public health protection hinges on using medical devices encompassing a diverse array of products crucial for diagnosing and treating patients (Feliczek, 2016).

The medical device industry, also known as the medical technology sector, encompasses entities and their activities associated with the production and trade of medical devices. A medical device, by definition, meets the criteria set forth by the European Commission Directives (for European countries). These encompass a broad spectrum of instruments, apparatus, devices, implants, in vitro reagents, calibrators, software, and similar items manufactured for individual use or in combination with others to diagnose, prevent, monitor, treat, or alleviate the symptoms of diseases (World Health Organization, 2003). These include well-known everyday items like bandages, syringes, or latex gloves, as well as more innovative solutions such as diagnostic tests, adaptive eyewear, technologically advanced scanners, monitoring devices, ultrasounds, life support machines, implantation devices, and so forth (Mark, 2015).

The medical devices industry is often described as diverse and innovative, with a trajectory for further growth and increased significance in the future (Ramakrishna et al., 2015). Key factors driving the industry's development include advancements in medicine, the rise in chronic diseases, demographic aging, and new medical conditions. These determinants and increasing societal affluence result in heightened demand for healthcare services, leading to escalated healthcare costs (Mark, 2015). Consequently, there is a need to explore avenues for cost reduction while optimizing clinical value, which involves enhancing patient diagnosis, treatment, and rehabilitation through efficient utilization of advanced technologies. This categorizes the medical devices industry as high-tech, witnessing particularly vigorous growth in countries with highly industrialized, innovative economies and high per capita national income (Gacek, 2013).

The medical devices industry is not limited to production or commercial activities alone. Its innovation and technological advancement are closely linked to extensive research and scientific endeavors. The tangible products of this industry often stem from years of scientific research, frequently carried out in active collaboration with the academic and scientific communities. This robust scientific foundation necessitates the creation of highly specialized and well-remunerated positions within the industry and its allied sectors.

Despite its positive socio-economic impact, the medical devices industry is often challenging. The sector comprises significant initial investments, extensive scientific involvement, and a broad spectrum of potential customers, including public entities, private organizations, and individual clients. Consequently, many companies need help to meet market demands, shelving numerous ideas or failing to achieve the anticipated return on investment. Furthermore, stringent regulatory requirements pose a significant barrier to market entry, making the medical device sector one of the most heavily regulated industries. Additionally, variations in legislation across different countries impede the smooth international trade of products (Eatock et al., 2009).

## 2. Methods

The presented article is based on the quantitative approach the research aimed to identify and evaluate the improvement process and forms used in the analyzed enterprises.

After analyzing the literature on the subject and the reports and materials provided by organizations related to the medical devices industry, the research questionnaire was designed.

The presented research is part of a broader research project on the competencies of managers in the medical devices industry and diversity management in the companies they represent. The amount of the questionnaire devoted to improving managerial competencies contained twelve substantive questions. They were concerned about the applied practices of managerial competencies in the analyzed organizations, forms of improvement and their assessment by participants, and the needs of respondents in the field of competence improvement. Quantitative research was conducted in English, in direct contact. Only the survey of managers of Polish nationality was shown in their native language. The questionnaire was translated from Polish into English and backward into Polish to ensure conceptual equivalence and transparency.

Empirical research was conducted in 2018-2020 using the diagnostic survey method with the survey technique. The study covered the management staff of enterprises in the medical devices industry. These were mainly high- and middle-level managers, primarily small and medium-sized enterprises, due to the sector's structure, in which approx. 95% are small and medium-sized entities. It is assumed that the design of the surveyed sample in terms of gender, age, and nationality reflected the sector's structure.

The research was conducted in selected European countries, i.e., Germany, France, Great Britain, and Poland. Apart from Poland, countries with high activity in the medical devices industry were selected for the study. Germany, France, and Great Britain are among the six countries with the most significant number of registered business entities dealing with medical devices and also have the highest percentage of people employed in the industry in Europe.

The selection of the sample was intentional. It is estimated that Europe has approximately twenty-six thousand companies in the industry. The study covered 130 managers, about 0.5% of the population.

The survey was conducted among 130 managers from 130 different organizations. Among the respondents, 21% work in micro-enterprises, 46% in small enterprises, 25% in medium enterprises, and 8% in large enterprises. At the same time, 71% of these enterprises operate in the global arena, 18% in the European theater, and 11% in the national stadium. The structure of origin of the surveyed organizations is as follows: 32% are registered in Germany, 19% in Great Britain, 26% in France, 18% in Poland, and 5% in other countries.

Among the surveyed managers, 11% are at a low management level, 67% at a medium or high level, 18% work under a managerial contract, and 5% did not answer. The study involved 38 women and 91 men. Among them, 19% represent the Baby Boomers generation, 43% represent the X generation, and 38% represent the Y generation.

The conducted research provided empirical material that was subjected to statistical analysis. The obtained data were entered into a database established in an Excel spreadsheet. Relationships between qualitative variables were assessed using the Chi-square test of independence. The analyses were performed at the significance level of  $\alpha = 0.05$ . Respondents expressed their opinions on diversity management using a 5-point scale, where 1 was the lowest value, and 5 was the highest. For comparative analyses, items for which respondents chose answers at level 4 or 5 were considered.

### 3. Results

The questionnaire began with a question about whether the competencies of managers in the analyzed medical product industry companies were being improved. In most surveyed organizations (71%), such actions are being carried out, while in 21%, they are not.

It was also interesting whether competencies related to diversity management were being improved in the companies represented by the respondents. It turned out that only 1/3 of the surveyed organizations develop this type of competencies, and 45% of them still need to. Every fifth respondent had no knowledge of this subject.

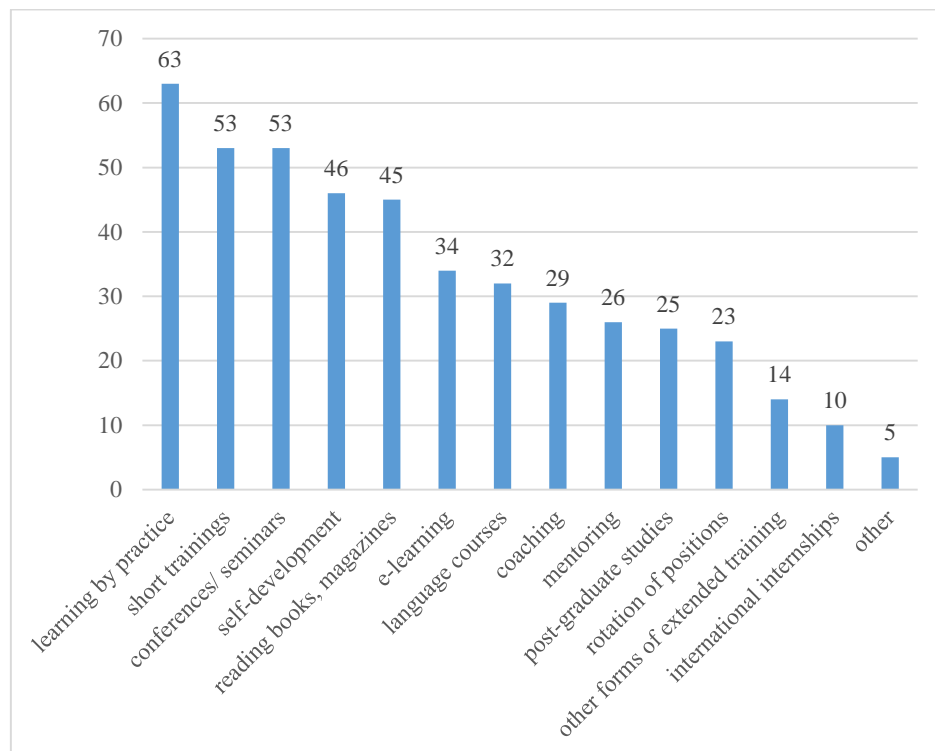
When characterizing the process of improving competencies, it should be stated that in half of the analyzed enterprises, it takes place on an ad hoc basis (from time to time). In 28% of organizations, improvement occurs systematically (regularly), while 23% of respondents believe that competencies are not improved at all in their organizations.

The next issue analyzed was the training needs in the analyzed organizations. Most respondents (58%) admitted that the companies they represent analyze their improvement needs. Every third respondent indicated that such practices need to be implemented in their

organizations. Similar results were achieved regarding answers to the question about setting improvement goals. In 56% of the analyzed enterprises, improvement goals are set, while in 1/3 of the organizations, no such activities are carried out.

The next question concerned the nature of improvement activities in the analyzed enterprises. In the majority of the surveyed enterprises (57%), individual actions are carried out to improve competencies, while in 32% of the surveyed companies - addressed to all employees of the organization. Every tenth respondent stated that in the company he represented, improvement activities were organized only for subunits, e.g., individual departments of the company.

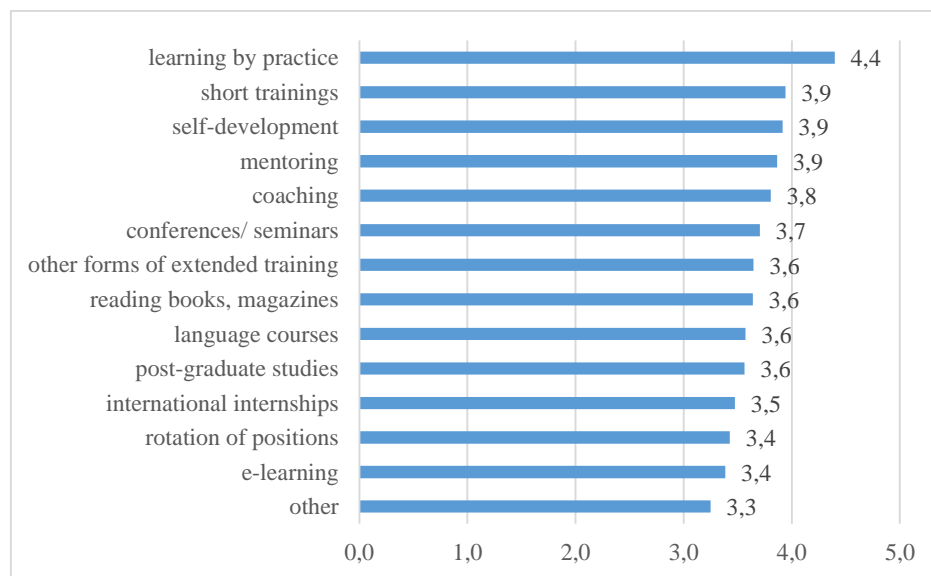
The respondents were also asked to indicate what forms of training they used. The most significant number of respondents (63%) said they used learning by practice. In terms of frequency of use, the following forms of competency improvement were ranked next: conferences/seminars (59%), short training courses (53%), product training courses (50%), self-development (46%) and reading books and magazines (45%). The least popular among the respondents turned out to be other forms of long-term training, e.g., MBA studies (14%), foreign internships (10%), and other (including webinars, conversations with experts, workshops, development in the field of ISO implementation and quality management – 5%). The results regarding the forms of improvement used by respondents are presented in Figure 1.



**Figure 1.** Forms of improvement used by respondents (%).

Source: own elaboration based on research results.

When asked to assess the effectiveness of forms of education (Figure 2), respondents rated learning by practice the highest (average rating 4.4 on a 5-point scale). The following places were taken: short training, self-development and mentoring (with a rating of 3.9), coaching (3.8), and conferences/seminars (3.7). The following were rated slightly worse: other forms of long training, e.g., MBA studies (3.6), reading books and magazines (3.6), language courses (3.6), postgraduate studies (3.6), and foreign internships (3.6). 5). The least effective were job rotation (3.4) and e-learning (3.4).



**Figure 2.** Effectiveness of the analyzed forms of improvement in the opinion of respondents (on a scale from 1 to 5, 1 is the lowest and 5 is the highest).

Source: own elaboration based on research results.

The analysis conducted regarding the evaluation of competency development methods by managers from different countries revealed that the assessments of managers from Poland, Germany, and the United Kingdom are the same. They considered the most effective training methods to be 1) learning by practice, 2) short-term training, and 3) coaching. However, while agreeing on coaching, the French value 1) postgraduate studies and 2) job rotation much more highly than learning in action or short-term training (Table 1).

**Table 1.**

*The evaluation of competency development methods by managers from different countries*

Forms of improvement	Poland		Germany		Great Britain		France	
	Av.	Rank	Av.	Rank	Av.	Rank	Av.	Rank
Learning by practice	4.52	1	4.39	1	4.39	1	3.66	8
Short training	4.17	2	4.02	2	4.02	2	3.59	9
Coaching	4.09	3	4	3	4	3	3.91	3
Self-development	4	4	3.93	4	3.93	4	3.75	6
Conferences/ seminars	3.87	5	3.89	6	3.89	6	3.26	13
Mentoring	3.83	6	3.89	5	3.89	5	3.56	10
Reading books, magazines	3.78	7	3.7	7	3.7	7	3.67	7
Language courses	3.74	8	3.5	8	3.5	9	3.56	11
Other forms of extended training	3.7	9	3.47	9	3.47	10	3.78	5

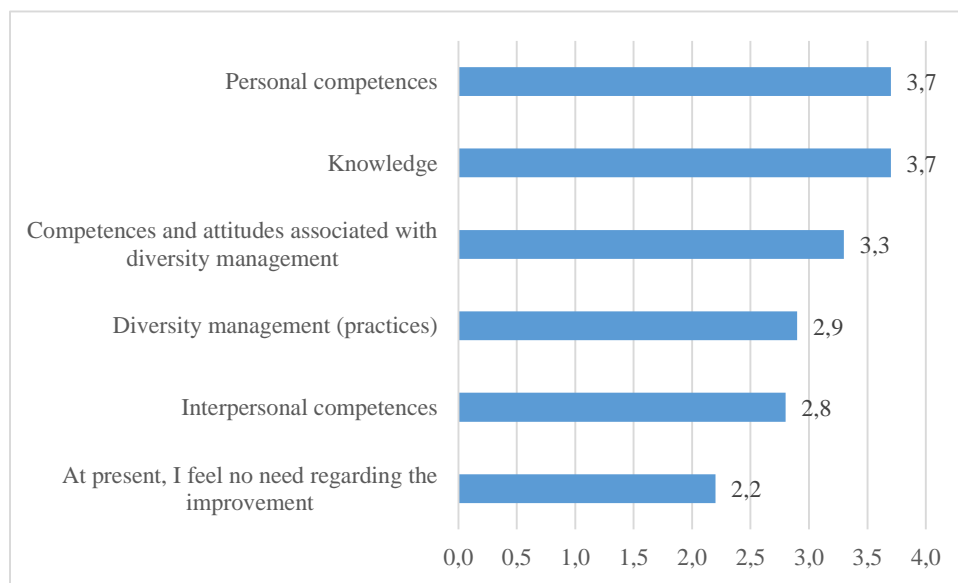
Cont. table 1.

Post-graduate studies	3.48	10	3.36	12	3.61	8	4.41	1
Rotation of positions	3.36	11	3.19	13	3.19	13	3.97	2
E-learning	3.3	12	3.45	10	3.45	11	3.88	4
International internships	3.23	13	3.37	11	3.37	12	3.5	12

Note. On a scale of 1 to 5, 1 is the lowest and five is the highest.

Source: own elaboration based on research results.

The surveyed managers were also asked whether an assessment of competency development is carried out in the companies they represent, including an evaluation of content, format, and the degree of achieving set goals. More than half (52%) of the respondents answered affirmatively to this question, while one-third of those surveyed responded negatively. Among the respondents, 15% admitted that they did not have knowledge of this matter.



**Figure 3.** Development needs felt by the respondents (on a scale from 1 to 5, 1 is the lowest, and five is the highest).

Source: own elaboration based on research results.

The block of issues related to the improvement of managerial competencies was closed with a question regarding the development needs felt by the respondents (Figure 3). It can be concluded that managers feel the need for development, mainly in terms of personal competencies and knowledge (average score of 3.7) and slightly less often in interpersonal competencies (3.3). According to respondents, issues related to diversity management attracted the slightest interest. Thus, the need for development in diversity management competencies and attitudes was assessed at 2.9, and diversity management practices at 2.8.



## 4. Discussion

The analysis of the research results conducted among managers of the medical devices industry showed that 71% of organizations care about improving the competencies of their management staff. This means that more than 2/3 of enterprises recognize the need for manager development and try to meet this need. Therefore, one in three respondents admits that their organizations need to develop managers or learn about it. There are two ways to try to explain this. Managers responding negatively may have included employees of micro or small enterprises in which the employee development strategy needs to be systematized. They often need HR departments or individuals responsible for HR matters or human capital development. The second explanation assumes that managers are left out of the development process. The medical devices industry is a highly specialized, modern industry with strong ties to science. In many companies, however, great emphasis is placed on developing employees directly responsible for creating products and services and sales and marketing department employees who must successfully present these products to customers. Often, managers, the so-called generalists who are not directly related to products or work with clients, are neglected in developing their competencies or continuing their education "on their own".

The results of the presented research confirm the literature's findings regarding the most popular forms of manager development (Szewczyk, 2018; Sitko-Lutek, Jakubiak, 2020). According to the respondents, learning by practice, short training, mentoring, and coaching were the most effective. Therefore, the claim that job rotation is one of the most effective forms of improvement (Szewczyk, 2018) has been refuted by this research.

The research showed that surveyed managers felt the need for development, which confirmed the research results by other authors (Frankowska, Głowacz, 2011; Sitko-Lutek, Jakubiak, 2020).

Only 28% of the respondents stated that managerial competencies in their organizations are regularly improved. In companies where managerial competencies are enhanced on an ad hoc basis, it is recommended to verify whether the indicated frequency is sufficient for the managerial staff's effective and efficient performance of tasks (Serafin, 2011). Similarly, it is worth examining the training needs assessment process, as research shows it is absent in every third company. As indicated in the relevant literature, the effectiveness of the improvement process can be ensured through a more systematic approach to this issue (Hamadamin, Atan, 2019; Frank et al., 2018).

## 5. Summary

One of the most valuable assets entrusted to managers is their workforce, the people working for the organization. Therefore, in managerial practice, new solutions are constantly sought to maximize the utilization of employees' potential to stimulate their activity, engagement, and satisfaction with their tasks. However, for the managerial staff to be able to support the personnel in their development, they should continuously enhance their competencies. This article focused on improving managers' competencies in the medical device industry. This industry effectively operates in the current economic environment, and its products and services support national healthcare systems.

The presented research was limited to four selected European countries, which only allows the generalization of the results to some of the population. However, the research findings provide insights into specific trends related to improving the competencies of managers in the medical device industry. They may also serve as a basis for future, more in-depth, and extensive research on competency development among managers in the innovative medical device industry.

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