



Management
Summary

Potentials of Generative AI for SMEs

How large AI models are transforming the working world

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Management Summary

The introduction of ChatGPT in November 2022 has electrified business, politics, society and science. Since then, numerous studies have highlighted the potential of Generative Artificial Intelligence (AI), particularly in the creation and processing of text and images. The implications for the working world are enormous. Fraunhofer IAO addresses this topic to support companies and SMEs in particular in exploiting the potential of Generative AI. The key findings of this study were compiled on the basis of interviews with 48 experts from science, technology and application, supplemented by literature research and our own expertise. The central result is a set of recommendations for action that are relevant not only to SMEs, since almost no company will be able to ignore this trend in the future. The recommendations are complemented by advice for science and society. The key findings of the study are:



Establish AI literacy: Basic AI skills for all employees

Generative AI will be indispensable in the future as it is widely used and integrated into many standard applications, e.g. as an assistance function in office applications. It is therefore important that users are aware of and can assess the potential, technical limitations and social challenges of AI. In this way, errors and misuse can be avoided. To achieve this, education and training (keyword: "AI literacy") for all employees in the company (and also for all people in society) is important. The content and scope of the training should be tailored to the target group.



Establish Generative AI as a strategic issue and synchronize data, AI and innovation strategies

Generative AI is becoming an elementary component of many applications and is therefore available, for example, on users' end devices. This provides a lever for increasing efficiency, but does not directly lead to competitive differentiation. In order to realise the full potential of Generative AI, company-specific AI applications must be developed in-house or with partners to create new unique selling propositions. This requires an AI strategy, which should be closely interlinked with the data and innovation strategies. Company-specific AI applications require company-specific data and specially trained models. The motto here is "digitisation before AI". In addition, AI is not an end in itself, but should generate new benefits for customers and employees in the context of products, processes and services, thereby creating innovation.



Identify and prioritise internal and external use cases

There are many and varied use cases for Generative AI. However, not all of them are easy to implement and some may even be risky. It is advisable to document and evaluate use cases in a structured way, using a methodology and fixed criteria (internal vs. external benefits, risks, resources required, etc.). An AI canvas, an easy-to-use and easy-to-understand template for capturing the key characteristics of use cases, is ideal for this purpose. To gain experience with Generative AI and avoid taking risks that could jeopardise customer-facing business, it is recommended to start with an internal use case, e.g. a chatbot for internal knowledge. In parallel, non-critical "quick wins" should be implemented, such as the use of text formulation tools like ChatGPT or DeepL Write for social media postings or public customer communications.



Enter partnerships and avoid vendor lock-in

The complexity of large-scale (Generative) AI solutions and the resulting need for expertise and resources (including hardware and software) means that many companies are unable to develop or operate them completely on their own. Companies should therefore partner with large vendors, start-ups, research institutions and consultancies in the field of Generative AI. It is also important to ensure that a variety of solutions are considered and supported. Otherwise, there is a risk of vendor lock-in, i.e. excessive reliance on a single vendor, which can be a technological and economic risk.



Enabling job-specific AI training and lifelong learning

Generative AI systems will change many job profiles: employees will be relieved of certain tasks, assisted in others, and new tasks will be added. In addition to basic AI skills ("AI literacy"), employees will need further training to acquire the skills required for the new tasks. This dynamic change in job profiles will continue over the long term. Employees therefore need to be prepared for lifelong learning, and companies must organise job-specific training for their employees – also to counteract a "digital divide" between younger and older or current and future employees..



Facing AI regulation and labelling AI content

Initiatives to regulate AI solutions are currently underway in both the EU and the US. The exact impact on businesses is not yet foreseeable – large Generative AI vendors are likely to be the ones primarily affected. However, all companies should implement best practices for developing Generative AI solutions or require compliance from vendors – not only to prepare for regulation, but also to ensure quality and safe use. This means being as transparent as possible about the data used, model architecture, testing and evaluation results. Although mandatory labelling of AI-generated content does not yet exist, voluntary labelling of such content is recommended as best practice.



There needs to be a "CERN for AI"

The global leaders in the field of Generative AI solutions are currently mainly American and, to some extent, Asian organisations investing billions of euros every year. In order to guarantee the technological sovereignty of the European Union, it

is important that competitive AI initiatives are established here in the long term and that independent solutions are created. This is the only way to create transparent, neutral AI models that are compatible with European values. This would require a major pan-European initiative, comparable to CERN for nuclear research.



Reduce resource usage of Generative AI applications

Applications based on large AI models have very high resource requirements: The large language models are trained with large datasets, which in turn require high hardware capacity, as well as significant energy and water consumption for operation and cooling. This means that only a few organisations in the world are able to train and operate such models. At the same time, it is often neither economically nor environmentally sustainable to train and operate these models today. In addition, the creation of the models requires considerable human effort in preparing the training data and fine-tuning the models. The challenge for research is to reduce the resource requirements of future models and algorithms. At the same time, hardware vendors will continue to enable further increases in efficiency.



Proactively dealing with the effects of productivity gains in organisations and society

Several studies have shown, and user experience confirms, that Generative AI can lead to significant productivity gains in areas such as software development, customer communications or text summarisation. The future development of these productivity gains also depends on the continued availability of high quality training data – combined with the challenge that this data itself can be "polluted" by artificially generated content. In all relevant areas of productivity gains, it is important to proactively address the foreseeable changes in the fields of activity. The questions and organisational options involved should be discussed openly in the organisations concerned and in society at large.

In summary,

Generative AI will change the entire working world because, unlike previous AI solutions, it affects almost all digital activities. The potential for more efficient work and productivity gains is enormous. In order to benefit from these opportunities and actively shape the changes, all stakeholders need to take action. This also applies to the important topics of efficiency, sovereignty and regulation, which are relevant for research, politics and society.



Generative AI: A Quick-Start Guide

This guide offers companies a fast and simple way to begin their journey with Generative AI. It highlights crucial first steps and provides expert guidance on how to successfully navigate this exciting new technology.

Defining the status quo and goals

To successfully implement Generative AI, it is crucial to first clarify the **objectives** that a company aims to achieve. By determining whether one's company should primarily focus on the usage of Generative AI solutions or actively design and adapt such systems in the future to meet its specific requirements, the company can confidently move forward with a clear plan of action.

To answer these questions, it is crucial to first gain a comprehensive overview of the **current status of AI use** in the company, as well as the available AI expertise and resources.

It is essential for success that most employees have a basic understanding of how generative AI works, its potential benefits, and its limitations. To achieve that, there are many (online) **training courses** available to impart this knowledge in a compact and engaging form.

Defining own goals for the initial measures is important: How shall the **economic benefits** of implementing (Generative) AI manifest? Examples are efficiency gains through accelerated work processes, quality gains through additional inspiration, error avoidance, and improved or new products and services.

Enabling innovation and avoiding "Shadow AI"

Generative AI tools are very easy to use and, in some cases, free of charge. It should therefore be assumed that such tools are already being used by employees, even without official requests and corresponding approvals. It is by no means expedient to block everything that has not yet been approved. It is better to take the initiative yourself and create the **conditions for the controlled use** of attractive tools such as ChatGPT or DeepL. This motivates employees to take innovative approaches while avoiding the emergence of a "Shadow AI" with potentially undesirable effects, while also gaining valuable experience to plan and implement more advanced measures in the future.

Create Quick Wins

A special feature of Generative AI is that available AI models cover a wide range of applications and can be adapted to specific tasks and application environments with little effort. It is therefore important to identify **quick-win scenarios** with which initial Generative AI projects can be implemented.

The following criteria help to identify suitable scenarios, although a scenario does not have to fulfil all criteria at the same time:

- The required **data is already available in machine-readable form** – or no (proprietary) data is required to create or customise the AI.
- The scenario has a medium to high **benefit**, the **effort** is low (no in-house development necessary, existing products can be used) and the **risk** of the project failing is acceptable.
- It is **possible to manually check or correct the AI output** (no full automation, but assistance functions).
- The desired **function is already available as a service on the market**, i.e. a potential external partner can implement it and the possibility of know-how transfer is available or
- The expertise and resources for **in-house development** are available.
- The **data protection** requirements and risks are manageable: no personal or confidential data is processed. Examples of suitable topics are public communication (e.g. social media) or non-critical internal processes (e.g. with human validation of results).

Suitable example scenarios can be identified and, if necessary, prioritised based on the criteria listed. During implementation, care must be taken to ensure that it is not only the immediate benefits that are important. Equally relevant are the learning effects for future use of the technology. These learning effects can arise in two possible areas:

- **Employees** learn to use Generative AI,
 - **Developers** learn to implement scenarios for Generative AI.
- Suggestions for suitable scenarios with learning effects in the two areas mentioned are summarised in the following table.

Fully utilising the potential of Generative AI

These first steps should serve to gain an initial overview of the opportunities offered by Generative AI in the short term and to gather initial experience. In order to utilise the full potential of the technology, the topics and recommendations for action described in this study should be taken into account.

Example scenarios for companies that want to use Generative AI

- **Image generation** for public relations: illustration of ideas in marketing, supplementing or replacing stock photos, editing images
- **Text generation** or rewording for public relations or marketing purposes
- **Translation** of texts (with post-editing)
- Creation of **product descriptions** for large article portfolios
- **"Ideation"**: use of language models (such as ChatGPT) to generate initial ideas or suggestions on specific topics, which are then curated by humans
- Use of **code generation** tools, e.g. for the creation of websites or data visualisations. Chatbots such as ChatGPT can also be used for this.

Example scenarios for companies that want to develop or customise Generative AI solutions themselves

- **Internal chatbot** for employees based on the company's intranet content
- **Research** chatbot for employees for public sources (legal texts, regulations, etc.)
- Analysing incoming **customer enquiries**, i.e. classifying, allocating and extracting key features

The full original document is available in German

www.digital.iao.fraunhofer.de/de/leistungen/KI/GenerativeKI.html



English translation

Dennis Klau and Maximilien Kintz with help from DeepL

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