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SIGNIFICANCE OF EMPLOYEE INNOVATION FOR KNOWLEDGE ECONOMY BASED ON THE CASE OF INDUSTRIAL COMPANIES LOCATED IN WEST POMERANIA

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Purpose: The subject matter of the article results from the growing importance of innovation both in the development of enterprises and the entire economy.
Design/methodology/approach: This paper is based on research conducted in 104 small and medium-sized industrial companies operating in the West Pomeranian province. For purposes of the research, the author applied the documentary research method and CATI survey.
Findings: The findings clearly indicate that efforts taken to create environments conducive to employee innovation in industrial companies in the West Pomerania are not sufficient. The surveyed business environments did not adequately encourage employees to, in particular, expand knowledge, seek novel solutions and did not provide them with access to innovation generating tools. It is the company's innovation culture and environment that fuels growth and fosters innovation which allows to compete successfully on national and international markets. The paper also brings to light the low level of innovation of Polish economy resulting from the fact that only ca. 17% of the small enterprises and ca. 37% of the medium-sized enterprises can be considered innovative.
Research limitations/implications: As part of the article, research was carried out in the West Pomeranian Voivodeship. It is planned to conduct research throughout Poland.
Originality/value: The article highlights the need for a comprehensive approach to the innovation generation system in enterprises.

Keywords: innovation, development, knowledge.

Category of the paper: research paper.

1. Introduction

Present day global markets proliferate with consumer goods and services. Highly competitive markets satisfy an infinite variety of consumer needs and wants. Therefore, for companies to be able to operate and thrive in the dynamic, ever changing market, they need to have the capability to gather and process an increasing body of knowledge and generate novel ideas. Successful companies are the ones that approach consumers in an exceptional way, foster original ideas and are able to exceed their customers' expectations. It can thus be said that today we operate in the conditions of a knowledge-based economy requiring companies to base their production and services on knowledge-intensive activities.

Knowledge significantly enhances the overall value of an organization which is the overriding goal of each company. Increased company value comes from, inter alia, a higher number of happy clients, better goods, constantly improving services rendered by competent employees, and the company's positive image and good reputation. Each of these elements can be achieved through focus on broadly-understood employee enhancement and knowledge-based innovative change. A well-structured employee enhancement program gives enterprises a chance to provide up-to-date products, gain a bigger share of the market, and ultimately, enhance the overall company value.

In the 21st century, employee knowledge and capability to create innovation should be the primary focus of organizations. Equipped with adequate knowledge, an organization is capable of taking rational, less risky decisions. Creation of new technologies, solutions or production methods allows to gain competitive advantage and offer highly sellable products which, naturally, translates into better economic outcomes.

It is therefore necessary that organizations implement programs that stimulate employee development and create an environment that encourages, supports and rewards employee innovation.

The aim of this paper is to assess how much focus is put on creating an environment conducive to employee innovation by owners of small and medium sized enterprises operating in West Pomerania, and to identify organizational settings that are appropriate to ensure efficient innovation.

The research focuses not only on the need to create employee innovation programs, but also on some simple improvements that support innovation culture in organizations. It is often the case that such minor enhancements and adds-on are a starting point for initiatives that drive innovation.

To meet the objective, the following research methods were applied: the documentary method and CATI (Computer Assisted Telephone Interviewing) survey that reached out to 104 small and medium-sized manufacturing companies operating in the West Pomeranian

province. The survey was conducted in late 2019 and early 2020. The survey respondents were company owners, CEOs and production managers.

This paper is part of the research program *Monitoring of the socio-economic situation as support for regional development* carried out by the Faculty of Economics of the West Pomeranian Technological University of Szczecin.

2. Organization development and knowledge economy

In today's highly fiercely competitive market, the quality of human resources is the foundation of every organization. It also seems that entrepreneurs and organization founders are increasingly more aware of the fact that employees are the most valuable and strategic resource worth investing in. In other words, they understand that employees – as key drivers of organizational performance – must be treasured and provided with opportunities for professional and personal development.

This view is reaffirmed by S. Kwiatkowski (2002, p. 46) who writes that *today, intangible assets are as significant as traditional tangible assets […], among them the crucial one being knowledge*. According to A. Toffler (1990, pp. 11-19), human capital is the most perfect factor of production as it is renewable and replicable, and in addition, it gradually substitutes other traditional resources.

In such economic setting, as D. Makulska (2012, p. 177) asserts, knowledge is created, acquired, transferred and used more efficiently by businesses, public administration, non-governmental organizations and people in general. In the context of the so-called new economy, knowledge can be understood as a product and a factor of growth. It is very often a subject of market turnover and it is an economic good. Knowledge is also the information needed to take informed decisions.

As L. Zienkowski (2003, pp. 15-16) points out, the concept of knowledge-based economy is linked to the theory of endogenous growth. The theory holds that certain factors of production are the result of e.g. accumulation of knowledge and intellectual capital. Technological and organizational progress depends on the country's socio-economic policy and changes in the society's mindset. Knowledge is treated as the endogenous force that is the growth engine, shaping the structure of production and driving economic and social progress. The theory perpetuates that knowledge as capital and asset is becoming an essential determinant of the pace and level of economic growth, along with other tangible assets.

In turn, G. Węgrzyn emphasizes that (2013, p. 209) innovation changes the way people do their work and shifts the focus of their professional activity to generating, processing and distributing of knowledge and information with the use of modern digital tools. In developed

economies knowledge as a factor of innovation is gaining importance, and in turn, innovation changes the labour market.

Developed countries are often referred to as knowledge-based economies (KBE). They base their economies on applying human know-how in all production processes. In the new economic reality, the increase in value added will be the result of intellectual, and not manufacturing, work, hence, as researchers claim: *it is the effective development of a nation's intellectual capital that will determine the country's future prosperity* (Dryden, Vos, 2000, p. 294).

In the era of knowledge economy, enterprises should aim towards becoming intelligent organizations that appreciate knowledge and use it for the sake of their own growth. Intelligent organizations readily invest into expanding their IT infrastructure, software and knowledge management systems (Łobejko, 2009, pp. 3-4). Furthermore, they develop the ability to adapt to the market and rapidly respond to the changing needs of consumers.

As M. Dolińska points out, an innovative enterprise should have the following characteristics (Dolińska, 2010, pp. 25-28):

- capability to create and implement innovation within the organization;
- ability to sell goods, in particular, new goods;
- ability to build and efficiently use the organization's innovation potential based on its core competencies;
- ability to acquire, accumulate, apply and expand knowledge;
- openness towards new concepts, ideas, inventions, scientific and technical solutions;
- employ workers who are creative and think out of the box;
- support for continuous development of employee competencies and implement employee incentive schemes;
- fostering innovation culture among employees;
- seeking collaboration with other organizations, academic and R&D institutions;
- collaboration with members of local communities;
- effective knowledge management and readiness to learn from partners/clients that pursue innovation;
- maintaining relationships with clients in order to learn about their expectations and respond accordingly;
- use of new technology, including IT technology;
- fostering multiperspective thinking and openness to change;
- ability to adapt flexibly to changing market conditions;
- readiness to take risks involved in implementing innovation and to take responsibility for outcomes.

Such approach emphasizes the need to build modern, innovative and flexible organizations that are able to adapt to the ever-changing market and generate new solutions and products in cooperation with R&D institutes, harnessing the potential of science and knowledge.

Intelligent organizations should employ highly qualified, highly motivated and creative staff who have full access to up-to-date information and communication technologies, and are well equipped to cooperate with academic and R&D institutes. The latter element will be explored in the further part of this paper.

3. Building environment conducive to organization's growth

Development of the world, including emergence of so many disciplines, invention of innumerous tools, in other words, the world as we know it today has been built by people who were courageous enough to pursue new solutions, to trot the unknown path. To do that, they had to have vast knowledge.

Knowledge is a tool used not only by scientists, teachers, managers, accountants or IT specialists, but by a growing number of working people. Drucker (1999, pp. 63-64) termed these high-level workers the "knowledge workers". Their advantage is that they have unique skills and qualifications, and theoretical and practical knowledge they acquired from, i.a., universities, postgraduate studies, specialist trainings, workshops, former work places and also as a sum total of life experiences.

Polish economy is rather short on innovation. In the report *European Innovation Scoreboards 2019* which provides a comparative assessment of innovation performance across the EU, the 2018 Summary Innovation Index (SII) for Poland is 0,295 compared to the EU average of 0,525. It places Poland in the group of „modest innovators" that close the ranking of the EU countries, exactly on the 4th position from the bottom, followed only by Romania, Bulgaria and Croatia (Figure 1).

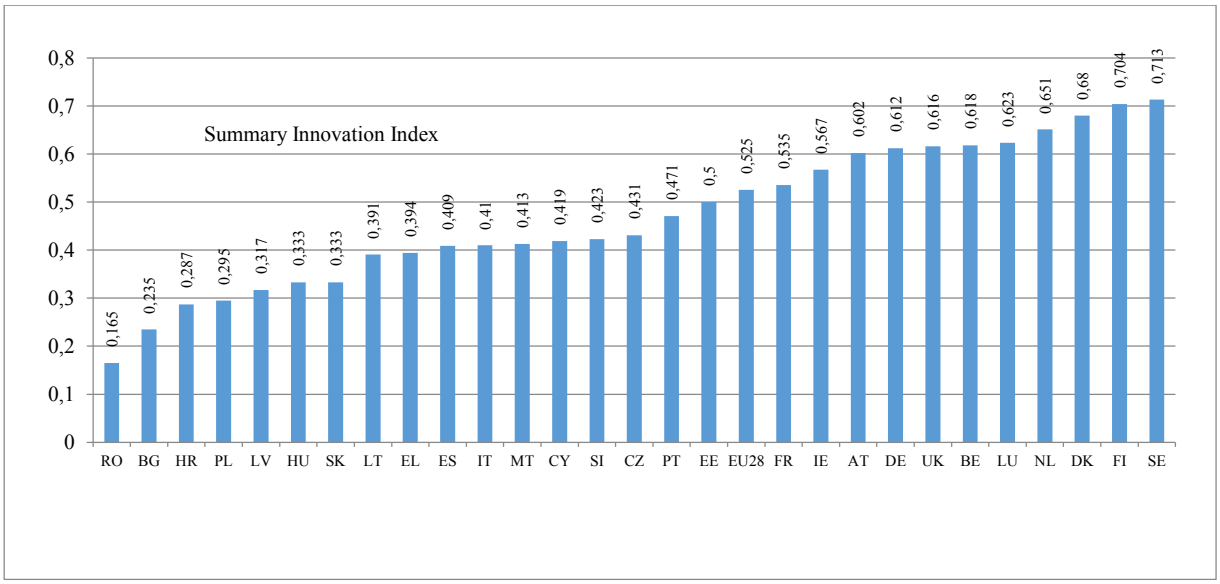

Figure 1. Summary Innovation Index 2018. Source: Own study based on the European Innovation Scoreboards 2019, European Commission, Luxembourg 2019, p. 91.

In the 2016-2018 period, the share of innovative enterprises in the industrial companies sector was 24% (Innovative activity…, p. 38). According to the Polish Central Statistical Office (GUS) among Polish innovative enterprises 17% are small and 37,2% medium-sized enterprises (Figure 2). It is large companies that score the highest on innovation performance with 62,3% of them venturing into innovative projects.

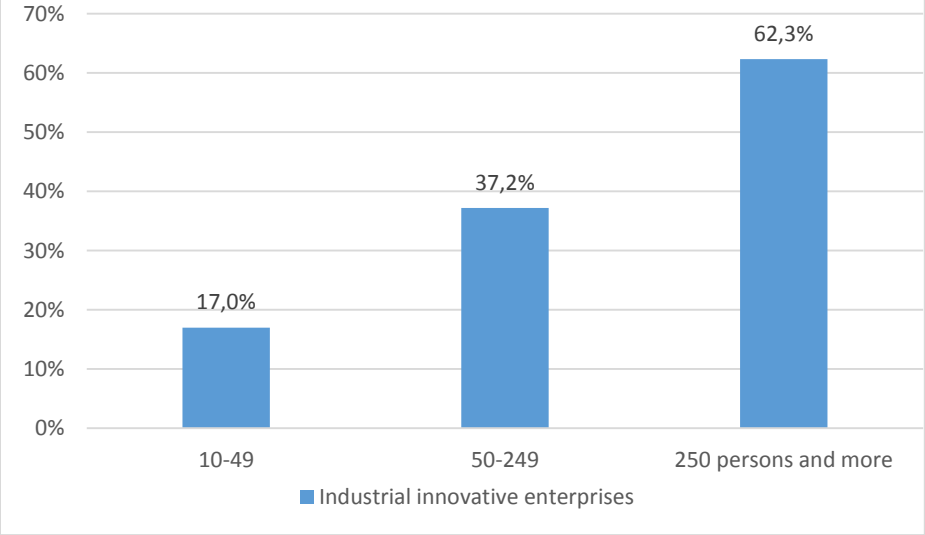

Figure 2. Innovative industrial enterprises in the 2016-2018 period by number of employed persons. Source: Innovative activity of enterprises in the years 2016–2018, GUS, Warsaw-Szczecin, 2019, p. 34.

In the context of a fiercely competitive market, enterprises are able to operate long term and thrive only if they keep developing, which mostly entails the following changes (Pierścionek, 1996, p. 11);

- implementation of new elements,
- improvement of the existing elements,
- transformation of system structures.

Implementation of the above changes equates with activating innovation. In other words, implementation of solutions that streamline business processes is a prerequisite for ensuring continuous development. Many entrepreneurs realize the growing need for novel solutions in all industries, and yet innovation performance of Polish companies has seen no significant improvement in recent years. Naturally, shortage of innovation translates into low competitiveness of the Polish economy which after Poland's accession to the EU has to face much tougher market requirements. In this context, employee enhancement and development comes across as particularly important (Armstrong, 2010, p. 208).

Inspiring, innovative ideas and solutions can be drawn from various sources. From this point of view we can distinguish the following types of innovation:

- egzoinnovation – innovation implemented within the organization based on concepts that originated outside of it, e.g. purchase of high-tech equipment or license,
- endoinnovation – innovation implemented in result of inventions that originated within the organization, e.g. employee innovation. While implementing egzoinnovation is often costly, endoinnovation that is usually a much cheaper option, and also better adjusted to the organization itself and easier to implement.

A novel, cutting-edge idea for a device or process (invention) originating within the organization and implemented there would be termed an endogenic innovation. And so, endoinnovation embraces all kinds of innovation inspired by employees (management, staff) and implemented in the organization. In the process of generating knowledge, employees should be provided with access to all kinds of resources which could fuel the creation of new solutions. For example, innovators can be inspired by an „idea bank" which gathers insights, tips, experiences and suggestions of employees from across the company structure and the stakeholders.

The main sources of generating new ideas for enterprises are:

1. First of all, the organization's clients who often articulate what should be changed, and in which direction should a product or enterprise evolve. Such insights are also provided by e.g. suppliers or consulting firms. Their input is invaluable as they often clearly see the deficiencies in company operations and perspectives for product development. These suggestions should also be recorded in the aforementioned "idea bank" to inspire employees in their efforts to improve the product or streamline work organization.
2. Information on novel projects implemented within the organization and in external organizations – so that employees engaged in solving a particular problem have insight into what actions were taken by others and what results they yielded. Such feedback allows to save labour and accelerate the development of a new device or process.
3. Access to patent descriptions which explain the invention, design or plant, and which provide a great insight into the state of current technology and give an opportunity to apply a solution which is not protected by patents anymore. Patent information is

a specialized field of scientific, technological and economic information. It encompasses information on all intangible industrial goods awaiting patent protection (e.g. inventions, industrial designs, utility models), and information about patent documents and ownership rights. Such information is accessible through the official websites of, e.g., the Polish Patent Office or the European Patent Office.

4. Access to professional literature and journals – to keep up with the latest trends and solutions implemented worldwide. Such access can be provided by in-house libraries.
5. Results of collaboration with academic and R&D institutes (such as the Polish Academy of Sciences, universities, various R&D institutes). The collaboration should be pursued on a regular basis, and its results available to potential innovators.
6. Benchmarking – a process of measuring the performance of company's products, services or processes against the best companies in the industry, also foreign companies and companies operating on different markets. Based on that conclusions should be drawn and one's organization transformed accordingly.

Another group of determinants of innovation is related to creating a more enabling environment for innovation by strengthening technology in the company. Potential inventors need to be provided with access to various hardware and software to be able to pursue their goal: compute, design, test, enhance. It is important that they can test the solutions they came up with and envisioned, especially that they are often very complex. Therefore, growth-oriented companies, especially large ones, should provide adequate technological facilities, e.g. labs, model making rooms, tool rooms etc. equipped in high-tech machines and devices.

The final group of innovation determinants has to do with employee motivation. An environment conducive to innovation and creativity is not sufficient to create innovation. Employees need to be truly motivated as motivation is the main force through which they are ready to allocate effort to generate and try out innovative ideas. Hence, they need additional incentives or impulses – "motivators", including: coercive, incentive and persuasion measures (Sekuła, 2008, p. 176).

It must be emphasized that the use of coercive measures such as subduing employee initiatives or imposing interests or priorities on them are not the best way to motivate anyone. Motivation measures must not be coercion measures as the latter are based on reprisals and fear, without leaving any room for employee expectations and best interests. In a way such role is played by: rules of procedure, organizational regulations, instructions, restrictions, employment agreements and other rules in place that tell employees what they should and should not do.

Incentive and persuasion measures are not only more suitable as motivational tools encouraging innovation, but also more effective.

Incentives can come in the form of reinforcement, systemic or temporary stimulation. They are usually part of long-term motivation strategy and are most commonly used in the motivation process. They stimulate employee interest and engagement through monetary and non-monetary rewards. Incentives also give a certain degree of freedom to employees (Jasiński,

2001, pp. 18-19). Incentives are a form of appreciation towards inventors in form of e.g. remuneration, bonuses, other rewards, privileges, and therefore, it is particularly important to apply them in innovation-driven organizations.

Persuasion as a motivational approach is also suitable for boosting innovation. Persuasion attempts to influence a person's mindset and triggers a change in behavior, habits and emotions. It is based on the assumption of equality or partnership in the superior – subordinate relations. Persuasion appeals to an individual's intrinsic motivation and can be either emotional, or rational in kind. Most commonly it is expressed in form of a request, urge, persuasion, propaganda, consult or suggestion (Jasiński, 2001, pp. 18-19).

As the above considerations imply, the issue of stimulating innovation must be approached from many angles. Entrepreneurs should pay attention to the many factors that affect innovation development to be able to effectively use the innovation potential of their employees.

In organizations where development is tied to the input of employees, the "knowledge workers", endoinnovation is generated – innovation is activated in result of inventions that orginated within the organization, e.g. the aforementioned employee innovation.

In contrast, when an organization purchases cutting edge equipment or licenses, they use egzoinnovation – innovation built on novel ideas coming from outside the organization.

Implementation of egzoinnovation usually requires relatively high investment costs, whereas endoinnovation is built on the resources – ideas and solutions – generated by employees, and is a more cost-effective option.

Examples of the world's most innovative companies show that it is worth motivating employees regardless of the position they hold in the company. For example, employees of Toyota generate about 2 million ideas a year (35 per person), of which as much as 85% is implemented in the manufacturing processes (Zajączkowski, 2005, p. 61). Undoubtedly, it's one of the key success drivers of the company.

4. Work environment and employee development in industrial companies in West Pomerania

For the purposes of this paper, in late 2019 and early 2020 a survey was conducted among 104 small and medium-sized industrial companies in the West Pomeranian province.

As per data gathered by the Polish Central Statistical Office GUS (Innovative activity, 2019, p. 37), in West Pomerania in the years 2016-2018 the percentage of innovative companies to total industrial companies was 23,8% (Figure 3), which is an all Poland average.

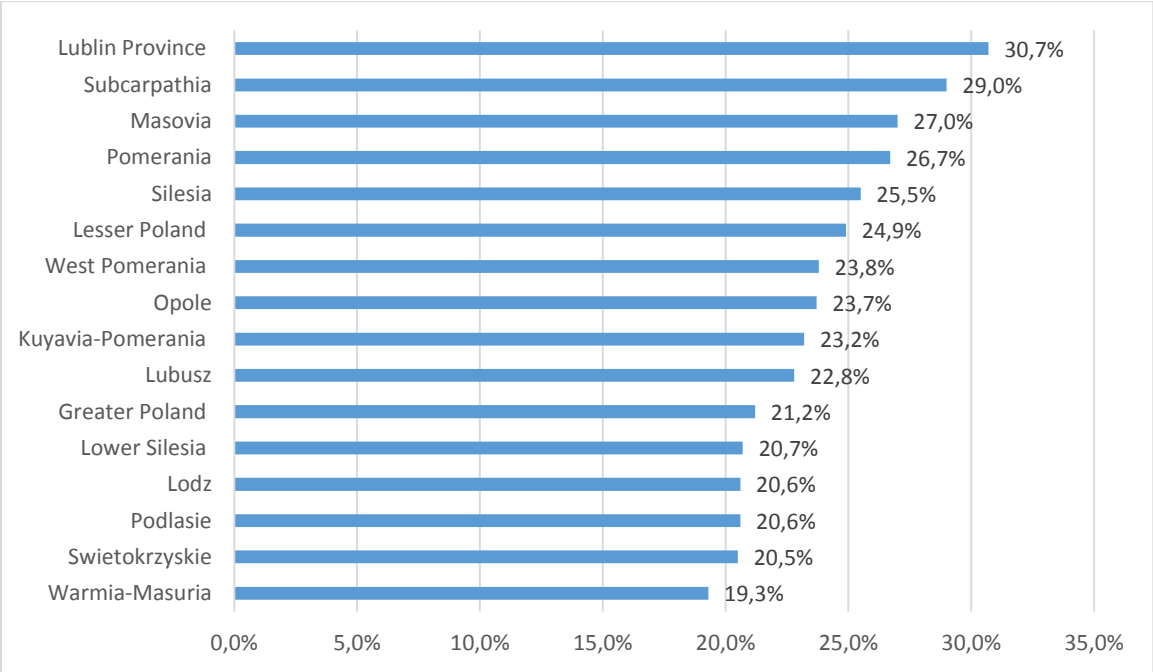

Figure 3. Innovative industrial enterprises in the 2016-2018 period by provinces. Source: Innovative activity of enterprises in the years 2016–2018, GUS, Warsaw-Szczecin, 2019, p. 37.

The survey's first question referred to the creation of novel solutions by employees. 56,7% of respondents asserted that no new solutions are created in their companies, whereas 43.3% claimed the opposite.

In the first case, respondents attributed the lack of innovation in their organizations to the lack of knowledge and novel ideas among employees (47,5%), lack of motivation (37,3%) and finally, lack of appropriate technological facilities (15,2%).

In the second case, most respondents (57,8%) asserted that innovation created in their organizations is no more than "minor enhancements" or "adds-on"; 26,7% of respondents termed the innovation as "not very advanced solutions" and 15,5% declared that "advanced innovation" is created in their workplace.

Although the creation of „minor enhancements" is not equivalent to creating innovation, it plays a very important role in the building of innovation culture and engaging workforce in innovative activities.

The next question probed into whether employers and managers implement any kind of in-company employee development programs and activities. 19,2% respondents claimed that none such activities are taken in their companies (Figure 4), and 37,5% declared that they are relatively rare. In contrast, 43,3% respondents answered affirmatively saying that employee development activities are carried out relatively frequently in their organizations.

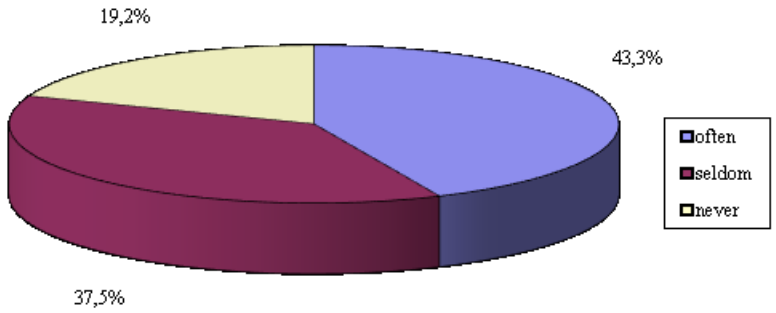

Figure 4. Spread of responses to the question whether employers and managers implement employee development programs in the organization. Source: own study.

The next question referred to motivating employees to raise their qualifications on their own. In this case 51% respondents declared that such motivational activities were taken up relatively often in their organizations, 31,7% stated that it was seldom the case and 17,3% respondents claimed that they were never motivated to raise their skills and qualifications (Figure 5).

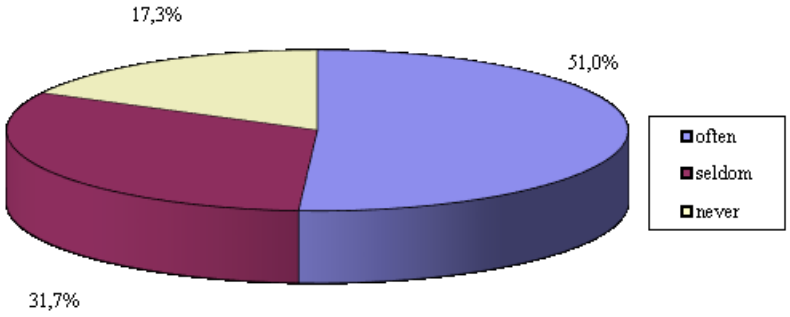

Figure 5. Spread of responses to the question whether employers and managers support employee qualification development outside the company. Source: own study.

Yet another question probed into whether employees are provided with access to professional literature and updated technological developments in their sector of industry, which would enable them to upgrade their skills and enhance their professional development (Table 1).

Table 1.
Responses to the question regarding access to professional literature and updates on industry innovation

No	Do you have access to industry knowledge in form of professional literature and industry updates in your organization?	Responses
1	Yes, I have access to updated and comprehensive knowledge.	25
2	Yes, the knowledge is updated, but access is rather difficult.	17
3	Yes, but the knowledge is not up to date.	9
4	There is no access to current industry knowledge, although it would be very beneficial.	31
5	There is no access to current industry knowledge and there is no need for that.	22
Total		104

Source: own study.

More than half of the respondents (51%) stated that they have no access to current industry knowledge (responses 4 and 5), and 21,2% saw no need for access to such knowledge. Almost every fourth respondent (24%) asserted that access to current industry knowledge is provided in the organization (Figure 6). In turn, only 16,3% respondents affirmed that the knowledge available is up to date, but access is not easy, whereas 8% respondents claimed the opposite, i.e. that they have access to industry literature and information but it is out of date.

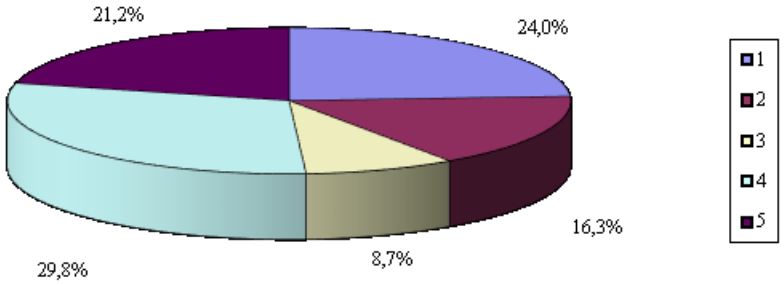

Figure 6. Spread of responses to the question whether access to up-to-date industry knowledge is provided in the organization. Source: own study.

The next question referred to the readiness of CEOs, company owners and managers to fund employee development courses outside the company. In this case, 32,7% respondents claimed that their organizations don't allocate any funds to employee development, 48,1% said that such cases are relatively rare and only 19,2% asserted that their employers are willing to finance their professional training in outside courses (Figure 7).

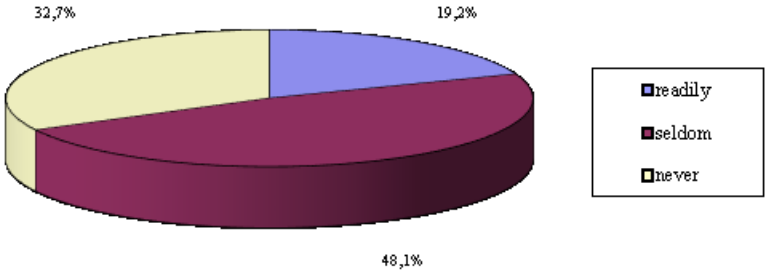

Figure 7. Spread of responses to the question regarding entrepreneurs' readiness to fund out-company employee development. Source: own study.

The findings indicate that no sufficient efforts are taken to create innovation-inspiring environments in industrial companies operating in the West Pomeranian province. Therefore, it seems that the surveyed organizations should remember that it is essential to engage employees in innovative activities, provide them with opportunities to upgrade knowledge and use creativity enhancing, innovation generating tools. The desired result, in the end, is that employees are motivated to push the boundaries of the known and seek innovation – the engine of business success.

5. Conclusions

Research findings confirm that a relatively big number of CEOs and managers (including employers) do not see value in the professional development of their employees. Definitely too few employee development and enhancement programs are realized within organizations, and on the other hand, employees are not motivated to enhance their qualifications outside the organization.

The research also explored others aspects of innovation, such as minor enhancements and adds-on made by employees. Although these are not elements that significantly affect the overall innovation potential of organizations, they are important in terms of promoting innovation culture and boosting employee engagement.

The survey was conducted among management staff only. Undoubtedly, it would be worth to find out the employees' opinion on how conducive the company environment is to innovation. This only proves the need to continue research on organization's innovation potential of the small and medium-sized companies in particular as they generate almost half of Poland's GDP and employ ca. 6,7 mln people (Report…, 2019, pp. 6, 27).

Employee-driven innovation gives companies a good chance to achieve competitive advantage. However, to make it possible, employees need to operate in an environment conducive to professional development, creativity and innovation. Innovative activities also enhance the quality of goods and services, enables diversification, increases organization's market adaptability and gives an opportunity to expand into new markets.

As aforementioned, organizations should have in place a system that: first, supports employees in upgrading their knowledge on a continuous basis, second, provides them with technological facilities needed to develop and test novel ideas, and third, motivates employees to enhance their skills and be creative.

In organizations which create such an environment and where innovation is integrated within the activities of an organization, the likelihood of growth and success is much bigger. This path starts, naturally, from small improvements and adds-on, but leads to innovation that gives competitive advantage.

Furthermore, it is crucial to undertake innovative activities across the entire organization, involving employees of all levels. It has been observed that in organizations cultivating a culture of growth and pro-innovation, employees become increasingly involved in innovative activities.

Innovative enterprises – ones that make innovation a continuous practice – are more likely to achieve competitive advantage and succeed in international markets. Moreover, their good market position and company image attract talent and valuable human capital that in turn fuels the collective ambition to innovate and maximize value in the organization.

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