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THE USE OF ADVANCED TECHNOLOGIES IN INDUSTRIAL ENTERPRISES IN THE YEAR 2023

44.9%

The share of industrial enterprises using advanced technologies in the year 2023

The most frequently indicated purpose of using advanced technologies in industrial enterprises in 2023 was process integration (e.g. production, storage and logistics) indicated by 50.8% of entities using Internet of Things (IoT). The most frequently declared benefit resulting from the use of advanced technologies was the improvement of the quality of manufactured products (76.5% of industrial enterprises using Artificial Intelligence).

Position of the enterprise in the global value chain

Products are goods or services; a company can simultaneously manufacture goods and provide services. In 2023 the share of industrial enterprises producing the final product, that goes directly to the end customer stated of 73.2%, whereby for final goods it was 62.2%, while for final services it was 41.4% of total industrial enterprises. During the period considered, the ownership of technological documentation, on the basis of which the final product going directly to the end customer was manufactured, owned 35.6% of such entities.

Nearly three-quarters of industrial enterprises produced the final product, which went directly to the end customer

Table 1. Industrial enterprises producing the final product and owning technological documentation in 2023 (in % of surveyed enterprises)

Specification	Enterprises	
	whose products go directly to the end customer	which have technological documentation
Total	73.2	35.6
BY NUMBER OF PERSONS EMPLOYED		
10–49 persons employed	72.4	31.3
50–249	74.1	42.7
250 or more persons employed	79.7	60.6

Table 1. Industrial enterprises producing the final product and owing technological documentation in 2023 (in % of surveyed enterprises) (cont.)

Specification	Enterprises	
	whose products go directly to the end customer	which have technological documentation
BY SECTIONS OF THE POLISH CLASSIFICATION OF ACTIVITIES		
Mining and quarrying	76.3	26.4
Manufacturing	74.4	36.8
Electricity, gas, steam and air conditioning supply	74.2	38.4
Water supply; sewerage, waste management and remediation activities	56.7	19.0

The use of advanced technologies

An enterprise using advanced technologies is one that in the period under review used at least one of the surveyed technologies, i.e. Cloud Computing, Internet of Things (IoT), Big Data analysis or Artificial Intelligence (AI).

In 2023 the share of industrial enterprises using advanced technologies amounted to 44.9%, while the highest share was recorded in enterprises classified to the section *Electricity, gas, steam and air conditioning supply* (70.9%). Taking into account the number of persons employed, units with 250 or more persons employed had the largest share in the total number of enterprises using advanced technologies (94.2% of industrial enterprises).

Among enterprises using advanced technologies, the largest share was held by entities with 250 or more persons employed (94.2%)

Chart 1. Industrial enterprises using advanced technologies in 2023 by sections of the Polish Classification of Activities (in % of surveyed enterprises)

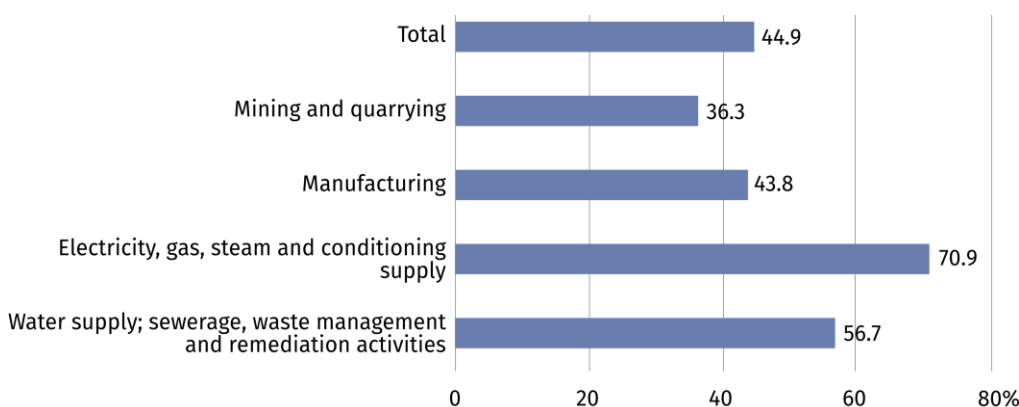
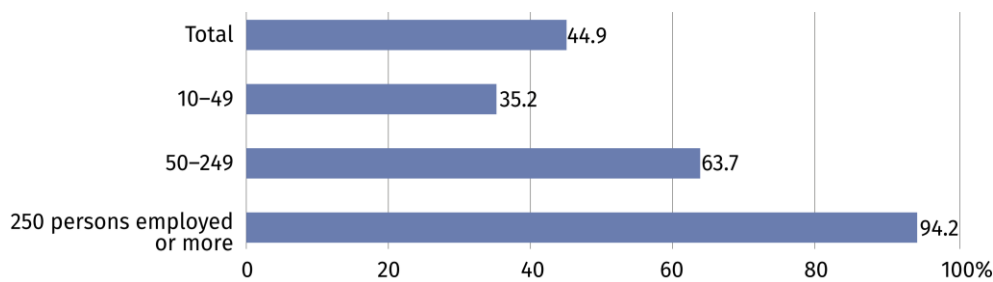


Chart 2. Industrial enterprises using advanced technologies in 2023 by number of persons employed (in % of surveyed enterprises)



Goals of using advanced technologies

Surveyed industrial enterprises using advanced technologies indicated the particular goals for which they used these technologies. Among the entities that used Cloud Computing in their activities, the most frequently cited reason was increasing the security level of the enterprise's IT systems (44.0% of enterprises).

More than half of the enterprises using the Internet of Things indicated process integration (e.g. production, storage and logistics) as the main purpose for using this technology, while 48.8% of enterprises pointed to increasing productivity/process of providing services.

Enterprises using Artificial Intelligence were most likely to respond that they use it to increasing productivity/process of providing services (46.0%).

Table 2. Industrial enterprises using selected advanced technology in 2023 by the purpose of their use (in % of enterprises using specified technology)

Goals	Enterprises using		
	Cloud Computing	Internet of Things	Artificial Intelligence
Marketing, advertisement	22.5	18.1	22.9
Production scalability	8.2	19.4	16.6
Process integration (e.g. production, storage and logistics)	36.6	50.8	28.1
Increasing productivity/process of providing services	23.3	48.8	46.0
Increasing the efficiency of design processes and/or computer simulations of a good/service	11.6	.	.
Increasing the security level of the enterprise's IT systems	44.0	30.2	19.3
Increasing the level of flexibility in responding to customers' needs	21.4	19.5	20.5
Generating new revenue streams and new business models	5.3	5.8	14.4

Table 2. Industrial enterprises using selected advanced technology in 2023 by the purpose of their use (in % of enterprises using specified technology) (cont.)

Goals	Enterprises using		
	Cloud Computing	Internet of Things	Artificial Intelligence
Exchange of information directly with product purchasers / improving the communication process with counterparties / customers	38.3	18.1	6.8
To obtain better information at different organisational levels of the entity	.	28.8	6.9
To obtain better information at different organisational levels of the entity, the ability to track the current operating status	35.4	.	.
The ability to track (including spying) the current operating of a good or service	.	25.5	24.0
Implementation of new service models for a good and/or service	.	10.5	.
Other	9.0	4.9	10.2

Advantages of using advanced technologies

Enterprises participating in the survey indicated benefits from four advanced technologies (Cloud Computing, Internet of Things, Big Data analysis, Artificial Intelligence).

In case of entities using Cloud Computing in their activities, the greatest benefit of its use was improving data security indicated by 72.2% of enterprises using Cloud Computing.

Entities using the Internet of Things, cited reduction of production time/process of providing services, reduction of downtime (61.5%) and increasing productivity (60.0%) as the most significant benefits of its use. Enterprises using Big Data analytics indicated the most important benefit from using this technology as improving product quality (76.5% of entities processing such data) and, similarly to enterprises using the Internet of Things, increasing productivity (76.0%).

Improving product quality was also very important for units using Artificial Intelligence – cited by 51.0% of them, however the greatest advantage for the firms using it was increasing productivity – percentage of such enterprises was 55.5%.

Table 3. Industrial enterprises indicating particular advantages of using given advanced technology in 2023 by benefits from their use (in % enterprises using specified technology)

Advantages	Enterprises using			
	Cloud Computing	Internet of Things	Big Data analyses	Artificial Intelligence
Reduction of costs	28.9	52.0	68.5	47.3
Reduction of production time/ process of providing services, reduction of downtime	29.9	61.5	61.3	47.1
Increasing productivity	41.1	60.0	76.0	55.5
Improving product quality	29.5	56.6	76.5	51.0
Improving health and safety at work	.	53.4	37.1	37.3
Generation of value added	.	26.4	40.3	.
Improving data security	72.2	.	.	.
Other	4.0	1.1	5.0	2.6

Staff changes

Due to the use of advanced technologies, in 2023, industrial enterprises experienced staffing changes, which involved either a reduction or an increase in the number of positions in certain departments, as well as the hiring of new, highly qualified specialists.

Among enterprises in which staff changes occurred as a result of using advanced technologies, the highest percentage was recorded in the case of an increase in the number of full-time positions in some departments of the company among industrial enterprises using Big Data analyses (13.4%); the lowest in the case of a reduction in the number of full-time positions in some departments of the company among enterprises using Cloud Computing (2.0%).

The highest percentage of entities employing highly qualified specialists in connection with the use of individual technologies was recorded among enterprises using Big Data analyses (7.5% of entities using this technology), and the lowest – among companies using Cloud Computing (3.8%).

Table 4. Industrial enterprises in which, in 2023, staffing changes occurred due to the use of a selected advanced technology (in % of enterprises using the specified technology)

Staff changes	Enterprises using			
	Cloud Computing	Internet of Things	Big Data analyses	Artificial Intelligence
Reduction in the number of positions in certain departments of the company	2.0	3.7	5.0	5.4
Increase in the number of positions in certain departments of the entity	3.4	5.4	13.4	4.5
Hiring of new, highly qualified specialists	3.8	5.2	7.5	4.7







Methodological notes

This news release presents the most important results of the first survey on the use of advantage technologies in industry, performed by Statistics Poland under Statistical surveys program of official statistics. Survey covered the representative sample of enterprises with more than 9 persons employed and the main type of activity classified as industrial according to the Polish Classification of Activities – PKD (i.e. sections B, C, D, E). Data will be published biennially.

In case of quoting Statistics Poland data, please provide information: “Source of data: Statistics Poland”, and in case of publishing calculations made on data published by Statistics Poland, please include the following disclaimer: “Own study based on figures from Statistics Poland”.

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Terms used in official statistics

[Cloud Computing](#)

[Internet of Things](#)

[Artificial Intelligence](#)

[Information Society](#)