

# Technological Innovations in Pcim Community

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## ■ The role of innovation for organisation development

The term innovation was introduced in the 20th century by J.A. Schumpeter and was defined as: introduction of new products or improvement of existing ones, introduction of new or improved production method, opening a new market, introduction of a new sales or purchase method, application of new raw materials or components, introducing a new production organisation method<sup>1</sup>

Innovation can be interpreted in a broad or narrow sense. Innovation in a broad sense is the definition of changes in production, which rely on the absorption of accumulated knowledge; in the narrow sense, innovation is defined as a change in the manufacturing processes or products, which are based on new or previously unused knowledge. J.A. Schumpeter's approach to innovation of is treated as a classical approach; but it is still considered valid because he referred it to five cases<sup>2</sup>.

- introduction of a new product, which is unknown to customers or a new type of product,
- introduction of a new production method, which has not been used before in the given sector (industry),
- opening a new market, previously unknown for the industry in question, irrespective whether the market has previously existed or not,
- obtaining a new source of materials or components, irrespective whether the source has previously existed or must have been created,
- introduction of a new organisation method for the industry, e.g.: creation of a monopoly or breaking it.

A.J. Harman defines innovation as the introduction of new or significantly improved products or processes to the economy<sup>3</sup>. Such a definition of innovation narrows down the term to the concept of product or process, whilst according to Schumpeter, innovation could concern a product, production process or industry organization. A similar understanding of the term was presented by E. Hagen, who stated that innovation is organisation

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<sup>1</sup> Brdulak J., "Zarządzanie innowacjami" [Innovation management], [in:] Zarządzanie w przedsiębiorstwie [Management in companies], Difin, Warsaw 2008, p. 333.

<sup>2</sup> Schumpeter J., Teoria rozwoju gospodarczego, [The theory of economic development] PWN, Warsaw, 1960, p. 104.

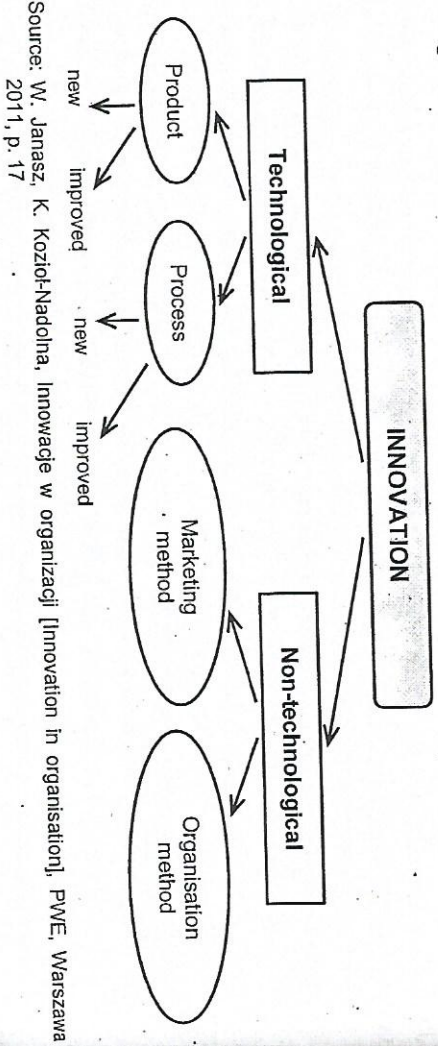
<sup>3</sup> A. J. Harman, *The international computer industry. Innovation and comparative advantage*, Harvard University Press, Cambridge Mass, 1971.

of production on the basis of new ideas which are considered better than the old ones<sup>4</sup>. The definition developed by S. Kuznets says that innovation is a new application of old or new knowledge in the production process, which can be considered an invention<sup>5</sup>, whilst Ch. Freeman considers innovation the first commercial introduction of a new product, process, system or device<sup>6</sup>.

R.W. Griffin, a contemporary economist, considers innovation to be a directed effort of an organisation to develop new products, services or new applications of already existing products or services<sup>7</sup>. M. E. Porter complements the concept of innovation with technological improvements, better methods or production processes of a given product. This can be revealed in product or process changes, new approaches to marketing and new distribution forms<sup>8</sup>.

The last presented definition of innovation is the one currently used in the European Union and OECD to measure the ability of companies and countries to implement innovation. According to this definition, we can distinguish two types of innovation: technological and non-technological<sup>9</sup>. The division into technological and non-technological innovations is presented in Figure 1.

■ Figure 1. Innovation according to the EU and OECD



Source: W. Janasz, K. Kozioł-Nadolna, *Innowacje w organizacji [Innovation in organisation]*, PWE, Warszawa 2011, p. 17

Based on information presented in Figure 1, we can conclude that innovation can be divided into two types: technological and non-technological innovation. In the light of this division, technological innovation includes the introduction of a new product or improvement of an existing one, as well as application of a new or improved production process.

4 E. Hagen, *On the theory of social change: How economic growth begins*, Chicago 1962.  
 5 S. Kuznets, *Six lectures on economic growth*, Chicago, 1959, p. 30.  
 6 Ch. Freeman, *The economics of industrial innovation*, F. Pinter, London 1982, p. 169.  
 7 Griffin R.W., *Podstawy zarządzania organizacjami. [The fundamentals of organisational management]* PWN, Warszawa 1996, p. 646.  
 8 M.E. Porter, *The competitive advantage of nations*, The Macmillan Press Ltd., London 1990, s. 45.  
 9 O. Manual, *The measurement of scientific and technological activities. Proposed guidelines for collecting and*

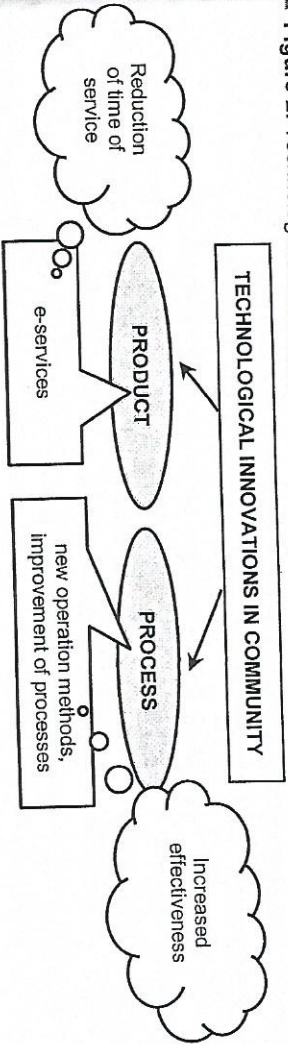
Nevertheless, the product or process must be new from the point of view of the organization that introduced it. The second group includes non-technological innovations, which consist of marketing and organisation methods, also called innovative management, which includes improved methods of organizing and managing research activities, production and services.

■ Technological innovations in a community

A community is a complex system with specific functions and tasks. Also, it is a specific organisation whose mission is to meet the needs of its residents. Therefore, the implementation of innovative processes may contribute to the development of the community. Moreover, these processes may facilitate and speed up the implementation of community tasks.

In the case of a community, technological innovations will include modifications or improvements in products and processes. The role of product innovation is to provide customers with newer and wider benefits; in this case, the community could put particular emphasis on e-services. The term refers to services that can be provided electronically via telecommunication networks (e.g. Internet with the help of information technologies). E-services are very much automated and require little effort from people. The development of e-services in communities is very important for their development<sup>10</sup>. Process innovations are focussed on diagnosing and improving processes which occur in the unit, as well as their formalization thanks to the introduction of new procedures. Technological innovation in a community was presented in Figure 2.

■ Figure 2. Technological innovations in a community



Source: own study

In the case of communities, the product is actually providing services, that is why product innovations in communities mainly concern e-services. Based on information presented in Figure 2, we can conclude that e-services significantly speed up the time of service. In the communities where the system of e-services is very well-developed, a citizen is able to perform the following tasks by clicking on a suitable tab: download forms, fill them in and send them to the local office. People do not have to leave the house

<sup>10</sup> see: Gorzeliary - Dziadkowiec M., "Wpływ procesów innowacyjnych i operacyjnych na rozwój obszarów wiejskich", *The influence of innovation and operational processes on the development of rural areas* Baroniell

to obtain some official information or submit a form, but they have to know how to use the computer system<sup>11</sup>.

The other group of technological innovation includes process innovations. The community performs its tasks through a set of processes that are characterized by the fact that they result in products or services that create added value for the organization and the customer; in addition they bind together resources and action. Also, processes can be described, monitored and measured. Processes in the community can be divided into primary and supporting processes. The process involves a series of steps that must be taken to achieve a particular purpose<sup>12</sup>. This can be exemplified by the registration of marital status. It is one of the main processes in the community. It includes the following operational processes: population census, identity documents, registration of marriages, births, deaths and other civil events, administration of personal reserves, etc. Supporting processes will include: the maintenance of the population register, issuing of ID documents, providing weddings and issuing certificates. Other main processes in the community include the following: property management, community promotion, supporting entrepreneurship, improving quality management methods.<sup>13</sup>

Those processes can be new or improved. Process improvement in a community is possible after adopting new regulations, acts or official decisions which facilitate the work. A new process means the application of new technologies (computers, software, IT and ICT systems). In that context, process innovations will be inseparable from product innovations. It can be also said here that product innovations in the community improve processes. For example, the implementation of e-services makes it possible to download necessary forms from a community website. Obtaining an ID card is possible after submitting an application from through the Internet, which is received by personnel responsible for ID issue and further processed. Personal appearance is required only to collect the document from the local community office. The added value for the customer here is lower amount of time to be spent on resolving a particular issue.

As mentioned before, introducing product and process innovations in the community is linked with technological innovations. Product innovations mean assuming new or improving existing manufacturing or delivery methods. In the case of a community, new products include e-services, which are directly linked to the use of Internet. IT and ITC systems are also very important in the context of e-services<sup>14</sup>. The use of modern technologies in the community generates both product and process innovations. The implementation of e-services and local acts improving the processes (e.g. reducing

bureaucratic procedures) facilitates community management and contributes to local development.

#### ■ Technological innovations in the community of Pcim - empirical analysis

The community of Pcim is situated in the south-eastern part of the mountain range of the Makow Beskids, in the district of Myślenice, Malopolska Province. The community consists of three villages: Pcim, Stróża and Trzebunia with a total population of 10,700 inhabitants. The location along the main road S7 Krakow-Zakopane makes the community easily accessible for tourists. The distance from Krakow is 46 km and from Zakopane – 61 km.

The study consisted of an interview and a questionnaire with a five-point Likert scale (where 1 meant that actions are not taken at all / not implemented in the community, 2 - actions are rarely taken / implemented, 3 - actions are sometimes taken / implemented, 4 - actions are often taken / implemented, 5 - actions are very often taken / implemented). The aim of the study was to answer the question whether the community implements both product and process technological innovations, and to what extent they are implemented. The obtained results have been presented in Table 1.

Having analyzed the results of studies presented in Table 1, we can conclude that the community in question does not implement technological innovations in a sufficient degree. There is quite a significant emphasis on implementing innovations through acts of law. The conducted analyses reveal that the community very often undertakes some activities aimed at improving existing processes by adopting acts of law so as to improve customer (citizen) service. As a result, it is possible to change official procedures in all departments (Finance, Administration and Population Affairs, Property Management, Family Affairs), as well as the Civil Registration Office. Sometimes, new computer, IT or ICT systems are introduced. The Internet is not used sufficiently. However, it is worth mentioning here that the community of Pcim is planning some improvements in that respect through a community project called "Mitigating the impacts of IT exclusion in the community of Pcim". When it comes to the product dimension, the community does not implement e-services, but the e-book service is developed very well. E-services and sorting out issues through the Internet has been evaluated with mark 1 (no activities are implemented in that area). The Internet can be only used to register business activity and obtain statistical data. These functionalities are used very frequently. The attempts at developing e-office were given the mark 2, which means that some steps are being taken in that respect.

It is also worth mentioning here that the analysed community uses structural funds; even hires a European Funds Specialist. It is also important to underline the attempts at promoting sports activities amongst young people: the community authorities have built a sports ground in Stróża and a football pitch in Trzebunia in 2012. Moreover, the community has decided to cooperate with foreign communities, such as the community of Breza, in such areas as culture and sports. At the moment this cooperation has led to the creation of the programme "Young engineer 2013".

<sup>11</sup> see more in: Gorzelany – Plesiska J., "Wykorzystanie mianików perspektyw Klienta w zarządzaniu gminą wiejską", [The use of customer perspective indicators in rural community management], Barometr Regionalny, no 4, 2012, pp. 90-94.

<sup>12</sup> Zawicki M., Mazur S., Bobek J., Zarządzenie w Samorządzie Terytorialnym. Najlepsze praktyki, [Management in local self-governments. Best practices] Institutional Development Program, Kraków, 2004, pp. 127.

<sup>13</sup> Ibidem, pp. 133-138.

<sup>14</sup> see more in: Gorzelany – Dziadkowiec M., Gorzelany – Plesiska J., "Wykorzystanie nowoczesnych technologii w tworzeniu systemów informacyjno-komunikacyjnych w gminie Michalowiec", [The use of modern technologies in the development of information and communication systems in the community of Michalowiec] Zeszyty Naukowe No. 703,

1. Technological innovations in the community of Pcim - study results

Innovation	Evaluation scale				
	1	2	3	4	5
<b>Technological / process / product</b>					
Does the community implement technological innovations?					X
Does the community use computer systems (computers, software)?					X
Does the community use IT systems (technologies used to receive and transfer information)?					X
Does the community use ICT systems?					X
Does the community improve processes?					X
Does the community improve processes through the use of new technologies?					X
Does the community improve processes through new acts of law?					X
Does the community improve customer service processes?					X
Does the community improve processes in the following Departments:					X
• Finance					X
• Administration and Population Affairs					X
• Property Management and Infrastructure					X
• Family Affairs					X
Does the community improve processes in the Civil Registration Office?					X
Does the company introduce e-services?					X
What issues can be sorted out via the Internet:					X
<b>For the citizens:</b>					X
Vital records					X
ID documents					X
Social benefits					X
Information about residence					X
Use of public libraries					X
Use of public libraries					X
<b>For entrepreneurs:</b>					X
Social Insurance Institution					X
Income tax					X
Value added tax					X
Registration of business activity					X
Statistical data					X
Customs declarations					X
Permissions and certificates					X
Public tenders					X
Does the community use e-documents?					X
Does the community develop e-tourism services?					X
Does the community develop e-office services?					X
Does the community improve processes through the use of Internet?					X
Does the introduction of new technologies influence community development?					X

Recommendations and proposals for the analysed community

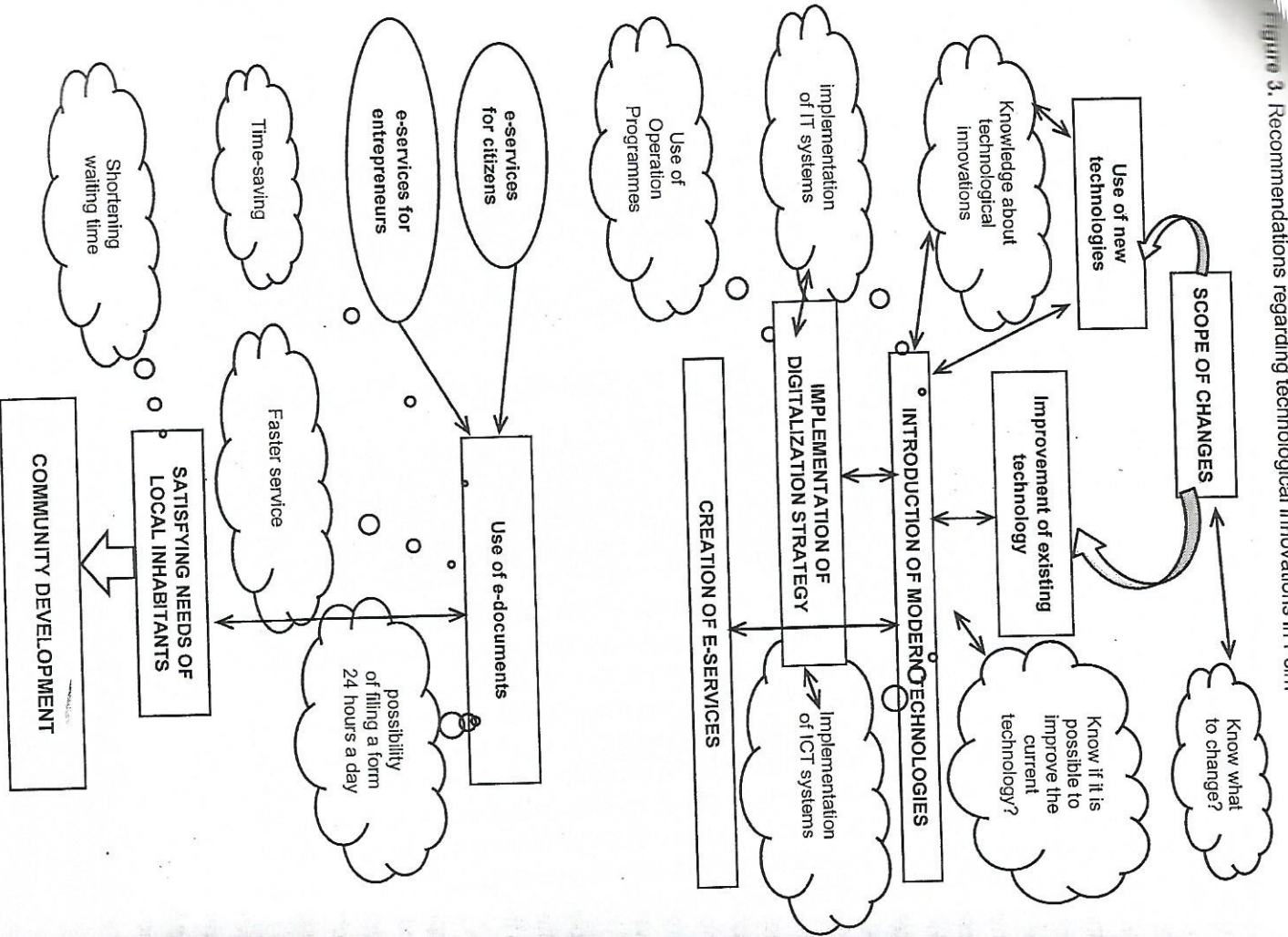
Having analyzed the implementation of technological innovations in the community of Pcim, one can conclude that there is a need for significant improvements in that respect. Local leaders should mainly focus on the implementation of programs aimed at developing information technology infrastructure (Operational Programmes: Innovative Economy, Infrastructure and Environment, Human Capital). Certainly, the community should focus on the development of IT and ICT systems. Creating information systems is related to communication, that is the process of sending and receiving symbols, which have a particular meaning. The development of information and communication systems is mainly dependent on information technologies, which are an important element of computer sciences. Information technologies deal with computer hardware, software used for creating, sending, storing, presenting and securing information, as well as telecommunication connections. IT is the combination of computer sciences with communication technologies. IT application areas include: the use of computer science means and methods to solve everyday problems and enable functioning in the information society<sup>15</sup>, this is the main reason why information technologies are concerned with sending and transmitting information, thus creating ICT systems, which have an enormous impact on social life. Creating efficient systems, which embrace all processes in the organisation, is the key to success. The system should support the work of various, very often distant, organisational units, that is why it has the information-communication character. Such systems are supposed to ensure fast information flow.

Another area that needs improvements is the creation of e-services and e-office. Pcim does not implement e-services, which is caused by insufficient information infrastructure. The recommendations for local leaders on the implementation of technological innovations in the community have been presented in Figure 3.

Having analyzed Figure 3, we can conclude that for Pcim should first focus on the implementation of Digitization Strategy, through the implementation of modern technologies and implementation of Operational Programmes. Taking action in this area will make it possible to avoid social exclusion for community inhabitants. The implementation of new technologies will have a direct impact on the creation of e-services, which will make a significant contribution to community development.

Summing up the conducted research, we can conclude that the community of Pcim develops by improving processes, which are indispensable for proper functioning of the community. Process improvements are performed by passing acts of law, resolutions and regulations. Therefore, we cannot say that the community does not implement technological innovations. They are implemented, but insufficiently. Local authorities should focus on the implementation of new technologies, which will significantly influence community development.

Figure 3. Recommendations regarding technological innovations in Pcim



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## Summary

The aim of this study is to identify the nature and importance of innovation, as well as indicate the way technological innovation affects the development of a community. The analysis will be conducted in the community of Pcim. The study will use interviews and a questionnaire with a five-point Likert scale. The article will attempt at creating a model with recommendations on how to use technologies in innovations as determinants for community development. Practical implications will include some proposals for community authorities regarding areas that should undergo significant transformations to ensure community development. Social implications are: delivering to customers new and great benefits, in this case for the commune e-services, streamlining processes, the coming into existence of the development of applications will have a great importance of information technologies, increase in the quality of informing the society.

**Keywords:** community management, technological innovations, innovation process, transformation  
**Article category:** Scientific publication