

# The Impact Evaluation of the Innovation Implementation within the EU Funds on the SMEs Performance Results

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**Abstract**—In subjective terms, Polish SME sector occupies a prominent position in the national economic development, in which planning of the management strategies should be primarily based on identifying and meeting the innovation needs.

As a research sample, there is chosen a printing sector of industry. SMEs share in printing sector in Poland is estimated at the level of 81% of all enterprises. In recent years, the printing industry achieved one of the highest levels of EU support in Poland. There is a relatively high increase in the development of technological innovations in equipment and the associated significant increase in production capacity. It can be also noticed that on average, every third enterprise belonging to the printing industry has implemented innovations, but not all of them effected in better economic results. Therefore, the aim of this article is to evaluate the impact of the implementation of innovation projects financed from the EU funds for performance of SMEs in the printing industry.

As the results of research of EU funds co-financing effects on the development of innovation in the printing industry, it was specified that examined SMEs prefer to implement product innovation to receive a grant to the project at a level between 40% to 60%, the remaining part of the investment is usually covered with equity.

The most common type of innovation had indicated a single implementation, related only to the change in process, technology, or organization. The relationship between variables of the EU funds and management of innovative activities was verified. It has been observed that the identified variables arising from the support in a form of the EU funds had a positive effect on the level of earned revenue, the increase in margin and in increase in employment as well. It was confirmed that the implemented innovations supported by the European funds have a positive impact on the performance of the printing companies. Although there is a risk that due to the decreasing demand for printing services such a high level of funding the companies in this sector will significantly increase competition in the long term, that may also contribute to the economic problems of the enterprises belonging to the analyzed branch.

**Keywords**—Innovations, SMEs, performance, results.

## I. INTRODUCTION

THE level of innovation of economy is to the significant extent the function of the sizes and modernity. Struggling for competitive advantage on the market of EU, what becomes more important is new technologies, global information networks, or modern ideas, or organizational solutions, that became the determinants of the level of innovation in the scale of the world, country, region and at individual level.

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The need for adaptation of innovative solutions is not only influenced by the requirements/ demands of the community, competitive market, but also by the process of economic globalization [1], [2], that influences, e. g. dynamic diffusion of technical- scientific development, wide access to information, modern solutions and enforcing modernizing activities contributing to the economic development [3].

Conducting innovative activity in the production enterprises is the basic condition in the struggling for the competitive position [4]. There is some evidence causing that innovation is the main „ingredient” of the enterprise competitiveness. Firstly – innovation is in the direct relation to the remaining competitive factors of the company, secondly – innovation is unequivocally connected with change, and novelty, that influences the development of the subject, and thirdly – it influences the level of demand in the market [5], [6].

According to J.A. Schumpeter innovation means periodic formation of the new combinations- what is more, it differs from the invention, which may be associated with the concept of innovation [7]. According to him, innovations result from the combinations of some particular production factors, with reference to:

- Implementation of a new production method, so far not used in a given branch of industry;
- Implementation of a new product, not known for the market, or existing in other form;
- Re-organization of the operational processes during supply, production and distribution of the goods;
- Emergence of a new market, or creation of a new market;
- Obtaining of the new materials and resources for production, even if they already exist in the market.

According to other definition, innovation is an internal process with social, technological, organizational, and cultural characteristics [8] that may be managed. According to P. Drucker, innovation is connected with the occurrence of systematic changes, showing characteristics of planned and organized activities, together with the indication on the effects of their realization for the enterprises [9]. Innovation „is commonly considered as determinant of the enterprise development and all the countries in the social- economic dimension” [10], because it is based on introduction and spreading the developmental changes, that occur every single time when the existing solution is replaced by the new one. Ph. Kotler perceives innovations as products, services, or ideas that appear for the first time in a given subject (unit), and are not necessarily new in the market [11].

An interesting approach is represented by T. Ravichandran, who distinguishes between innovation and adaptation of a new solution, defining adaptation as elaborated previously, and in other place innovations, that manifests itself by noticeable Progress by buying, or retting by the New organization of one, or more utility values [12]. Features of an innovative organization are mainly novelty and uncertainty, on the other hand, adaptation is the knowledge of the solution and predictability of their use. Moreover, the innovative activity requires abilities, skills, involvement of the members of an organization, coordination, and support of the highest management level, while for adaptation only one- side decision of the management is sufficient.

## II. INNOVATION OF SMEs IN POLAND ON THE EXAMPLE OF THE PRINTING INDUSTRY

The policy of the European Union, directed to the branch of small and medium- sized enterprises originates from the year 1981, before implementation of the first multiannual European action plan. Since then, activity of the small and middle-sized enterprises in the European market has changed significantly, especially in the area of management strategies, causing on one hand increase in competition, on the other hand giving the chance for dynamic development.

Among all and medium sized enterprises, every fourth implemented products and/ or process innovation as a result of cooperation with other enterprises, with commercial laboratory, or public research institutions [13], [14]. Remaining units of economy based their activities only on the internal resources. The most common forms of innovative cooperation may be identified in Cyprus (62,3% of all the products and/ or innovative processes of the enterprise) and in Austria (51,0%), the most rarely the cooperation in the area of innovation is used by Italian enterprises (12,1%) and British (13,7%). Polish enterprises take in this category the 15th position, among 27 countries of the European Union.

The level of innovation of the Polish sector of small and medium- sized enterprises in the period 2008-2010 has improved. Apart from many investments and support from the EU, innovative activity of the small and medium sized enterprises remains still at the level of observation and careful implementation of innovative solutions. Focusing on the activities on the increase in innovation of Polish SMEs is especially significant, as they are the main driving force of the economy, and their ability to operate in the market also influences social situation in the country. Polish printing industry, as a result of increasing level of competitiveness and export, is one of the most perspective European markets. Simultaneously with the development of this branch of industry, what becomes significant is various activities aiming to sustainability (sustainable development), which causes that printing houses limit oxide emission, using energy-saving innovative technological lines environment- friendly. These activities require undertaking of the capital- intensive investment that may be supported by the funds from the European Union.

Polish printing industry of SMEs is 81% of all the units in the printing branch of industry, whereas significant party increased by micro-enterprises (40% of participation in SMEs), which means that the printing industry in Poland is pretty fragmented. In this time in the Polish industry there were 45,1 thousand of people employed, which gave to this sector the sixth position in terms of the level of employment in the whole European Union (5,3% of the share). Almost half of the people working in the printing industry is employed in microenterprises, similar participation refers to small enterprises. Remaining enterprises gave employment totally to less than 8%.

Development of the branch of industry is influenced mainly by increasing market demands. Developing specialization of the production and organization of the printing industry requires increase in the scope of the automation of the processes, which is connected with complexity of the systems of operations, printing and activities connected to that. In order to achieve that aim, the units incur expenses on various types of investment in new machines, and technological solutions used by the enterprises in the western markets.

In the last years, modern technologies, connected usually with buying of the machines and devices, were implemented by over 85% of the entrepreneurs form the printing industry. Using of the new technology should foster effective and high-quality production that as a result will cause reduction of labour costs – mainly factor limiting development of the branch. Polish printing industry is characterized by high diversity in the area of offering of the products and services. Economic forecasts indicate dynamic development of the branch, based especially on the increase in income for small and medium sized enterprises. The specifics of the operations in the given area and the structure of costs and income connected to that, is significantly different between enterprises, dependent on the printing technique used. Investments dependent on the technique used are focused then mainly on the production equipment.

Increasing efficiency and global competition caused generating of the excessive production potential that is at the same time accompanied by low margins on materials and equipment, and high production costs. Increasing supply and lowering demand on the traditional printing products because creating of the excessive production capacity. Nowadays, in the branch there remains about 35% of not used production capacity.

## III. ANALYSIS OF THE INNOVATIVE ACTIVITIES RESULTS OF SMEs IN THE PRINTING INDUSTRY

The research sample included 31 enterprises belonging to the sector of small and medium sized enterprises, of the printing industry and received grant for realization of at least one project in the years 2007-2013. Among the analyzed units, there were 18 hiring from 10 to 49 people, and 13 enterprises hiring 50 to 249 people. The size of the enterprises to the significant extent determines the developmental potential, especially in terms of implementation of innovative solutions. Greater amount of resources means greater possibilities of

action. In the research, there were more small enterprises that because of the lower capital, more often used grants from the European Union.

In the research, there were verified the results of implemented projects: the activity of the analyzed enterprises was presented in the aspect of the type of implemented innovation, defined on the basis of the theoretical research. Generally, there may be noticed greater focus on the innovative activity of the units in the projects directed only on the implementation of changes with particular character (Fig. 1).

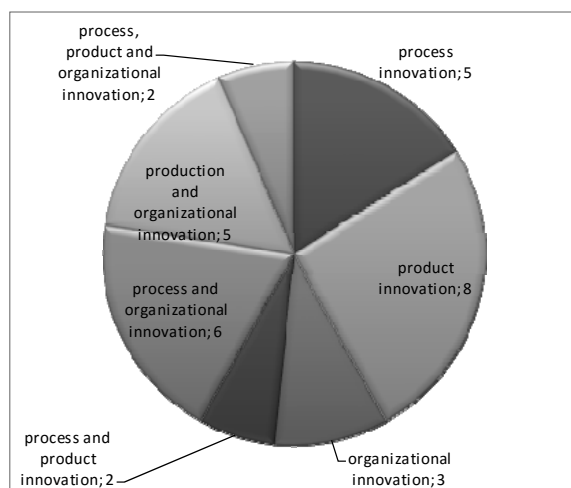


Fig. 1 Types of the implemented innovations in the analyzed enterprises

As the subject of innovation, the most often indicated, was product innovation (8 indications). Taking into account the possibility of realization of more than one innovation in the examined years, it was observed that at the same time the entrepreneurs have implemented process and organizational innovations (6 indications). Nevertheless, all of the types of innovations implemented simultaneously were indicated only two times.

The most commonly indicated range of the grant was in the scope between 40% and 60 %, not many- only 3 units declared grant at the level lower than 1/5 of the value of the project. It is also corresponding to the presumptions of the function of grants, for which the amount of the subsidies realized by enterprises of the projects estimated at the level of max. 60%.

Evaluation of an innovative activity is not an effect of only implementation of an innovative solution, but mainly – its impact on functioning of an enterprises and its competitive position with respect to the received support for the realized projects. As a result of the project realization, the entrepreneurs could observe particular changes referring to both, efficiency in manufacturing/ production, as well as financial aspects accompanying these changes (Table I).

TABLE I  
CHANGES OBSERVED AS A RESULT OF IMPLEMENTATION OF INNOVATION

Area of changes	increase	decrease	No changes
Productivity	29	0	2
Level of employment in production	11	5	15
Level of prices of the manufactured products/ services	4	2	25
Level of prices of the resources	5	9	17
Level of the production costs	4	10	17
Level of the generated revenues	22	3	6

Among the suggested changes being an effect of innovation implementation, there was noticed that:

- Almost all of the analyzed enterprises have registered greater production efficiency (80% of the units).
- In case of every third enterprises – increase in employment was registered (30% of the units), according to the operational program, simultaneously in the half of the units the number of employees remain the same as before the innovation was implemented.
- Only in several cases the level of prices for the manufactured products and services has changed (total-16% of the units), nevertheless there were significantly more enterprises in which the prices for services and products have not changed,
- Similar situation refers to the changes in the prices of resources, they have changed only in 25% of cases, over half of them has not noticed any significant changes in the price of the resources.
- Among the enterprises that have observed changes in the production costs, a significant part of them met with decrease of these costs (27% of the units), over half of them have not registered any significant changes in the scope of the total production costs.
- Most of the enterprises declared increase in income from the operational activity (58% of the units), almost every fifth enterprise has not noticed changes in income.
- Details concerning the changes in the area of analyzed results of implementation may start from the level of changes, corresponding to the generated income (Fig. 2).

Over half of the checked enterprises declared increase in the so far generated income from sales for over 10%, the next two enterprises observed that increase was not greater than 10%. For 6 enterprises, the level of sales remained the same that may be the result of the changes in the amount of the orders, or production costs.

For the three enterprises income from sales decreased up to 10% comparing to the period of innovation implementation. Observed adverse changes at the level of income from sales may be also a result of the costs incurred while project realization, referring both to the financial cases connected with preparing and implementation of the new solution with a technological, product or process character. The issue of financial profits was also analyzed on the basis of observed as a result of sales – profit margin net, that reflects profit net from a given reporting period, in this case – from the period before and after implementation of innovation (Fig. 3).

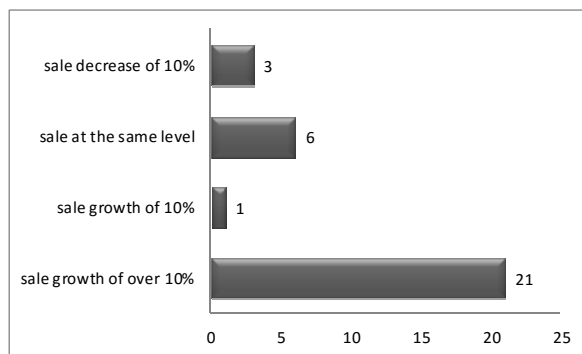


Fig. 2 Types of the implemented innovations in the analyzed enterprises

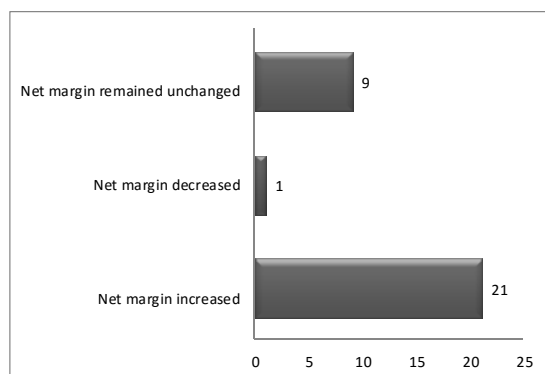


Fig. 3 Changes at the level of the margin net since the moment of innovation implementation

Most of the analyzed units have noticed increase in margin net, which means that their financial position has improved after implementation of innovation as well as it means that the units are able to position their price strategies successfully. One of the enterprises has noticed the decrease in margin net, but nine remaining enterprises have not changed the level of margins. High rates of return may cause increase in competitiveness and- further- may lead to destructive price tactics. Lowering margin corresponding to the fixed costs of an enterprise may be an effect of negligence in management.

Lack of the changes in margin may be an effect of increase in production costs and desire to preserve the amount of orders at the same level. Increase in margin net is possible by reducing of the spending on the production factors (Fig. 4).

Almost half of the indications of the tested enterprises confirm that after innovation implementation the labour costs connected with hiring and maintenance of the employee have decreased. Realization of the project caused greater efficiency in production; often-automated technological equipment reduces the need for involving a person to the particular production activities.

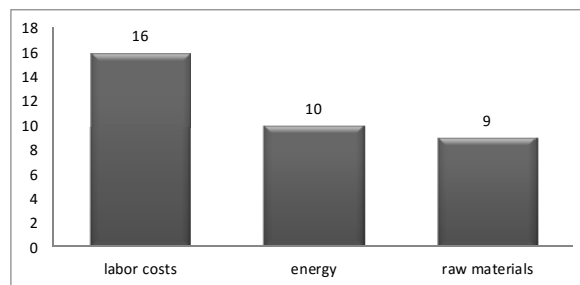


Fig. 4 Structure of the production costs referring to decrease in their level, until the moment of innovation implementation

Increase in the production efficiency has also significant influence on generating the savings in case of the use of electricity, therefore 28% of the indications referred to the lowering of the expenses for energy. The rarest indication, only every fourth, was connected with reduction in the costs concerning purchase of the resources and materials for production. Reduction in labour costs is confirmed by the changes at the level of employment, since the moment of innovation implementation (Fig. 5).

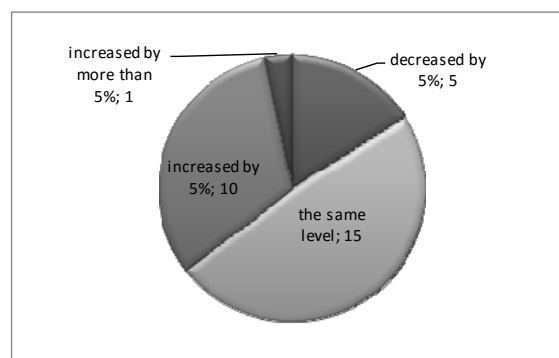


Fig. 5 Changes at the level of employment in the area of production, since the moment of innovation implementation

Half of the analyzed enterprises have not changed the level of employment, only in every sixth enterprise the change has occurred. Decrease in the labour costs in every second enterprise could be therefore caused not only by reducing of the number of employees, but also increased production efficiency and shorter working hours for the employees from the sector of production. Although one of the indicators of the result influencing the value of the subsidy was increase in employment, some of the enterprises decided not to maintain additional employees after innovation implementation. Simultaneously, as a result of the project realization every third enterprise has increased the level of employment for maximum 5 %.

Total level of the production costs effecting from the individual costs of the production factors was reflected by the changes in the price of the offered product, or service (Fig. 6).

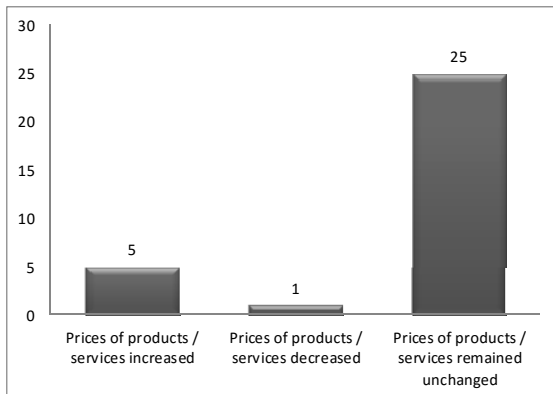


Fig. 6 Changes at the level of prices of the offered products/ services since the moment of innovation implementation

As it may be noticed, in case of the 25 enterprises the level of the price of an offered printing products and services remains at the same level as before innovation implementation. Only in case of five enterprises, the prices increased, and one of the enterprises decided to cut the prices. Preserved in most of the cases value of the products may aim to increase competitiveness of the researched enterprises. Increased productivity, preserving the same features enables the enterprise to realize the greater amount of orders; simultaneous increase in prices could influence the development of the company in a negative way, comparing with the market competitors, not only in the region, but also in the whole world.

Most of the beneficiaries of the program have noticed shortening of the time of the production cycle, and according to this – increase in productivity. It means greater possibility of meeting the customers' demands, not only in the quantitative dimension, but also qualitative aspect, and- what is connected to that – increase in the market of potential recipients of the printing products and services.

As a result of innovation implementation, estimated percent of the use of the production capacity comparing to the period before innovation implementation, was on average, at the greater level for over a half of the value, than previously. As a result of the project realization, the number of machines, devices and technological lines in the researched enterprises have increased. Similar proportion was observed in terms of the newly implemented printing products and services. At the same time, the 15 enterprises were identified in which all of the four indicators of the result and product was observed.

#### IV. CONCLUSION

Printing industry is characterized by constant and systematic increase in demand, especially in the area of preparing the materials for printing. Polish printing industry not only develops rapidly, but first of all is one of the most modern, and the cheapest one in the European markets. As a result of the technological changes and increase in the number of competitors, especially in the e-market, printing enterprises significantly increased their investments in innovations.

The most commonly indicated type of innovation had only the character of a single implementation and referred to the process/ technological changes, and changes at the level of product and organization. Simultaneously, it may be observed that implementation of innovation had innovative character mainly in the scale of the enterprises with the local scope, and the type of the implemented innovations referred the most often to the offset technology and digital printing.

It should be noticed that grants for innovation according to the EU projects, not only caused the development of the enterprises, but also with relatively great support caused meaningful increase in competitiveness in this particular branch of industry, together with the threat for further functioning of the significant part of the enterprises.

The results of the presented research may be completely applied to other SMEs, although selected tendencies may be characteristic for most of the financial innovations from the EU funds.

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