



Artificial Intelligence Policies Association (AIPA) Research for the Future Artificial Intelligence Perception in Establishments

Reference to the report: Zafer Küçükşabanoğlu, Volkan Kılıç, Şebnem Özdemir.
AIPA Research on Future: Quantitative Research Report on Artificial Intelligence Perception in Society.
Artificial Intelligence Policies Association (AIPA), Kuantum Araştırma 2021.

October 2021



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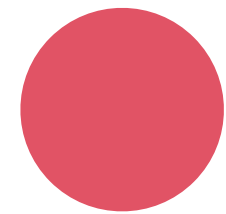
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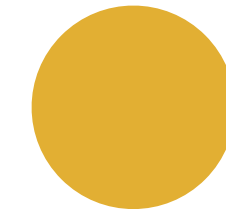
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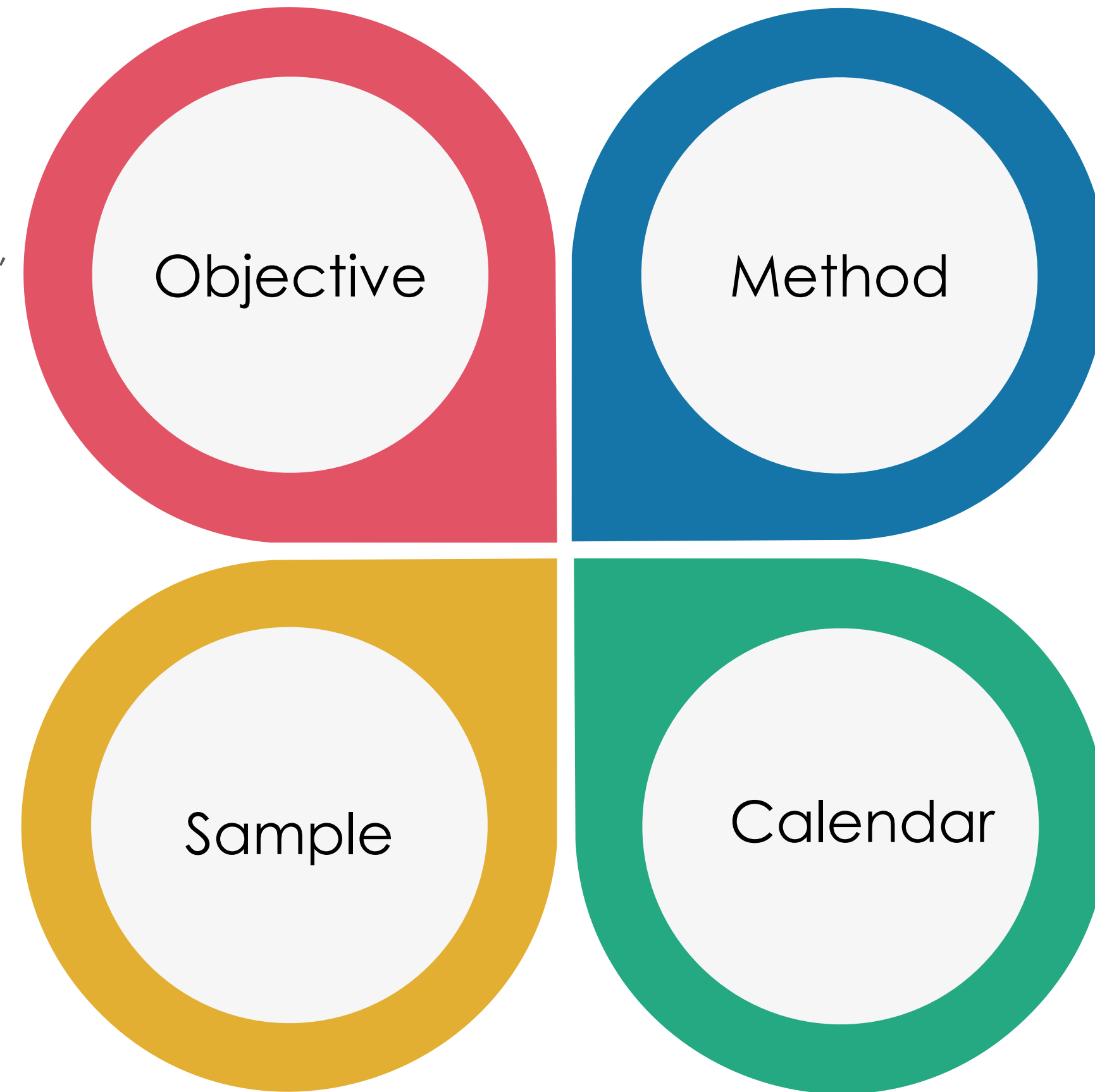


Methodology



 To research and analyze the enterprises using information technologies and artificial intelligence, their point of views and perceptions on these issues.

 847 establishments located in 12 provinces were interviewed at 95% confidence level with ± 3.5 margin of error.



Quantitative Research
Hybrid (CAWI and CATI) methods are applied.

CAWI (Computer-Assisted Web Interviewing)

CATI (Computer-Assisted Telephone Interviewing)

Fieldwork
22 June - 16 July, 2021

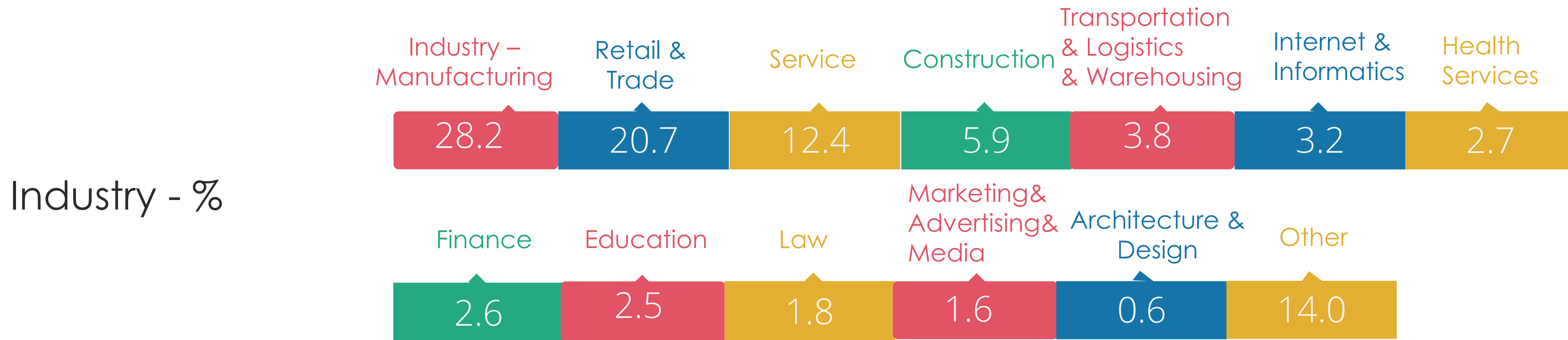
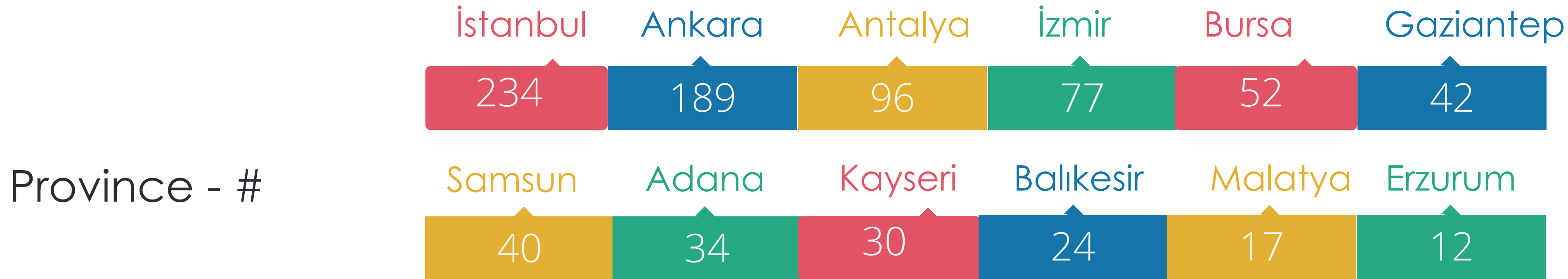
Data Control
23 June - 17 July, 2021

Analysis and Reporting
26 - 27 July, 2021



Artificial Intelligence Perception in Establishments

Sample





Preface



Artificial intelligence studies, which gained more importance in the 1950s, were the focus of the monetary power of that period, namely DARPA, and received financial support from every point, especially from the private sector, in all periods until the 1st and 2nd winter. The main idea behind this support is the potential impact that artificial intelligence might have on the business world and economy. Since 2016, this impact has been described in detail by the reports of industry giants such as the World Economic Forum, Accenture, Deloitte and IBM.

Since 2016, the developments in hardware, software and mathematical fields have clearly shown that the change to be created by artificial intelligence in the business world will increasingly continue. In fact, the year 2020 has been the year of establishments integrating artificial intelligence into their structures at an advanced level. The 85% of establishments that have accessed this capability on a global scale have significantly reduced their costs. This is a clear proof that the artificial intelligence is both the accelerator and the main influencer of the economy.

Artificial intelligence is inevitable/negligible for every country, company and structure that wants to strengthen its economy. According to AIPA, which aims to "accelerate our country's goal of being among the top 10 economies in the world through technology entrepreneurship", the first step is to reveal the current situation. In this regard, appropriate actions and policies need to be developed. At this point, AIPA has clearly taken a picture of the artificial intelligence used by establishments in regard to business size and sectors through the research on artificial intelligence perception in establishments.

Based on this picture, plans should be made and steps should be taken, so that the growing and deepening digital and technology capability-oriented gap can be eliminated through artificial intelligence.



Economic growth and competitiveness is the main agenda of every country. Artificial intelligence has created a devastating innovative transformation on this agenda also with the effect of the pandemic. Transformation is inevitable. We would like to express our thanks to the Founder of Kuantum Araştırma and Advisory Board Member Volkan Kılıç and his team, our AIPA Advisory Board Member Dr. Şebnem Özdemir, our AIPA Vice President Gökhan Varan, and our AIPA Researchers Nevin Akarsu and Rüveyda Varan for enabling the conduct of such a critical and comprehensive research.

Regardless of sector and scale; every company, structure and economy that can integrate and transform artificial intelligence will exist, while others will disappear. Therefore, we should take actions in order to plan the future. It should not be forgotten that artificial intelligence is the most strategic and fundamental element in these actions, and that it is the driving force of economic development today.

Kind regards.

Zafer Küçükşabanoğlu

Artificial Intelligence Policies Association (AIPA) Founder and Chairman



Zafer Küçükşabanoğlu - Artificial Intelligence Policies Association (AIPA) Founder and Chairman

Gökhan Varan - Artificial Intelligence Policies Association (AIPA) Vice Chairman

Dr. Şebnem Özdemir - Artificial Intelligence Policies Association (AIPA) Vice Chairman

Selin Duru - Artificial Intelligence Policies Association (AIPA) Secretary General

Volkan Kılıç – Founder of Kuantum Araştırma & Artificial Intelligence Policies Assoc. (AIPA) Board Member

Selver Güngör Reis - Kuantum Araştırma, Customer Relations Manager

Murat Ünsal - Kuantum Araştırma, Customer Relations Director

Merve Karakullukçu - Kuantum Araştırma, Analyst

Bahar Coşar - Kuantum Araştırma, Junior Research Specialist

Yelda Pulat - Kuantum Araştırma, Operations Director

Burcu Aksu - Kuantum Araştırma, Research Specialist



Executive Summary



- The evolution of technology integration in establishments starts from logistics, stock and product management and develops towards CRM after financial management and infrastructures are completed. The most important step in the digitalization process is to transfer the customer experience into digital. Machine learning and artificial intelligence's interpretation of the customer has a very important and critical position in this era of digitalization. While the use of CRM has increased in the last 10 years, the use of these highly product-related technologies in retail sector's CRM systems seems to be promising for monitoring consumer behaviors on a product basis.
- One of the biggest problems in the end-to-end digitalization of the establishments is the security vulnerability. While all information flows digitally in such an uncontrolled manner, the rate of investment in cyber security infrastructure is very low with 35.2%. On the other hand, the rate of not investing in cyber security in companies having a corporate management with 100+ employees is very pleasing with a ratio of 1.7%. However, we cannot say the same for micro-scale enterprises with 1-9 employees, since this rate rises to 70.9% in micro-scale companies with 1-9 employees.

While cyber attacks occur even in large technology companies, the threat is huge, regardless of industry or number of employees. Business size can be a barrier to budgeting for investment. However, establishments should start from somewhere and establish these systems with regular investments.



- While the rate of associating artificial intelligence with a robot (which we define as the Hollywood effect) is 21.1% in the society, this rate is 9.9% in establishments. In businesses with 100+ employees, the correct definition is diverging. Recently, corporate businesses with 100+ employees organize trainings to bring digital transformation and artificial intelligence culture to their employees. This inevitably forces the establishments to correct the mistakes in the description of artificial intelligence by themselves and therefore artificial intelligence becomes a corporate culture. While there is no significant difference between artificial intelligence descriptions of the sectors, the education sector differs significantly from other sectors with the description «technology / the new state of technology». It is worrisome that our educational institutions, which will teach and develop these technologies in the age of digitalization, artificial intelligence and algorithms, make more general definitions.
- When 61.0% of micro-scale companies called "small retailers" with 1-9 employees, which have a very serious place in the Turkish economy, and 27.2% of companies with 10-49 employees cannot keep up with digital transformation, this means that their professions are under threat. The average rate of 50.0% of establishments integrating AI into their business or believing that AI will affect businesses in the short term show us that companies have a certain awareness of the impressive power of AI. There is also a segment among the occupational groups that do not see the need to keep up with digitalization, especially in micro-scale small businesses, however they state that they will use artificial intelligence in the future. This shows that some of the occupations performed by micro-scale establishments with 1-9 employees, which do not use artificial intelligence technologies and face the threat of extinction, will only survive by keeping up with the times.



- The fact that 70.4% of companies using artificial intelligence will increase their use in the future is both very promising and worrying in terms of the growing gap between establishments in the economy.
- The rate of establishments considering using artificial intelligence in the future is promising with the rate of 54.2%. But when we look at the results of the society, only 28.9% of the population want to deal with artificial intelligence in the future. According to the research on the society, the biggest fear about artificial intelligence for both students and community stakeholders is the belief that the employment will be negatively affected. When the use of artificial intelligence in establishments does not find a response in the society, the employment gap of qualified personnel might increase. While the people participating in the research on the society are between the ages of 18-45, who are born, produce, use and will have to use these technologies, only 28.9% of this population stated that they want to be interested in artificial intelligence. In addition, when we consider the risk of brain drain of qualified personnel who can use these technologies in the future, it is clear that there will be a bottleneck in terms of employment, so that the corporate companies will think of integrating artificial intelligence into themselves. It is observed that the rate of companies with 50-99 employees considering using artificial intelligence is 50.0%, which is a great threat to these businesses in this period where competition and digitalization are so intense. Therefore, we might say that it is one of the biggest opportunity areas for these companies to institutionalize rapidly, invest and raise awareness in the medium term.
- While the number of entrepreneurs producing artificial intelligence in Turkey was 75 in 2019, this number has increased by 82.7% in 2020 to 137. Considering 2021, the number of entrepreneurs is 167, with¹³ an increase of 21.9% compared to 2020.



Business Administration



Artificial Intelligence Perception in Establishments

Would you please indicate the management tools you want to digitize in the upcoming period?



Corporate Governance Tools/Processes to Digitize



- The evolution of technology integration in establishments starts from logistics and stock management and develops towards CRM.
- The management tools that establishments want to digitalize show us that they are experiencing this evolution in the right way.
- The most important step in the digitalization process is to transfer the customer experience into digital.
- Machine learning and artificial intelligence's interpretation of the customer is in a very important and critical position in this era of digitalization.



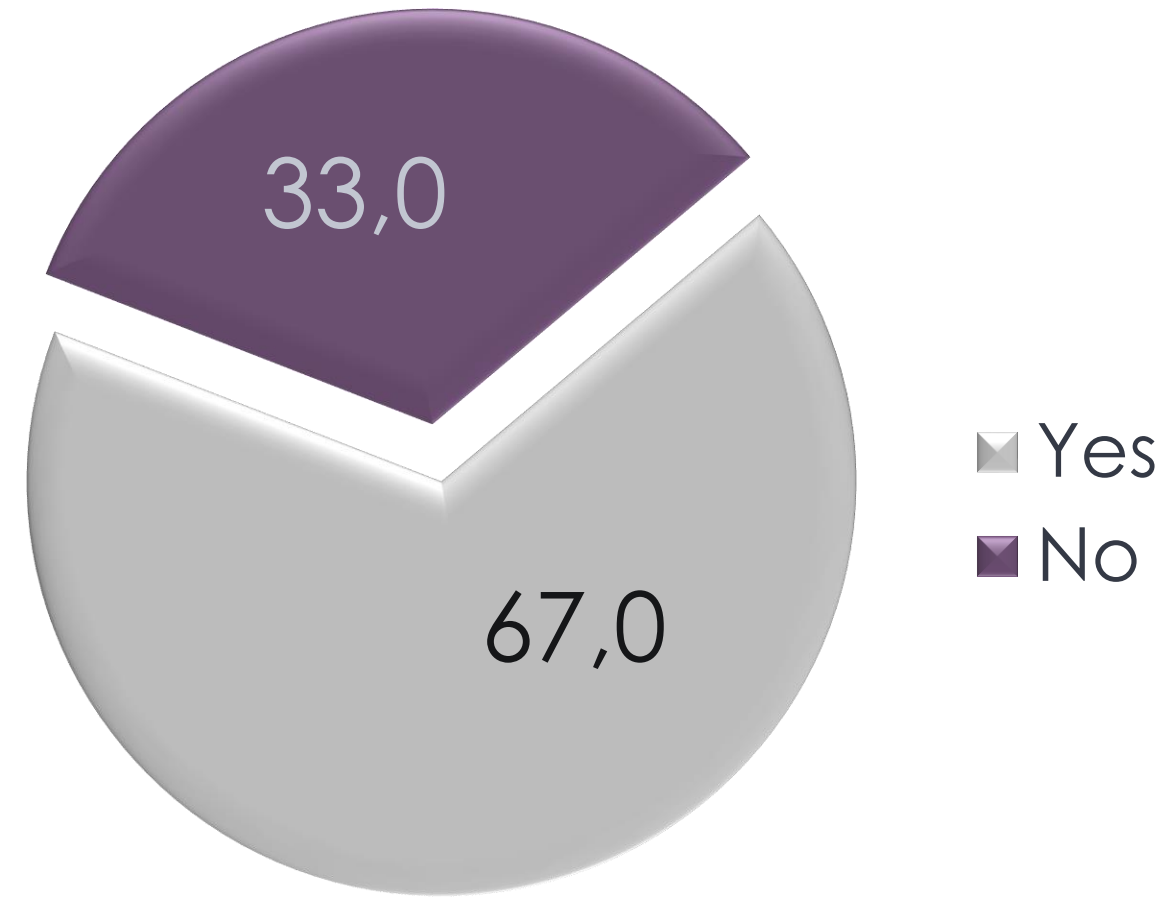
Digital Security



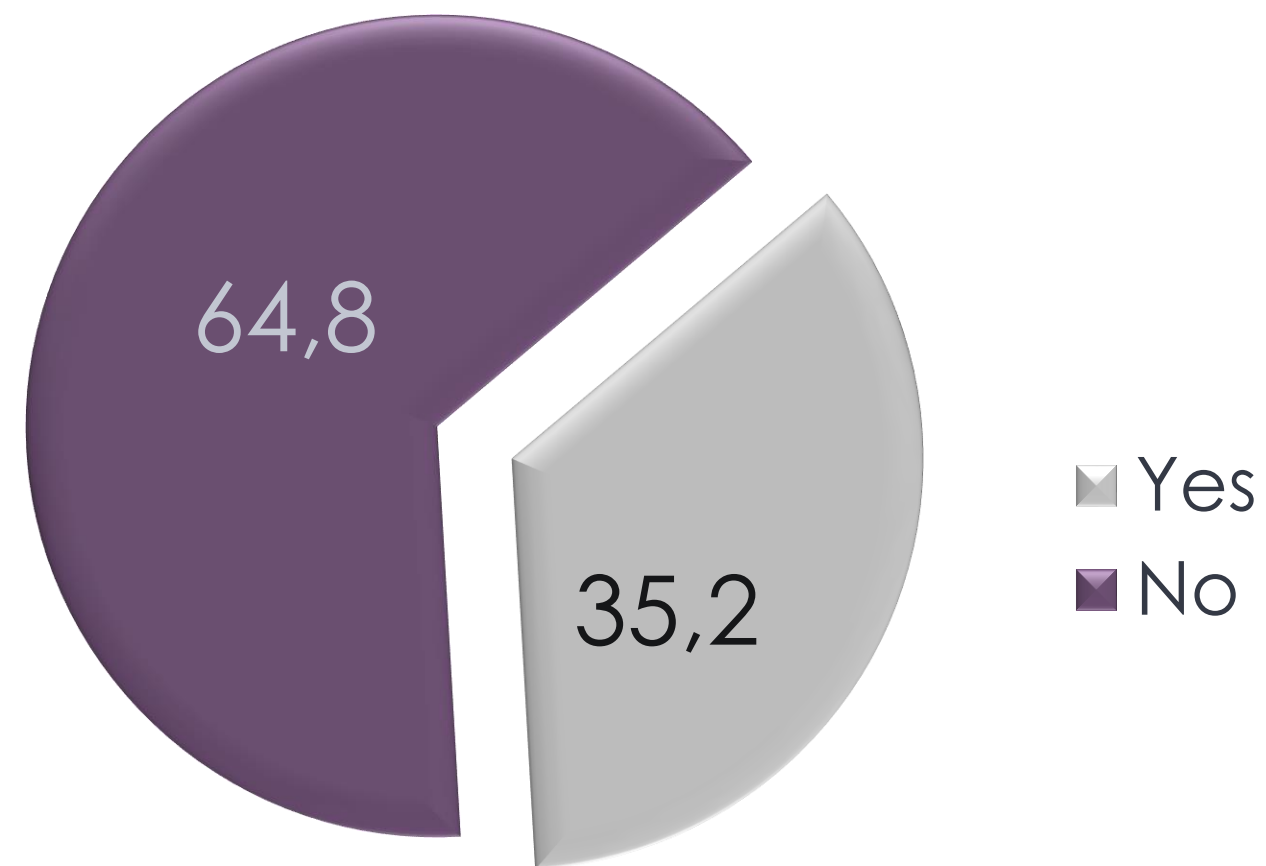
Artificial Intelligence Perception in Establishments

Do you have information technology security systems in your company?
Do you invest in cyber security infrastructure?

Possession of Information Technology Security Systems



Investment in Cyber Security Infrastructure

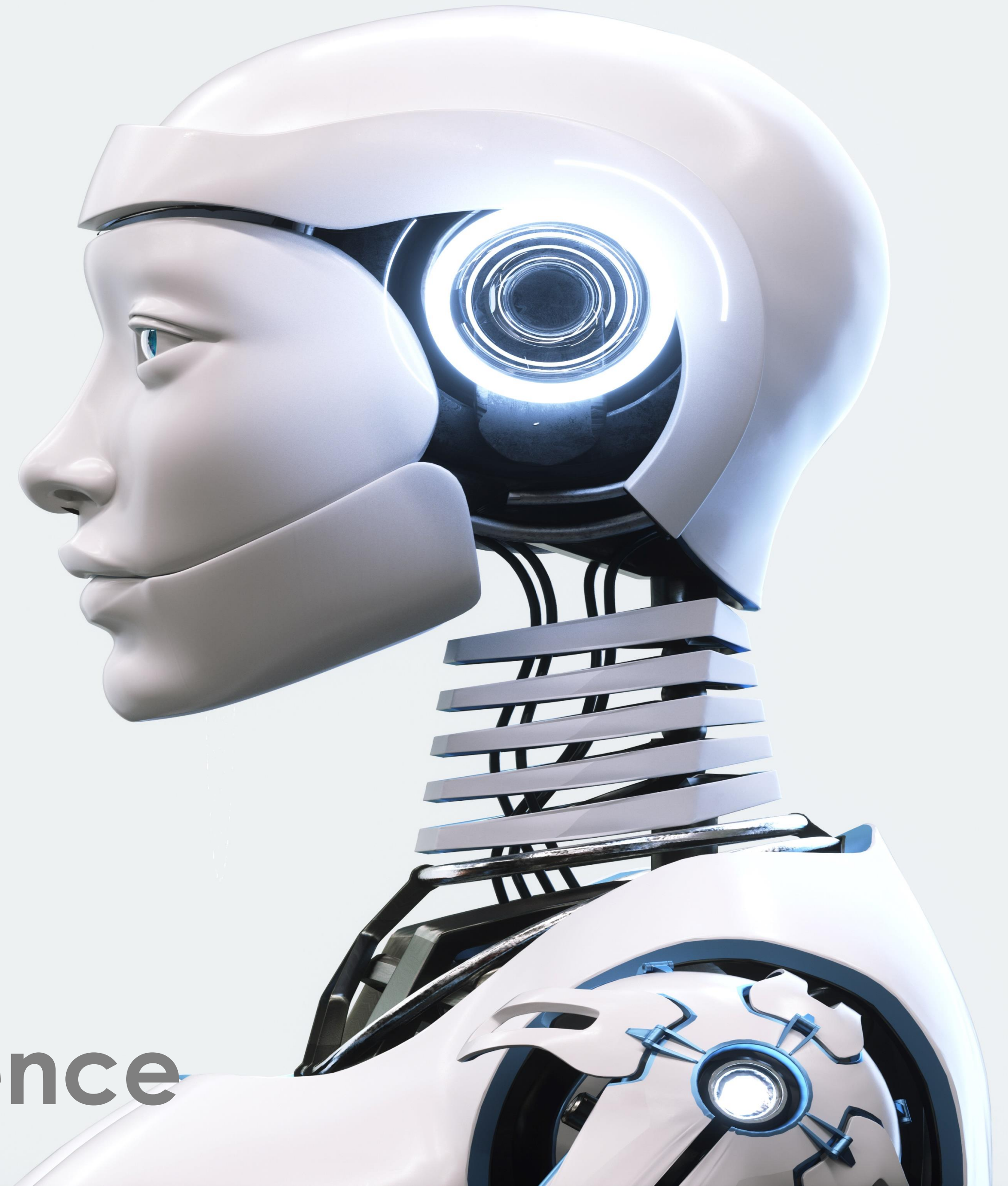


- One of the biggest problems in the end-to-end digitalization of the establishments is the security vulnerability. While the establishments are digitalizing so fast, the rate of investment in cyber security infrastructure is very low with 35.2%.
- Micro-sized enterprises differ significantly from large-scale enterprises in terms of not using an IT security system and not investing in cyber security infrastructure.
- In addition, the lack of systemic protection in infrastructure of these companies draws attention.

	Without IT Security System	No Cyber Security Investment
1-9 Employees	74.1%	70.9%
10-49 Employees	21.2%	25.0%
50-99 Employees	2.1%	2.4%
100+ Employees	2.6%	1.7%

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Artificial Intelligence



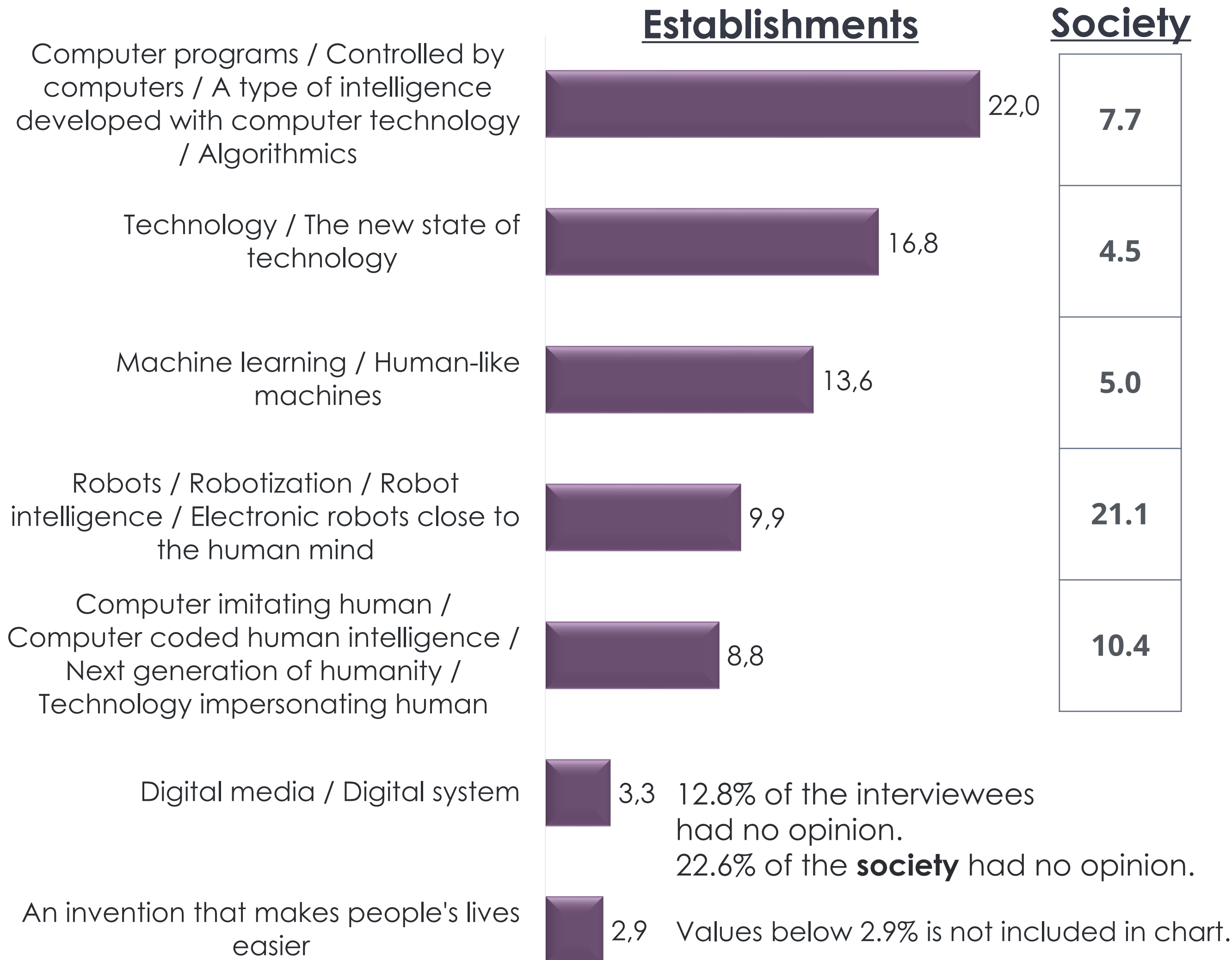


Artificial Intelligence Perception in Establishments

In your opinion, what is artificial intelligence?



What is Artificial Intelligence?



- Although many establishments, that have grown during the pandemic period, use artificial intelligence (such as logistics companies), they cannot define it correctly.
- Companies, that have a corporate management and have 100+ employees, differ in describing artificial intelligence correctly.

	1-9 Employees	10-49 Employees	50-99 Employees	100+ Employees
Computer programs / Controlled by computers / A type of intelligence developed with computer technology / Algorithmic	24.4%	21.2%	7.1%	20.7%
Technology / The new state of technology	15.6%	19.7%	28.6%	13.8%
Machine learning / Human-like machines	11.9%	9.1%	14.3%	27.6%
Computer imitating human / Computer coded human intelligence / Next generation of humanity / Technology impersonating human	10.0%	9.1%	-	6.9%
Robots / Robotization / Robot intelligence / Electronic robots close to the human mind	9.4%	12.1%	7.1%	10.3%
An invention that makes people's lives easier	2.5%	4.5%	-	3.4%
A system prepared on the Internet / Information developing in Internet environment	2.5%	-	-	-
Digital media / Digital system	2.5%	3.0%	21.4%	-



Artificial Intelligence Perception in Establishments

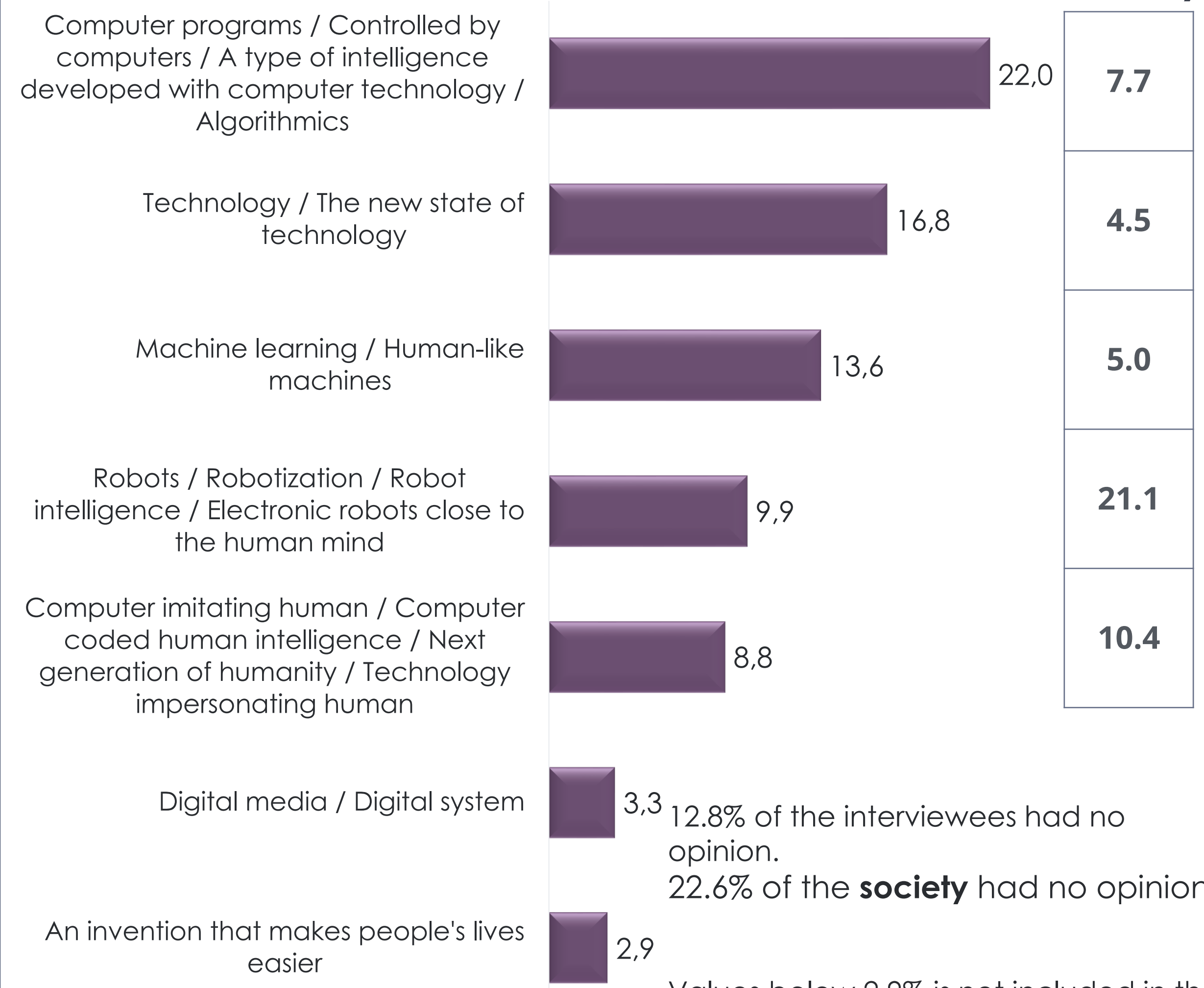
In your opinion, what is artificial intelligence?



What is Artificial Intelligence?

Establishments

Society



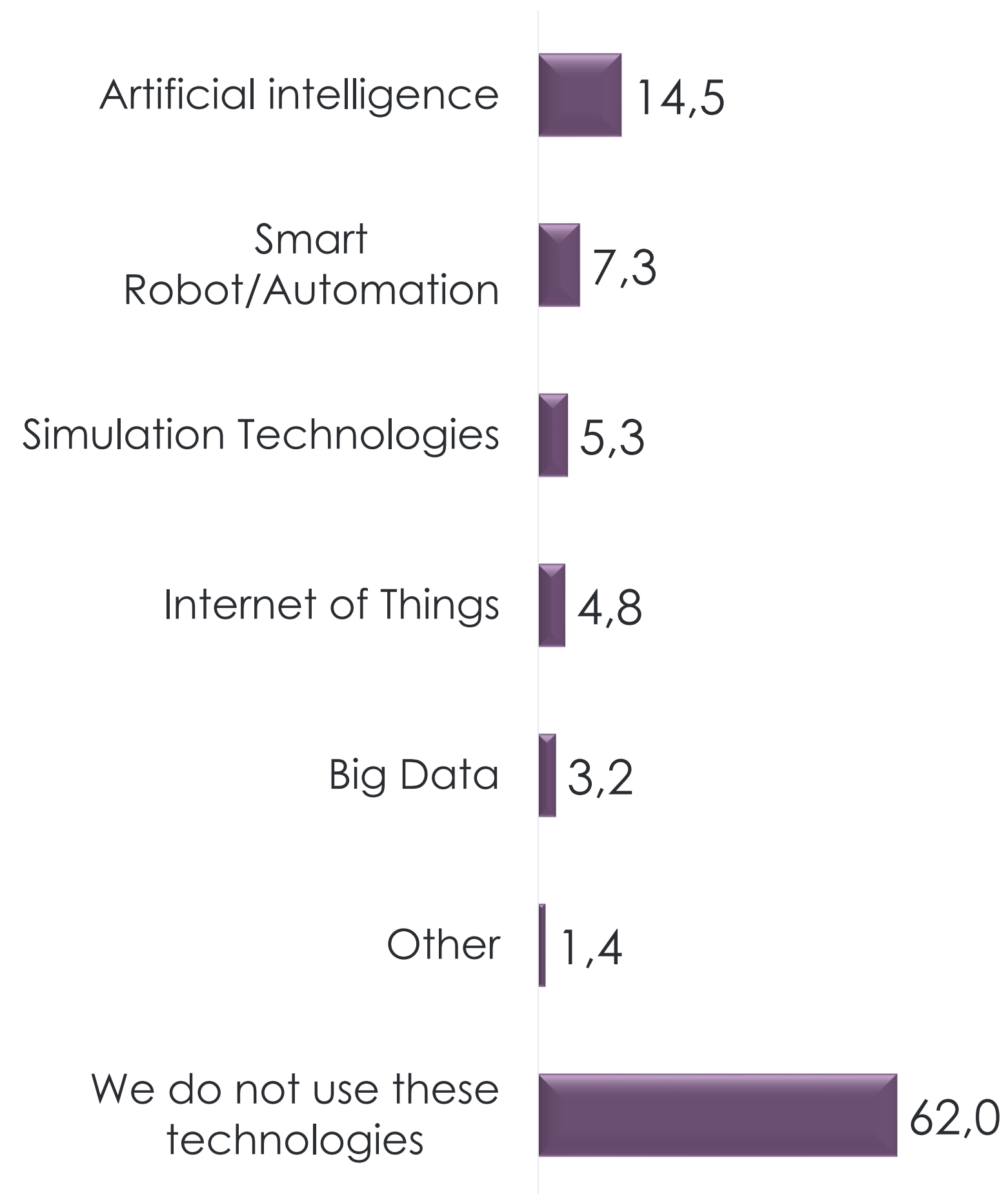
12.8% of the interviewees had no opinion.
22.6% of the **society** had no opinion.

Values below 2.9% is not included in the chart.

- There is no significant difference between artificial intelligence descriptions of the sectors.
- The education sector differs significantly from other sectors with the description «technology / the new state of technology».
- In this new age of technology, the lack of describing artificial intelligence seems to be worrisome in this industry, since it is going to train qualified people to use these technologies, .
- Although many establishments, that have grown during the pandemic period, use artificial intelligence (such as logistics companies), they cannot define it correctly.



Digital Technologies Used

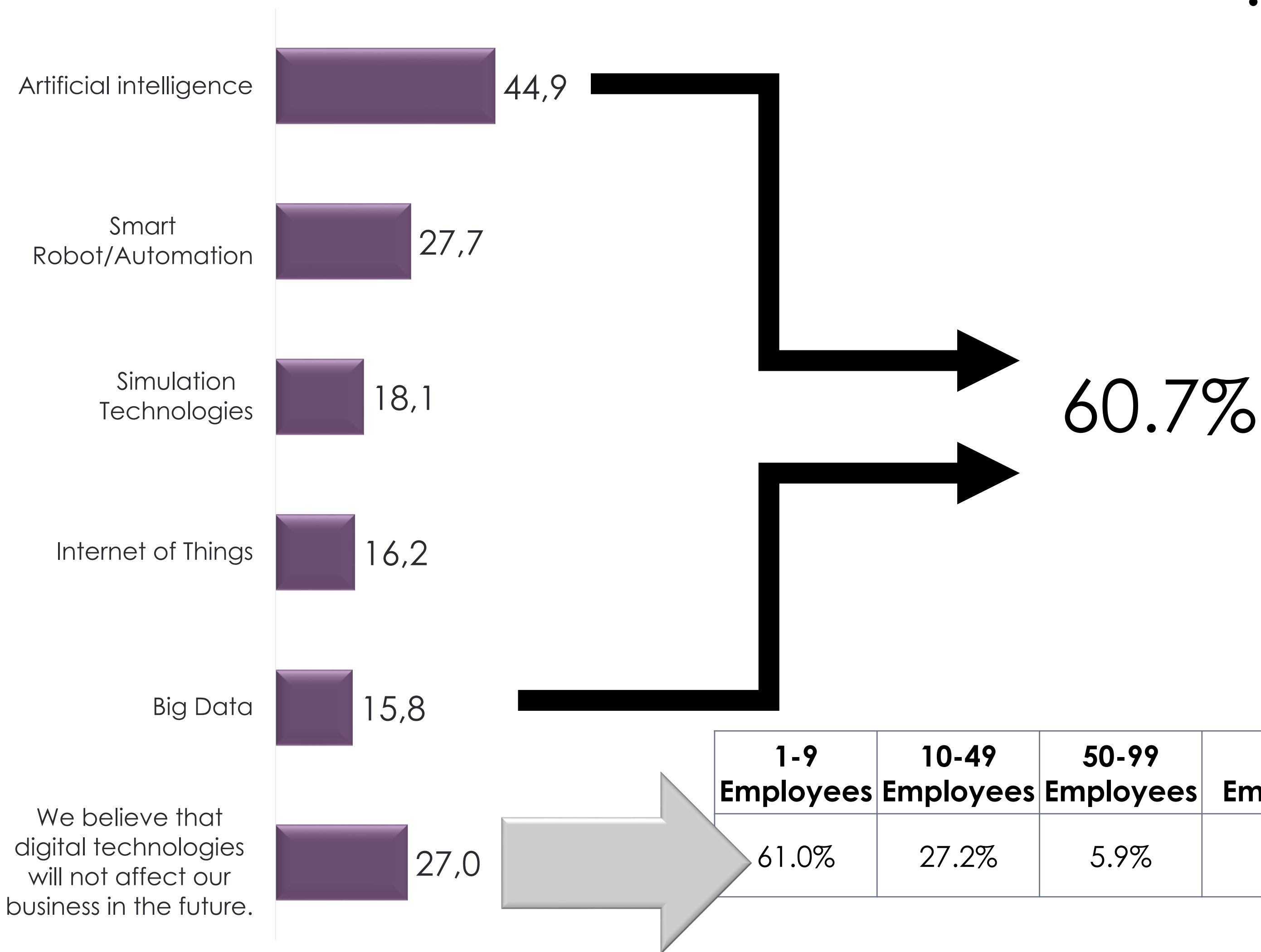


- Establishments that do not use the specified digital technologies are not significantly different from each other.
- When we elaborate on the basis of business size, micro-businesses differ in a meaningful way.

1-9 Employees	10-49 Employees	50-99 Employees	100+ Employees
65,3%	27,6%	4,1%	3,0%



Digital Technologies Believed to Impact the Establishments in the Future



- In regard to digital technologies that are believed to affect establishments in the future, «artificial intelligence» and «big data» differ significantly in enterprises with 100+ employees that have completed their corporate management.

1-9 Employees	10-49 Employees	50-99 Employees	100+ Employees
3.2%	8.2%	23.7%	64.9%

60.7%

1-9 Employees	10-49 Employees	50-99 Employees	100+ Employees
61.0%	27.2%	5.9%	5.9%

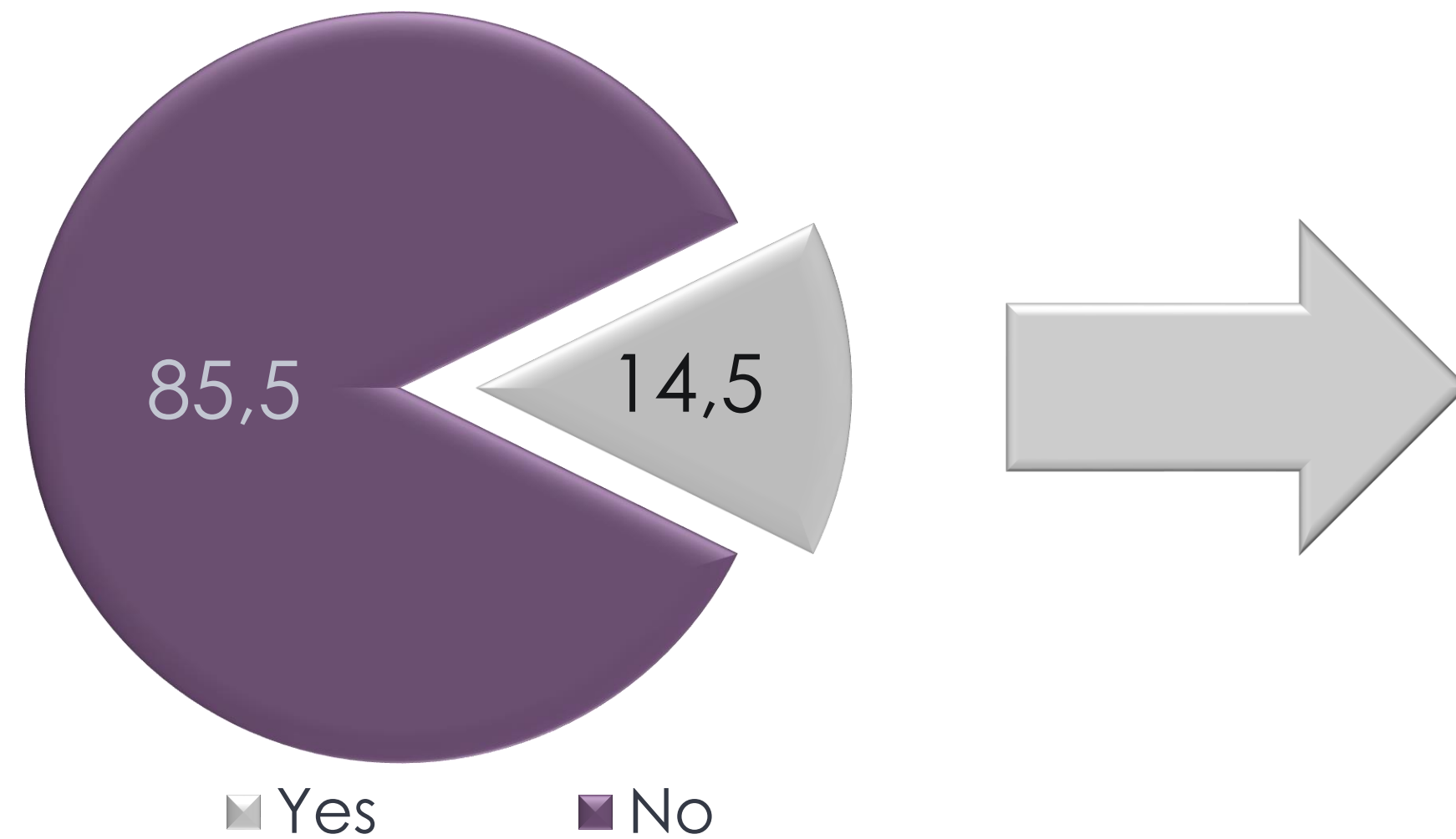
- The idea that «digital technologies will not affect business in the future» is a common thought in all sectors.
- Regardless of the sector, this idea intensifies in micro-scale enterprises. As the size of the enterprise increases, the intensity of this thought decreases.



When analyzed on the basis of regions, Marmara region differs significantly from other regions with a rate of 54.1% and Central Anatolian region with 22.0%, In this regard, the provinces that have the greatest impact on this differentiation between regions are determined as Istanbul and Ankara.

Sectors / Fields Where Artificial Intelligence Technology is Used

Usage of Artificial Intelligence Technology



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	1-9 Employees	10-49 Employees	50-99 Employees	100+ Employees
Yes	9.8%	16.3%	35.7%	38.2%

Industry-Manufacturing - 27.6%

- Camera/Security/Alarm
- Forecasting systems (spare parts, raw materials, etc.)
- Production lines
- Sound assistant
- Stock tracking
- Marketing activities

Service - 22.0%

- Customer tracking / CRM / customer segmentation
- Camera/Security/Alarm
- HR department
- Product recommendation
- Big data/information processing

Retail-Trade - 19.5%

- Camera/Security/Alarm
- HR department
- Insight creation
- Customer campaigns
- Education
- Chatbot (product delivery phase)
- Customer tracking / CRM / customer segmentation

Education - 5.7%

- Devices
- Data processing
- Student affairs

Construction - 4.1%

- Camera/Security/Alarm
- Data processing

Internet & Informatics - 3.3%

- Intelligent assistants
- Recommendation engines
- Data editing
- In-house reporting

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Artificial Intelligence Perception in Establishments

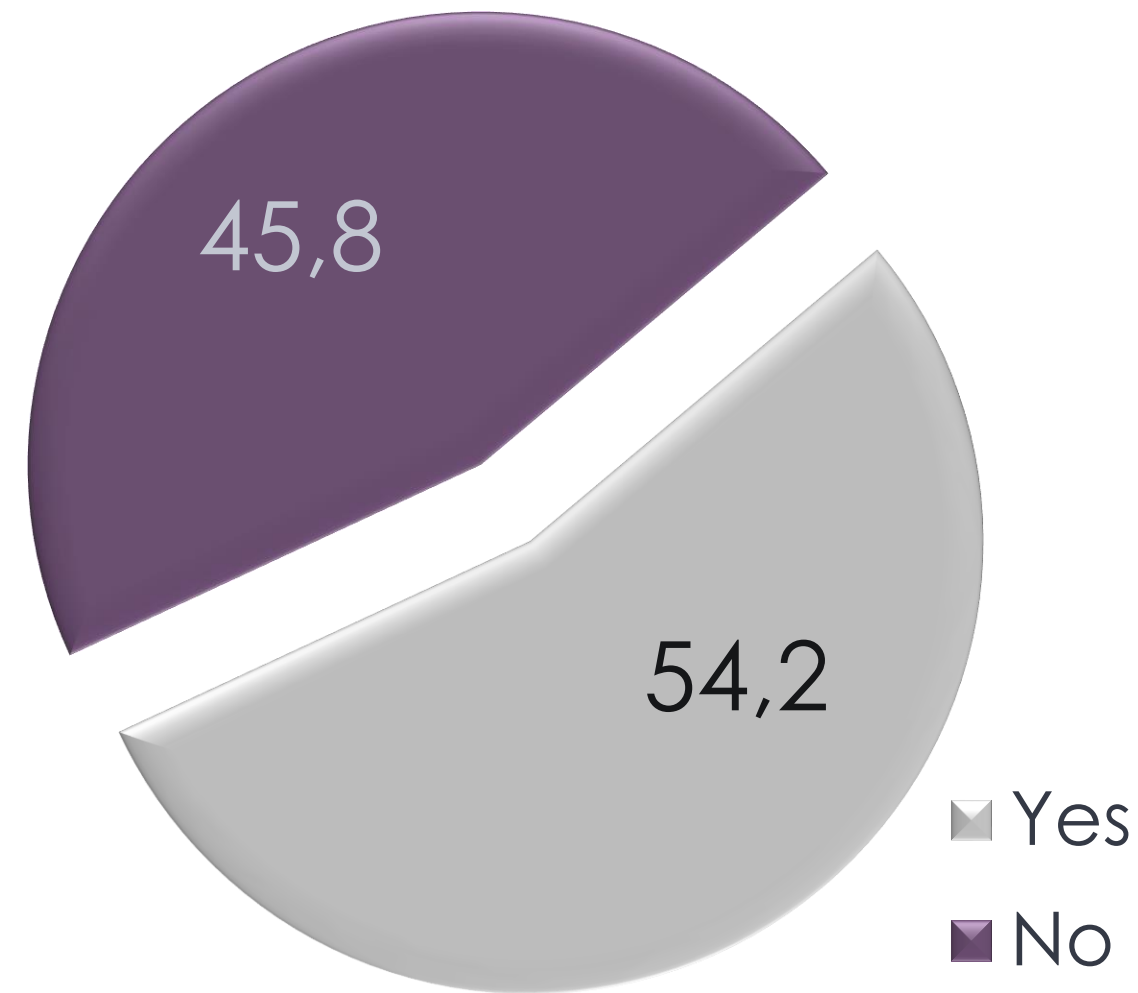
Do you want to use artificial intelligence technology in the future?
Do you want to be interested in artificial intelligence in the future? - Society



54.2% of establishments consider using artificial intelligence technology in the future. When we analyze it in terms of business sizes, this rate rises to 75.0% in companies having a corporate management with 100+ employees. In smaller businesses, it is around 50.0%.

On the other hand, only 28.9% of the society wants to deal with artificial intelligence in the future. Since the idea of using artificial intelligence in establishments does not find a response in the society, there might be a lack in employment in the future.

Consideration to Use AI Technology in the Future - Establishments



Desire to be Interested in AI in the Future- Society



	1-9 Employees	10-49 Employees	50-99 Employees	100+ Employees
Yes	50.9%	55.8%	50.0%	75.0%



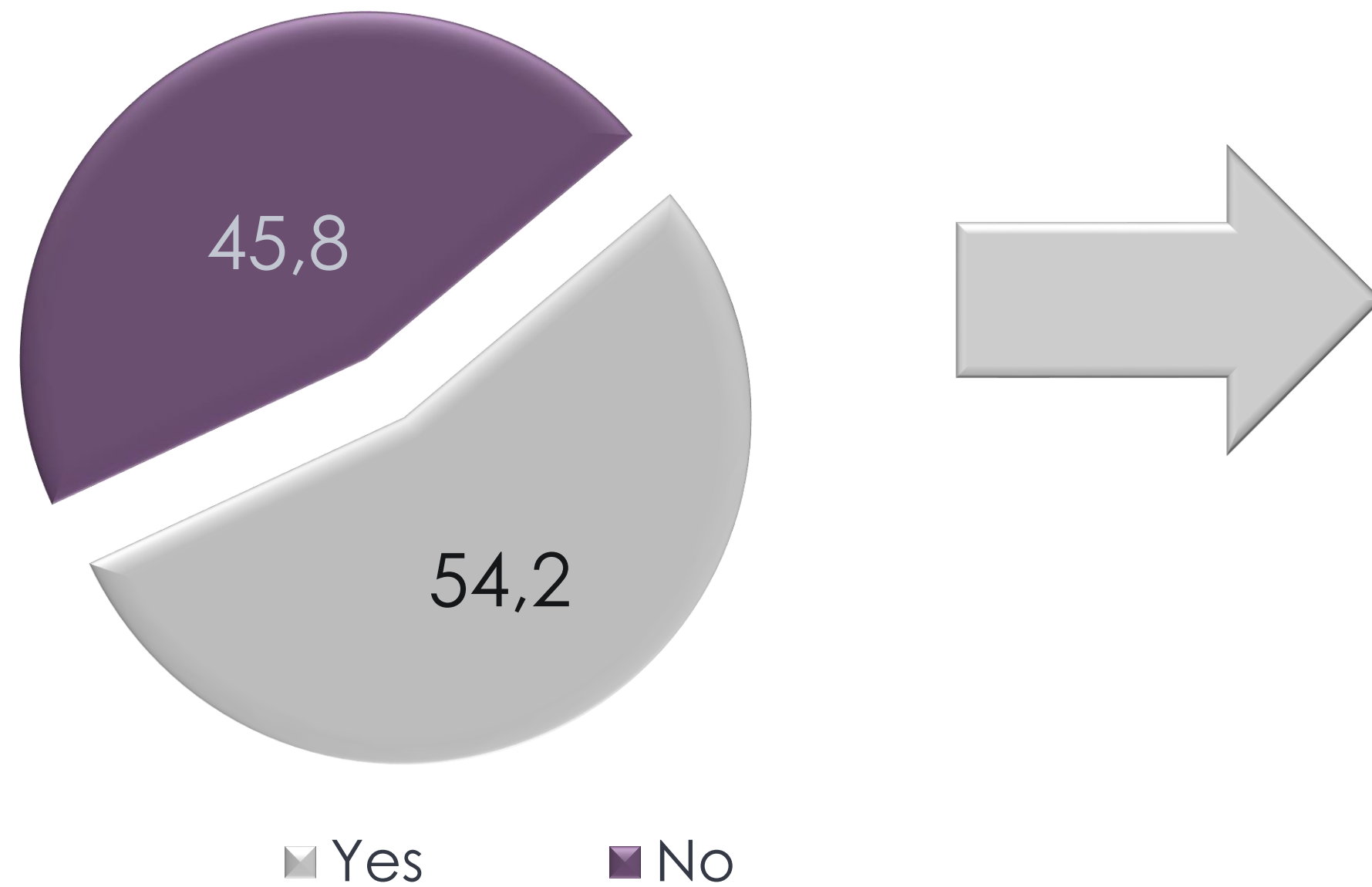
Artificial Intelligence Perception in Establishments

Would you please state why you do not consider using AI technology in the future?
 Would you please indicate your reasons for your fear of artificial intelligence? - Society



- Among the reasons stated for not to use artificial intelligence in the future, «I don't know what it is / I don't have the technological knowledge» and «Because it will become uncontrollable» are detected as the reasons why the society fears artificial intelligence.

Consideration to Use AI Technology in the Future



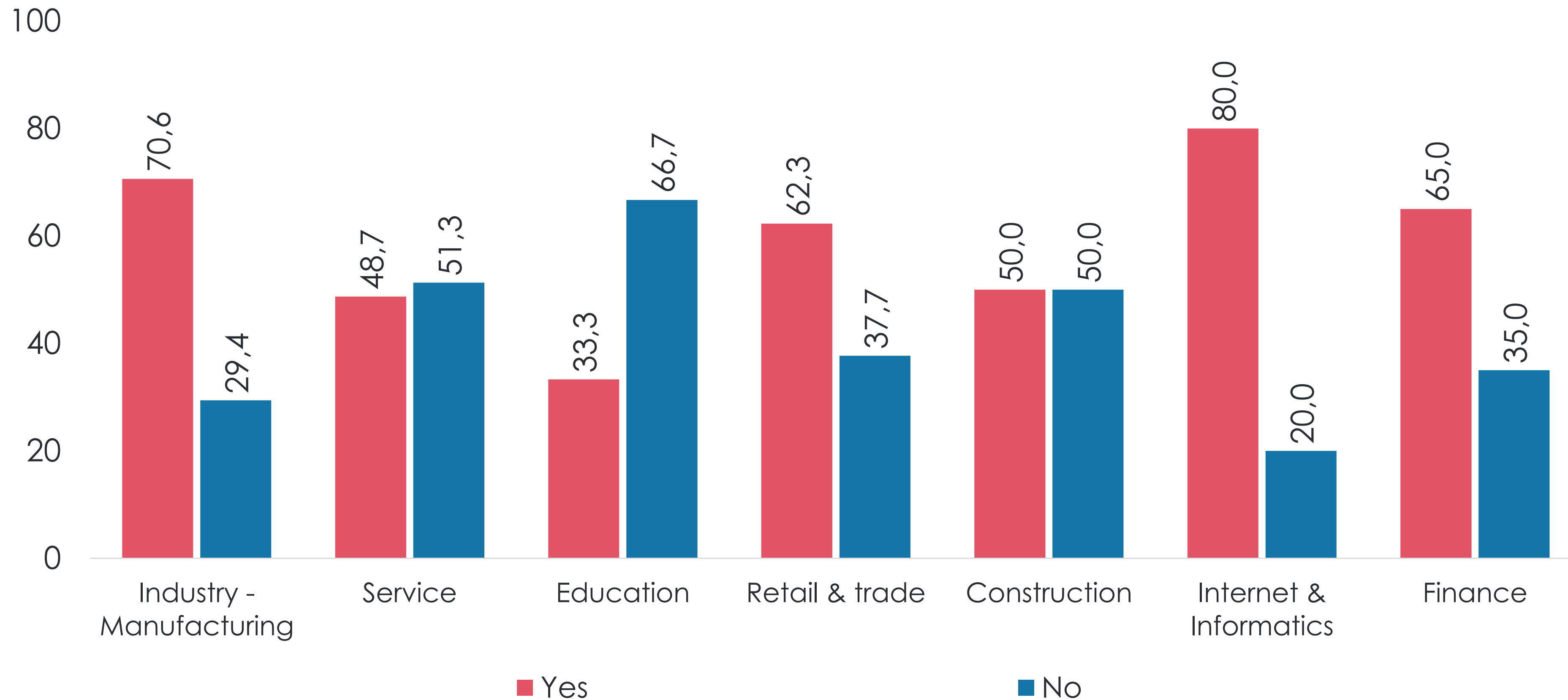
	1-9 Employees	10-49 Employees	50-99 Employees	100+ Employees
Yes	50.9%	55.8%	50.0%	75.0%

Reasons For Not Considering Using AI Technology in the Future

	Society	Establishments' Total
Not suitable for what we do / Not suitable for our industry	-	39.0%
We currently do not need / No need	-	17.1%
We have no investment / Requires large investment	-	9.8%
I don't know what it is / I have no technological knowledge	10,4	7.3%
Because I want to work with people / The element of living is more important	-	7.3%
Because it will become uncontrollable	5,4	3.7%

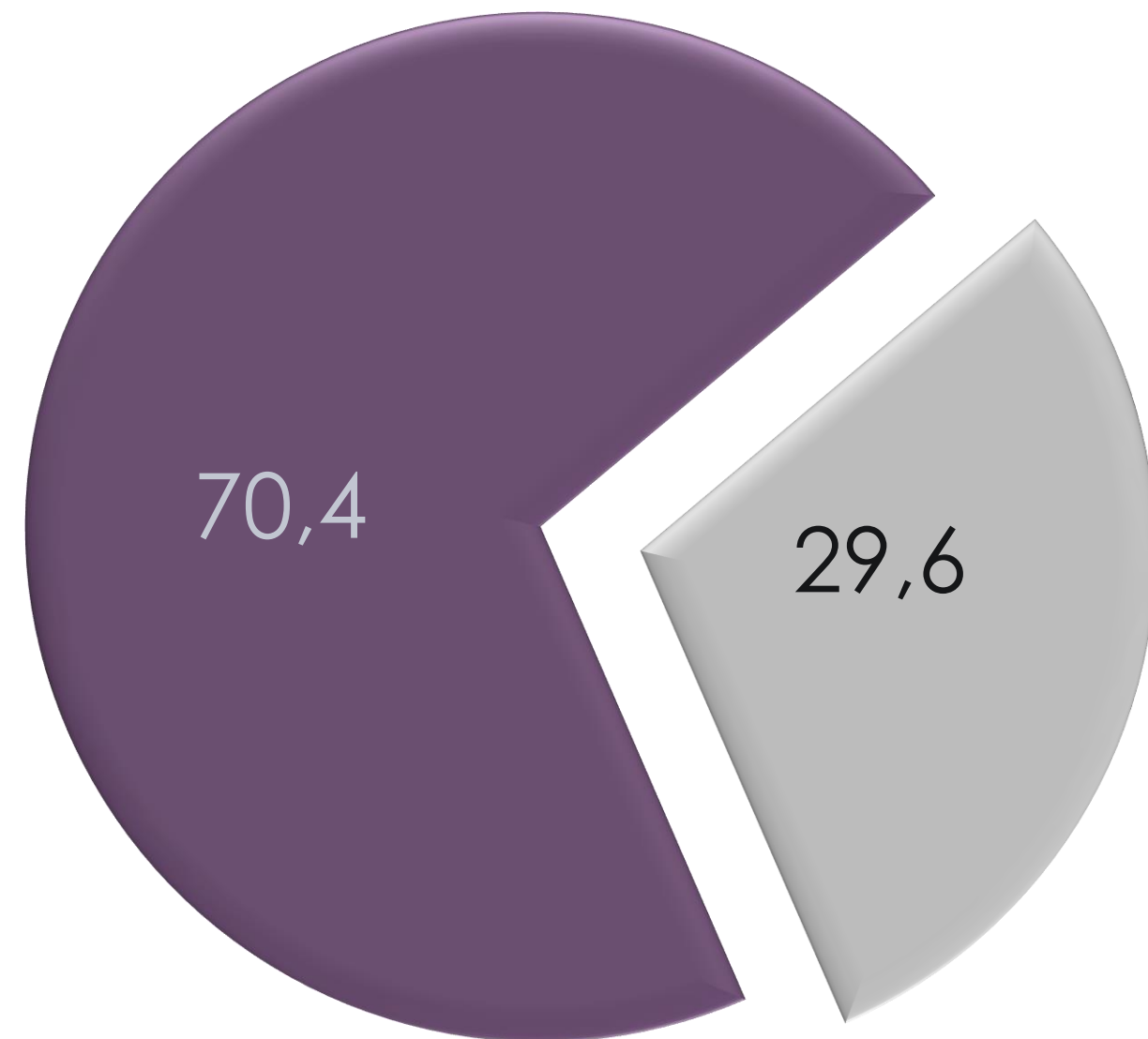


Consideration to Use AI Technology in the Future





Consideration to Use AI Technology in Different Fields in the Future



- I'll use it at the same level
- I will expand my usage area

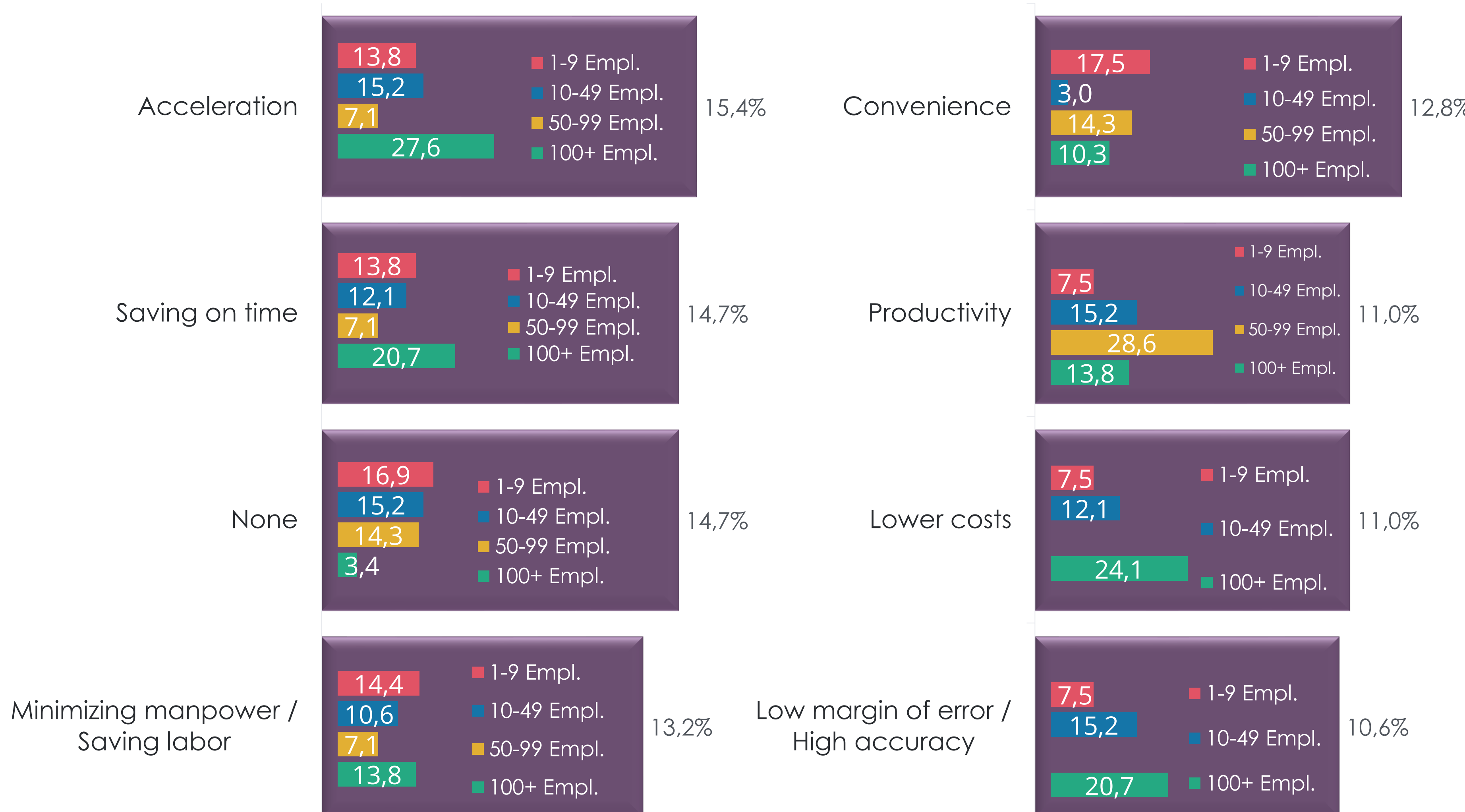
- When we examine establishments using artificial intelligence, one of the most attention-grabbing issues is that companies with 50-99 employees are less likely to increase the rate of AI usage than companies with 100+ employees.
- It is observed that these establishments are mostly family businesses, companies that have not completed the institutionalization process, subcontractors and predominantly companies in the education sector.

	1-9 Employees	10-49 Employees	50-99 Employees	100+ Employees
I'll use it at the same level	24.5%	7.1%	60.0%	26.7%
I will expand my usage area	75.5%	92.9%	40.0%	73.3%

	Industry- Manufacturing	Service	Education	Retail & Trade	Construction	Internet & Informatics	Finance
I'll use it at the same level	-	36.8%	33.3%	27.8%	-	-	-
I will expand my usage area	100.0%	63.2%	66.7%	72.2%	100.0%	100.0%	100.0%



Advantages of Using Artificial Intelligence Technology at Work



Enterprises that have a corporate management with 100+ employees indicated «Acceleration, saving on time, lower costs, low margin of error/ high accuracy» as the advantages of using artificial intelligence.

These reasons differ significantly by business sizes. It is observed that establishments with a more corporate management with 100+ employees use artificial intelligence more consciously.



Artificial Intelligence Perception in Establishments

Would you please specify the disadvantages of using AI technology in your business?
The reasons for occupations being negatively affected by artificial intelligence - Society

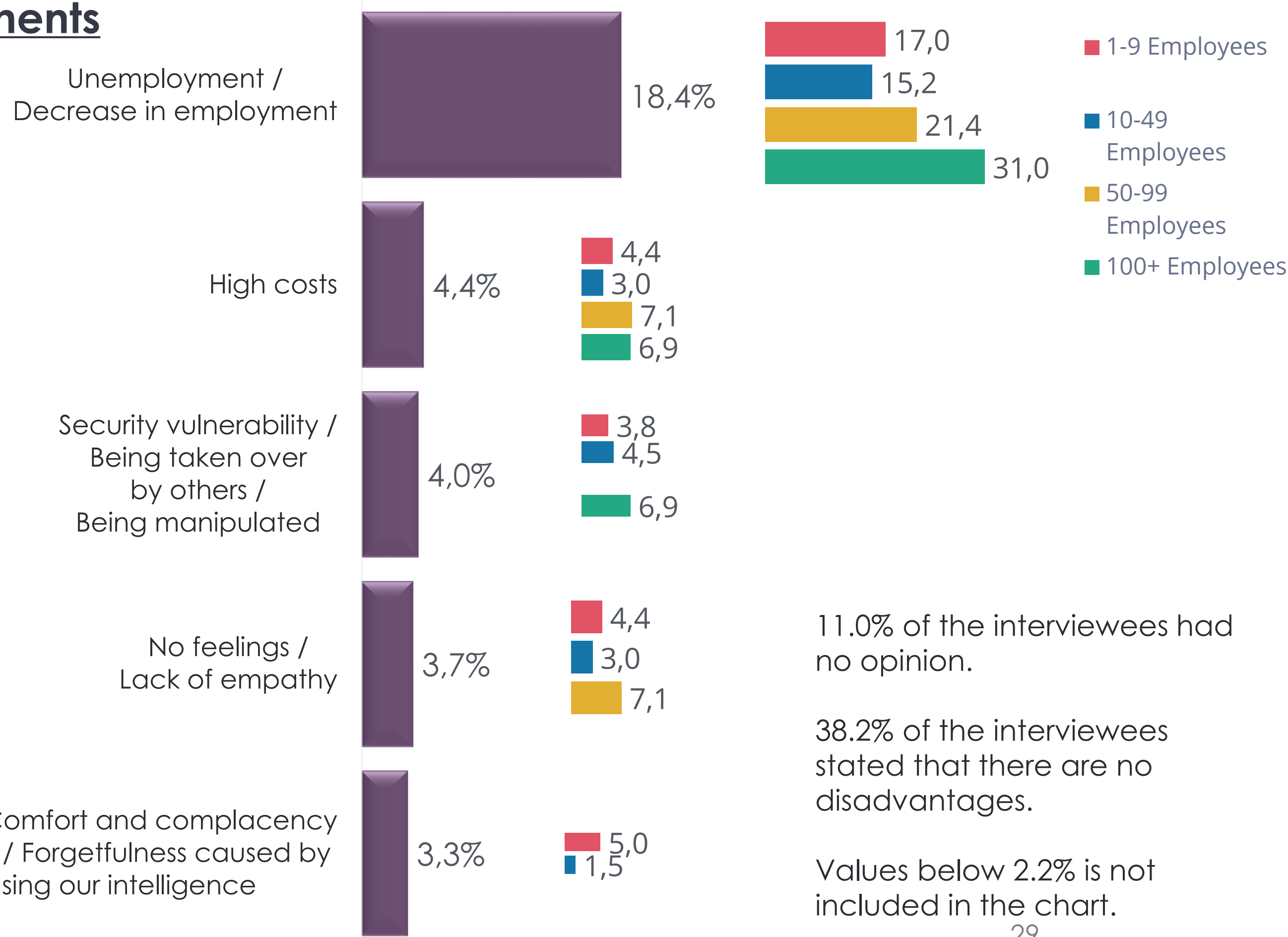


Disadvantages of Using Artificial Intelligence Technology at Work

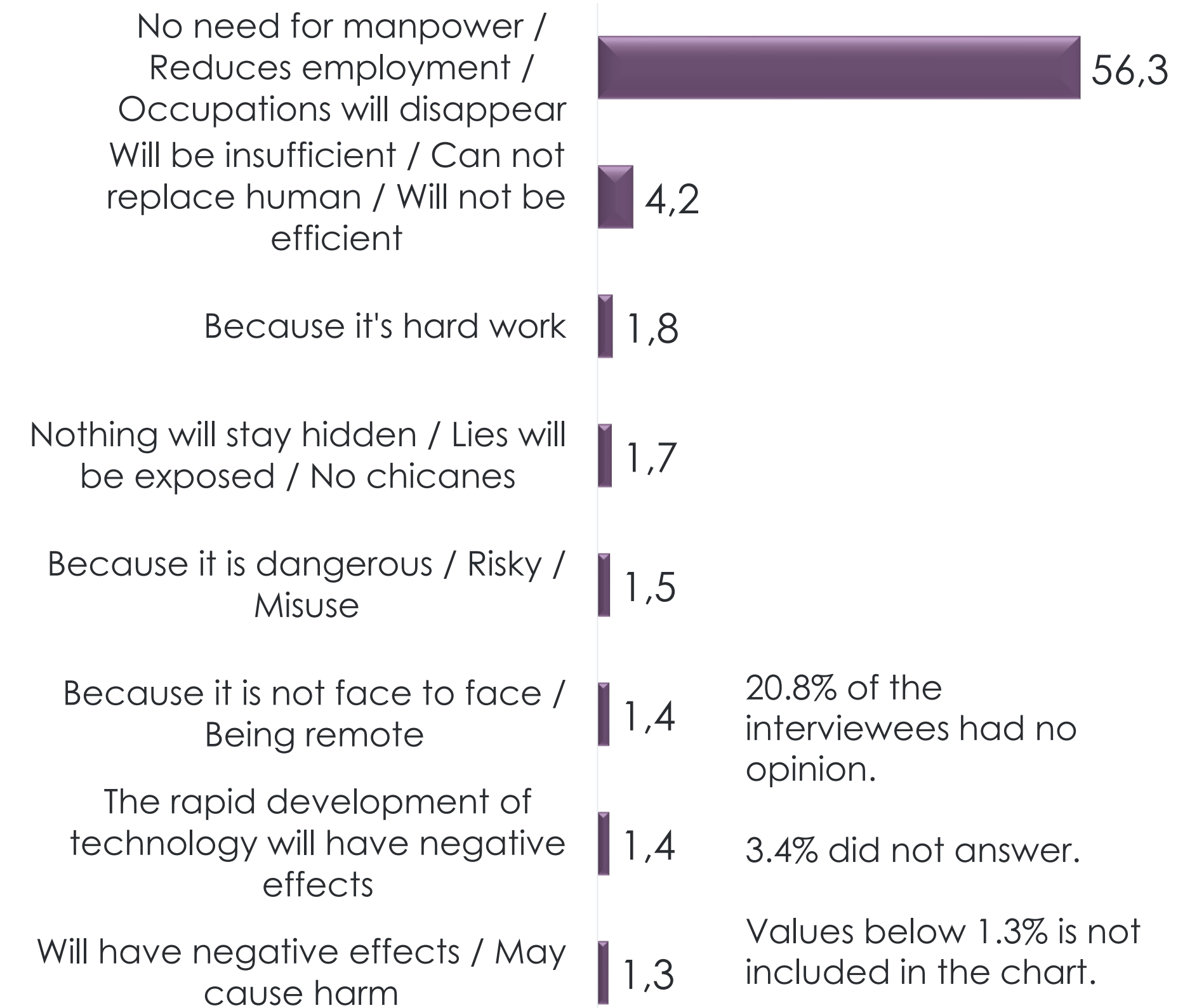
In establishments with 100+ employees, where the majority of employment is provided, "unemployment/decrease in employment" is stated as main disadvantage of using artificial intelligence with a rate of 31.0%. This rate is 21.4% in enterprises with 50-99 employees. According to the society, the main reason for occupations being negatively affected by artificial intelligence is "decrease in employment".

Although artificial intelligence will create new employment opportunities, the belief that the employment will decrease is observed with the highest rate in establishments with 100+ employees.

Establishments



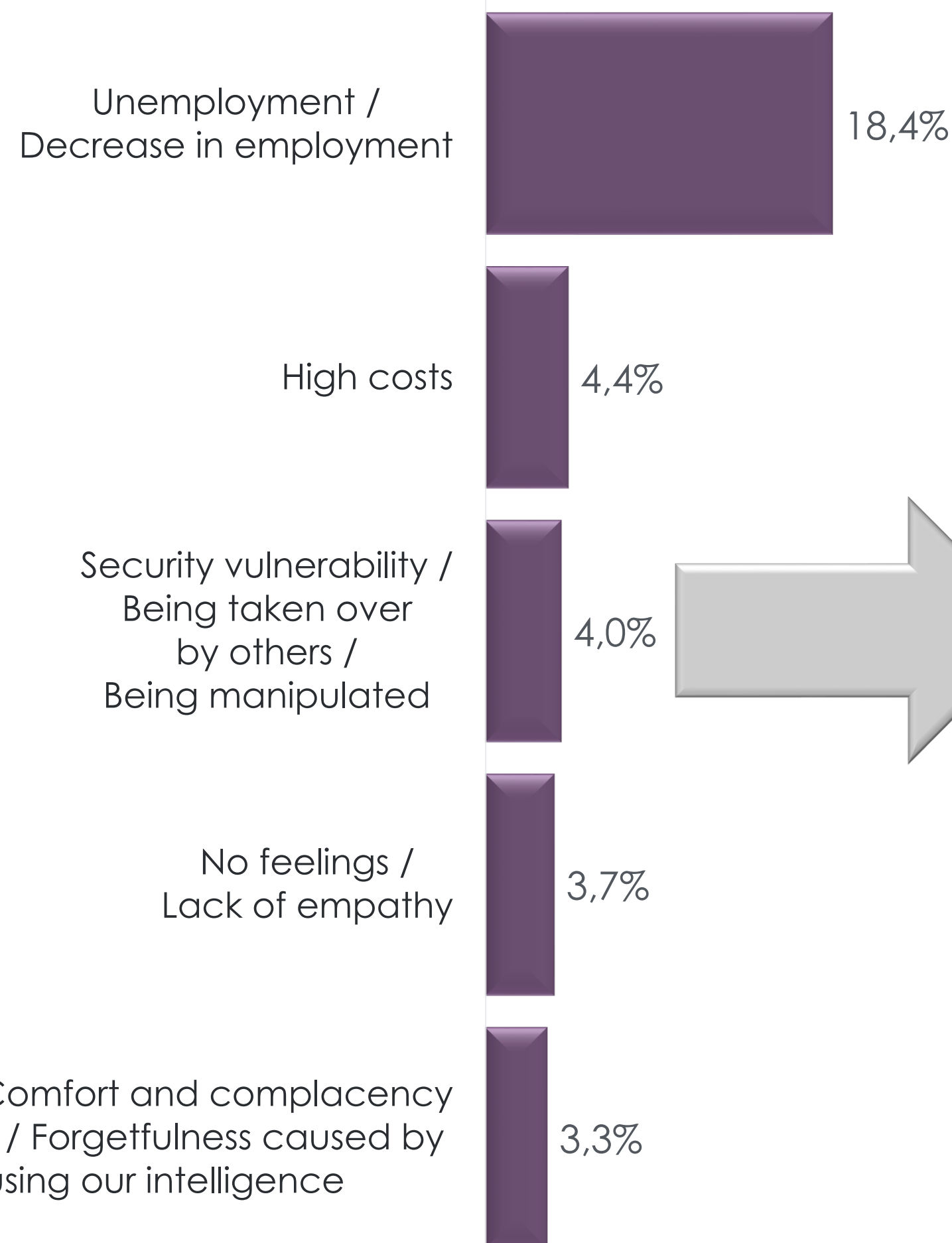
Society





Disadvantages of Using Artificial Intelligence Technology at Work

Establishments



	Security vulnerability / Being taken over by others / Being manipulated
Marketing & Advertising & Media	16.7%
Construction	7.1%
Internet & Informatics	5.9%
Service	5.4%
Industry – Manufacturing	4.0%
Retail & Trade	2.5%

Security vulnerability / Being taken over by others / Being manipulated
Might open the system to outside
Being taken over by others
Might transfer your private information in cyber attack
Security vulnerability
Information security is reduced, might be hacked
It is open to error
Might be manipulated
It will think for us, dangerous, not versatile



Artificial Intelligence Perception in Establishments

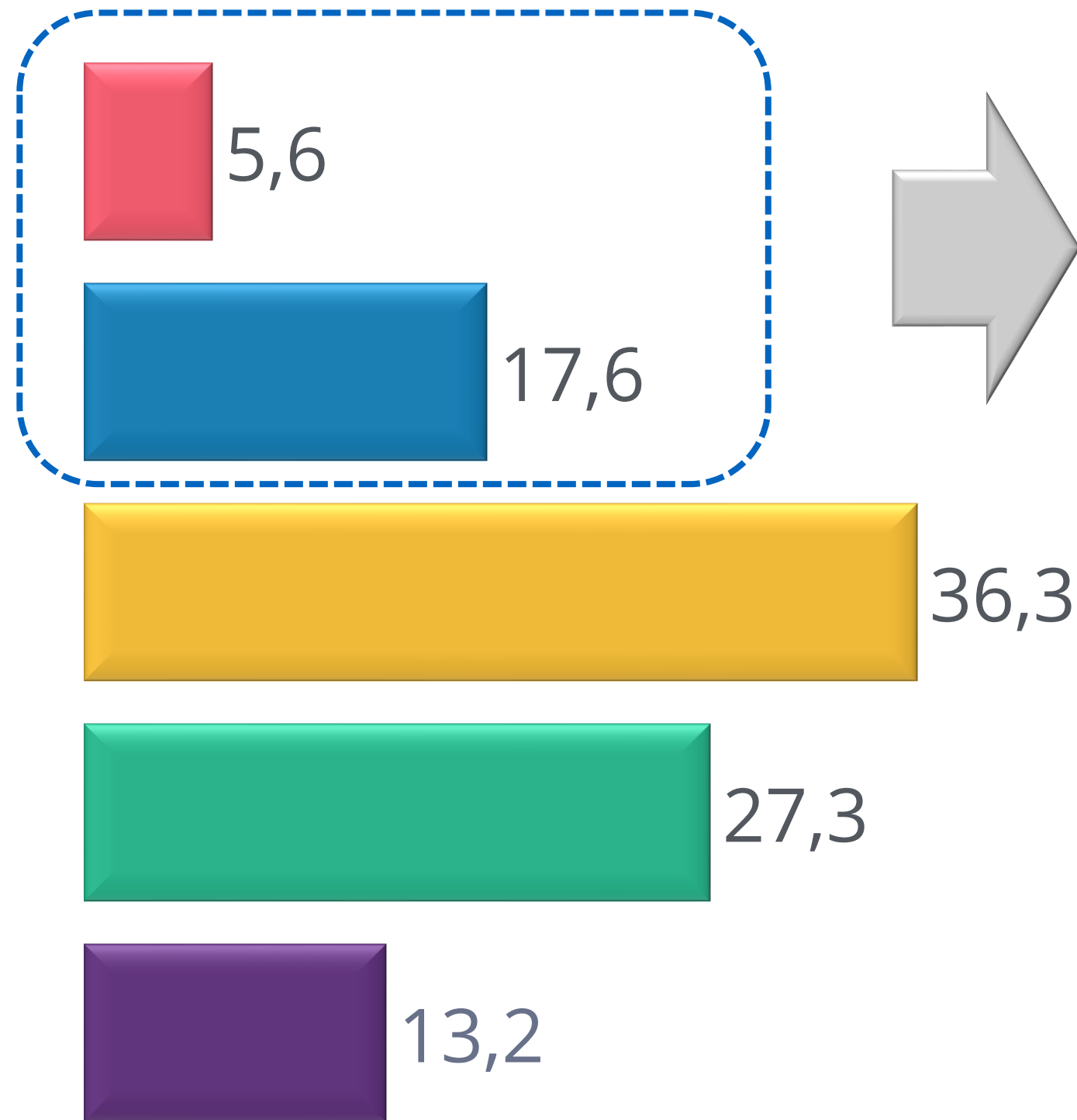
Do you think that artificial intelligence technology will reduce the need for employment?



40.5% of companies stated that artificial intelligence technology will reduce employment.

This rate is the highest with 81.5% in enterprises with 100+ employees.

Belief that AI Technology Will Reduce the Need for Employment

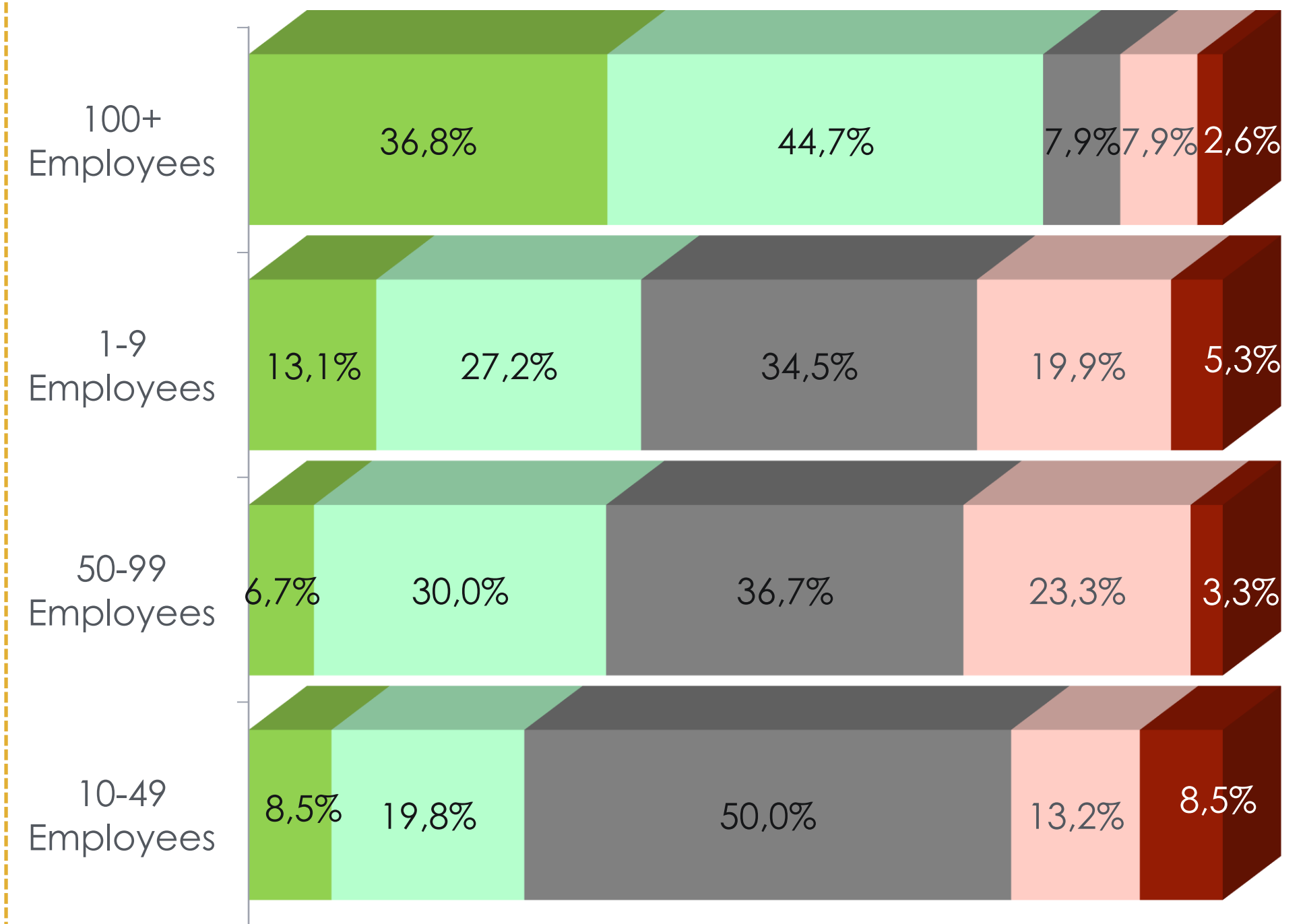


- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

n:847

Reasons For Not to Think That Employment Will Decrease
The industry needs manpower
There is a need for manpower in units that work one-on-one with the customers
Manpower is needed in education
Artificial intelligence is advancing with data, it will not reduce human power
We sell information. Technology cannot do that.
Generating artificial intelligence also requires employment

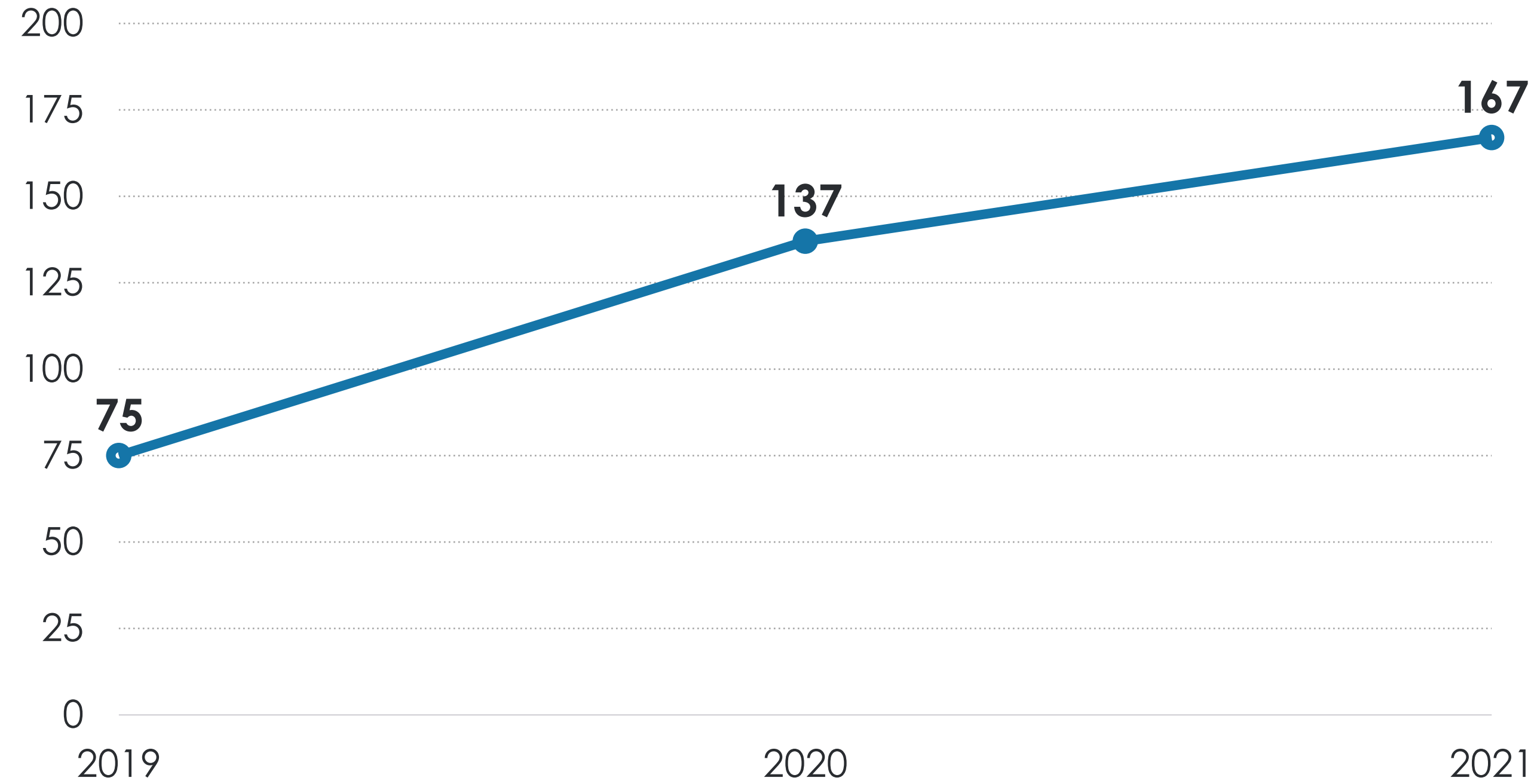
Belief that AI Technology Will Reduce the Need for Employment – Business Size



- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree



Number of Entrepreneurs Producing Artificial Intelligence



While the number of entrepreneurs producing artificial intelligence in Turkey was 75 in 2019, this number has increased by 82.7% in 2020 to 137.

Considering 2021, the number of entrepreneurs is 167, with an increase of 21.9% compared to 2020.*

$$\text{Arf}(g) = \sum_{i=1}^n g(a_i) g(b_i) \in \mathbb{Z}_2$$

$a_i, b_i \quad i = 1, 2, 3, \dots, n.$



Ord. Prof. Dr. Cahit Arf
Atatürk University

1958-1959 Academic Year Public Conferences

Can a machine think and how can it think?

