AI for SMEs

Research Report

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Authors

Annette Icks, Christian Wildt, Oliver Kruse, Alina Yakovenko

Contributors

Piret Potisepp, Audronė Masandukaitė, Bogumiła Frąckowiak, Tamás Rettich, Anastasia Nezgovorova, Deimantė Vilčinskaitė

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Introduction

AI technologies are developing rapidly. AI is widely regarded as the next cross-cutting technology due to its potential to transform entire industries and enable the discovery of innovative new business models and products. In 2022, the publication of the AI language model ChatGPT-3 brought generative AI to the attention of the general public and raised their awareness of the potential and risks of the technology.

The use of AI is increasingly becoming a key factor in the economic success or failure of a company. Large companies in particular have recognised this. The number of companies using AI has doubled worldwide since 2017 (McKinsey 2024). Managers worldwide assume that generative AI will bring about significant changes in their companies in the near future (Deloitte 2024). However, EU countries have a lot of catching up to do compared to the US and China (European Court of Auditors 2024).

The current hype around AI could be the perfect catalyst to promote the introduction of AI in Europe. The growing interest in AI can help to drive forward realisable strategies in SMEs too. However, this would require further incentives, awareness-raising campaigns and supporting political measures and impetus for the introduction of AI.

This concept first categorises the status of AI use in companies in Estonia, Germany, Lithuania, Poland and Hungary. Based on the empirical results of quantitative and qualitative company surveys in the countries analysed, the expectations and challenges that small and medium-sized enterprises associate with AI are then described and the needs of SMEs are addressed. Existing barriers and deficits are to be reduced and eliminated through appropriate training. Good practice examples are used to familiarise SMEs with the potential of AI for their own companies. To this end, the report discusses support measures as well as transfer channels that should facilitate access to SMEs.

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AI use in the EU

Within the individual EU countries, the use of AI[1] by companies varies considerably. The wide range of AI applications is also evident in the companies of the five project partner countries. While around one in eight companies in Germany uses at least one AI application, which is above the EU average, this figure is around 5% in Estonia and Lithuania and only 3.7% in Poland and Hungary.

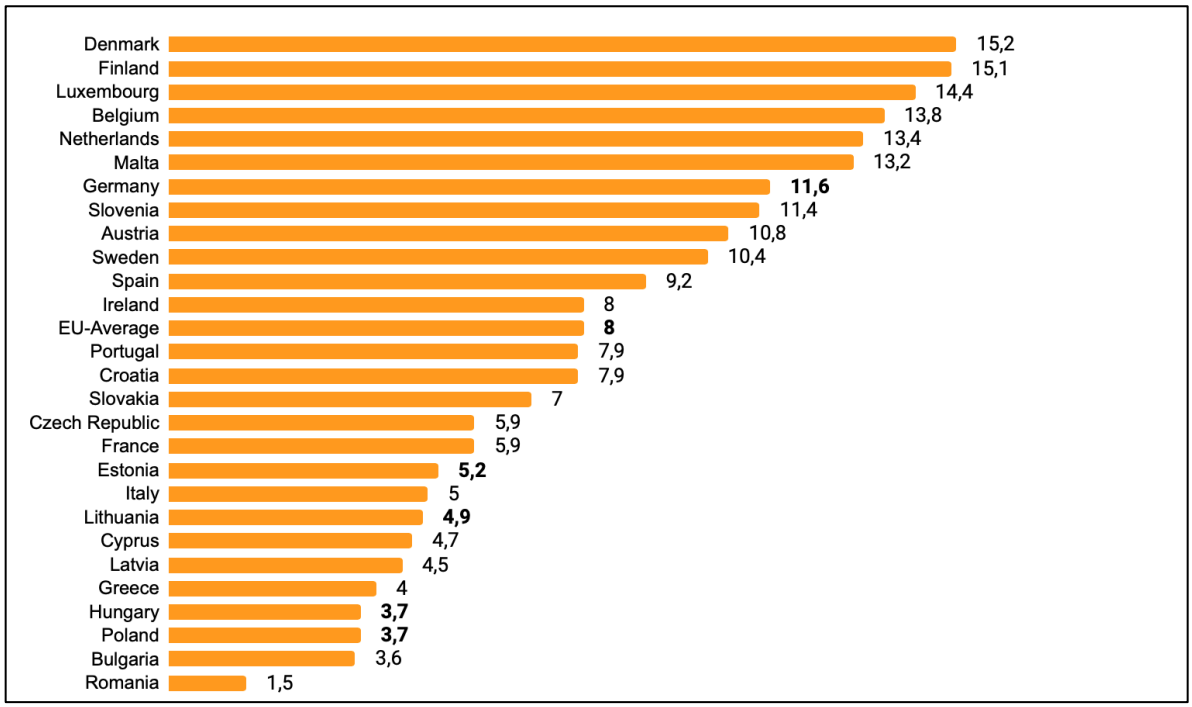

Figure 1: Use of AI in a country comparison in %.

Source: Eurostat 2024

The different levels of AI use in the countries included in the study may be related to the varying degrees of dependence of the individual economies on automation, but also to the different phases in the development of AI ecosystems (EU Court of Auditors 2024). However, the different use of AI in the individual EU countries is likely to be primarily due to the different employee size structures of the countries analysed, as there is a positive correlation between company size and AI use. The comparatively high proportion of AI-using companies in Germany, as well as in Denmark and Luxembourg, can be explained by the comparatively high average number of employees per SME, among other factors: With an average of 6.8 employees, SMEs in Germany had the most employees of all EU-27 countries in 2022 (EU-27: 3.5) (IfM 2024).

[1] We define the use of AI as text mining, speech recognition, machine processing of natural language, image recognition, machine learning, AI-based process optimisation, autonomous control with environment recognition

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In fact, the smaller the company, the less intensively AI is used in all member states (Eurostat database 2024). While many large companies recognise the importance and potential of AI and implement AI technology in their company, small and medium-sized enterprises are more hesitant to implement AI applications.

Country	Companies that use AI technology 2023 - (in %)		
	Large companies (250 and larger)	SMEs (50 to 249 employees)	Small companies (10 to 49 employees)
Germany	35,4	16,8	9,7
Estonia	23,6	8,1	4,1
Lithuania	21,3	8,8	3,4
Poland	24,4	6,5	2,2
Hungary	17,4	5,5	3,0
European Union (EU27)	**30,4**	**13,0**	**6,4**

Table 1 AI utilisation - share of all companies in the same size category in %

Source: Eurostat database 2024

Although the implementation of AI poses similar challenges for all companies regardless of their employee size class, the prerequisites for successful implementation are more difficult for SMEs than for large companies due to their structural characteristics (Meub, L.; Pröger, T. 2023).

One major reason for the better performance of large companies is that they have more resources, such as greater financial and time resources. Purely economic reasons are also important: For example, large companies - unlike small companies - can allocate their costs for AI investments to a larger production volume.

However, large companies are also more likely to recognise the great potential of AI processes and attribute greater relevance to them (Löher et al. 2022). In this respect, it can be assumed that large companies are more willing to invest in technological trends than smaller ones. At the same time, the adequate use of AI processes in business processes requires a high level of technical and application-related understanding, which requires appropriately trained personnel. Studies show that AI processes are used significantly more frequently if the company employs its own IT specialists. However, this is predominantly not the case in small

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companies: the vast majority do not have their own IT staff, which makes access to specialist knowledge and therefore the identification of potential fields of application more difficult (Löher et al. 2022, EU Court of Auditors 2024).

Country	Companies with ICT specialists 2022 in %		
	Large companies (more than 250 employees)	SMEs (50 to 249 employees)	Small companies (10 to 49 employees)
Germany	79,0	47,0	15,0
Estonia	73,0	37,0	12,0
Lithuania	79,0	36,0	11,0
Poland	88,0	50,0	25,0
Hungary	88,0	57,0	25,0
European Union (EU27)	**78,0**	**44,0**	**15,0**

Table 2 Companies employing ICT specialists - share of all companies in the same size category in %

Source: Eurostat database: Digital skills - Employment of ICT professionals [isoc_ske_itspen2], last update: 05.01.2023.

Just under one in five SMEs in Europe employs skilled workers with a strong knowledge of information and communication technology (ICT). Nevertheless, significantly more ICT specialists are still employed in large companies than in SMEs. This applies equally to companies in all project partner countries. However, there are already differences in size within the SME group: around every second medium-sized company in Germany, Estonia, Lithuania, Poland and Hungary has staff with ICT skills, while the figure is significantly lower among small companies (IfM 2024 statistics).

SMEs have an ambivalent view of AI, similar to that of digitalisation: on the one hand, AI is seen as a general problem solver. On the other hand, there is great uncertainty about the explicit benefits of AI in the company. These sometimes false expectations on the one hand and fears and uncertainties on the other can be reduced through better communication of knowledge about AI and its potential and opportunities for companies. At the same time, low-threshold solutions to legal and technological hurdles should be offered, as they face greater

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challenges when using the technology due to financial constraints and limited access to expertise (Deloitte 2024)

However, companies that do not introduce AI run the risk of losing their competitiveness. In several industries, the potential of AI applications has not yet been fully recognised, which often goes hand in hand with the attitude that there is no need for innovation given the economic success to date. This lack of awareness is hindering the adoption of AI as companies fail to recognise how AI can help address critical business challenges or improve operational efficiency (OECD 2024).

AI for SMEs

Advantages of AI

SMEs and especially micro-SMEs can be much more efficient and productive with the help of AI. Businesses can make better use of their resources, automate routine tasks, and cut down on mistakes by using AI. AI can do things like enter data, manage schedules, and answer simple customer service questions. This automation gives workers more time to work on more important and creative jobs that need human input. Many businesses have problems with human error, which can cause mistakes that are expensive and take a long time to fix. On the other hand, AI systems are made to do things very accurately. A lot less error can be made by small businesses if they use AI for jobs like accounting, managing inventory, and quality control. Customers and business partners will have more confidence in you because of this. That makes operations more reliable.

AI helps small businesses to get the most out of their people and assets. For example, AI can look at data to guess how much demand there will be for a product, which helps to better handle inventory. It makes sure there are sufficient products to meet customer needs without having excess inventory, which can waste money and space. AI can also help with managing employees by predicting busy times and offering the best times for staff to work. This way, the company can always have enough workers without spending too much on them.

AI systems can quickly handle and look at a huge amount of data. Businesses can make better choices more quickly with this feature. AI can give you real-time information about things like sales trends, customer tastes, and the state of the market. Managers can make faster decisions based on data that helps the business stay competitive with this knowledge. This quickness in making choices can be especially helpful in a market that moves quickly, where being the first to act can give you a big edge.

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AI frees up workers to do more important and productive work by taking over boring and repetitive tasks. Employees will have more time to do things that are good for the business, like coming up with new items, giving better customer service, or looking into new markets. This not only increases output, but it also improves job happiness, since people are more likely to be happy with their jobs when they are doing interesting and important work.

AI not only makes businesses more efficient and productive, but it also cuts costs by a large amount for SMEs. AI lowers the need for a lot of manual labour, which means lower payroll costs. AI does this by automating tasks like customer service through chatbots, processing invoices, and managing supplies. Also, this technology lowers the chance of costly mistakes being made by people. AI can also for example look at patterns of energy use and offer ways to cut back, which can lead to lower utility bills.

AI can be also very important for SMEs, to improve the customer experience. AI can personalise relationships with customers through chatbots that can help and answer questions right away, 24 hours a day, 7 days a week. AI can make customers feel valuable and understood by making suggestions and promotions that are specific to each person's tastes by looking at their data. AI also helps to improve service processes, which means that problems and questions are answered faster. This level of personalised and quick service not only makes customers happier, but it also makes them more loyal, which leads to return business and good word-of-mouth, both of which are important for small businesses to grow.

AI also makes it much easier for small businesses to make decisions. AI can quickly and correctly look at huge amounts of data, giving real-time information about things like sales trends, customer preferences, and the state of the market. This lets managers make choices that are based on facts and figures, which are very important for staying competitive. AI helps businesses better predict market changes and consumer demands by finding patterns and guessing what will happen. With this much information, small businesses can quickly react to problems and chances, making smart choices that help them grow and be successful.

Needs of SMEs

There is no doubt that the importance of AI for the economy and society will continue to grow. The question is to what extent SMEs are up to this challenge. We wanted to know specifically:

- whether and, if so, to what extent the potential of AI applications is recognised by SMEs,
- what challenges they have to overcome during implementation and
- what support could help them to cope?

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To answer these questions, we asked SMEs in the partner countries Estonia, Germany, Lithuania, Poland and Hungary for their opinion in the first quarter of 2024 using a standardised questionnaire. Ultimately, 190 SMEs were included in the evaluation.

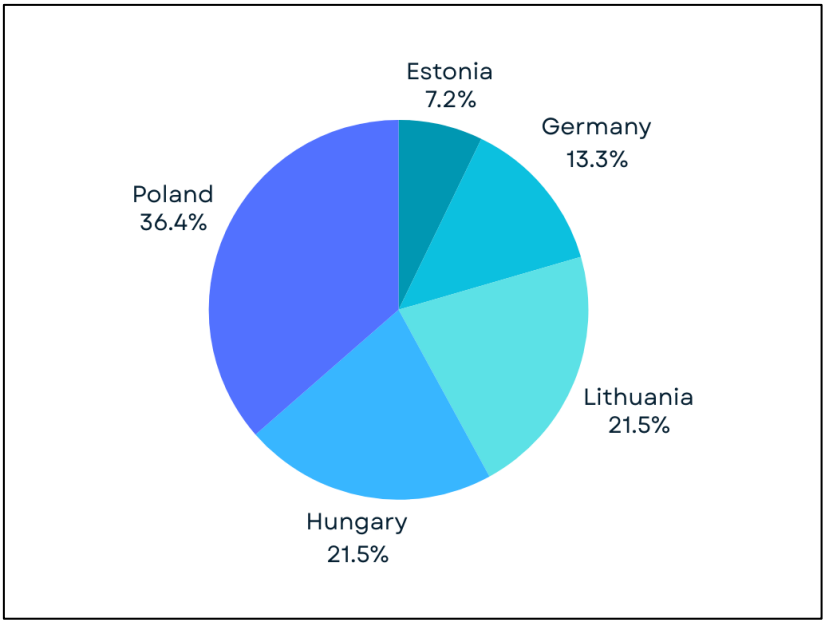

Figure 2: Location of the SMEs surveyed (in %)

As some rather complex issues can only be captured to a limited extent using a standardised questionnaire, additional interviews were conducted in April and May 2024 with experts from intermediary organisations such as trade associations, chambers or consulting organisations. These expert interviews were conducted on the basis of an interview guide in order to give the discussions a concrete structure and to direct the interviewees to the topics that were central to answering the research questions.

On the one hand, the company survey makes it possible to obtain generalisable statements on a solid empirical basis thanks to the large number of participants. On the other hand, the discussions at association level allow a deeper understanding of the topic to be gained.

General Understanding of AI

There is no doubt that the use of AI in companies plays a decisive role in maintaining and improving competitiveness. Nevertheless, SMEs are rather reluctant to utilise intelligently controlled machines and manufacturing processes. However, one reason for the reluctance to implement AI applications is not so much a lack of understanding of AI. The survey results show that the majority of companies have a similar understanding of AI in terms of data analysis, the use of robotics, the use of algorithms and recognising correlations. Differences can be seen in the area of independent decision-making. German companies in particular

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associate this application with AI. Estonian companies associate AI primarily with apps and smartphones.

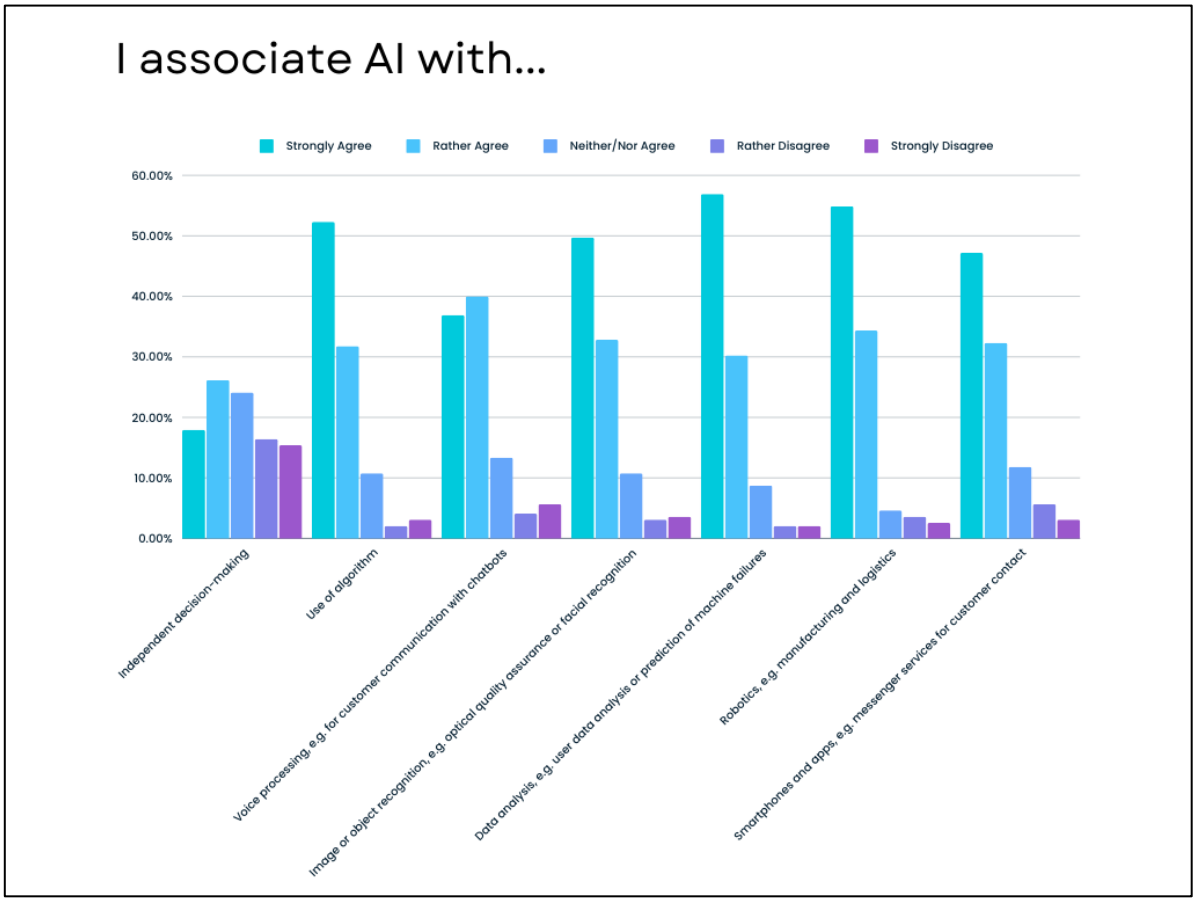

Figure 3: Understanding of AI by SMEs in the partner countries (in %).

The survey results also make it clear that most companies recognise the importance of AI and are already using it in some cases. One in five companies currently uses AI technology in their organisation. Estonia and Lithuania are particularly active in the use of AI. Even among those that are not yet using AI, more than four in ten companies are planning to do so in the future. AI technologies are most frequently used in marketing and sales as well as in customer service.

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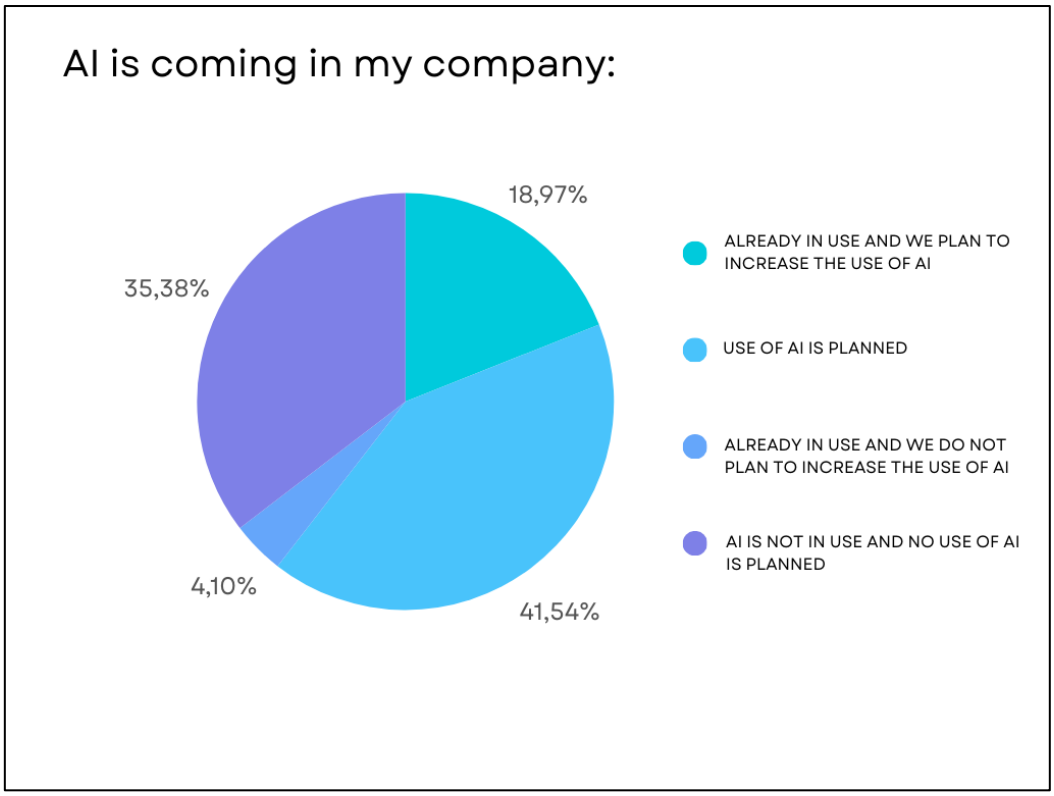

Figure 4: Use of AI technologies in SMEs of the partner countries (in %).

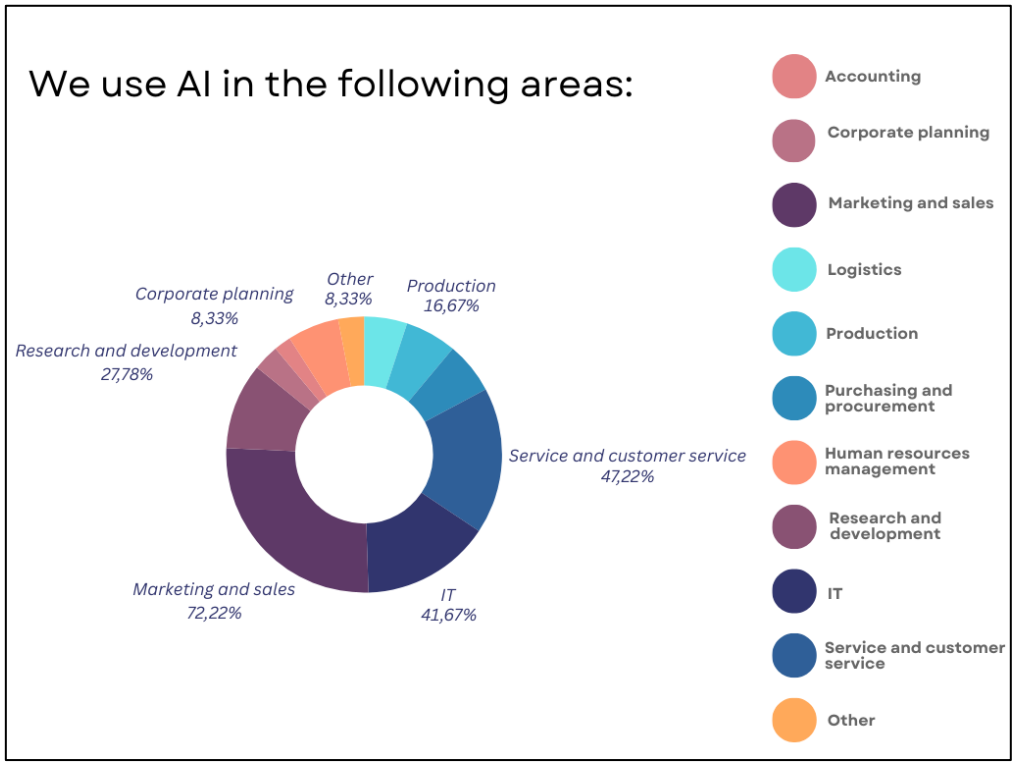

Figure 5: Areas of AI use by SMEs in the partner countries (in %).

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In Hungary and especially Poland, the number of companies using AI in their organisations is significantly lower. However, while more than six out of ten Hungarian companies are planning to use AI in the future, only 20% of Polish companies will use AI in the future.

Looking at all the companies surveyed, the results show that a good third of companies do not see any need to use AI in their organisation. This is particularly true for Polish companies, at a good 60%. While companies in other countries mainly cited a lack of expertise and skills as the reason for not using AI, the main reason for Polish companies is that they see no reason to use AI.

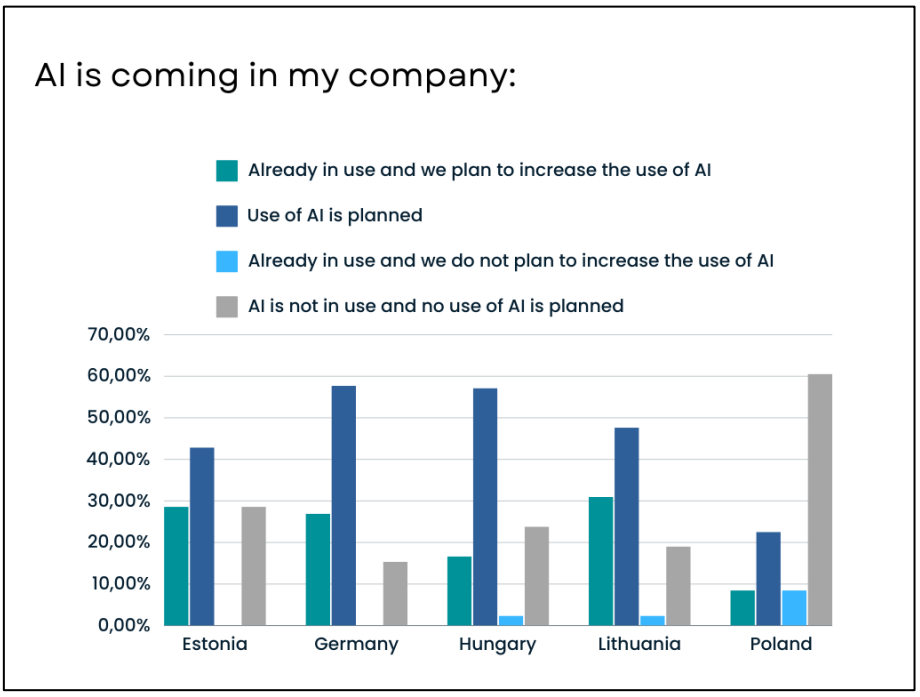

Figure 6: The readiness to use AI by SMEs in a country comparison (in %).

The results suggest that although many companies have a rough understanding of AI, they are clearly not sufficiently aware of the potential associated with the use of AI.

There can be many reasons for the non-utilisation of AI. On the one hand, company structure characteristics can explain the low utilisation of AI: Polish and Hungarian SMEs tend to be smaller and have fewer employees on average than the companies in the other countries included in the study. The positive correlation between company size and AI was already highlighted at the beginning of the report. Large companies have specialised departments or staff units that deal strategically with the use of AI. Small companies tend to take a short-term rather than a long-term strategic approach.

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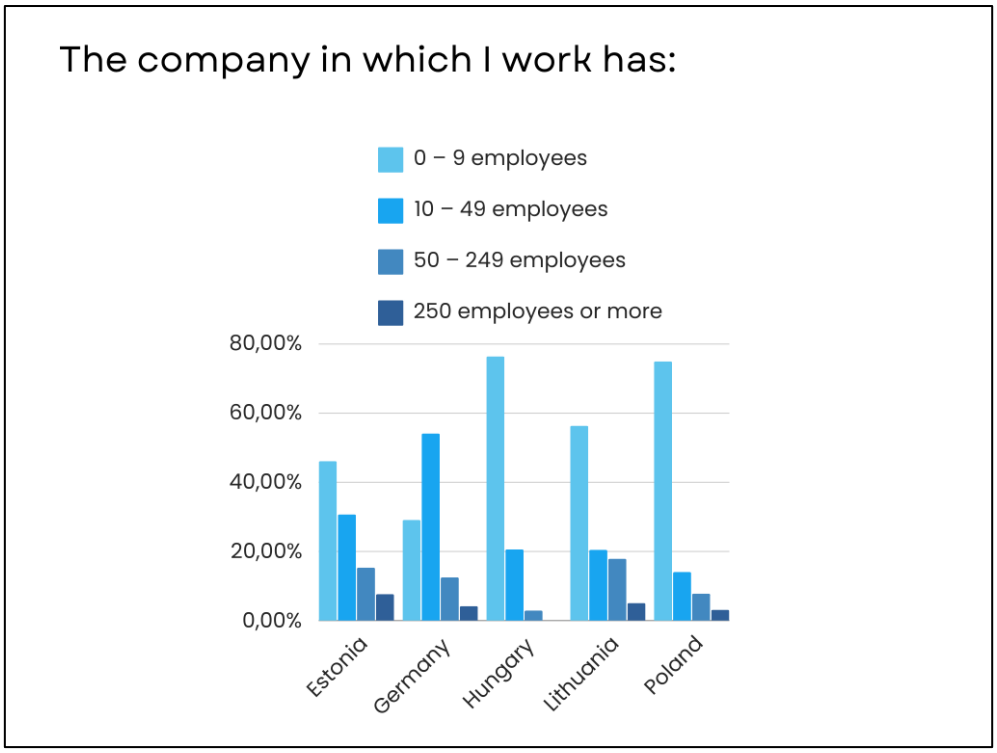

Figure 7: Size of the SMEs surveyed (in %).

It is also possible that the Polish companies surveyed come from more rural regions, where AI is less widespread than in more urban regions, and therefore lack positive examples from other AI-using companies.

The general rejection of many Polish companies, but also some companies from other countries, could also be due to a lack of acceptance of AI. On the one hand, this may stem from a lack of understanding of AI, but also from fears and uncertainties caused by the introduction of AI.

If one assumes that the use of AI will be necessary in the future in order to maintain competitiveness, a special approach and motivation to use AI seems necessary here.

The Challenges

When companies are asked about the specific reasons for not using AI, almost all companies apart from Poland cite a lack of knowledge about AI. Although this obstacle is also relevant for a good one in three Polish companies, they rate the fact that the benefits of AI are not or hardly recognisable to them as more important. This may be due to the fact that AI is diffuse. As a rule, it is not tangible like a new machine, but unfolds its effect in technical methods and devices. This makes it difficult for many to access this new technology.

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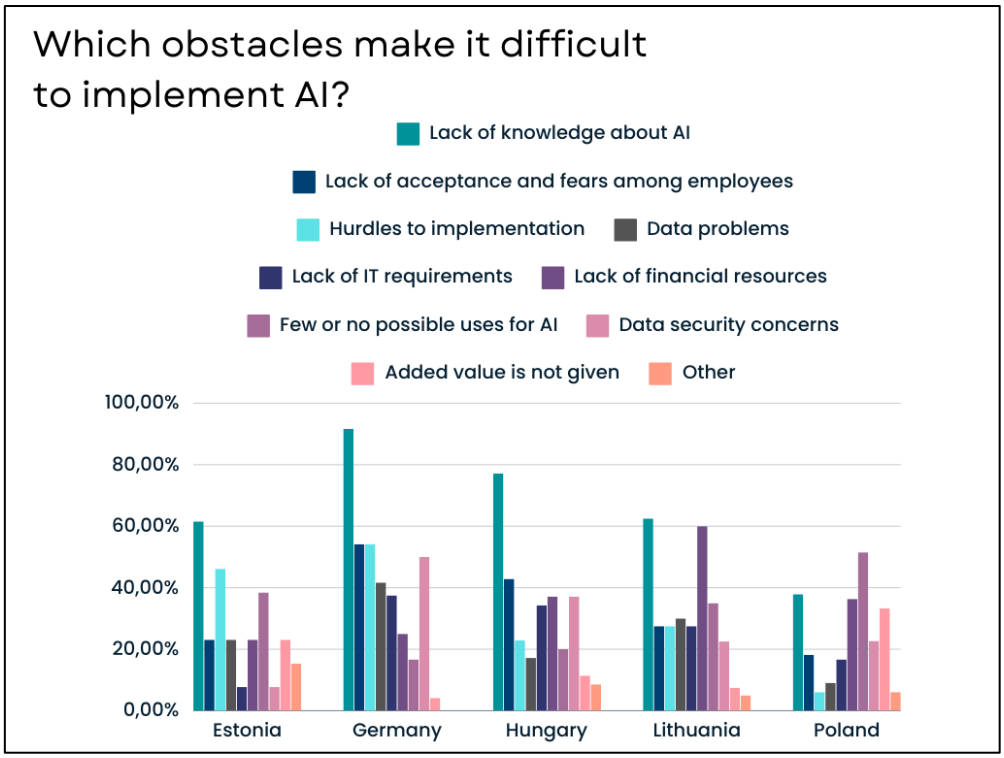

Figure 8: Barriers to using AI by SMEs in the partner countries (in %).

By contrast, companies from the other countries included in the survey primarily cite specific barriers to the implementation of AI, such as a lack of expertise and knowledge. Many SMEs assume that specialised and technical knowledge is required to implement AI. They don't have the 'grip'. They only have a vague idea of what AI can do and where it can be used sensibly. This often leads them to abandon the idea of implementing AI.

Lithuania points to the cost aspect, where there is a lack of financial resources for the implementation of AI. In general, SMEs in particular find it difficult to weigh up the costs and benefits of implementing AI. On the one hand, the development of AI systems, the implementation and, if necessary, the further development and maintenance of AI - depending on the complexity and the resources required - incur high costs. On the other hand, these costs must be considered in relation to the expected added value of the AI solutions in order to make a well-founded investment decision. SMEs often lack the relevant knowledge in this area. In addition, many companies only associate AI with very advanced and expensive technologies that are generally only used by large companies. This puts many SMEs off.

Another obstacle that was mentioned comparatively frequently in Germany and Hungary is the lack of employee acceptance. If employees are unwilling to accept a new technology and use it in the work process, this reduces or prevents the successful use of AI applications in the company.

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The survey results reveal a great need for support. We wanted to know in which areas the companies surveyed need to take action.

Need for action

The companies surveyed see the greatest need for action in communicating specific potential and the concrete benefits for the company. Ultimately, the questions are what makes sense for me and where should I start? Application examples are particularly suitable for this. The more practical the AI applications are described, the more likely they are to be able to transfer the benefits of AI to their own company. Companies not only want to be informed about the benefits of AI, but also about the associated risks.

For Germany and Estonia risks in connection with data protection and data security were particularly important. Companies feel insecure here: On the one hand, they ask themselves whether and to what extent company data is safe from possible external attacks and what protective measures can be taken. Can they rely on third parties (manufacturers, clouds, messenger services) to protect their data? This involves questions about who has access to the data and in what contexts it is used and by whom. Should companies and individuals demand basic content-related information from the manufacturer/service provider on how their data is handled? Have the necessary measures been taken to secure the data for the AI application (access rights, sufficient encryption, protection against technical defects (such as power failure), deletion periods, etc.)?

However, the internal protection of personal data is also important. Is everyone involved aware of what data is collected, kept available internally and processed in the company, how the systems learn and what the data is used for (data transparency)? How should the company deal with behaviour and performance monitoring, for example? In other words, does the AI application give managers and employees a sufficient degree of control over their own personal data?

The companies, especially those from Estonia, Lithuania and Germany, see a need for further action on how AI can be integrated into the corporate strategy and what effects AI can have on corporate management. Processes are often not clearly defined in SMEs. This makes it difficult to identify activities that can be automated or supported by AI-based tools.

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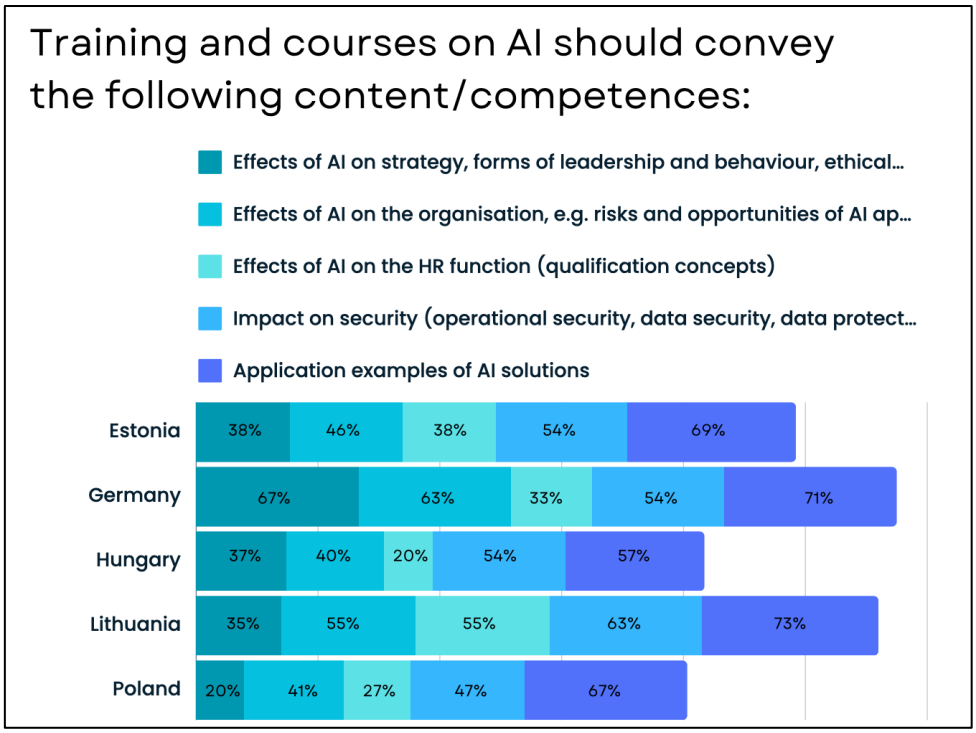

Figure 9: Assessing the relevance of AI effects and impacts for SMEs (in %).

In this context, ethical aspects associated with the use of AI should also play a role. As guidelines for dealing with generative AI in the company are largely not yet in place, SMEs often find themselves in a legally uncertain area. Which data can also be used by others, e.g. if the data is stored on platforms? Users should be aware, for example, that the anonymised data of a vehicle is used to optimise driving performance and to optimally adjust the vehicle technology. In addition, the data collected could be compared with data from other manufacturers and analysed for statistical purposes. It is possible that data could be used for contexts for which it was not collected and re-linked for other purposes.

The surveys of the counsellors revealed a need for further action in addition to those mentioned. For example, the topic of networking plays a major role for advisors. AI can realise its full potential above all when large amounts of data are available. Utilising large amounts of data can make products smart, i.e. internet-enabled. SMEs generally do not have access to the volumes of data that large companies work with. This makes machine learning of specialised AI applications - for which large amounts of data are a prerequisite - more difficult for SMEs. Since access to third-party data and its availability are essential for further development, SMEs should be given access to data in other ways (Wangermann, T., 2020). One possibility is data cooperation, where SMEs in particular can benefit greatly from new technical developments, especially decentralised training approaches in AI and the production of synthetic data. Many SMEs are unaware of the possibilities or are hesitant because they are not sufficiently aware of the benefits and the risks are seen as difficult to manage. In order to create legal certainty, rules for data pools must be developed that clarify access and usage

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rights and make them verifiable while complying with applicable data protection law (Heumann, S.; Jentzsch 2019).

Cooperation with other SMEs could be useful here. However, SMEs could also be subject to financial, time and technical restrictions in other areas compared to large companies and can create added value through cooperation with other SMEs and tackle the topic of AI together.

Contents of the training programme

The need for action described by the companies is also reflected in the desired training measures. First and foremost, the training should convey a general understanding of AI. Obviously, most companies still have gaps in their knowledge. On the one hand, the training should scrutinise their own understanding of the term: What is AI anyway, what types of AI are there, which technologies are differentiated, and are these perhaps already being used in your own company?

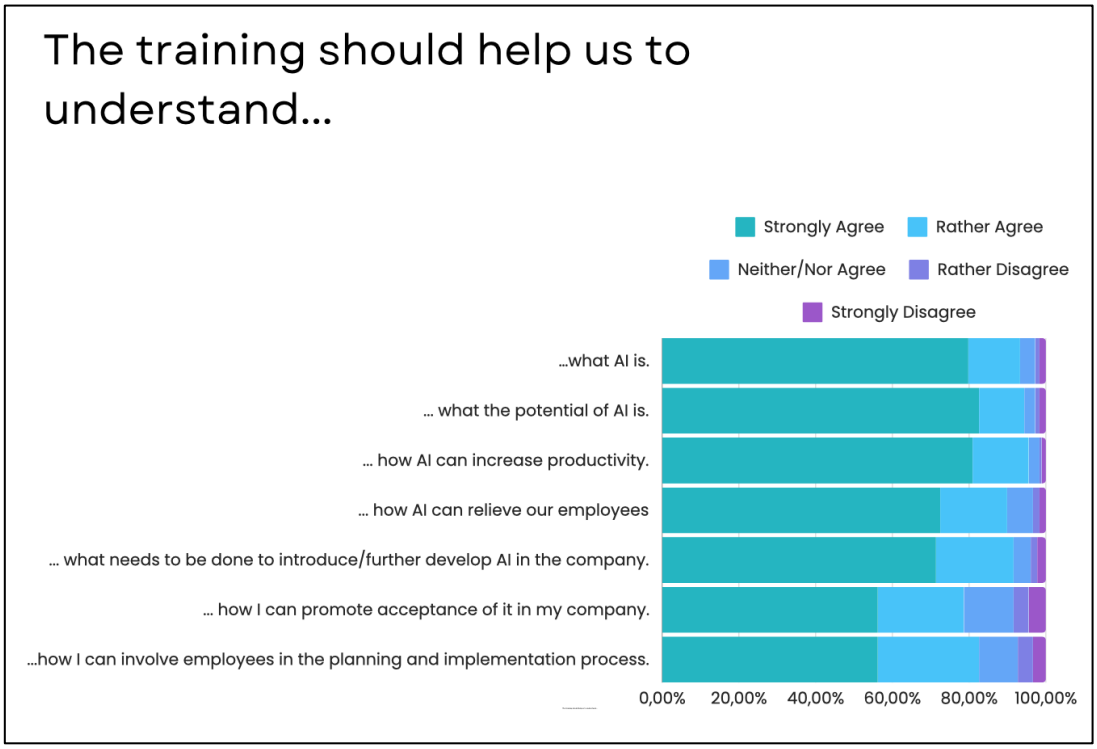

Figure 10: Requirements and expectations about the content of AI trainings (in %).

Above all, however, companies want AI training to convey the specific added value of using AI-based tools. On the one hand, this is about the potential of AI, especially with regard to possible increases in productivity. To this end, companies should be supported in analysing their own value creation structure and operational functional areas to determine where intelligent technologies could be used. Small companies in particular are dependent on an investment paying off quickly. They have fewer financial resources, so the economic benefits of introducing AI must be made clear. To this end, questions should be answered such as: Do the AI

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applications generate an attractive return on investment (ROI) directly and in the short term or will they have a more positive effect in the medium and long term (such as new customer segments, etc.)? At the same time, however, companies must be made aware that AI projects can miss their economic targets and still generate great value, as a great deal of knowledge about data and process behaviour has been gathered on the way to the application. Only if they have a sufficiently good understanding of the economic opportunities and risks can they make a good decision.

It was also important for the companies to learn about the technical implementation of AI. Questions such as: "How can you implement AI in your company? What technical requirements are necessary for this? How can I continue to develop within the company in order to stay up to date?" were to be answered in the training course.

The introduction of AI technologies always affects employees. These are not (yet) the focus of all the companies surveyed. However, Germany and Lithuania, and to some extent Estonia, expect the training to provide information on how AI can reduce the workload of their employees, but also how I can involve employees in the planning and implementation process - also to increase their acceptance of new technologies.

Skills and competences of the trainer

A training course is only as good as the trainer. In this respect, it was important for us to find out what skills and competences the companies expect from him. Predictably, the AI trainer should have the necessary expertise and experience in dealing with AI. Compared to the other countries, it was important for Polish and Hungarian companies that the trainer had relevant industry knowledge.

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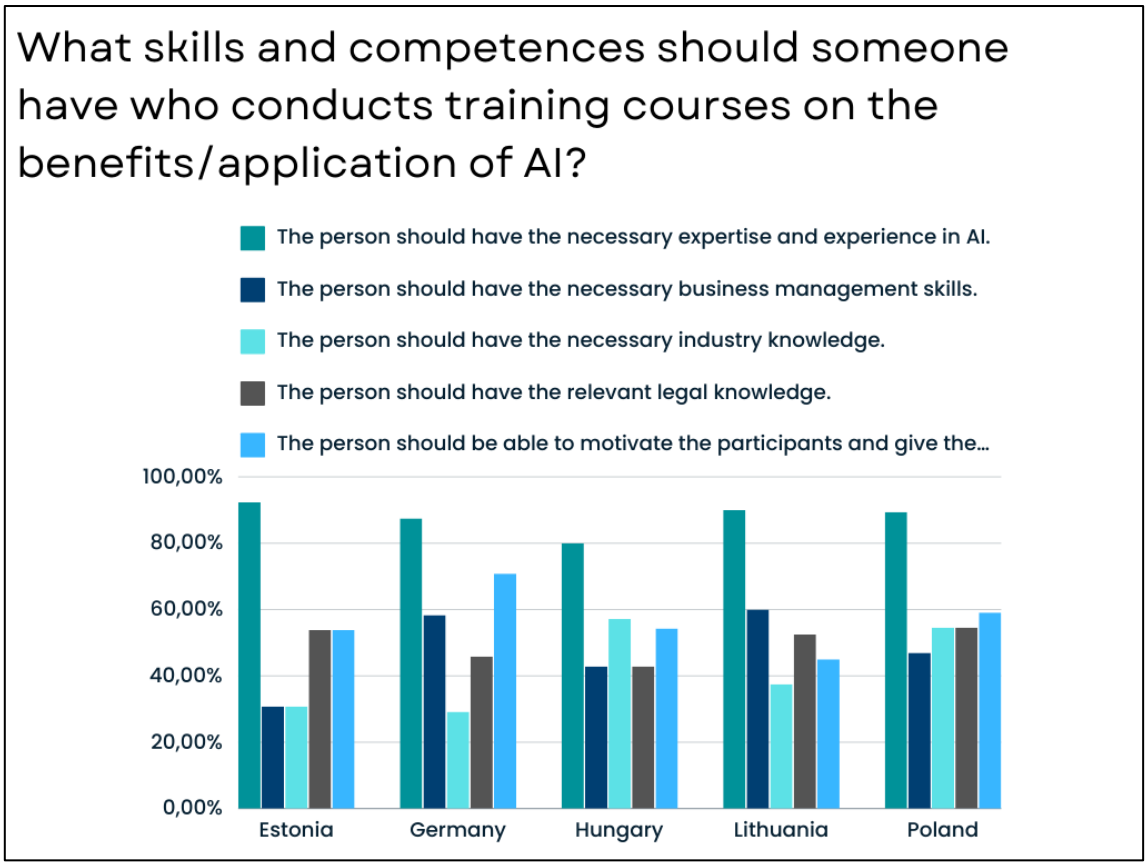

Figure 11: Expected competencies and skills of an AI trainer (in %).

Germany and Lithuania, on the other hand, consider the teaching of general business fundamentals to be more important and expect the trainer to have the relevant knowledge. All respondents were in comparative agreement that the trainer should have good legal knowledge - if only to be able to provide companies with comprehensive and in-depth information on the topics of "data protection and data security", which are important to them. In addition to technical expertise, the trainer should also be able to motivate the training participants for the topic. As the learning success can be reduced if the participants are over- or underchallenged, the trainer should also take the participants on board based on their level of knowledge.

Time and cost of a training course

The companies' expectations of the training programme are high: the training should impart knowledge about AI and its potential and opportunities for companies. In addition, low-threshold solutions to legal and technological hurdles should be offered. At the same time, the companies surveyed have limited resources. This raises the question of how much they are willing to pay to attend a training programme and how much time they would invest in the measures.

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Two thirds of Polish companies would only invest 50 euros in AI training programmes. The same applies to just under half of Hungarian companies. The low willingness to pay corresponds with the relatively low interest in the operational implementation of AI, at least among Polish companies. Six out of ten Estonian companies, on the other hand, would be prepared to pay up to 200 euros. German companies are willing to dig much deeper into their pockets - more than four out of ten companies can imagine paying between 200 and 500 euros. One in four companies would even pay up to 1,000 euros.

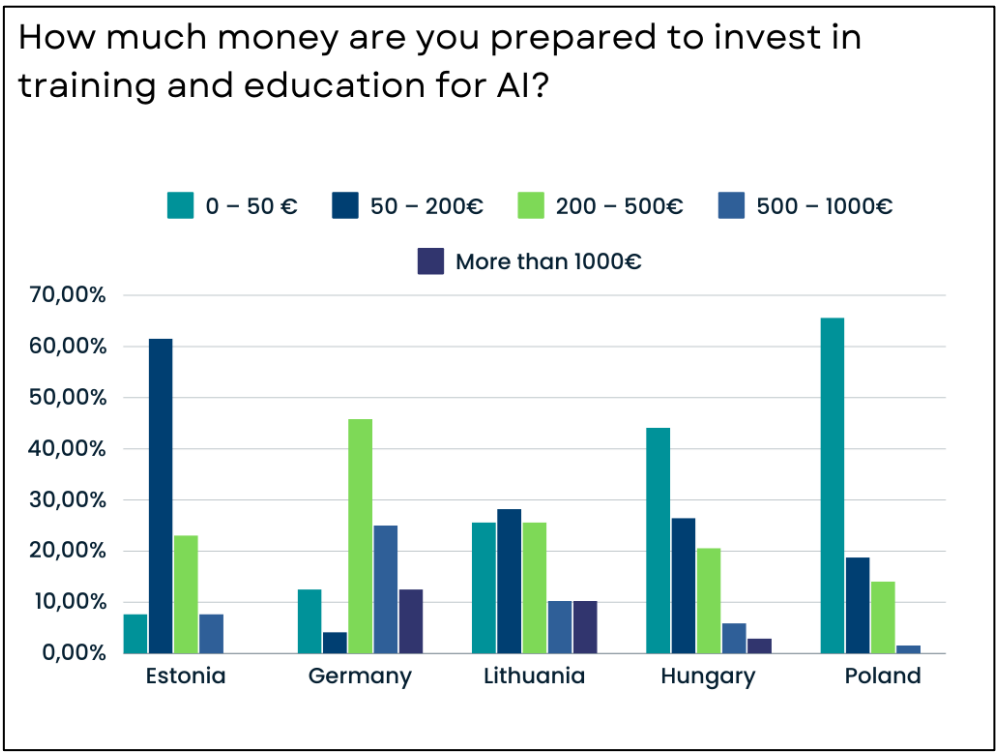

Figure 12: The financial willingness of SMEs to invest in AI education and training (in %).

The willingness to pay is also reflected in the amount of time that companies are willing to spend on training. Just under half of Hungarian companies consider a maximum of 4 hours to be sufficient for AI training. This is quite a short time when you consider the content to be taught. Nevertheless, almost one in three Hungarian companies would be prepared to take part in a training course lasting up to eight hours.

In the other countries, the willingness to invest more time is higher. The majority of Estonian companies and a good third of German companies favour 1 to 2 days. However, a quarter of German companies would also invest up to 40 hours.

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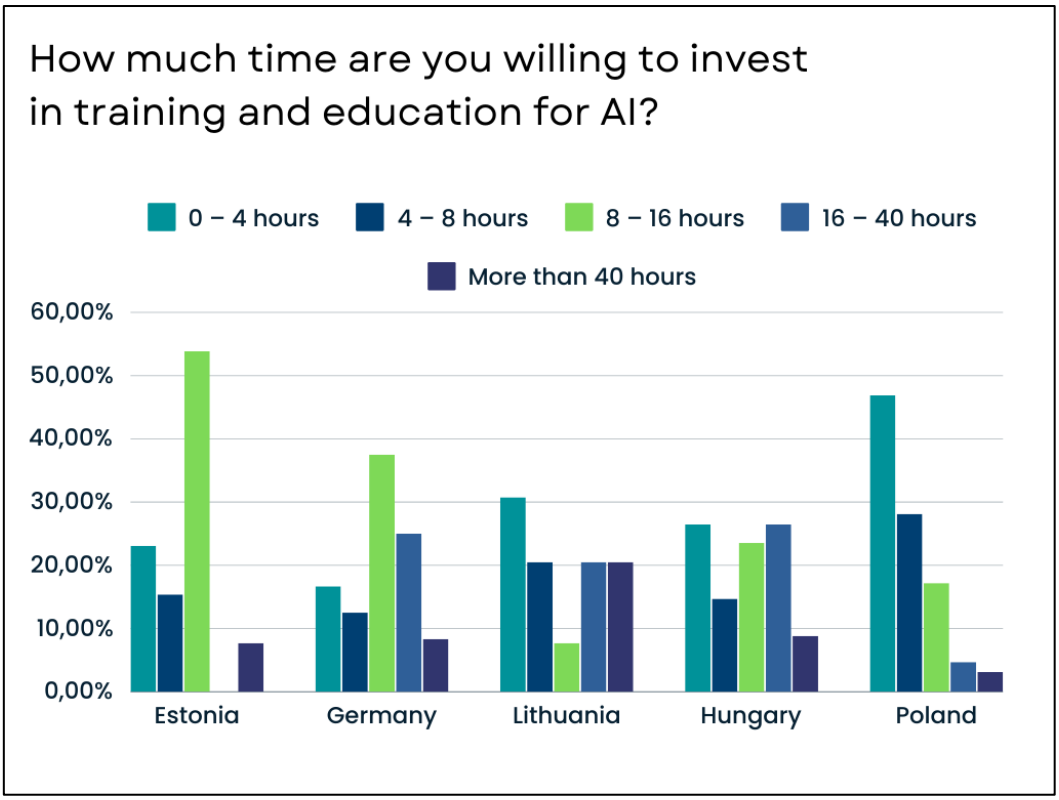

Figure 13: Time resources that SMEs are willing to invest in AI education and training (in %).

The Hungarian and Lithuanian companies show a wide range from a maximum of four hours to more than 40 hours. One in five Lithuanian companies would even be prepared to take part in AI training for more than a week (more than 40 hours).

General Support Measures

The use of AI in SMEs is not a sure-fire success. Micro and small companies in particular are limited in their ability to develop AI applications tailored to their operational needs themselves. This was already evident in the development of strategic concepts in connection with digitalisation (Icks et al 2017; Löher et al., 2022). Compared to large companies, SMEs still have a lot of catching up to do. A supportive environment is needed to close this gap. This includes training, financial and technical support, competence centres that illustrate practical applications, idea providers, strategic and technological advisors, projects and programmes, as well as framework conditions such as technological infrastructure.

Training measures

Training measures can be an important first step in sensitising SMEs and showing them the numerous potentials associated with the use of AI. On the one hand, the training measures should be tailored to the prior knowledge of the participants so that nobody feels over- or underchallenged. On the other hand, it makes sense to orientate the training courses to the

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phases of AI introduction. This would also have the advantage that individual training and qualification measures would fit into the time and financial budget of SMEs.

- Training before the launch

The primary aim here should be to sensitise SMEs to AI. Firstly, companies should be made aware that they are very likely already using AI in their organisation. Smartphones are customised for their owners, navigation devices scan drivers' driving habits, social media and messenger services are used by almost all companies, albeit not systematically. Good examples of the systematic use of AI can be used to demonstrate the potential and operational benefits of AI. ChatGPT could be a good starting point for reducing potential reservations about AI. The ease of use and the opportunity to try out how the system works in a playful way can reduce the fear of AI.

- Training during planning

Once companies have decided to implement AI solutions in their organisation, company-related, technical, financial and legal consulting aspects should be addressed. First of all, it should be explained what I want to achieve with the use of AI, where do I use AI and which areas of the company are involved in the implementation. The cost calculation is also of interest. But how do I involve employees, how do I gain their acceptance and what data protection, and security aspects need to be taken into account?

- Training during use

This phase should focus on the continuous further development of the AI systems. Where is there further potential for optimisation? What further training measures do employees need?

Financial support

SMEs often do not have the financial means to implement AI technologies in their company. Investing in AI is uncertain and, unlike buying a machine, less tangible. To raise awareness and increase the willingness to invest in AI, the German government provides financial support to SMEs. For example, the Federal Ministry for Economic Affairs and Climate (BMWK) offers SMEs grants and interest subsidies to make it easier for them to finance research and innovation projects (Central Innovation Programme for SMEs (ZIM)) (BMWK 2024) https://www.bmwk.de/Redaktion/DE/Dossier/Innovationspolitik/forschung-und-innovation-in-kmu-foerdern.html. The Federal Ministry of Education and Research (BMBF 2024) has also launched an action plan for AI, which, among other things, strengthens the transfer of AI from research to application. There are already more than 1,000 application examples in Germany. The aim is to install or promote further programmes and projects (BMBF 2024). The

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Kreditanstalt für Wiederaufbau (KFW) offers further financial support in the form of grants and loans https://www.kfw.de/inlandsfoerderung/Unternehmen/Innovation-und-Digitalisierung/Digitalisierung/?wt_mc=72087781840_510994468997&wt_kw=p_7208778184 0_digital fördermittel&wt_cc1=innovation&wt_cc3=72087781840_kwd-1959157759833_510994468997&gad_source=1).

In Poland, there are various financial support programs designed to help SMEs adopt and implement AI technologies. These support mechanisms include grants, loans, and tax incentives offered by both national and European Union funds. There are some of the key financial support options available for SMEs in Poland to engage in AI-driven initiatives. Smart Growth Operational Programme (POIR): one of Poland's key funding programs, POIR supports innovative projects, including AI development and implementation. SMEs can receive grants for R&D activities related to AI, automation, and data analytics (https://www.poir.gov.pl/en/). National Centre for Research and Development (NCBR): NCBR offers financial support for research and innovation projects, including AI technologies (https://www.gov.pl/web/ncbr-en). PARP (Polish Agency for Enterprise Development): PARP offers various support programs for SMEs, including grants, loans, and consulting services aimed at fostering digital transformation and AI adoption (https://en.parp.gov.pl).

Hungary is actively supporting the adoption of AI by SMEs through a combination of national and EU-funded programs. One of the major initiatives is the HUF 181 billion (approximately EUR 474 million) EU-funded program to foster SME innovation, which includes substantial support for AI adoption. Out of this, HUF 75 billion is allocated specifically for boosting innovation at micro and small businesses, including AI-related projects. The program focuses on sectors such as healthcare, agriculture, and manufacturing, where AI applications are highly encouraged. Under Hungary's AI Strategy (2020-2030) (https://ai-hungary.com/api/v1/companies/15/files/146074/view), an AI Corporate Experimental Fund was created to support companies in the early stages of AI experimentation. The fund helps reduce the costs and risks associated with developing AI solutions up to the proof-of-concept phase. The National AI Laboratory is another initiative that fosters collaboration between SMEs, research institutions, and the industry to promote AI development through grants and research funding (https://mi.nemzetilabor.hu).

In 2024, SMEs in Lithuania have access to several financial support schemes to help with the adoption of AI and other digital technologies. The Ministry of the Economy and Innovation of Lithuania plays a key role in supporting SMEs through simplified processes, such as the SME declaration tool, which allows companies to easily prove eligibility for financial support for AI-related initiatives. For instance, the newly digitized SME declaration tool simplifies the process of proving SME status, which is necessary for accessing state support, including financial

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instruments related to AI adoption. Financial intermediaries like SEB Bank and others are involved in providing loans, offering up to €364 million to support Lithuanian businesses. In addition to EU-backed programs, Lithuania's OECD collaboration aims to improve the business environment by enhancing access to finance and promoting innovation (https://www.oecd.org/en/countries/lithuania.html). This also supports the digital transformation efforts of SMEs, making Lithuania a growing hub for AI integration across industries.

Estonia continues to enhance its support for SMEs adopting AI technologies through various funding mechanisms. EU Structural Funds & Recovery and Resilience Facility (RRF) allocates €58 million specifically for the digitalization of small and medium-sized enterprises, targeting AI adoption and technological upgrades (https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility_en). This funding supports initiatives such as developing industrial data clouds, conducting feasibility studies, and training employees. The grants can reach up to €750,000 for projects that increase digital capabilities within SMEs. Enterprise Estonia (EAS) provided various grants and support mechanisms aimed at fostering innovation among Estonian SMEs. These include funding for technological advancements, with a strong emphasis on AI and robotics integration. EAS also supports SMEs through the European Digital Innovation Hubs (EDIH), which offer free services and expertise to help companies develop AI solutions (https://european-digital-innovation-hubs.ec.europa.eu/home).

Technological Infrastructure

SMEs need support in accessing tools and platforms. There are now so many tools that it is difficult for SMEs to maintain an overview and decide which one is most suitable. This is where intermediary organisations can give SMEs an initial overview with a brief description of useful tools. The same applies to cloud providers; which cloud solution offers me the flexibility and scalability I need for my chosen AI solution? For a better assessment of cloud solutions, the BMWK has created Trusted Cloud, a platform where companies can find out about secure cloud providers (BMWK 2024) https://www.bmwk.de/Redaktion/DE/Artikel/Digitale-Welt/trusted-cloud.html

However, the technological infrastructure also includes reliable and powerful data centres. With the establishment of four AI service centres, the BMBF is therefore pursuing the goal of providing users from science and industry with high-performance computing infrastructure in order to significantly increase the availability of AI computing power in Germany and thus enable research institutions and companies, especially SMEs, to use, understand and further develop AI applications and integrate them into their processes. To this end, the AI service

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centres conduct cutting-edge research in the field of AI and promote the transfer of AI into practice through low-threshold and agile services (BMBF 2024) https://www.bmbf.de/bmbf/shareddocs/kurzmeldungen/de/2022/11/foerderung-von-4-ki-zentren-gestartet.html .

Gaia-X, a European cloud initiative backed by the German government, promotes a secure and sovereign data infrastructure that adheres to European regulations, ensuring SMEs can confidently deploy AI solutions in compliance with GDPR. The German government continues to support AI adoption among SMEs through initiatives like Mittelstand-Digital and AI Innovation Hubs, which provide free consultation, training, and AI deployment strategies tailored for small businesses. These programs help SMEs integrate AI into their operations, particularly in areas like automation, supply chain management, and customer service (https://european-digital-innovation-hubs.ec.europa.eu/home).

Advice and mentoring programmes

The use of AI requires expertise in very different areas. SMEs often find it difficult to find the right consultant for their needs. This is where networks or mentoring programmes can help. One example is the coaching programme of the New Quality of Work Initiative (INQA), an initiative of the Federal Ministry of Labour and Social Affairs, which aims to make SMEs fit for the future by promoting consulting (INQA 2024). (https://www.inqa.de/DE/angebote/inqa-coaching/uebersicht.html) Another example is the "Go Digital" programme (BMWK 2024) funded by the Federal Ministry of Economics (BMWK) https://www.bmwk.de/Redaktion/DE/Artikel/Digitale-Welt/foerderprogramm-go-digital.html or the Mittelstand Digital Centres, which offer competent and provider-neutral contact points for information, awareness-raising and training throughout Germany (Mittelstand Digital 2024) https://digitalzentrum-berlin.de/ki-tools-fuer-den-arbeitsalltag.

The AI Federal Association (KI-Bundesverband) offers a mentorship program aimed at SMEs looking to adopt AI technologies. The association connects SMEs with AI mentors, including experts from AI startups and researchers, to foster practical AI implementation (https://ki-verband.de/en/).

In Poland PARP (Polish Agency for Enterprise Development) is helping businesses create personalized AI strategies and providing mentoring services (https://en.parp.gov.pl). PFR (Polish Development Fund) continues to provide mentoring and training programs tailored to the needs of SMEs. It supports companies in developing AI competencies and understanding AI applications in their business (https://pfr.pl).

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Hungary offers various mentoring programs and initiatives aimed at helping SMEs integrate and leverage AI technologies. Hungary's Digital Innovation Hub provides support to SMEs in their digital transformation, including AI adoption. As part of the EU's DIH network, it offers access to AI experts, training, and funding for digital innovation projects (https://european-digital-innovation-hubs.ec.europa.eu/news/pioneering-digital-transformation-hungary-edihs-leading-way-nations-smes).

The Estonian Digital Innovation Hub offers various training programs designed to help SMEs adopt digital technologies, including AI. The hub provides access to expertise, resources, and collaborative opportunities (https://aire-edih.eu).

The Lithuanian Artificial Intelligence Association (LAIA) promotes AI education and collaboration among businesses and educational institutions. Tailored training programs focused on applying AI in sectors such as healthcare, manufacturing, and finance. (https://lithuania.ai).

Community and networking

Acceptance for the use of AI is all the greater if companies learn about good application possibilities from other companies and can share challenges and experiences and thus learn from each other. Conferences, meet-ups and other networking events can facilitate the exchange of experiences. With over 30 regional and thematic centres, small and medium-sized enterprises and skilled trades businesses can experience the benefits of digitalisation and, from this year onwards, increasingly of AI through practical examples, demonstrators, information events and mutual exchange. (BMWK 2024 https://www.mittelstand-digital.de/MD/Redaktion/DE/Artikel/Mittelstand-4-0/mittelstand-40-kompetenzzentren.html).

One of the promising networking opportunities is AI Campus Berlin. It is a prominent hub for artificial intelligence innovation, collaboration, and community building, specifically aimed at fostering AI development among SMEs, start-ups, researchers, and industry experts. Regularly hosts events, workshops, and hackathons focused on AI, where SMEs can learn, share experiences, and connect with peers and experts. Campus offers networking with AI mentors who provide guidance and support to SMEs in their AI journeys (https://www.merantix-aicampus.com/community).

The AI Federal Association promotes AI development in Germany and connects various stakeholders, including SMEs, start-ups, and research institutions. It provides a platform for networking among businesses, start-ups, researchers, and other stakeholders in the AI field, facilitates the exchange of knowledge, best practices, and experiences related to AI

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technologies and applications. They provide membership network, events and conferences, mentoring programs, workshops etc. (https://ki-verband.de/en/).

The European AI Alliance is an initiative launched by the European Commission to foster collaboration among stakeholders in the AI ecosystem across Europe. The Alliance brings together a wide range of stakeholders, including businesses, industry associations, researchers, civil society organizations, and public authorities, to ensure comprehensive representation and input on AI-related matters. The Alliance serves as a platform for stakeholders to contribute to the development of AI policies and regulatory frameworks at the European level, ensuring that diverse viewpoints are considered. It provides access to reports, studies, and guidelines on various AI topics, helping members stay informed about current trends, challenges, and innovations in the field (https://futurium.ec.europa.eu/en/european-ai-alliance).

In Germany, various local and regional AI meetup groups offer informal yet valuable networking opportunities for SMEs interested in adopting and leveraging artificial intelligence. These groups serve as platforms for knowledge exchange, collaboration, and staying updated on the latest AI trends.

The Digital Hub Initiative, organized by the Federal Ministry for Economic Affairs and Climate Action (BMWK), is an initiative aimed at promoting digital transformation and AI adoption in Germany, with a specific focus on SMEs. This initiative creates regional innovation hubs that foster collaboration between startups, SMEs, corporates, research institutions, and investors, particularly in AI and other digital technologies. The hubs serve as networking platforms where SMEs can connect with tech startups, corporates, universities, and research centers, creating opportunities for collaboration on digital transformation and AI projects. Regular events such as conferences, hackathons, and innovation competitions provide informal and formal networking opportunities for businesses and digital experts (https://www.de-hub.de).

Conclusion

Today, no one doubts the fact that AI is one of the leading catalysts for the development of new industries and markets, which transforms and modernizes entire business paradigms. Even though many companies have long recognized the importance and significance of AI, the results of the study demonstrated that not all companies continue to actively implement AI technologies, which can be explained by various reasons. In addition to the mentioned correlation between the size and location of the company and the active use of AI, companies face various barriers, among which the most prevalent are insufficient awareness of the capabilities and technologies of AI, fear and insecurity among employees, lack of technological

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and financial resources, data protection and many others. All this shows the need to develop a comprehensive and flexible approach to integrating enterprises into the AI environment, taking into account their interests, needs, capabilities, and limitations. For many enterprises, the most difficult challenge is to develop an AI implementation strategy, to understand in which areas AI (marketing, logistics, production, HR, sales, etc.) can bring new opportunities and potential, and which of them imply certain limitations that require more careful actions to implement AI. Organizing AI trainings can become a benchmark for many companies to increase their awareness of the capabilities of AI technologies, applied digital solutions, and most importantly, they will help them navigate and build their own AI implementation plan, considering such aspects as motivation and acceptance by employees, corporate strategy and organizational culture, and many others. Despite the operational workload of small and medium-sized enterprises, many of them are ready to spend time and financial resources on AI trainings and education. Today, the understanding that it is the development of AI that will form new business conditions and the organization of the social landscape contributes to the emergence of many supporting programs (financial, technological, educational, networking) both at European and national levels. Many programs focus on providing access to AI infrastructure, including cloud services, AI tools, and high-performance computing platforms. European and national bodies support collaboration by creating ecosystems where SMEs can connect with larger corporations, research institutions, and AI experts. Mentorship and networking opportunities foster innovation and help SMEs to scale. Thus, the future of SMEs with AI integration is set to be transformative, reshaping how these businesses operate, innovate, and compete. AI is expected to become a foundational tool for SMEs, driving growth and helping them adapt to an increasingly digital and automated world. But first, there is a need to build a roadmap for SMEs that will lead them to digital transformation results.

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