

Kienbaum 2022 Study

AI

**Leadership in the Age
of Technologically
Assisted Decision-Making**

Kienbaum  + 

Realisation by: Institut **Kienbaum@ISM** INNOFACT  AG

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Leadership is about making decisions

Why is Kienbaum conducting a study on artificial intelligence? We were asked this question many times when we were working on this incredibly complex and important issue. – For us and ada, our cooperation partner, dealing with the issue of machine learning also means dealing with autonomy and responsibility.

So this is where important threads come together: making decisions means taking responsibility. But who actually takes responsibility when AI makes a decision?

Who takes the blame if human intelligence (HI) disapproves of such a decision? Which ethical consequences are to be expected if AI is allowed to do as it pleases?

The questions that arise can be expanded almost indefinitely, but I was personally touched by some of the answers: "I'm afraid of losing control of decisions made by AI in my area of responsibility", was the reply of almost half of the respondents. – A justified concern? For the HR sector, at least, we can say: not according to our current knowledge. In the near future, people will continue to prefer human expertise and empathy over decisions made solely by AI when it comes to personnel decisions.

Last, but not least, I would like to emphasise that the 500 professionals and managers surveyed are well aware that they bear a huge responsibility in terms of ethics, society and sustainability when dealing with AI: The majority of our participants have established monitoring processes for reviewing AI from development to application. So the challenge for organisations is to find and retain the best of these thoughtful and forward-thinking talents to stay tuned in the "war for AI talent".



Making decisions means taking responsibility. But who actually takes responsibility when AI makes the decision?

Fabian Kienbaum

Co-CEO

Kienbaum Consultants International GmbH



What remains of the freedom of decision-making and managerial autonomy if AI systems can interpret the world better and more accurately than humans?

Prof. Miriam Meckel
Co-Founder & CEO
ada Learning GmbH

Watching an internet engineering task force meeting is a unique moment. They sit together, the mathematicians and techies who once invented the internet. And when a vote is due, they don't raise their hands, but hum. Loud humming signals approval, quiet disapproval. This could hardly be more human, especially amongst this group of people who see technology as their destiny.

Human judgement, intuition, experience or even just humming will still continue to play a significant role in decision-making processes in the future. But they are increasingly being supplemented and challenged by the growing options posed by data analytics. Data-driven forecasting has long been used to stock warehouses appropriately. Using AI and quantum computers will make it possible to simulate and forecast ever larger, systemic relationships. All of this will change how managers make strategic or even

operational decisions. But what will remain of the freedom to make decisions and managerial autonomy if AI systems can interpret the world better and more precisely than humans?

These are the questions we explored in our study. It showed: We're only just starting out. How its managers make decisions using the power of AI will impact a company's strategy, risk profile and its economic performance. Our data provides interesting insights into all these aspects and it also reveals significant potential for development.

"Automate the routine and humanise the exceptional", is what US engineer and businessman Peter Diamandis once said. This study provides many starting points as to how this goal can be achieved.

Key findings and methodology



Managers in particular can see the relevance of AI – but its potential has not yet been realised

53% of managers see the immense strategic relevance of AI. However, only 17% of managers and 4% of specialists reported that the potential of AI is fully realised within their organization.

1



Though assisted by technology, decisions are rarely made independently by AI

More than half of the companies use AI for present-oriented analyses (56%) or for proposed decisions (66%). Only 22% allow AI to make independent decisions without any human involvement

2



Human intelligence remains sovereign in a decision-making process

45% of managers see a symbiotic relationship between AI and HI in the future. However, a human will always make the decisions in the last instance. 46% see more operational decisions being made by AI.

3



The war for talent and people dimensions as important success factors

Only 41% of the companies stated that they have qualified specialists in the workplace with regard to AI. Similarly, 37% reported that they needed advice during recruitment and 33% that they need advanced training for their qualified specialists.

4



Managers are ready for AI – but integrating AI into the leadership role is not yet successful

63% of managers are more willing to let AI make leadership decisions. However, they encounter unclear responsibilities, show themselves to be risk-averse, fear a loss of control and experience their autonomy with regard to their leadership role as limited.

5



Partial consideration of responsibility and control

Some companies often consider the implications for ethics (26%), society (23%) and sustainability (31%), when dealing with AI. 57% of those surveyed also reported that they continuously monitor how the AI systems are used.

6

ABOUT OUR STUDY

The study was conducted by Kienbaum and ada as an online survey involving more than 500 people. The respondents were mainly managers, but also professionals who are confronted with technologically supported decision-making in their daily work. This survey was preceded by nine additional qualitative interviews with experts to explain the terms and develop the questionnaire.

The operational implementation and scientific monitoring of the survey was conducted by the Kienbaum Institute @ ISM, which is Kienbaum's in-house research facility, and Innofact, a market research institute.

The questionnaire was available in German and included items for the self-assessment of the participants as well as items for the external assessment of their employer or manager. The majority of the questions were asked using multi-level Likert scales, single or multiple choice formats or visual analogue scales.



USING AI SYSTEMS IN A BUSINESS
CONTEXT MEANS NOT ONLY TAKING
ECONOMIC-RESPONSIBILITY, BUT
ETHICAL, SUSTAINABLE AND OVERALL
SOCIAL RESPONSIBILITY AS WELL.

FABIAN KIENBAUM

Co-CEO

Kienbaum Consultants International GmbH

INTRO

DISCUSSION

Leadership and AI

Digitising and automating processes using AI as well as using data for digital business models, new products and services opens up attractive opportunities for companies¹. They use artificial intelligence to tailor advertising and suggest products and services to their consumers. Chatbots can be provided for processing customer enquiries automatically, while algorithms can be used to forecast share prices or market developments².

The implications for companies, markets, consumers and society are immense. Companies face competition in terms of their products and services, but also with regard to the talent needed for applying AI³. Numerous jobs will be partially or fully automated, whereas many others will be newly created⁴.

However, only a few experts know precisely what AI, algorithms and automation really are. Consumers and staff often do not know which technologies or products include AI. So it's not surprising that in 2018 only 10% of Germans said they knew what an algorithm was⁵.

Yet AI is not a new technology. The first attempts at AI were made in the 1950s⁶. Since then, the sector has progressed through various research milestones in machine learning and especially in deep learning.





ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) describes technical systems based on algorithms and independently process target-oriented tasks, which imitate, strengthen or supplement human abilities in terms of seeing, hearing, analysing, making decisions and acting on them. They include automating dynamic decision-making processes in industrial production as well as recognising and classifying images, writing texts or conducting dialogues via chatbots. AI systems can use machine learning to recognise and analyse patterns found in huge amounts of data and then automate processes based on them. In a more recent understanding of AI, the instructions are no longer given by humans (programmers), ("supervised learning") – instead AI systems learn by themselves based on unclassified data ("unsupervised learning") or interpret the data using a trial-and-error principle ("reinforcement learning").

The terms referring to decision-making systems assisted by technology, artificial intelligence, AI systems, decision-making systems assisted by AI and machine learning will be used synonymously in the further course of the study.

Advanced AI technologies can solve complex problems. In some contexts, this will also effect decisions that have already been made by people to date. The current enormous relevance of the concept in management is, according to Höddinghaus and colleagues⁷, due in particular to general developments in digitisation:

1. COMPUTER POWER AND CLOUD COMPUTING

The computing power of modern computers has multiplied and – together with cloud computing – it now allows complex computing operations to be run on an unprecedented scale.

2. DATA (BIG DATA) AVAILABILITY

Mobile and smart devices as well as increased networking via the internet are producing huge amounts of data. In some cases, this data also produces data in turn (autogenous data), multiplying by that the most important resource for AI systems⁸.

3. MACHINE LEARNING

Machine learning algorithms learn partly through guidance and partly independently. They make forecasts, structure data and automate processes and decisions.

Leadership and AI

The advantages of using AI seem obvious. The focus is particularly on efficiency increases through AI, for example cost savings, risk minimisation or the standardisation of processes and procedures.

However, the rapid development of and constant improvements to AI systems go far beyond this. AI is increasingly capable of making independent decisions without any human involvement. Here AI technologies make rational decisions⁹. To date, AI has not been able to model complex intuition or creativity. Nevertheless, the question arises as to how AI and HI can, should and even must work together. This question is especially relevant with regard to managerial decisions.

Are modern AI systems capable of making management decisions independently?

When AI systems can take over management decisions that are usually made by executives, we speak of technologically assisted decision-making. This gives rise to further questions. For example, the question arises as to which decisions AI can be sensibly adopted, what will this development mean for the everyday life of managers and how will the collaboration between AI and HI be designed.

Previous studies with regard to "algorithmic" or "automated" leadership postulate that AI can be usefully applied in many sectors – though it is not yet capable of behaviour and decision-making oriented towards people and change¹⁰. The advantages of automated decisions can be seen in a faster pace of decision-making and processing. Besides these functional benefits, however, studies have also demonstrated that automated leadership decisions are perceived as being more integral and transparent if made using AI⁷.

Other studies have highlighted that using AI in management decisions is not about automating management, but rather more about improving "board intelligence", in other words the quality of the management decisions¹¹. Marc Benioff, the CEO of Salesforce, already uses the company's own "Einstein" AI system in this way in his top management meetings to obtain forecasts for markets and products¹². Benioff sees the benefit of Einstein especially in its neutrality towards human colleagues.

AI is the technology of our time and therefore raises questions not only in terms of its concrete application, but also in terms of responsibility, ethics and morality. Examples of this include autonomous weapons or automated decisions made in law and medicine.



TECHNOLOGICALLY-ASSISTED DECISION-MAKING

In the study, this refers to technical applications that can be summarised under the term artificial intelligence or machine learning (for example unsupervised, supervised or reinforcement learning).



DECISIONS

In the study we refer to both comprehensive and important measures and procedures as being part of the development and implementation of a company's long-term objectives. Strategically, these are usually made by top management or senior management and operatively by middle to lower management. The objective is to positively influence long-term innovation and performance and to gain competitive advantages.

The use of AI in management and business contexts was studied so that both the aspects and questions could be presented in more detail in this study. The study specifically addresses the following questions:

- > **What relevance does AI have in companies in Germany, which AI technologies are used in companies and how are they being used?**
- > **How does decision-making assisted by technology work in companies?**
- > **How do executives experience AI systems and decision-making assisted by technology?**
- > **What are the consequences of these new human/machine interactions?**



WE CAN SEE FROM THE RESULTS HOW IMPORTANT ADVANCED TRAINING IS IN ALL SECTORS IN COMPANIES. TECHNOLOGIES WITH FAR REACHING SOCIAL-INNOVATION, SUCH AS AI, REQUIRE ALL ORGANISATIONS TO SEE LIFELONG LEARNING AND THE ACTIVE DEVELOPMENT OF OUR DIGITAL FUTURE AS A PERMANENT TASK AND OPPORTUNITY.

PROF. MIRIAM MECKEL
Co-Founder & CEO
ada Learning GmbH

SAMPLES

DESCRIP

TION

Who participated?

Personal and job-related details

A total of 515 managers and specialists were surveyed. The majority of those surveyed were managers (79%) who are confronted with technology-assisted decision-making in everyday

leadership. The experts/specialists are involved in directly implementing technology-assisted decision-making. The majority of the participants work in the IT (29%), finance (10%) and administration and organisation (9%) sectors.

FIG. 1 – GENDER

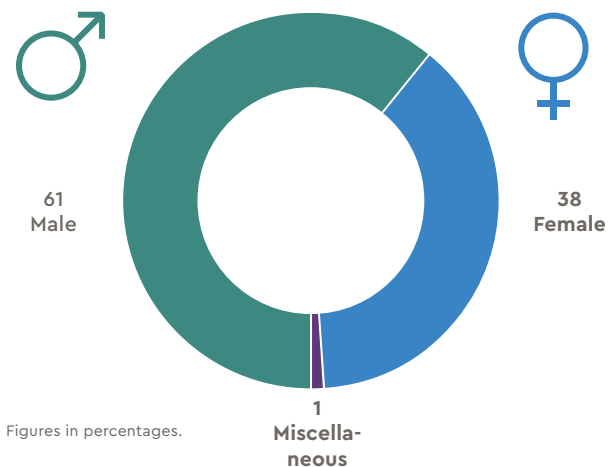


FIG. 2 – AGE

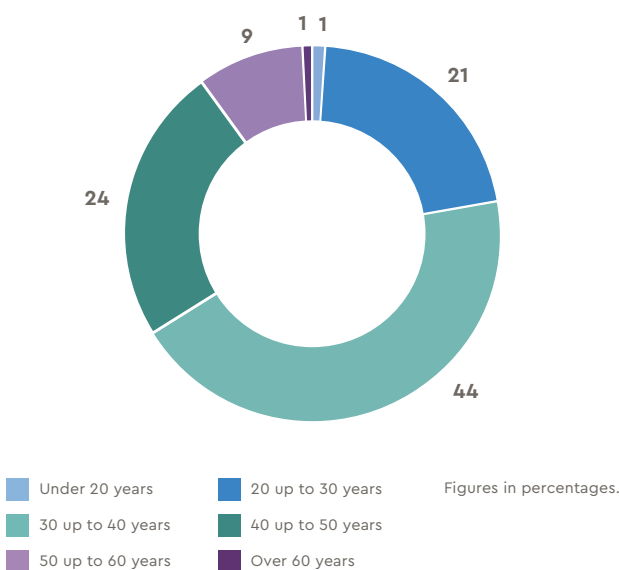
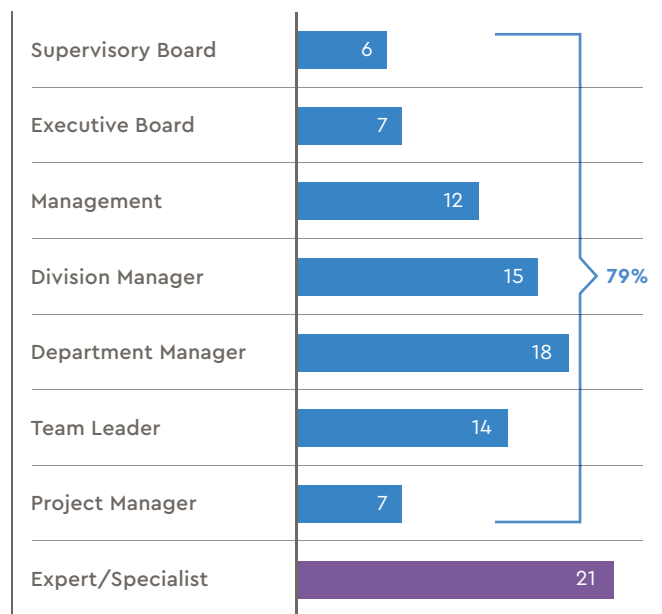


FIG. 3 – POSITION



N = 146. Figures in percentages.

Company details

The companies operate predominantly in the IT & internet (24%), consumer goods (9%) and automotive (9%) sectors. More than one third of those surveyed (35%) work in a family business.

FIG. 4 – TURNOVER

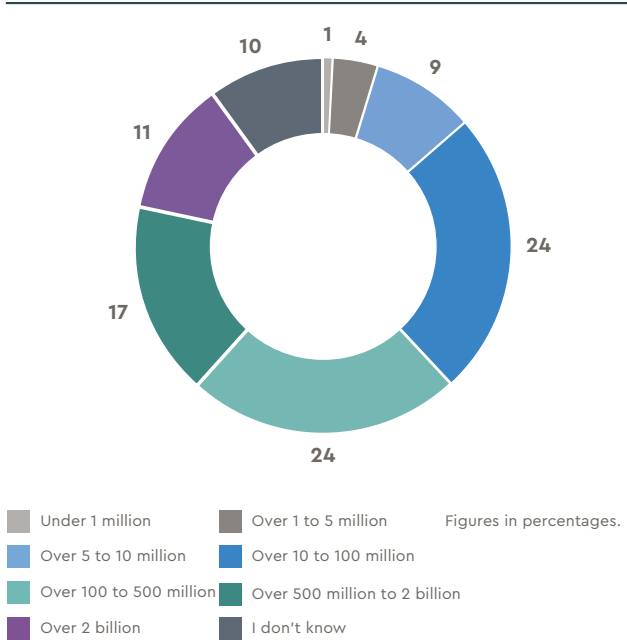
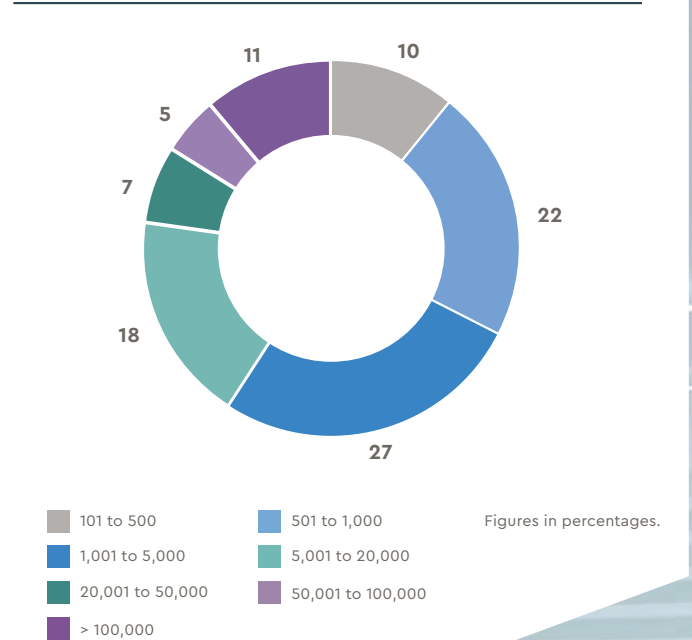


FIG. 5 – EMPLOYEES





IN ORDER TO MAKE THE BEST POSSIBLE USE OF AI-SYSTEMS AND TO FURTHER DEVELOP THEM, MANAGERS MUST UNDERSTAND ALL OF THE DIMENSIONS OF HUMAN-/ MACHINE-INTERACTIONS. THIS INCLUDES NOT ONLY A BASIC UNDERSTANDING OF THE TECHNOLOGY, BUT ALSO THE ACCEPTANCE FACTORS OF THE USERS AND THE VARIOUS AI OPERATING PRINCIPLES.

DR. LEÁ STEINACKER

Co-Founder & Chief Operations Officer
ada Learning GmbH

ARTIFI

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INTELLI

GENCE

IN BUSINESS

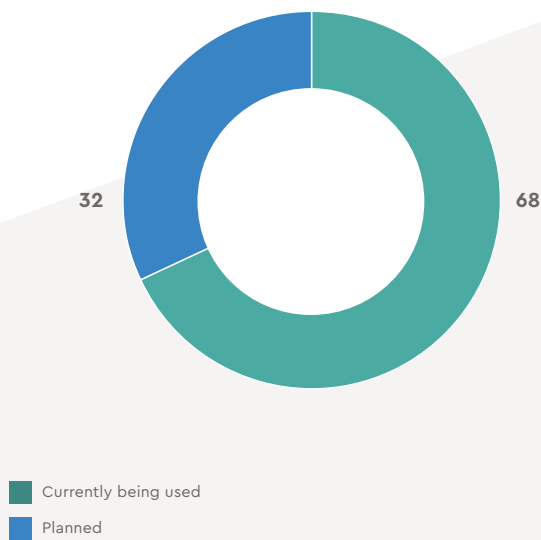
PRACTICE

Relevance

Two out of three companies are already utilising AI

The majority (68%) of the surveyed managers and specialists stated that AI systems were already being used in their companies. Another third (32%) reported that their company is planning to deploy AI systems (Figure 6).

FIG. 6 – USING AI SYSTEMS

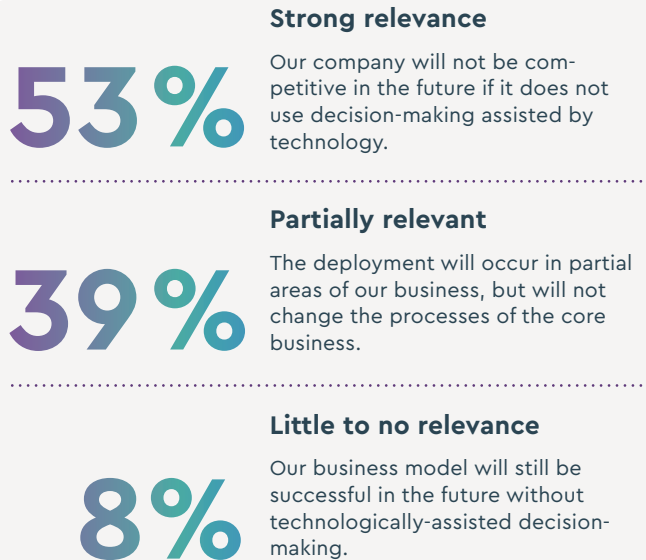


N = 515. Figures in percentages.

Decision making using AI is of major strategic relevance

The use of AI in decision-making processes is strategically relevant for company competitiveness (Figure 7). More than half of those surveyed are convinced that her/his company will not be competitive in the future without the use of technological decision-making. A further 39% of respondents only see partial relevance – in other words AI could be used in sub-departments but it will not change the processes in the core business. Less than one in ten respondents reported little or no relevance.

FIG. 7 – STRATEGIC RELEVANCE



N = 515. Figures in percentages.

STRATEGIC RELEVANCE AND ENVIRONMENTAL DYNAMISM

FIG. 8 – STRATEGIC RELEVANCE AND ENVIRONMENTAL DYNAMISM

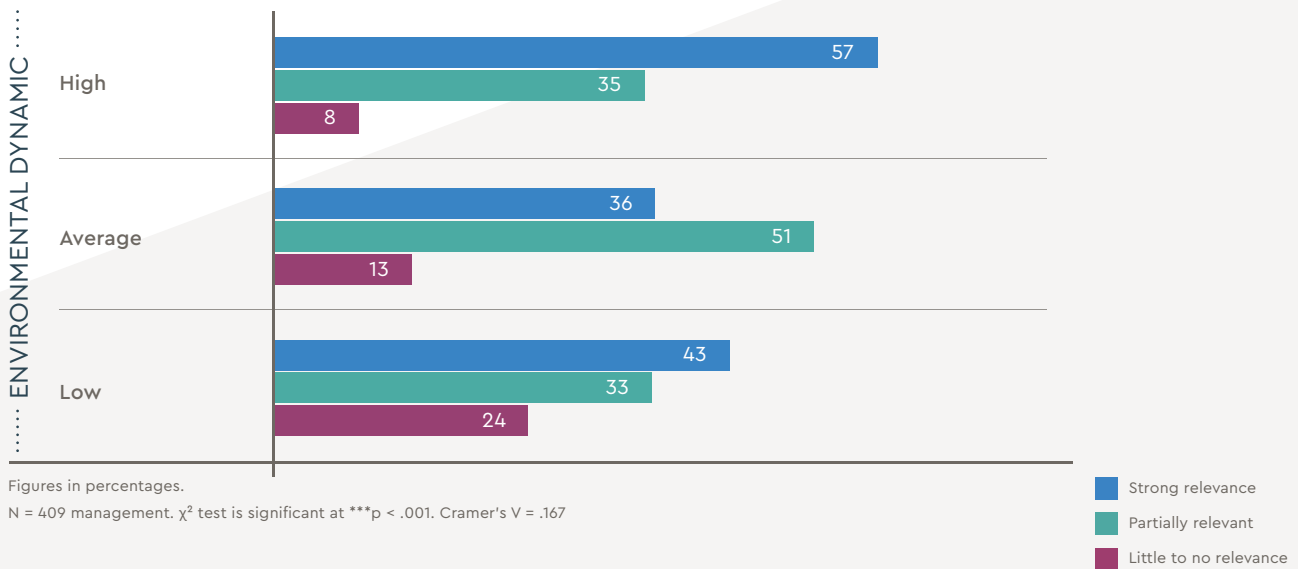
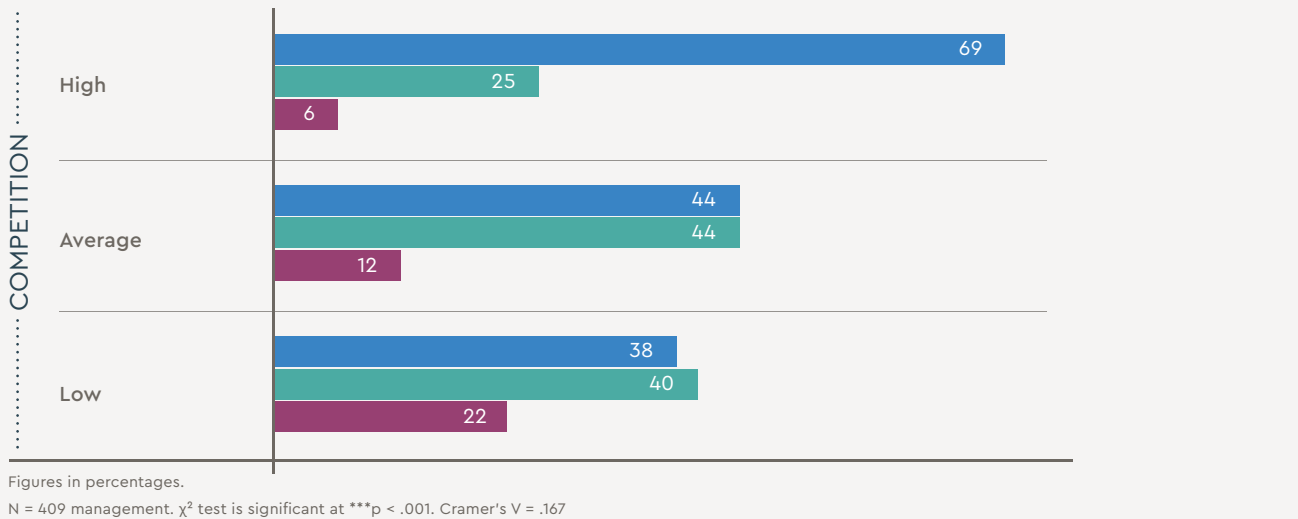


FIG. 9 – STRATEGIC RELEVANCE AND COMPETITION

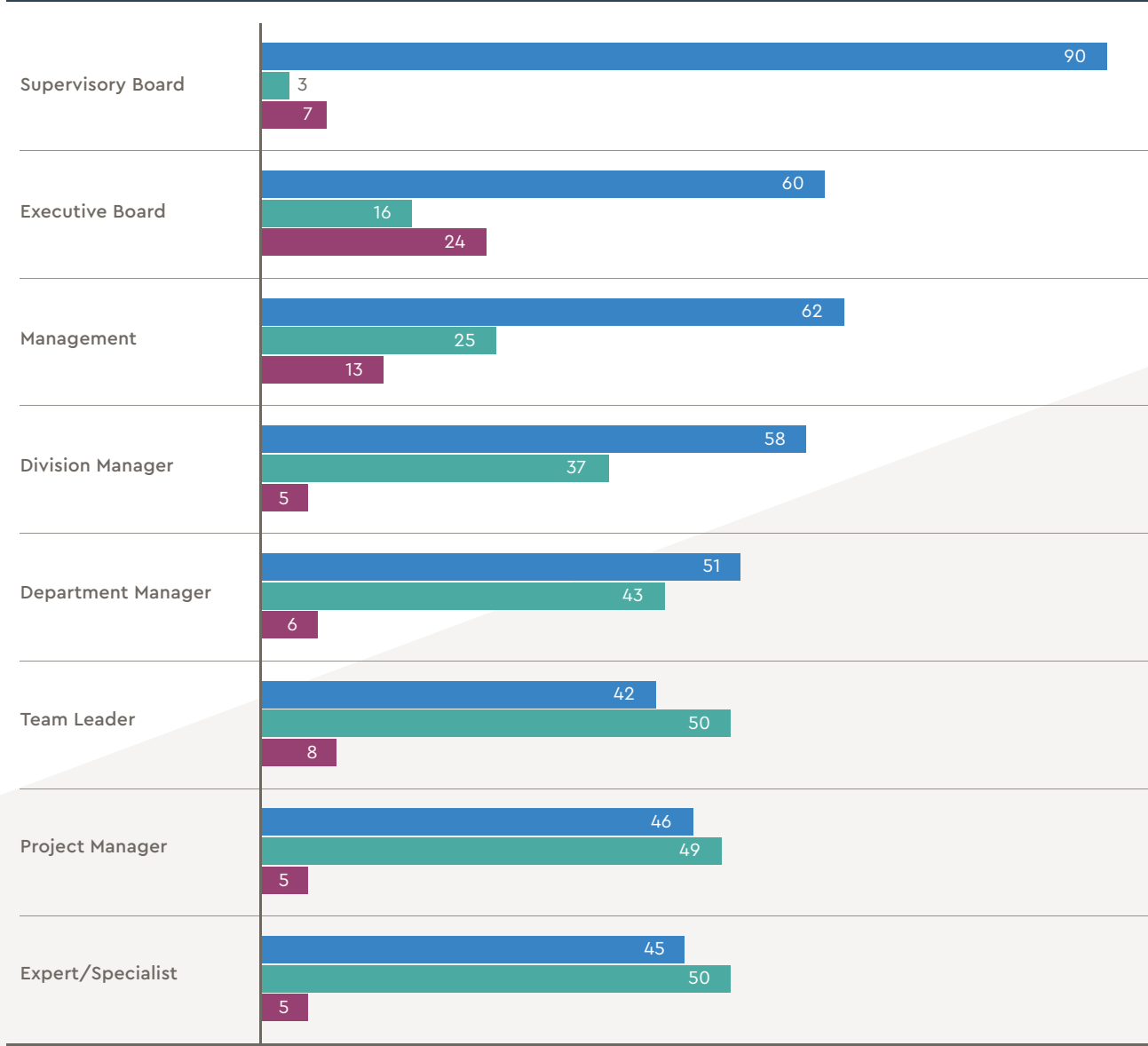


Decision-making assisted by technology is especially relevant when competition and environmental dynamics are high

The strategic relevance of decision-making assisted by technology has a positive correlation to the competitive and environmental dynamics faced by the company. The competitive situation in particular appears to play an important role here. Of the managers who were under high competitive pressure, 69% indicated that decision-making assisted by technology had a strong relevance for them. This interrelationship makes it clear that decision-making using AI is crucial to competitiveness.



FIG. 10 – STRATEGIC RELEVANCE BY POSITION



Figures in percentages.

N = 515. χ^2 test is significant at ***p < .001. Cramer's rule = .228

- Strong relevance
- Partially relevant
- Little to no relevance

STRATEGIC RELEVANCE

In contrast, only 38% of executives whose companies face weak competition reported a strong relevance for decision-making assisted by technology (Figure 8). 57% of managers described strategic relevance as being very pronounced with high environmental dynamism (Figure 9). However, it was only 36% for average environmental dynamics and, interestingly, it was 43% for low environmental dynamics.

Strategic relevance varies with the hierarchical level

The strategic relevance of decision-making assisted by technology appears to increase with the hierarchical level. For example, 90% of Supervisory Board members and 60% of Executive Board members, but only 42% of Team Leaders and 45% of Experts/Specialists, reported strong strategic relevance.

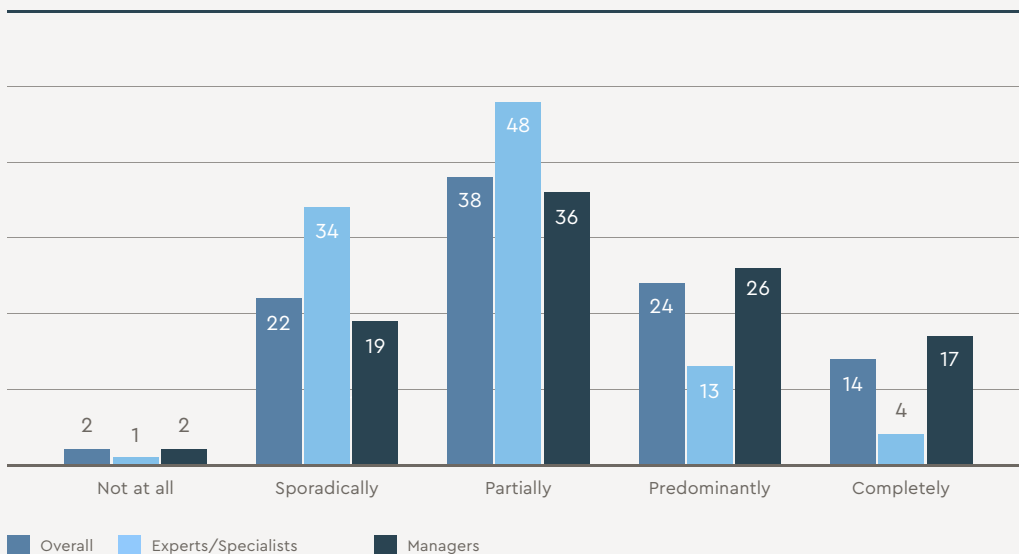
Enthusiasm in top management

Top management estimated the strategic relevance to be significantly higher than operational middle management did. Similar results were also indicated during the expert interviews. In particular, managers who make decisions about AI emphasised how important AI is for competitiveness and the success of the company, whereas experts/specialists assessed it somewhat more soberly and stressed that the advantages of AI should not be overestimated.

AI potential has not yet been fully exploited

Only a few managers and experts/specialists (14%) were of the opinion that the AI potential in their company is currently being fully utilised (Figure 11). Differentiated analyses also show differences between managers and experts/specialists. Whereas 17% of managers reported full realisation of AI potential, only 4% of specialists did so.

FIG. 11 – REALISING AI POTENTIAL



N = 515. Figures in percentages. χ^2 test is significant at ***p < .001. Cramer's rule = .236

DECISION: AI AND HI

One reason for the sober assessments given by many data specialists during the interviews is that the term "AI" suggests that a technical system is capable of making automatic human-like decisions.

"All models are wrong, but some of them are useful."

Statistician George E. P. Box

However, in practice AI technologies are advanced statistical models that analyse and cluster huge amounts of data and, on this basis, make predictions and calculate probabilities from the data. These models are based on immense amounts of data and attempt to model specific and realistic complex relationships. Some models are better or worse at modelling reality as they depend on the data or methodology. AI can model a complex context in reality, but never completely predict reality as such. Kelleher and colleagues¹³ call this "ill-defined problems", which means that there are always several solutions or models for a problem.

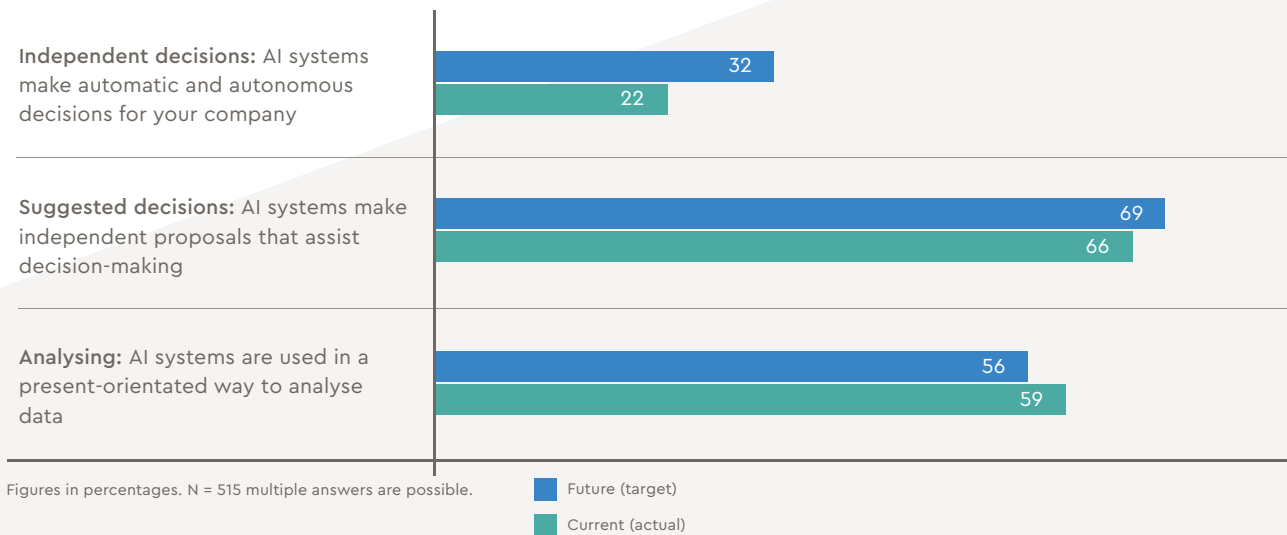
Furthermore, we have to assume that "HI" is also highly complex and – despite profound research – still not fully understood. This is another reason why AI has not yet been able to replace complex human thought processes, such as creativity, critical thinking or intuition. From a psychological perspective, these complex thought processes are characterised by something that AI does not possess: metacognition, i.e. the ability to evaluate and reflect on one's own thought processes and knowledge states.

Mitchel¹⁴ summarises this as: AI research has repeatedly set itself the goal of developing AI so that it is equal to humans, but this goal is unattainable for the time being. That is why the data specialists that were interviewed repeatedly emphasised how important it is to deal with AI in a reflected way.

Decision-makers need to understand AI technologies in order to be aware of the strengths and weaknesses of these technologies and then be able to take them into consideration during their daily work.

Application

FIG. 12 – AI SYSTEM FUNCTIONS

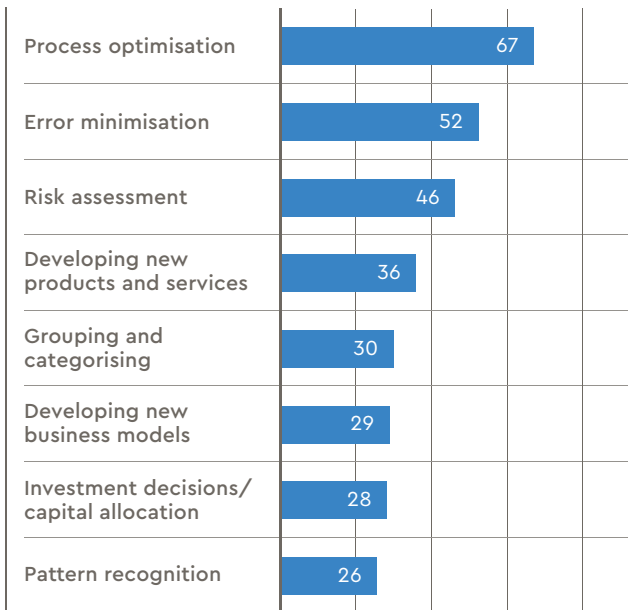


STATISTICAL MODEL LEVELS

- 1. REVIEW**
 Descriptive analyses: "How has the proportion of the AI technologies being used evolved over time?"
 > Describes the data – provides an overview
- 2. INSIGHT**
 Inferential statistical process: "To what extent does the use of AI technologies relate to management's attitude to AI?"
 > Monitors the interrelationships – interprets the data
- 3. FORESIGHT**
 Predictive models: "How will the share of AI technology develop in the coming years?"
 > Predicts future events based on complex models



FIG. 13 – PURPOSE OF AI



N = 515. Figures in percentages. Multiple answers are possible.

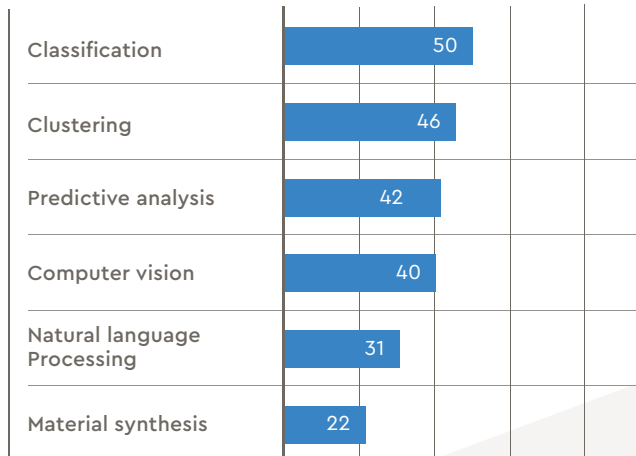
Virtually every third company also uses AI systems in more complex processes that require innovations. Good examples are developing new products and services or new business models.

In summary, the results reflect that the benefits of AI currently still lie more in optimising routine processes and less in adopting complex (innovative) processes, although it should be noted that they were also taken into consideration.

No clear preference for specific AI technologies

According to the respondents, there are several AI technologies that are used with a similar frequency (Figure 14). Classification and clustering are used in almost every second company, while predictive analysis and computer vision is also utilised in four out of ten companies. Natural

FIG. 14 – AI TECHNOLOGIES IN USE



N = 515. Figures in percentages. Multiple answers are possible.

language processing, which is used in every third company, as well as material synthesis (used in every fifth company) are both deployed somewhat less frequently. It should also be noted here that most companies use several of these technologies.

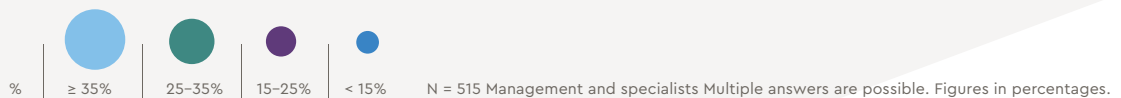
Currently AI is most frequently used in the IT, HR, finance, controlling, marketing and production departments

AI is less commonly used in legal and corporate communications as well as in purchasing and operations (Figure 15).

AI FOR BUSINESS

FIG. 15 – FUTURE GROWTH POTENTIAL

Company reports	Actual state	Future growth potential through the use of AI technology in the business sectors					
		Predictive analysis	Classification / Clustering	Natural language processing	Computer vision	Material synthesis	I don't know/ Other
HR	32	28	31	21	25	14	5
Administration	24	19	32	24	27	16	3
Marketing	28	23	28	30	27	14	3
Company communications	17	17	27	26	30	15	4
Controlling	31	22	30	23	26	18	4
Finance	28	23	27	25	24	18	4
Legal	11	15	20	24	22	13	6
Purchasing	20	20	26	21	26	22	5
Sales	24	23	28	27	26	17	6
Production	29	21	29	22	28	22	5
Logistics/ Supply chain	24	22	25	26	26	16	5
Customer Service/ Experience	22	17	26	29	24	17	5
IT	41	26	33	29	35	17	6
R & D	22	22	27	27	30	18	5
Technology	18	22	26	28	32	14	5
Operations	19	16	26	26	27	16	4





Growth potential especially in HR, Marketing and IT

Most growth potential is found in the areas of HR, marketing and IT. 25 to 35% of the companies show growth potential for different technologies in these sectors.

Clustering/classifying, computer vision and natural language processing most frequently show potential for growth

This growth potential mainly involves clustering/classifying, computer vision and natural language processing. Respondents saw less growth potential for predictive analysing and material synthesis.

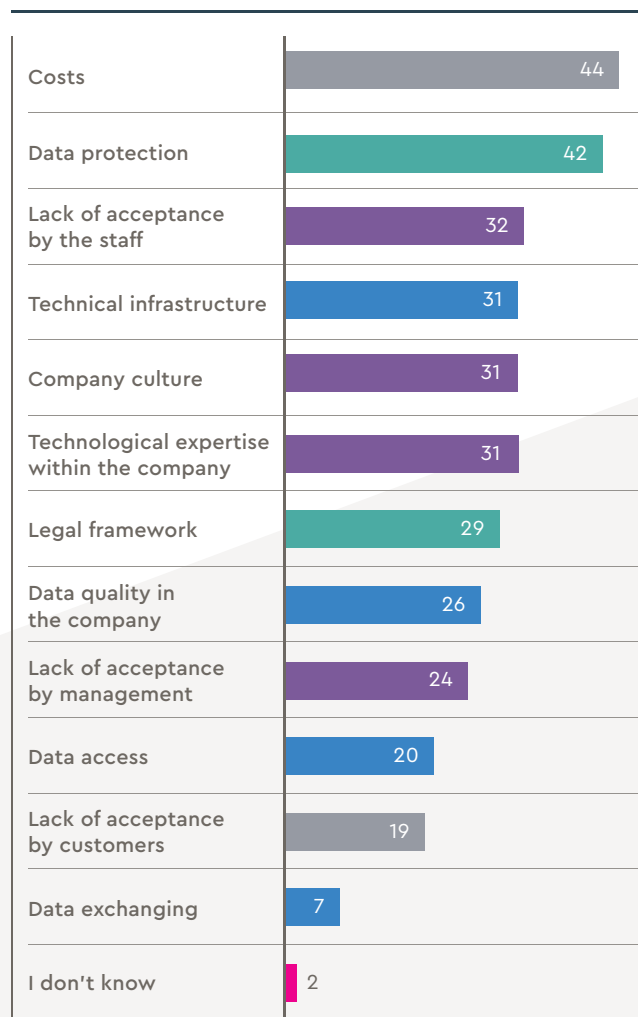
Costs and data protection are the biggest obstacles in realising AI potentials

More than 40% of respondents said that they see costs and data protection as being the biggest obstacles in realising AI potentials (Figure 16).

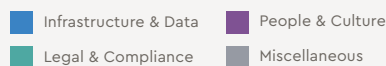
People & culture are undermining the realisation of AI potentials in every third company

A lack of employee acceptance, corporate culture and the technological skills of staff in addition to the technical infrastructure and legal framework are other potential obstacles to utilising this potential through AI. Lack of AI experience and expertise in particular could be responsible for this lack of acceptance. One in four respondents also reported a lack of acceptance by management, which partly contradicts the pronounced strategic relevance.

FIG. 16 – OBSTACLES IN REALISING THE POTENTIAL



N = 515. Figures in percentages. Multiple answers are possible.



RESEARCH: UNDERSTANDING

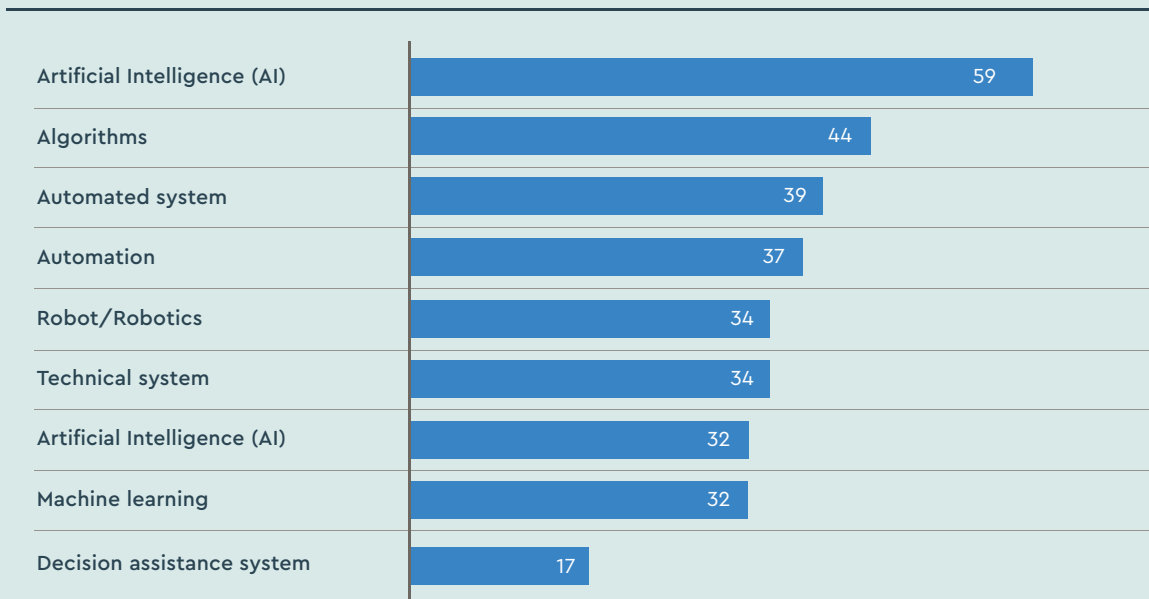
No uniform understanding of AI

In the reference literature covering decision-making assisted by technology and AI issues, it is notable that there is hardly a clear or uniform definition of AI to be found. This finding was also reflected in the expert interviews. The respondents all defined AI in a similar way, but also differently in some cases. A data scientist wrote: "What many subsume under AI are more-or-less the issues of machine learning, deep learning and advanced statistics". He further described decision-making assisted by technology as "data-driven derivations for qualified management decisions". Other interviewees understood decision-making assisted by technology to be "algorithms used in the decision-making process" and/or an "intelligent automation of the decision-making processes". The different terms used during the interviews, such as AI, algorithms or automation, made it clear that the term "AI" is not entirely a clear-cut term. As a result, it is not always clear whether AI is also meant when, for example, automation or algorithms are mentioned.

Wording used with AI systems is important for communications within a company

The choice of term used can effect the AI experience (see page 17), such as the experience of complexity or the trust in technology¹³. We therefore asked the managerial and specialist staff, which terms are used in their companies. Around two thirds use the term "AI". Almost every second company said that "algorithms" is used, closely followed by "automated system" and "automation". The "decision assistance system" term is rarely used.

FIG. 17 – AI TECHNOLOGIES IN USE



N = 515. Figures in percentages. Multiple answers are possible.



THE MAJORITY OF RESPONDENTS FOUND THAT IT IS STILL DIFFICULT FOR AI IN HR TO MAKE COMPLETELY INDEPENDENT DECISIONS. THE TREND THEREFORE SHOWS US THAT HERE IN PARTICULAR HUMANS WILL CONTINUE TO BEAR THE MAIN RESPONSIBILITY FOR PERSONNEL DECISIONS IN THE FUTURE.

PROF. WALTER JOCHMANN

Managing Director/Partner

Kienbaum Consultants International GmbH

TECHNO

LOGICALLY

ASSISTED

DECISION-MAKING

Current decision-making

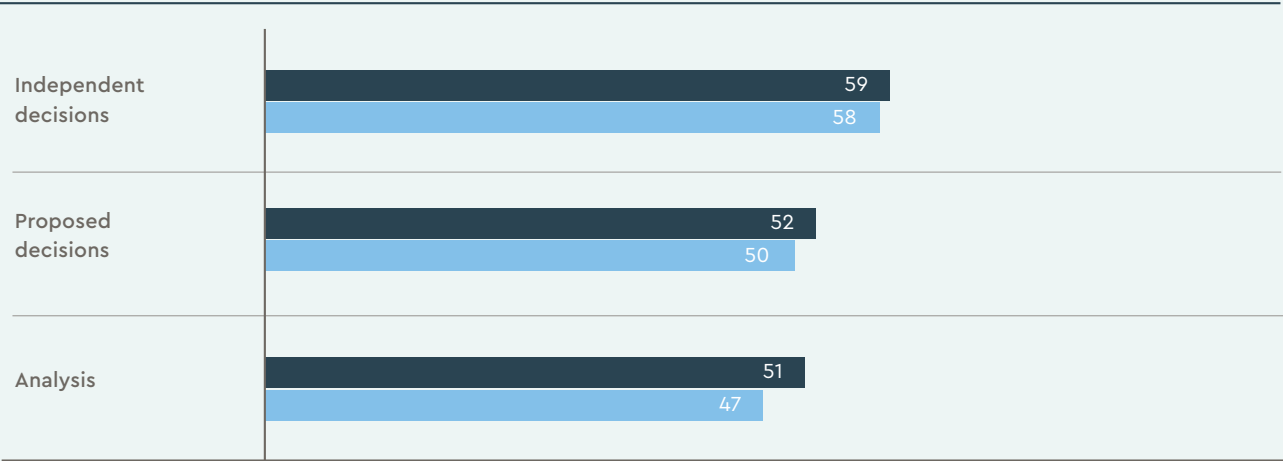
On average, half of the decisions made in a company are data driven

The managers and specialists that were surveyed reported that on average 50% of the decisions made in their companies are data driven by AI. However, the proportion of data-driven decisions also depends on the AI system's function. Figure 18 demonstrates that the share of data-driven decisions is on average 11% higher when the AI systems make autonomous, automated decisions than when they are only used for supporting analysis purposes.

More than every second leadership decision that is made is data driven

The managers stated that on average 52% of the managerial decisions that they make are data driven. This percentage also depends on the function. More than one in two managers also reported that their decision-making is more rational than intuitive. So there does not seem to be a clear preference for purely rational or purely intuitive decision-making. Situation and contextual variables probably moderate the cognitive approach here.

FIG. 18 – DECISION MAKING AS AN AI FUNCTION



The details are given as average percentages. N = 515. Multiple answers are possible.

- Management
- Companies

TECHNOLOGICALLY ASSISTED DECISION-MAKING

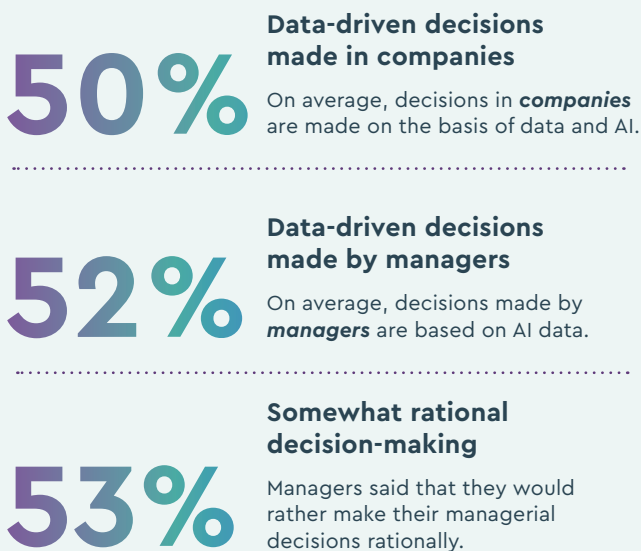
The proportion of data-driven decisions correlates with hierarchy

With regard to the proportion of data-driven leadership decisions, there is once again a correlation with hierarchy (Figure 20): the higher the manager is in the company's hierarchy, the higher the percentage of data-driven leadership decisions that will be made. At Project Management level the average is 43% as compared to 61% at Board level and 71% at Supervisory Board level. This correlation can probably be explained by the fact that the higher the level in the hierarchy, the more complex the role requirements for a manager and the greater the need for more standardisation and assistance in the form of data-driven decisions.

AI systems are continuously monitored in more than half of the companies

More than one in two managers (67%) reported that AI systems in their companies are monitored from planning to implementation. Around a third (35%) attest that their company carries out an impact assessment in advance of application (Figure 21). Awareness and majority control over the entire application process can be seen as positive. Nevertheless, there is still a need for action, as almost every tenth respondent (9%) did not see any such processes in her/his company. This means that the reflective use of AI technologies has not yet arrived in every company.

FIGURE 19 – DECISION-MAKING IN COMPANIES



N = 515. The details are given as average percentages.

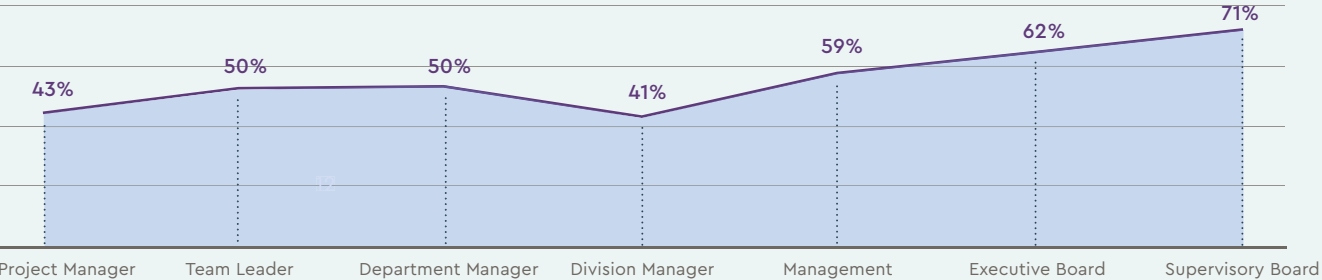
Current decision-making

Specialist data scientists

Expert data scientists are important for the reflective and sensible use of AI. Expert here means in particular that they understand their field of application and not just AI development and programming. A data scientist who

develops algorithms for personnel selection must also be able to evaluate the algorithm's data and decisions. This includes a basic knowledge of personnel selection and diagnostics such as knowledge and judgement biases or demands about objectivity and validity.

FIG. 20 – DATA-DRIVEN LEADERSHIP DECISIONS RELATING TO HIERARCHY LEVEL



N = 409 Managers. Figures in percentages.

FIG. 21 – MONITORING PROCESSES



Figures in percentages.



WHY MONITORING PROCESSES ARE IMPORTANT

DATA QUALITY: REPRESENTATIVENESS AND TOPICALITY

AI processes need to be able to access huge amounts of data so that they can calculate predictions and cluster data. This also means that AI can only be as good as the data on which it is based. However, this data can be biased, as it often reflects judgement bias. For example, an algorithm used for selecting personnel at Amazon favoured white men.

Furthermore, the topicality of the data also played a decisive role. If AI technologies were supplied with outdated data that might reflect patterns that are no longer current, then the models calculated by AI would be biased accordingly. This means that the data would only show low external validity. For example, AI used in medicine was more accurate in identifying sepsis when it was based on less but more recent data – as opposed to excessive historical data.

Future decision-making

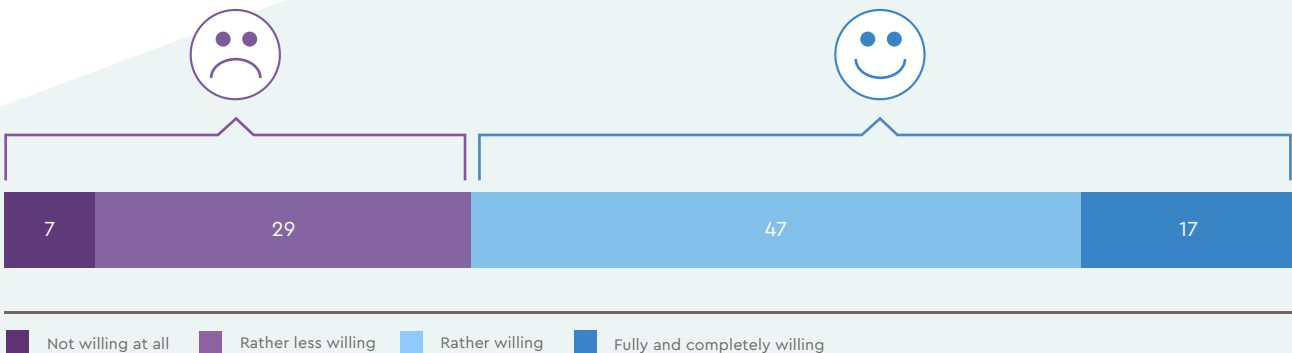
More than half the managers are willing to have their leadership decisions made by an AI system

A total of 17% of managers are fully prepared and 47% more are willing to have their leadership decisions made independently by an AI system (Figure 22). This finding suggests that the majority of managers are quite positive and

optimistic about the automatic processing of specific managerial decisions.

Nevertheless, Figure 22 shows that nearly every third manager is not at all or rather less willing to hand over managerial decisions to an independent AI system.

FIG. 22 – ARE YOU WILLING TO HAVE YOUR LEADERSHIP DECISIONS MADE INDEPENDENTLY BY AN AI SYSTEM?



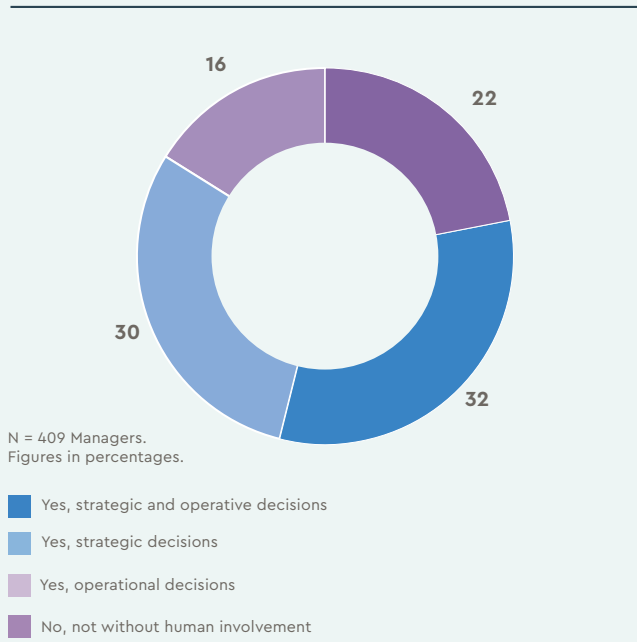
N = 409 management. Figures in percentages.

One in five managers believes that AI should not make independent strategic or operational decisions

However, every third manager thinks that AI should make strategic and operational or just strategic decisions independently. Only 16% said that AI should make operational decisions. These

results reflect the readiness results (Figure 23). The majority of managers are willing to let AI make leadership decisions independently. However, one third are not yet ready to do so. Overall, managers are well on their way to integrating AI into their decision-making process, but this does not apply to all managers.

FIG. 23 – SHOULD AI MAKE INDEPENDENT DECISIONS?



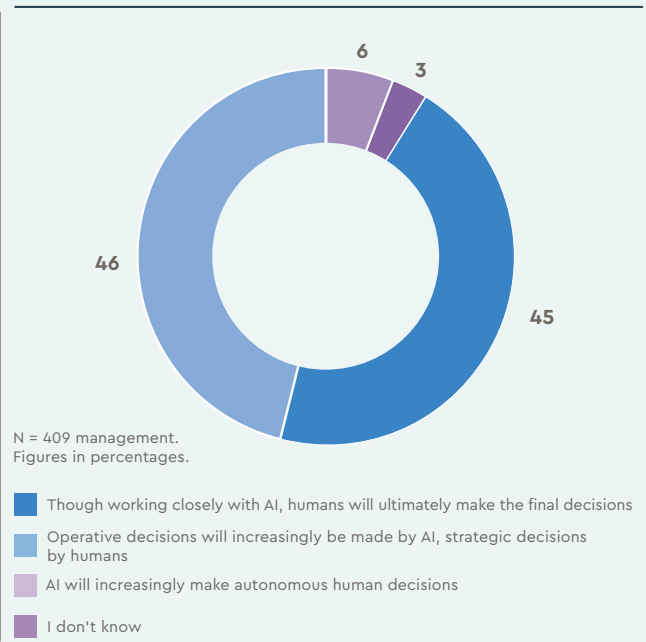
Humans remain sovereign

It is therefore not surprising that hardly any of the managers are convinced that AI will make autonomous decisions in the future (Figure 24). Nearly every second manager (45%) saw humans as still being sovereign in the future. This means that humans will work closely with AI, but they will make the final decisions. This leads to the question of what this interaction between humans and AI should and will look like in the future.

Operational decisions should rather be transferred to AI

Virtually every second manager also sees AI being involved in decision-making processes in the future – especially for operational decisions – whereas strategic decisions will still be made by humans. This assessment coincides with the information that AI is more likely to be used in process optimisation and in routine processes

FIG. 24 – FUTURE INTERACTION HUMAN VERSUS ARTIFICIAL INTELLIGENCE



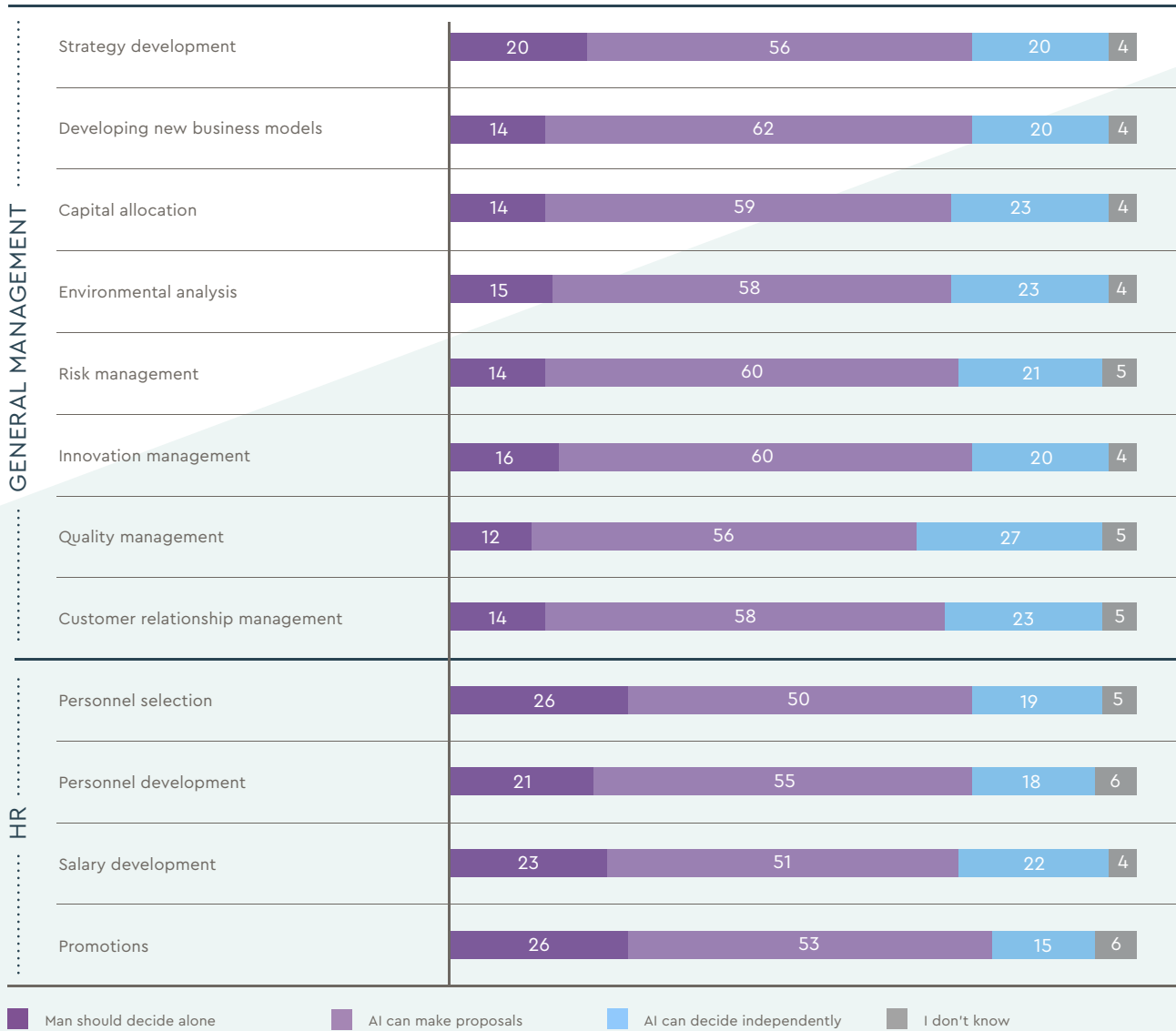
than in management processes – these latter requiring complex thought processes, such as making strategic decisions. And this despite the fact that two-thirds of managers say AI can make independent strategic decisions (Figure 23). Human and machine will have to work hand-in-hand for the time being.

AI and ambidexterity: AI could orchestrate the core business

This interaction could mean that AI is used in processes, especially optimising the core business. Meanwhile, HI is witnessing significant demand in creative processes that are needed by the innovation business. This hypothesis certainly does not imply a strict assignment and describes more of a tendency that AI will increasingly make more independent decisions in the core business than in the innovation business. The same applies in reverse for HI.

Personal experience

FIG. 25 – DECISION-MAKING IN COMPANIES



N = 409 management. Figures in percentages.

TECHNOLOGICAL DETERMINATION

Which decisions should be made by humans and which by AI?

Based on the results shown in Figure 23, the question arises as to which type of decisions are influenced by AI and to what extent. Figure 25 shows that the majority of managers believe that general management and HR decisions should be augmented by AI decision suggestions, thus confirming a hybrid approach involving HI and AI. In particular, decisions regarding quality management and customer relationship management appear to be fully realisable by AI for about one quarter of the managers. One fifth of managers also said that strategy development, the development of new business models and innovation management could be modelled using AI. However, when it comes to strategy development an equally large proportion of managers said that only people should make the decisions here.

HR appears less suited to full automation

A different pattern emerges for HR. 26% of the managers said that people alone should make decisions in this area – especially when it comes to choosing staff. The same rings true for promotions (26%). Less than one fifth of the managers thought that personnel selection and salary development should be decided by AI alone. When tackling human resource development, one in five managers also sees people alone as having the power to make decisions.

There's no clear trend apparent in salary development

One in four managers believed that people must be the ones to make such decisions. A similarly large proportion is convinced that the AI should make these decisions independently. Overall, the HR results converge with the striking growth potential shown in Figure 15. It seems that decisions taken using AI as an aid in HR are more based on support and decision suggestions and are not yet fully implemented.



MANAGERS RECOGNISE THE POTENTIAL OF AI AND ARE READY TO USE IT IN DAY-TO-DAY LEADERSHIP. HOWEVER, ROLE CLARITY WITH REGARD TO RESPONSIBILITY, RISKS AND AUTONOMY DOES NOT YET APPEAR TO BE GIVEN. IN THE FUTURE THIS SHOULD BE TAKEN INTO ACCOUNT BY HR MANAGERS WITH REGARD TO DIFFERENTIATED DECISION MAKING PROCESSES THAT WILL BE CARRIED OUT BY MAN AND MACHINE. UNCERTAINTIES CAN BE LESSENERED AND THE SYMBIOSIS BETWEEN AI AND HI CAN BE USED IN THE BEST POSSIBLE WAY.

LUKAS M. FASTENROTH

Academic Director Consulting

Kienbaum Institut @ ISM

EXPERIA

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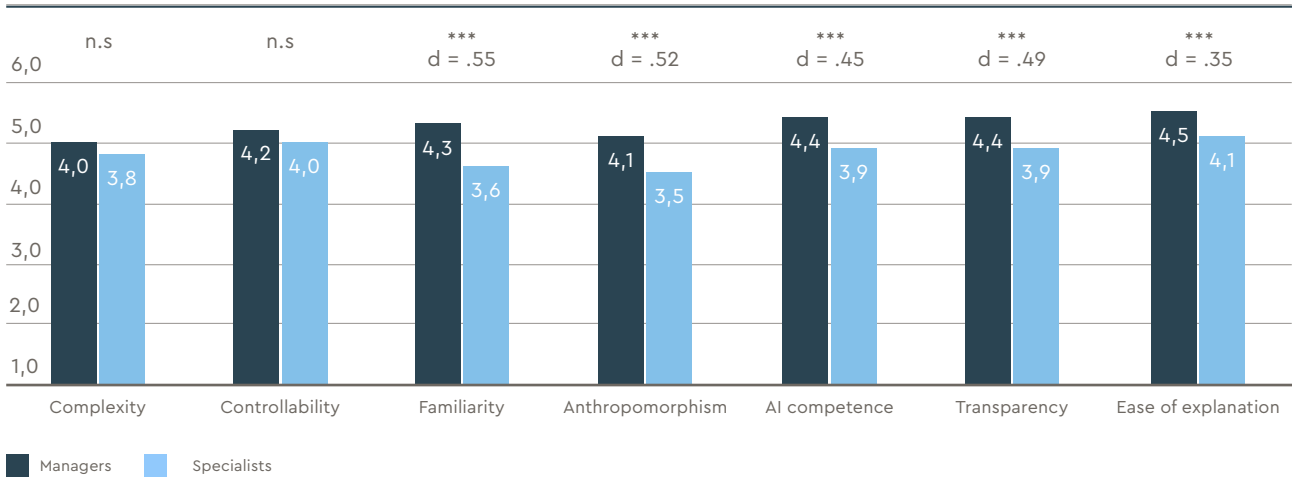
ARTIFICIAL

INTELLI

GENESE

Experiencing the technologies

FIG. 26 – EXPERIENCING THE AI SYSTEMS USED BY MANAGERS AND SPECIALISTS



N = 515 Managers and specialists
 Values are given on a scale from 1 (does not apply at all) to 6 (fully applies). T-tests are significant at ***p < .001. Cohen's D: .20 = minor effect, .50 = moderate effect, .80 = intense effect. n.s. = not significant.

Managers experience AI systems positively in terms of benefits and functions

Managers and experts/specialists were asked to evaluate the AI systems used in their companies with regard to various dimensions (see info box P. 45) (Figure 26). Overall, managers and experts/specialists evaluated the AI systems positively in all dimensions. This means the systems are not only perceived as complex and demanding – with a good measure of competence and performance thrown in – but also controllable, familiar, transparent and easy to explain. The experience can therefore be evaluated as positive. In terms of anthropomorphism, managers and experts/specialists also experience AI systems as human-like.

Differences between managers and experts/specialists

Comparisons between managers and experts/specialists reveal significant differences in the dimensions of familiarity, anthropomorphism,

AI competence, transparency and intuitive explanation. The effects were evaluated as being moderately pronounced with the exception of intuitive explanation. Managers evaluated these dimensions as being significantly higher than experts/specialists did. This effect could also be due to the fact that, as with strategic relevance, managers sometimes overestimate AI systems – whereas experts/specialists describe them more soberly. This assumption is also supported by the fact that the differences occur especially in dimensions involving similarity (anthropomorphism) to humans, performance (AI competence) as well as transparency and intuitive explanation.

Personal experience reveals challenges and a need for action

Although the AI systems were perceived positively regarding their functions, personal experience results indicate alarming findings (Figure 27).

Experiencing the technologies



COMPLEXITY

AI systems are considered complex when they are seen as difficult to understand. This applies especially to their design, application and function.

CONTROLLABILITY

Extent to which people believe that systems can be controlled by people and that behaviour and functions can be influenced and controlled by them.

FAMILIARITY

Describes the extent to which people are familiar with technologies, have heard of them or have already worked with them. It also includes the extent to which this technology is seen as part of everyday life.

ANTHROPOMORPHISM

Perceiving a system as being human-like – for instance assuming an AI system has intentions or can make autonomous decisions.

AI COMPETENCE

Associates the system with great potentials regarding successful use in different contexts. The systems are considered effective and successful.

TRANSPARENCY

Extent to which all information is given by the system to be able to evaluate the processes involved in finding results and generating suggestions based on the available data.

EASE OF EXPLANATION

An explainable system is considered to be understandable and it produces comprehensible results.

Personal experience

Unclear responsibility for AI-based decisions

It's clearly apparent that responsibility is fuzzy when it comes to decisions based on AI. Three out of four managers reported such a lack of clarity. This means that when AI makes decisions, it is not clear who ultimately bears responsibility for any consequences such as errors and/or even accidents. The majority (67%) of managers also believed that responsibility should lie with those who programmed the AI.

These results show an enormous need for action. If responsibilities are unclear for managers, then this could undermine willingness to trust AI-based decisions and the general use of AI in decision-making processes.

Managers see their autonomy being restricted by AI

Furthermore, the majority of managers (68%) have experienced their autonomy being restricted. Almost one in five (78%) managers fear losing control over decisions in their area of responsibility if AI is involved in the decision-making process.

Managers tend to be risk-averse when it comes to making decisions based on AI

Unclear responsibilities, fear of losing control and limited autonomy appear to be reflected in distinct risk aversion. Almost two-thirds of managers therefore feel uncomfortable taking risks that result from AI recommendations. 70% of managers prefer to trust their own risk assessments rather than those from an AI system. In uncertain times, however, leaders seem more willing to let AI make their decisions.

Positively emphasising the trust and critical ability of the managers

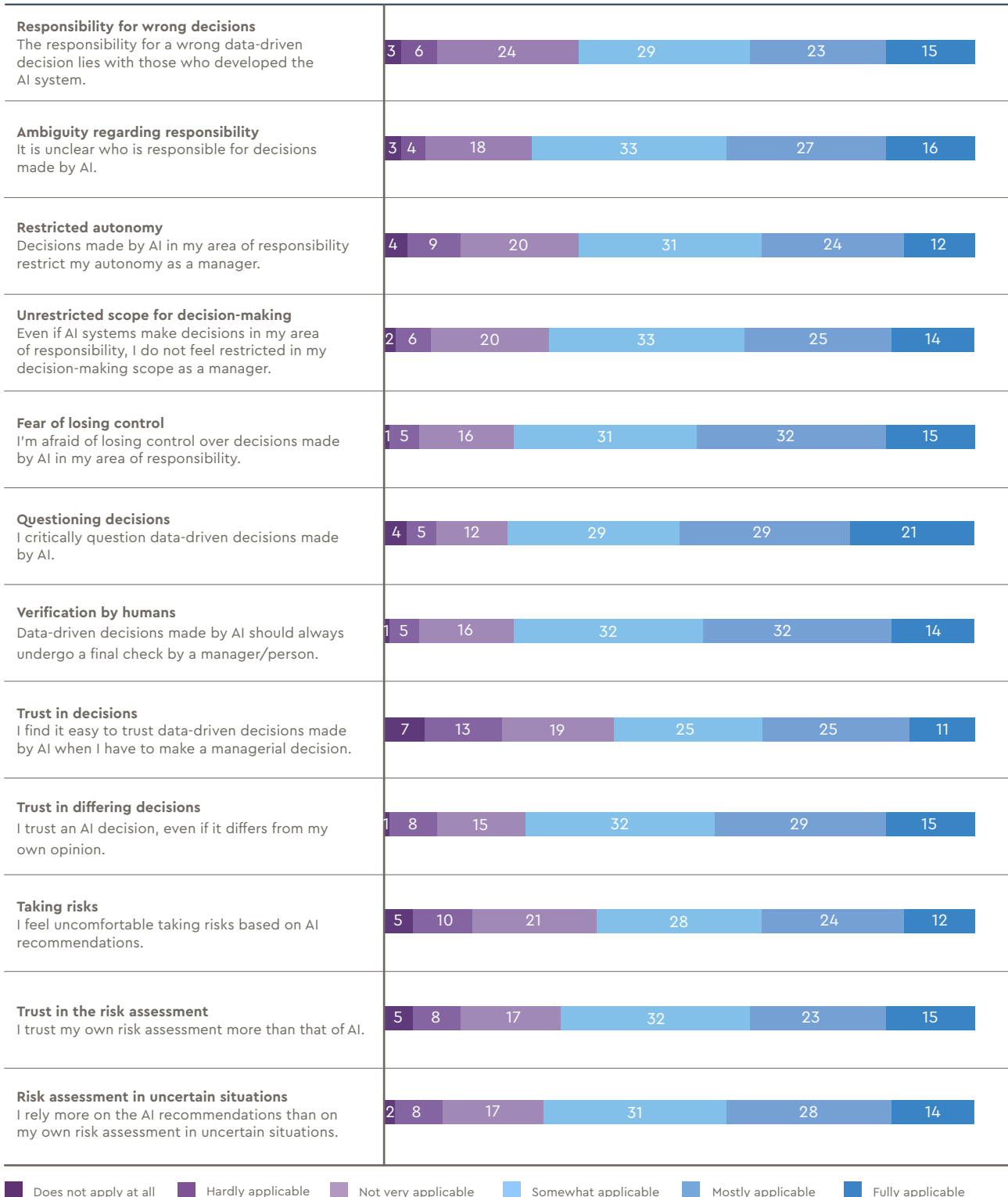
Yet positive results can also be taken from the analysis. More than a half of managers (60%) find it rather easy to trust decisions based on AI. Besides this, more than three quarters of managers (77%) were willing to trust an AI-based decision, even if it differed from their own. Finally, 82% of those surveyed stated that they critically question decisions made by AI. This critical faculties is quite positive, as it's an important prerequisite for a reflective use of AI. Nevertheless, such critical ability could also be brought about by a certain degree of scepticism towards decisions based on AI. Finally, the majority of managers – on the lines of Figure 24 – see people as the most important control body in the final instance of the decision-making process.

Managers appreciate the benefits of using AI, but do not yet see it being integrated into their managerial roles

Overall, the results indicate that managers value AI systems – considering them relevant and effective – though integrating decision-making assisted by technology still conflicts with their managerial role in practice. This insight could be one reason why the potential has not yet been fully realised – as well as a factor behind obstacles encountered among people & culture. In order to realise the full potential of decision-making assisted by technology, companies must answer the questions with regard to responsibilities and role clarity as well as resolving the evaluation of AI-based decisions.

Personal experience

FIG. 27 – PERSONAL EXPERIENCES OF MANAGERS



Does not apply at all
 Hardly applicable
 Not very applicable
 Somewhat applicable
 Mostly applicable
 Fully applicable

N = 409 management. Figures in percentages.

Personal experience



RECOMMENDED ACTION

CLEAR RESPONSIBILITIES

Companies need to clarify responsibilities regarding AI-based decisions. On the one hand, this means structurally defining how responsibility will be organised for which use of AI. On the other hand, it also includes legal issues that have been questionable so far. For example, who is responsible in the event of damage if an autonomous car causes an accident?

ROLE CLARITY

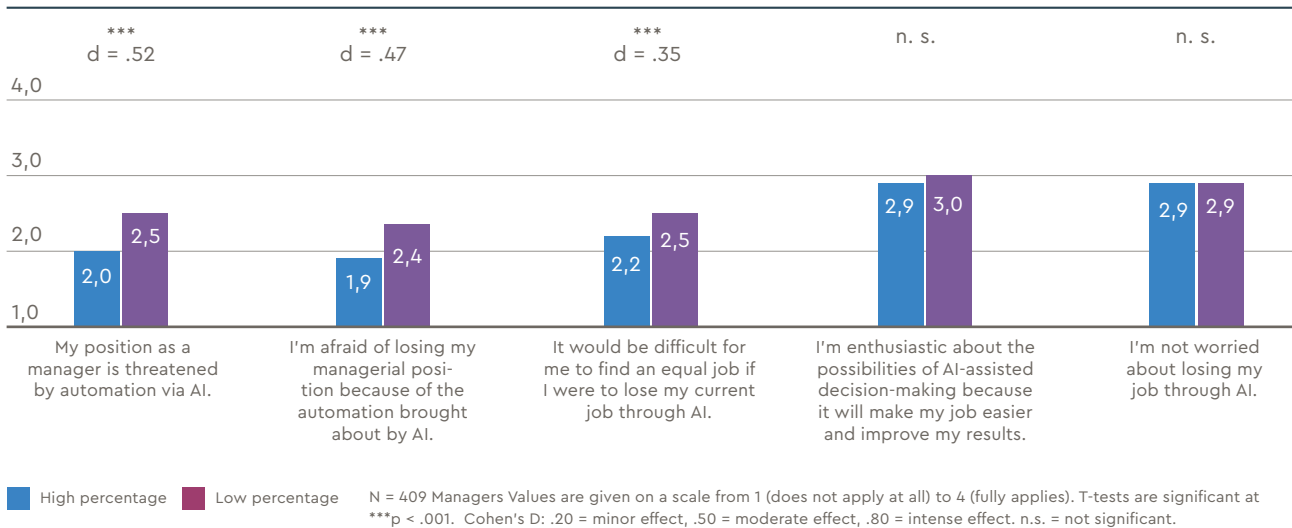
The managerial and job role requirements must also be matched in addition to the responsibilities. In which situations and for which types of decisions should managers use AI and in which situations should they not use AI? Criteria and guidelines could help to maintain autonomy and gain more trust in AI if used here.

CLARIFICATION

The most important measures are clarification and advanced training. Managers do not need to be able to programme AI systems, but they do need to understand and evaluate them. This means that they must be able to classify and question the results, suggestions and decisions made by an AI system. They must also develop an awareness of when and for what type of decision using AI will be of help. – In brief: Managers provide the metacognition that was previously mentioned, which AI does not have.

Personal experience

FIG. 28 – UNCERTAINTY ARISING FROM THE LEVEL OF DATA-DRIVEN DECISIONS



Generally low affective and cognitive job insecurity

Though there is a tendency to perceive personal experience negatively when it comes to responsibility, autonomy and risk aversion, managers do not believe their position to be threatened by automation due to AI (cognitive). Nor are they worried about losing their job as a result of automation (affective). On average, managers are also less likely to think that it would be difficult for them to find an equivalent job if they lost their current job because of AI. So they're not really afraid of losing their jobs because of AI. Managers describe themselves as being enthusiastic about the possibilities of using AI and its optimisation potential.

Job insecurity is greater when fewer data-driven decisions are made in a company

A differentiated view of job insecurity shows that job insecurity partly depends on the proportion of data-driven decisions made in a company. Executives who report less data-driven decision-making in their organisation describe significantly

higher cognitive and affective job insecurity due to AI. The average value for this group shows that they tend to be more insecure. These effects are assessed as being moderate. Managers who reported a lower proportion of data-driven decisions made in their companies also experienced greater uncertainty with regard to the belief that they will find an equivalent job in the event of losing their jobs through AI.

Clarification as an important success factor

The differences suggest that confronting and dealing with AI-based decisions on a day-to-day basis is associated with less uncertainty and fear. Managers who deal less with AI in a company experience more uncertainty. This finding once again underlines how important it is to achieve clarification dealing with AI-based decisions.

DISCUSSION: HUMAN AND AI-ASSISTED DECISIONS

The results of the personal experience of AI-based technological decision-making make it clear that managers and other people still see difficulties in using AI. This is not just about rational logic, but rather the emotional factors arising when assessing AI applications. We delved into this aspect in an interview with best-selling author Olivier Sibony. Sibony argues that algorithms and AI were originally used to minimise errors and risks and less for assessing risks, especially future risks. – However, strategic decisions in particular involve taking certain risks. These risks are important for innovation and progress as well as for the evolution and revolution of the organisation. Yet the quality of these decisions is measured by their results. This means that managers who have made a risky, but subsequently successful decision will be praised. Managers who are subsequently unsuccessful will be held responsible for such failure and may even be sanctioned.

According to Olivier Sibony, this decision evaluation makes managers more risk-averse. This means they evaluate decisions and associated risks in terms of potential losses rather than gains. Managers might well feel uncomfortable when relying purely on an AI decision – especially if the responsibilities for its decision lie with them.

What is more, our interviewee emphasised that it is not only about reducing errors in the predictions and decisions made by AI, but also about reducing human errors in decision-making and when evaluating AI-assisted decisions. Humans only have bounded rationality – they are guided by emotions and are subject to various cognitive judgement biases. Good examples of such false judgement include: hindsight bias (error of belated insight ("It was clear from the beginning that the business model could not be successful")), outcome bias (decision is evaluated against an already known outcome); overconfidence bias (a tendency to overestimate oneself).

Another problem with using AI is that major decisions (e.g. about investing in a new business sector) are traditionally made by people in organisations because they have little trust in a machine making such decisions – whereas less important decisions with a low probability of failure tend to be controlled by algorithms. Even so, such algorithms tend to be used for preventative effect.



You can find excerpts from our interview with Prof. Olivier Sibony here:

<https://www.kienbaum.com/de/ki-studie/#blog>



.....

Human errors are normal, but those made by machines are not

Sibony sees the following problem in particular: managers focus more on the average error of a machine and less on outliers, which are difficult to predict. This means they look for those errors in models where they are easy to find but actually happen only rarely. But it is precisely outliers that determine extreme success or failure. (Successful companies like Apple or Google are not average companies, but the outliers in the model.) As a result, managers should reflect on their assessing and handling of AI and focus less on detecting errors in the models. Too much focusing on the "average error" or average-based predictions by machines in general could result in a culture where there are neither positive nor negative outliers. Therefore it is also very important to support AI decisions that differ from our own viewpoint. If we didn't do this and revised them just because the decision didn't agree with our assumption, we would only be confirming ourselves ("confirmation bias") and using AI would become worthless. Making this interaction between human and machine effective is a major challenge for an organisation and its leadership. Sibony is convinced that a team formed between humans and AI will be more successful than either of them working alone.

With regard to responsibility, he emphasises that AI is a technology and therefore a tool. After all, you're responsible for the tools you use in your daily work. He clearly sees the responsibility for AI-assisted decisions as lying with humans. However, the fact that the managers surveyed in this study have problems accepting such responsibility is explained by Sibony as being an asymmetry that results from the fact that machines cannot be held responsible for wrong or faulty decisions – whereas humans can. So it's really important for managers to be ready and willing to make rational decisions at all times. – Despite or because of the knowledge about emotional reactions and evaluating technology. This always includes in-depth knowledge of technologies and decision-making.

"We should follow the AI's advice – even when we disagree – because if we choose to only take the advice when it confirms what we think, AI is worthless."

Prof. Dr. Olivier Sibony



IN PARTICULAR THOSE LEADERSHIP
STYLES THAT ARE FOCUSED ON
INNOVATION, CHANGE AND PEOPLE MAN
AGEMENT WILL PLAY A DECISIVE ROLE
IN FULLY UTILISING A COMPANY'S
EXISTING POTENTIALS IN THE FUTURE.

INGE BAURMANN

Leadership & Change Director
Kienbaum Consultants International GmbH

LEADER

SHIP AND

TRANSFOR

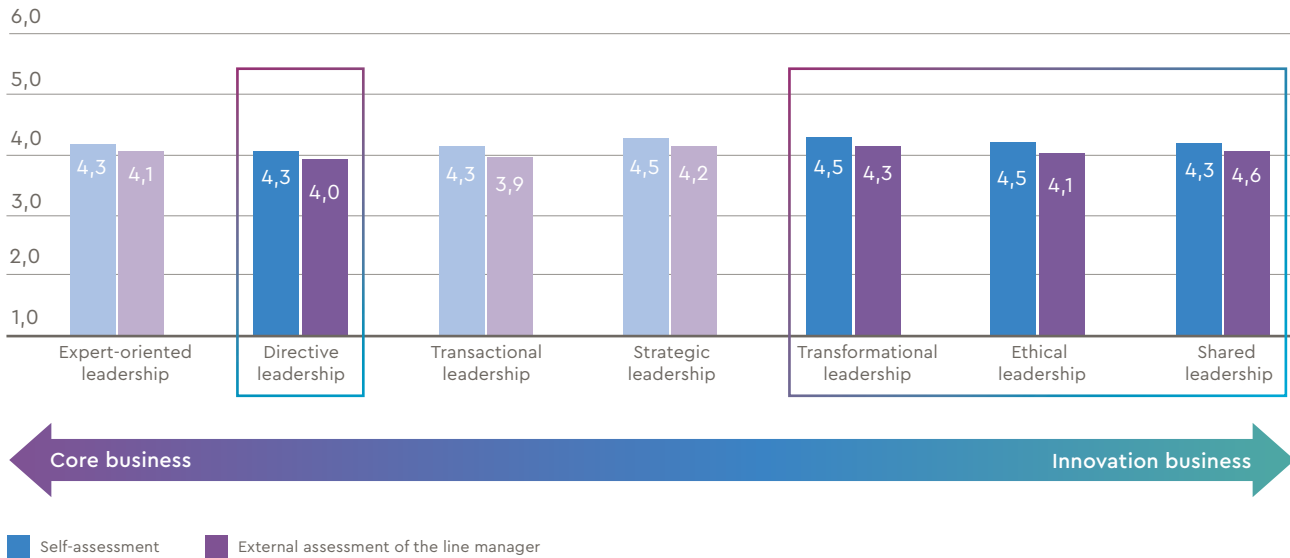
MATION

Leadership Transformation

Leadership

FIG. 29 – LEADERSHIP STYLE AND REALISING AI POTENTIAL

22% of the potential of AI can be realised through combining shared, transformational, ethical as well as directive leadership.



N = 409 managers and 78 specialists with a direct line manager who uses decision-making assisted by technology. Values are given on a scale from 1 (does not apply at all) to 6 (fully applies).

Management oriented towards innovation, change and people is a key factor in driving the realisation of existing AI potential

Figure 29 illustrates which leadership styles are critical for realising the AI potential in companies. A regression analysis could include shared, transformational, ethical, and directive leadership (an overview of the styles can be found in the glossary) as significant predictors. They could explain the 22% potential realisation.

This means that those managerial styles that especially focus on innovation, change and people management will play a critical role in fully exploiting the potential that exists in the company.



One reason for this finding is probably that the transformation process goes hand-in-hand with realising the potential – with introducing and implementing AI technologies, in other words. Nevertheless, a directive leadership approach is also important. Clear distribution of tasks, a distinct orientation towards performance and discipline are therefore important factors when implementing the transformation process.

It's not only technical expertise that's decisive for transformation and potential realisation

The results from the leadership styles also show that managers involved in digital transformation in the context of AI need not just pure technical expertise, but also skills and experience in change management, people management and innovation management as well.

Ethical, social and sustainability implications are occasionally considered

Using AI systems also means taking responsibility with regard to ethics, society and sustainability. In the ethical dimension, this involves judgement biases being included in the data due to gender or age stereotypes. When it comes to sustainability, AI consumes energy and therefore it also produces CO₂. With regard to social responsibility, automation can eliminate jobs – exposing certain job groups to the risk of unemployment. The responsibility for considering these dimensions in the context of AI lies solely with senior management in a company, despite high environmental dynamics, competition and change. An appropriate purpose in line with the corporate strategy could provide a solid starting point for giving ecological, social and economic responsibility the necessary relevance within the company.

DISCUSSION: THE ROLE OF ETHICS AND MORALS

Using AI inevitably raises discussions about ethics and morality. One of our interviewees suggested that AI shows us which moral issues we have failed to solve – neither in the past nor in the present. Examples of this are algorithms that are supplied with data that disadvantages age, gender or other groups. An AI system's decisions will run the risk of perpetuating the past. Specific moral dilemmas must be resolved in order to make such decisions fairly and neutrally when AI is used. The data often also reflects the conscious or unconscious corporate culture assumptions and procedures, such as Amazon's algorithm that favoured white men. Algorithms can even reveal deficiencies and problems inherent within the culture in some cases.

"Making mistakes is human – we don't allow AI this sort of grace"

Prof. Viktor Mayer-Schönberger

Another important aspect with regard to ethics and morality is the issue of how much responsibility is justifiable for AI. During the interviews, one interviewee emphasised that in the social discussion about AI, "red lines" that have to be set up for this technology are often formed very quickly. But on closer inspection these are often moral conflicts which, being completely detached from the technology, are also unresolved by humans. For instance, exhaustion due to too little sleep has been proven to affect human abilities, which is why it is legitimate to question how justifiable many decisions (human) made by chronically stressed people in leadership or generally high positions of responsibility actually are.

The only decisive factor in the attitude towards AI often seems to be the fact that AI is NOT a human being. This often results in a much more rigid error evaluation being made by AI, even if a human would normally make even more errors at this point: "Making mistakes is human – we don't allow AI this sort of grace", was how our interviewee Viktor Mayer-Schönberger summed things up. Moral dilemmas are used to reveal the imperfections of AI, even though they cannot be solved by humans either. It is not always a question of comparing the decision-making qualities of humans and machines, but often a general question that is difficult to answer. For example, there is an ongoing debate about whether drones that shoot at people should be automated by AI or controlled by humans. But the real moral question here is whether drones should shoot at people at all.

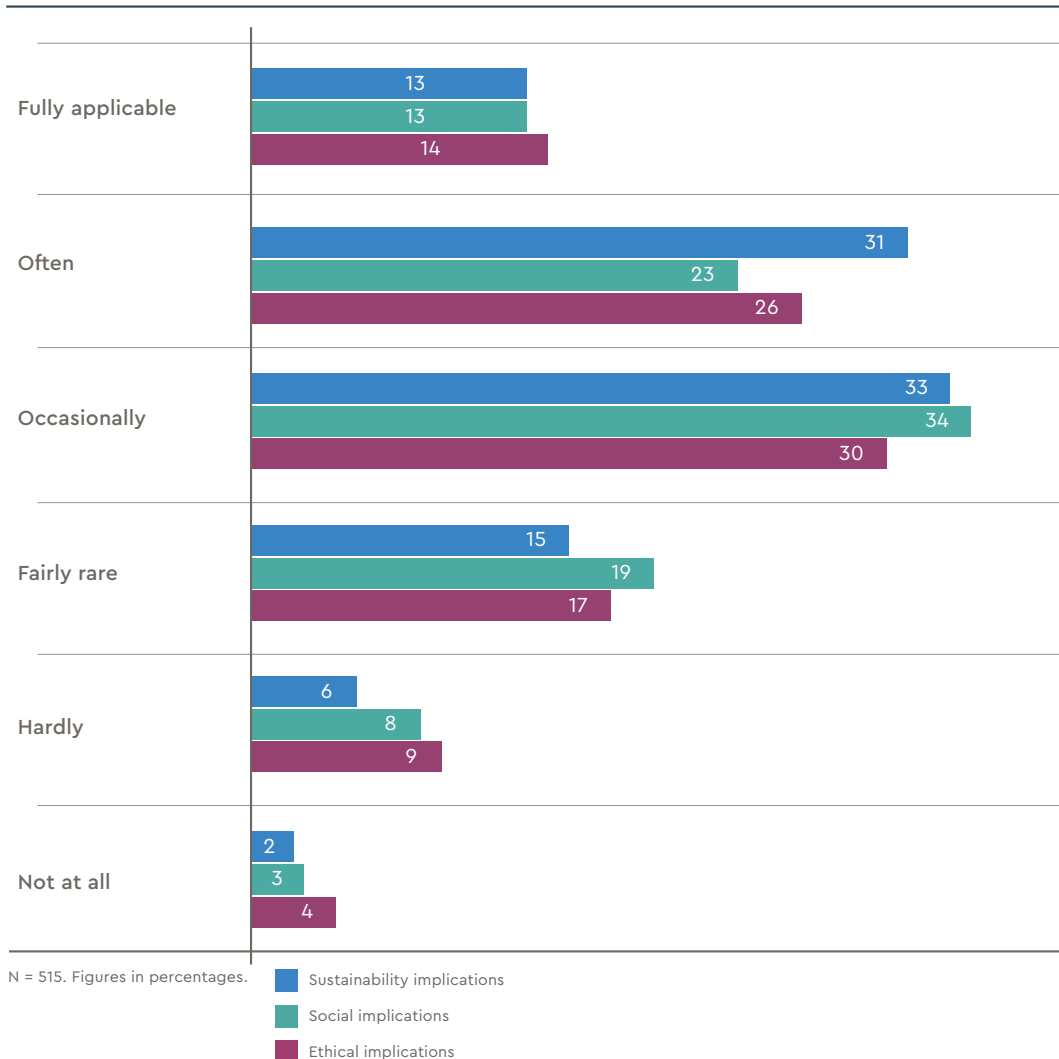
Leadership

Every third company often considers sustainability and every fourth one considers ethical and social implications

As shown in Figure 30, these three dimensions are already taken into consideration when selecting, developing and using AI systems in companies. Slightly more than every tenth participant reported that one or more of the three dimensions are fully taken into consideration in their company. Around one third affirmed sustainability and one quarter affirmed that

ethics and society are often taken into consideration. One third reported occasional consideration of these dimensions. Although only a small proportion reported little or no consideration at all, 15% (sustainability), 17% (ethics) and 19% (society) attested that these dimensions are rarely taken into consideration in their companies. It can be seen from this that there is still potential for development, which should be addressed by the company's leadership in particular.

FIG. 30 – STRATEGIC RELEVANCE AND COMPETITION



LEADERSHIP IN THE AGE OF TECHNOLOGICALY ASSISTED DECISION-MAKING

Transformation

Technical resources, know-how and qualifications provided to a partial extent

The integration of technology and especially high-tech systems such as AI implies transformation processes. On the one hand, new, competition-relevant technologies must be introduced in the company – so it needs to be digitised – while digitalisation processes will also trigger a necessary digital transformation. Technology does not have to be introduced just because AI is available, it also needs to be integrated into people's daily working lives.

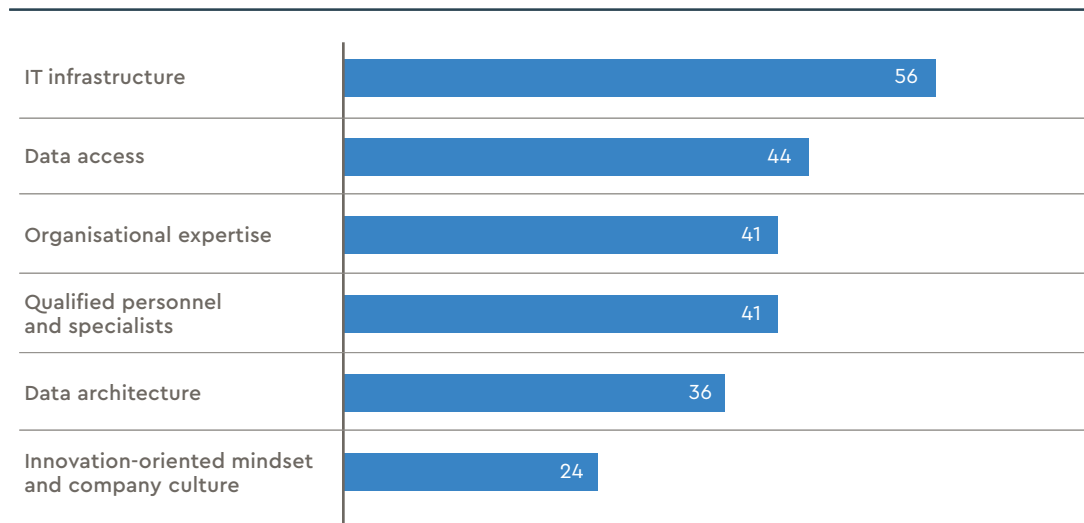
When asked whether the participants' companies have the necessary resources for successfully using AI, only slightly more than one in two managers and specialists said that they have the

necessary infrastructure and/or access to data (Figure 31). Four out of ten respondents saw organisational know-how and qualified personnel in their company. Only every third respondent reported an existing data structure.

Lack of innovation-oriented mindset and corporate culture

Nearly every fourth respondent reported that an innovation-oriented mindset and corporate culture existed in their companies. Infrastructural issues, know-how and expertise are currently the most commonly available resources. So it appears that "hard" requisite factors remain in the foreground – while softer factors such as mindset and corporate culture hardly play a role so far.

FIG. 31 – RESOURCES AVAILABLE FOR USE



N = 515. Figures in percentages. Multiple answers are possible.



Need for advice in digital business models, data analysis and recruiting specialists

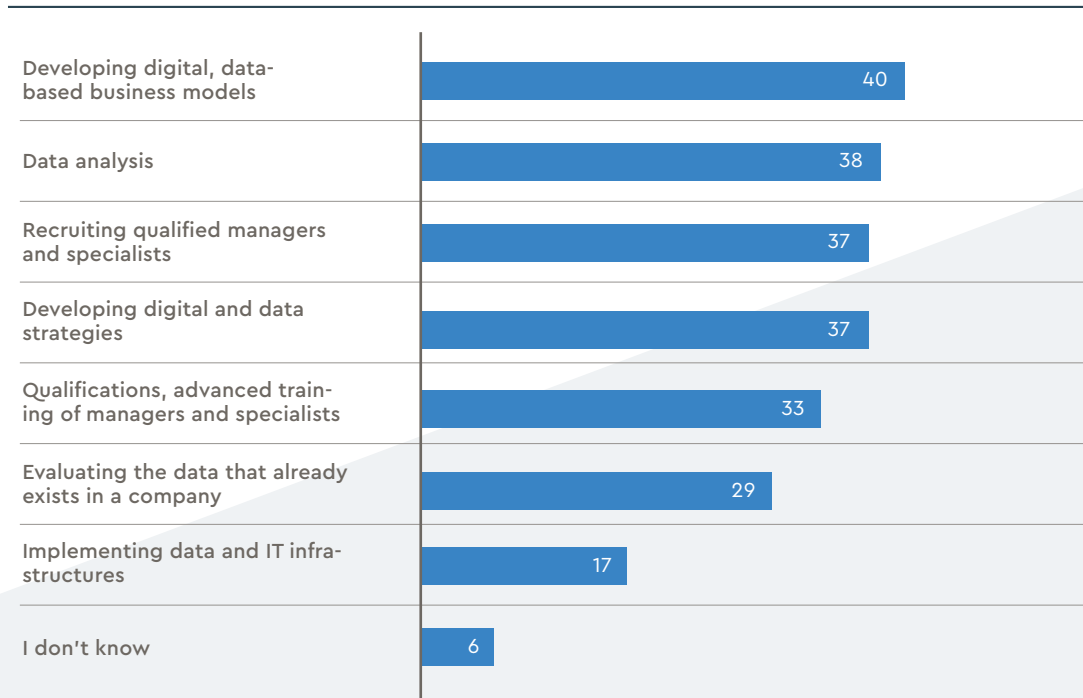
The question about the need for external consulting shows that companies have a hard time developing digital, data-driven business models (40%), analysing data (38%), recruiting qualified specialists and managers and formulating both digital and data strategies (37% each) (Figure 32).

Every third company needs support regarding qualifications and advanced training

Just under one in three companies also needed support regarding qualifications and the advanced training of managers and specialists, as well as in evaluating the data available within the company.

These organizations' need for advice and advanced training indicates that most companies already have data and a, more or less, adequate infrastructure in place – but still see the need for support in utilising their data potential. Converting data into business models is a question for professional staff who know how to create value from data.

FIG. 32 – NEED FOR ADVICE AND ADVANCED TRAINING



N = 515. Figures in percentages. Multiple answers are possible.



FOR THE REFLECTIVE USE OF AI, IT IS IMPORTANT TO ENSURE THAT DATA SCIENTISTS NOT ONLY DEAL WITH PROGRAMMING AI, BUT ALSO UNDERSTAND THE APPLICATION AS WELL. THEY MUST BE ABLE TO UNDERSTAND THE UNDERLYING DATA AND PROCESSES TO BE ABLE TO CLASSIFY THE ALGORITHM'S DECISIONS. A REAL UNDERSTANDING OF THE CONTEXT IS A GREAT ADVANTAGE.

DR MICHAEL KIND

Head of the Data Science Department
Kienbaum Consultants International GmbH

PEOPLE

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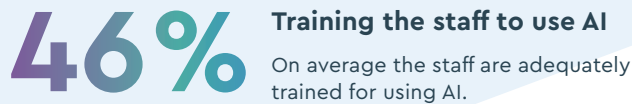
CIAL

INTELLI

GENCE

Need profiles

FIG. 33 – STAFF TRAINING



N = 515. Figures in percentages.

On average, less than half are adequately trained for using AI

On average, managers and experts/specialists consider only 46% of their company's staff to be sufficiently trained for using AI (Figure 33).

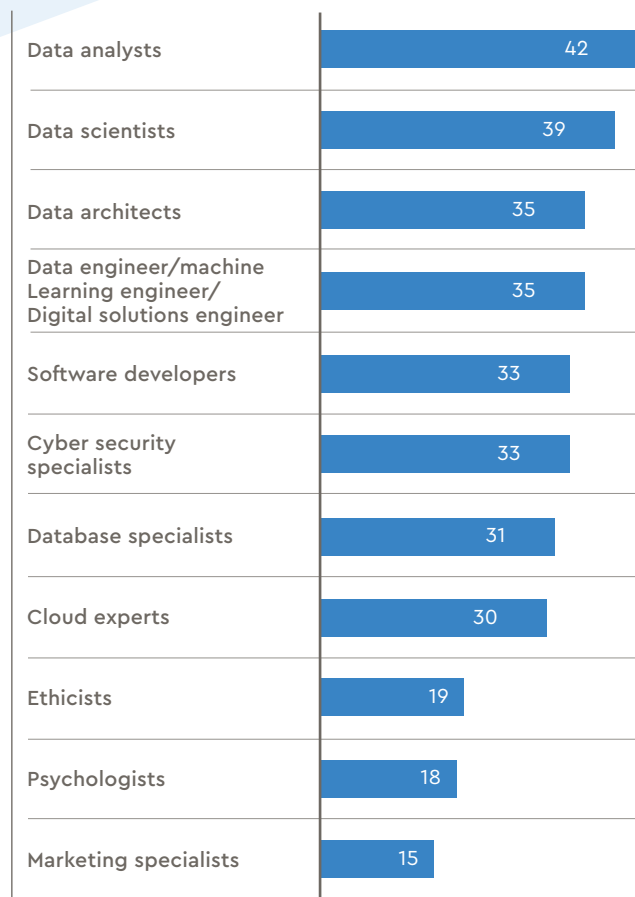
There's a lack of data and IT specialists in companies

When it comes to need profiles, companies lack data specialists such as data analysts, scientists or architects as well as IT specialists such as software developers, cyber security specialists or database and cloud experts (Figure 34). In the interviews it also became clear that data engineers who have both the analytical/statistical expertise for evaluating and integrating this expertise in an IT infrastructure are highly sought after.

Profiles without a direct relation to technology are less relevant

There is significantly less demand for profiles without a direct relation to technology. So ethicists, psychologists or marketing specialists are less in demand – even though they also play an important role with regard to using AI and are linked to the sometimes critical implications for ethics, society and sustainability.

FIG. 34 – NEED PROFILES



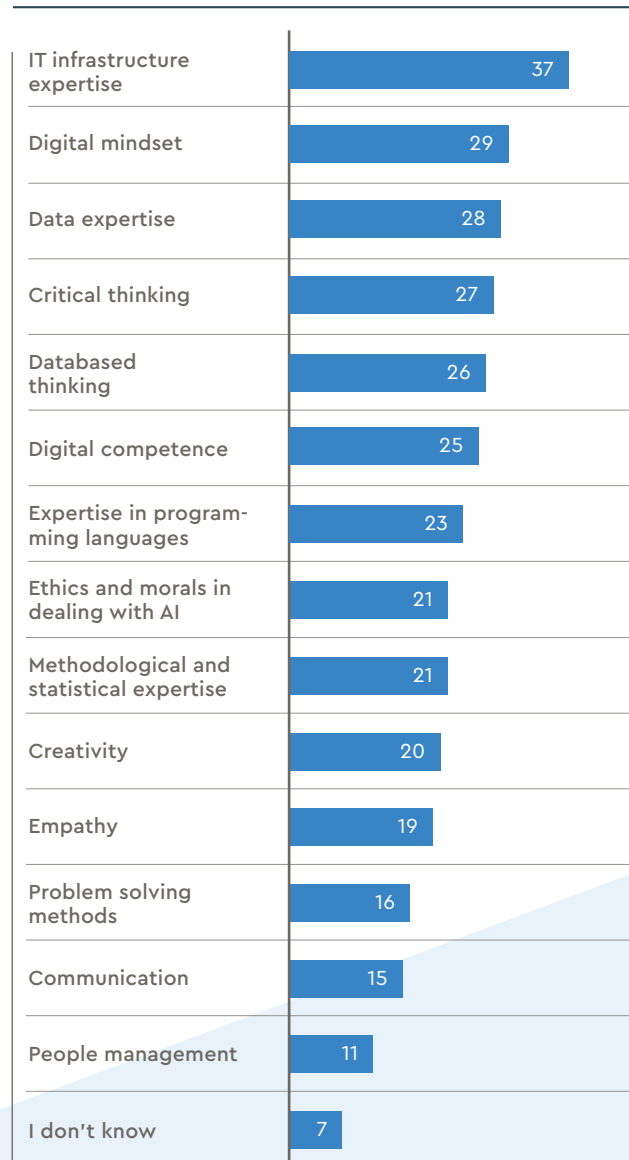
N = 515. Figures in percentages. Multiple answers are possible.

Need competencies

Reflecting on need competencies Need profiles

The need competencies reflect the results of the need profiles. Primarily, companies lack data, IT and digital competencies. However, some companies also lack other competencies such as critical thinking, ethics, morality as well as creativity when dealing with AI (Figure 35).

FIG. 35 – NEED COMPETENCIES



N = 515. Figures in percentages. Multiple answers are possible.

PEOPLE AND ARTIFICIAL INTELLIGENCE

Ethics and morals are just as important as methodological and statistical expertise when dealing with AI

Interestingly, one in five companies lack ethics and morals when dealing with AI as much as they lack methodological and statistical expertise.

There is hardly any demand for people management

Only every tenth company reported that they lack people management for successfully using AI.

War for AI talent

The results on the topic of people reveal a clear "war for AI talent", as companies are keenly aware of the need for digital, data and IT profiles and associated skills. Companies will have to shift up a few gears to survive in this war for talent.



MANAGING THE "WAR FOR AI TALENT"

EMPLOYER ATTRACTIVENESS

Employer attractiveness plays a crucial role in attracting the required AI talent. Companies have to develop and communicate a credible employee value proposition. – And, of course, implement these operatively through personnel marketing measures.

EMPLOYEE RETENTION

Employee retention through measures such as a positive employee experience and development opportunities are key levers for retaining AI talent over the long-term.

LEARNING AND DEVELOPMENT

Learning and development are central items for enhancing the qualifications of existing talent and this can pay dividends with regard to employee retention. This is also an important factor in career development and it can also influence employer attractiveness.



THE CHALLENGE FOR FUTURE-ORIENTED STAFFING IS NOT ONLY TO LOOK FOR THE "HARD", NECESSARY SKILLS SUCH AS INFRASTRUCTURAL ISSUES, KNOW-HOW AND EXPERTISE, BUT ALSO TO CONSIDER SOFTER FACTORS SUCH AS MINDSET AND CORPORATE CULTURE.

JÖRG ALBOLD

Head of Digital, Media and Tech Practice Group
Kienbaum Consultants International GmbH

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AI is strategically relevant, but its potential has not yet been fully realised

In summary, the results of the study indicate that managers as well as experts/specialists are aware of AI's strategic relevance – and that its potential has not yet been utilised in their companies. Companies that are able to utilise this potential will probably be able to outperform their competition as well.

Decision-making is actually supported by technology – but independent decisions without any human intervention still tend to be rare

Overall, the clear majority of companies employing the respondents utilise technologically assisted decision-making. However, AI's function is mainly making decision proposals and less frequently making independent decisions for humans.

Human intelligence still remains the final authority in the decision-making process

On the positive side, on average half of the decisions made in a company as well as those made by its managers are data-driven. Although the proportion increases with the hierarchical level and the AI function, the majority of those surveyed were convinced that human intelligence should make the final decisions.

AI should make operational decisions, humans strategic decisions

Thus, it should come as no surprise that although the respondents believe AI can definitely make operative and strategic decisions, companies tend to focus more on operative decisions, as these are easier to standardise. The fact that AI has increasingly been used in process optimisation as well as error and risk minimisation so far underlines this conviction.

Managers are mostly willing to use AI and value its competence

The majority of managers are willing to hand over decisions in their everyday managerial role to AI – evaluating AI systems positively, too. However, their personal experience of integrating AI into their managerial role is rated negatively. What is alarming here is that managers encounter unclear responsibilities, fear of losing control, restricted autonomy and pronounced risk aversion when AI takes over the decision-making in their everyday managerial role. Consequently, there is a considerable need for companies to plan how to integrate AI into everyday leadership and to implement it in practice so that their managers can also use it in the best way possible and without any hesitation. The willingness to do so and a positive AI assessment are certainly useful starting points in this respect.

Leadership styles oriented towards innovation, change and people are important for the transformation process

An analysis of these leadership styles suggests that realising AI potential and associated transformation requires leadership styles geared towards innovation, change and people. This should result in the transformation being driven by those managers who – besides purely professional competence – are also able to lead complete change processes. These competencies should urgently be considered in terms of employee qualifications and training programs and need to be integrated in personnel selection through professional diagnostics.

Clear potential for development in HR

There is enormous growth potential regarding the use of AI in HR functions. Nevertheless, the majority of respondents found that independent AI decisions are difficult to make in HR.

The tendency shown here is that in the future, humans will predominantly continue to make decisions on their own.

War for AI talent and relevance of the people dimension

The study clearly reveals that companies need profiles and competences in the data, digital and IT sectors – and are attempting to acquire these through external service providers. So companies feel a distinct need to appeal to candidates as an employer in order to attract talent. Of course, it's also important to invest in employee retention to retain existing talent. Only in this way can the necessary staff transformation be successful and competitiveness be maintained.

The relevance of the people dimension will become clearly apparent in the form of a lack of talent and the relevance of people-centred leadership styles – but also in the lack of mindset and culture within companies. The majority of companies are still in the infancy of their digital transformation, but in their enthusiasm for progress, the people dimension should always be taken into account – especially when it comes to strategies concerning employee training.

Sense of responsibility and positive control

Finally, it's worth noting that most managers are aware of their responsibility for ethics, society and sustainability when dealing with AI. This is also reflected in the fact that the majority have already established monitoring processes for controlling AI from development to use. Yet a number of companies have still failed to address this topic in a responsible way. These companies are well advised to put this responsibility on the management agenda and integrate it into their AI efforts.

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Technical Artificial Intelligence

Predictive analysis

Enables events to be predicted and their probability of occurrence to be estimated after taking into consideration the most important influencing factors.

Classification

Provides a data pool with various names ("labelling"), which can range from supposedly trivial, binary distinctions to multi-layered delimitations of different elements.

Clustering

Explorative AI technology that can recognise correlations in large data sets, subdivide them and assign new elements according to their similarity. This technology does not have to be trained as opposed to "classification".

Natural language processing

Describes types of speech recognition in the broadest sense, but which can be consequently used for challenging tasks related to analysing and understanding human speech.

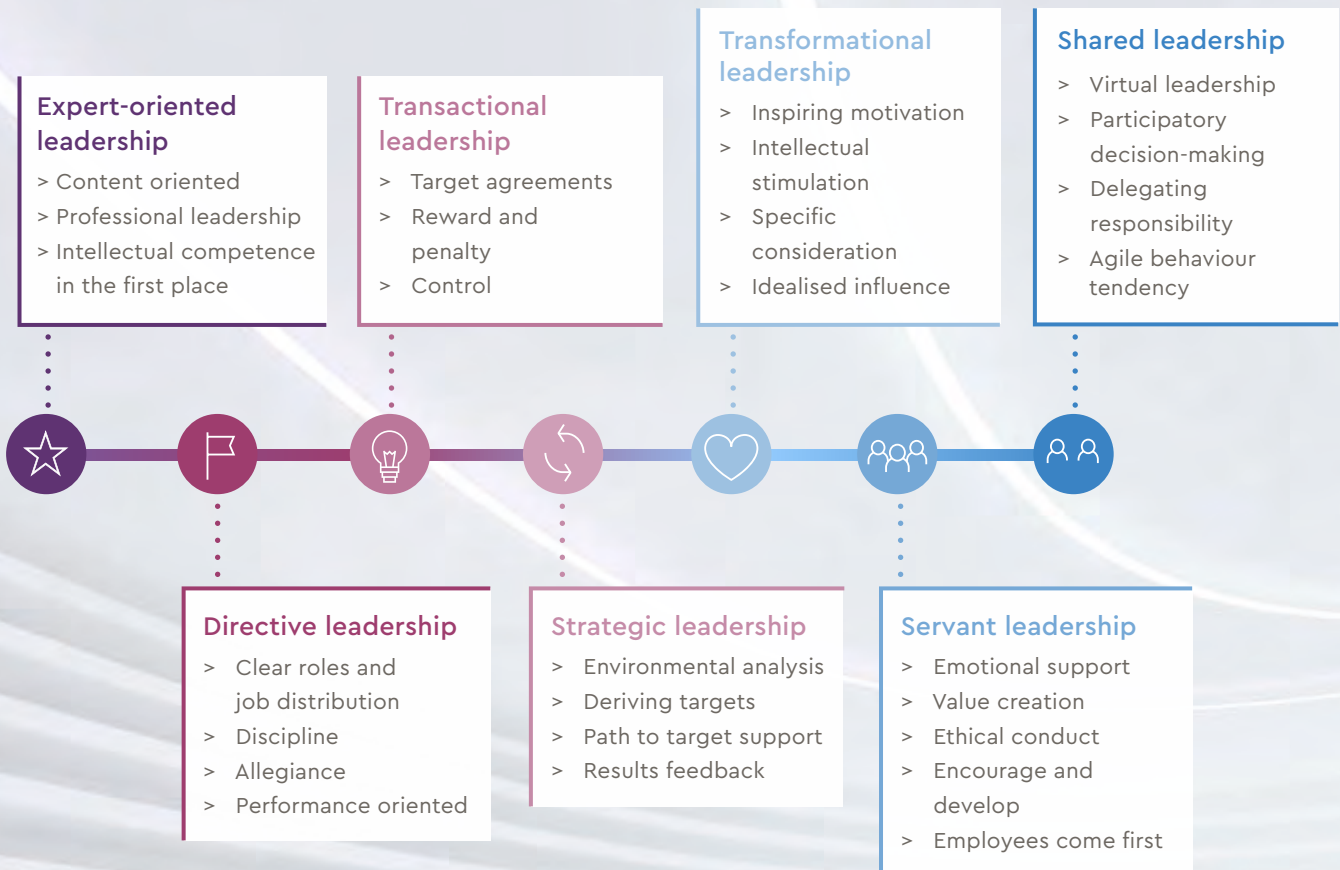
Computer vision

Comprised of various types of object recognition processes that can be used in a variety of ways for processing computer-assisted visual image material.

Material synthesis

Basically includes various chemical as well as physical methods that are used to create new materials (for example ceramics). AI technology is used in this context to gain an even greater understanding of the materials (for instance modelling the mechanical behaviour of materials at the micro level) and subsequently make their production more efficient.

Leadership styles





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