GETTING STARTED WITH AI: A GUIDE TO ADOPTION

A STUDY OF AI IMPLEMENTATION AND USE-CASES IN DANISH COMPANIES

11 DECEMBER 2024

EXECUTIVE SUMMARY

Key Insights for Successful AI Adoption

Adopting AI effectively begins with a deep understanding of an organization's unique challenges and opportunities. Identifying specific business needs enables companies to strategically align AI implementation efforts, create business value, build internal expertise, and ensure employees are well-trained to use these technologies.

This report draws insights from five case studies in Denmark, offering a practical roadmap for beginning your AI adoption journey. It outlines four distinct strategies for implementing AI, accompanied by real-world use cases from various industries. Additionally, it highlights the skills and training essential for successful AI integration.

AI IMPLEMENTATION STRATEGIES

The identified strategies focus on either external market-facing goals or internal organizational improvements and leverage standardized or tailored digital solutions. Companies may adopt one or combine elements from multiple strategies, as outlined below:

1) **Product-Oriented Strategy:**
   Develop standardized AI solutions for market adoption, using a stage-gate model to manage projects and ensure return on investment (ROI).

2) **Project-Oriented Strategy:**
   Develop AI solutions tailored to specific needs, engaging stakeholders to identify and implement high-impact use cases.

3) **Process-Oriented Strategy:**
   Integrate AI into internal processes to enhance operational efficiency, ensuring human oversight in decision-making.

4) **Problem-Oriented Strategy:**
   Establish dedicated AI teams to tackle core business challenges, ensuring alignment with strategic objectives.

AI TECHNOLOGY TYPES AND APPLICATIONS

Organizations can deploy various AI technologies to address business needs, leveraging specific algorithms and data requirements to deliver solutions:

1) **Assistive Technologies:**
   Generative AI like Copilot can support employees in tasks such as content creation, drafting documents, and summarizing communication.

2) **Augmentation Technologies**:
   Predictive analytics enables faster, data-driven decision-making. Example: forecasting for proactive problem-solving.

3) **Automation Technologies**:
   AI agents can handle repetitive tasks, reducing human error and operational costs. Example: streamlining administrative processes.

4) **Assessment Technologies**:
   Machine learning systems analyze complex data sets with precision. Example: using AI for image recognition in quality control.

SKILLS AND TRAINING FOR SUCCESSFUL AI INTEGRATION

Skill development is critical from the outset of AI adoption. Companies should focus on tailored training efforts for each use case and prioritize strong change management practices to facilitate organizational alignment. Key actions include:

1) **Hire Technical Experts**:
   Bring in data scientists and machine learning specialists to accelerate AI implementation, train existing staff, and collaborate with domain specialists.

2) **Train Existing Staff**:
   Invest in continuous education through workshops, online courses, and hands-on training to ensure employees can effectively utilize AI technologies.

3) **Maintain Critical Skills**:
   Use drills and simulations to retain essential manual competencies and prepare for potential AI system failures.

4) **Manage Human and AI Resources**:
   Equip managers with the skills to oversee both human and AI-driven resources, emphasizing ethical AI use, transparency, and addressing biases.

A NEW PERSPECTIVE: THINKING WITH METAPHORS

To successfully integrate AI, consider it as a guest invited into your organization. This metaphor emphasizes the importance of thoughtful preparation and continuous engagement:

1. **Introduce AI to Everyone:**
   Explain its capabilities and limitations to ensure transparency and understanding.

2. **Set AI Up for Success:**
   Provide the necessary infrastructure, data, and tools for seamless integration.

3. **Foster Relationships:**
   Offer training and opportunities for teams to collaborate with AI and build familiarity.

4. **Monitor and Support:**
   Ensure AI contributes effectively, intervening if challenges arise to maintain alignment with business goals.

By being a thoughtful host, organizations can make AI an indispensable partner in achieving innovation and growth.

INTRODUCTION

Getting started with Artificial Intelligence (AI) can be challenging. The earlier types of AI technologies mainly handle routine tasks, leaving the more complex ones to humans. However, the current AI technologies perform not only routine and structured tasks but also non-routine and cognitive tasks (Raisch and Krakowski, 2021). For example, AI enables organization to obtain accurate (and low-cost) predictions and reduce uncertainty. The technological landscape is both vast and diverse, featuring a range of options from Generative AI tools like ChatGPT and Copilot, to AI agents performing automated tasks and predictive models with countless parameters. However, implementing these technologies does not automatically translate into business value.

Each organization faces the critical task of identifying which AI technologies to adopt and determining how best to leverage them to address specific business needs, uncover new opportunities, and create value for stakeholders. This process involves selecting the right technologies and considering the associated technical and change management costs.

The integrative framework of **decision redistribution** (Constantiou et al., 2024) provides a conceptual lens for understanding AI implementation decisions. This framework captures the dynamic migration of decision-making responsibilities across three key facets: **decisions about AI**, **decisions with AI**, and **implications of decisions with AI**.

In practice, as companies implement AI, the locus of decision-making and the actors involved shift and evolve, need adjustments. This redistribution of decision-making rights may occur, for instance, between business managers and data scientists, between traditional information systems and AI algorithms, or between established work practices and new AI-enabled processes. These shifts underscore the need for careful supervision and coordination to ensure that AI systems complement and enhance organizational objectives.
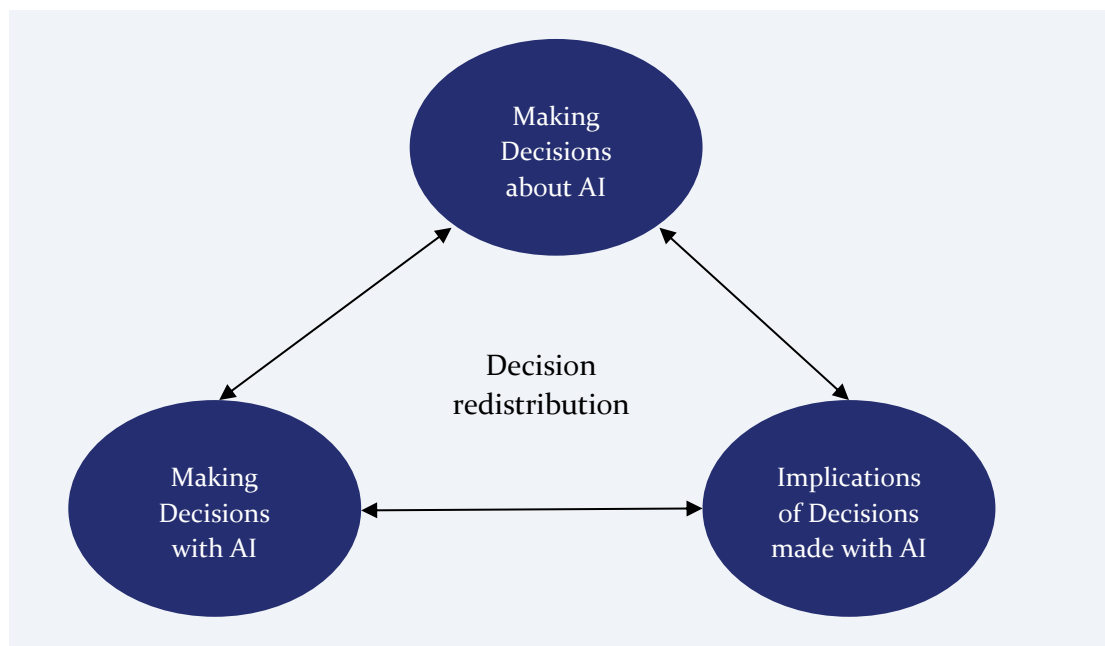
Adapted by Constantiou et al. 2024

Successfully integrating AI into daily operations requires more than technical proficiency—it demands a fundamental **shift in skills and mindset** (Neeley & Leonardi, 2022). Managers and

employees must develop new competencies to envision innovative applications of AI and effectively incorporate these solutions into their workflows (Constantiou et al., 2024). As a result, AI adoption is not an instantaneous process; it represents a **transformative journey** that requires **strategic foresight**, **organizational adaptability**, and a **long-term commitment to continuous learning** (Constantiou et al., 2023; Vial, 2021).

KEY TERMS

Organizational adoption:
The process by which organizations **implement** AI into their operations, leading to changes in business processes, decision-making, and organizational performance.
(Radhakrishnan & Chattopadhyay, 2020).

User adoption:

The process by which individual users integrate AI solutions into their daily work
(Radhakrishnan & Chattopadhyay, 2020)

Digital mindset:
A set of attitudes and behaviors that help people and organizations understand how data, algorithms, and AI can be used to create new possibilities
(Neeley & Leonardi, 2022)

Digital transformation:
A process that unfolds over time as a company integrates digital technologies into all business areas, fundamentally changing how it operates internally and delivers value to its customers.
(Constantiou et al., 2023)

RESEARCH METHODOLOGY

The research methodology is a qualitative multi-case study, based on desk research, interviews, and document collection.

Desk Research

The initial phase of the study involved desk research to understand the current state of AI adoption in Danish companies. This step was crucial for selecting relevant case companies from diverse industries. Interview preparation was also conducted during this phase.

Interviews

First, five open-ended interviews with contact persons in the selected case companies were conducted, each lasting 30 minutes to 1 hour. These interviews began with an introduction to the research project and the case company, followed by the selection of relevant interviewees who could provide valuable insights pertinent to the study. The interviewees hold titles such as Vice president of AI, Head of AI, Director of Machine learning, Country manager, HR director, etc.

The selected case companies

The five case companies were selected for their digital transformation efforts to utilize the vast amounts of data they collect through enhanced data infrastructure and governance. This is crucial for implementing AI in both internal processes and external customer-facing solutions.

With over eight years of AI experience in areas, such as demand-driven pricing, algorithms, predictive analytics, and more recently, GenAI, they are relevant candidates for this study.

- **Food industry**: Company that develops sensor-driven equipment and data analytics for its global customer base in the food production industry (1700 Employees globally).
- **Transportation industry:** Company that delivers transportation services to passengers and manages and maintains transportation assets (6000 employees in DK).
- **Energy industry:** Company that provides energy solutions to utility companies, industries, businesses, governments, and consumers (8000 employees in DK).
- **IT industry:** Danish branch of an international consultancy and IT solution provider (700 employees in DK).
- **IT industry:** Danish consultancy and IT solution provider, operates internationally (7800 employees globally).

Next, to gather in-depth insights about the case companies' approach to AI, 22 semi-structured interviews were conducted. Each interview lasted between 45 minutes to 1½ hours. This format allowed for flexibility in exploring various topics while ensuring that key areas of interest were covered.

All interviews were recorded to ensure accuracy and facilitate detailed analysis. The recordings were subsequently transcribed and analyzed to identify common themes, patterns, and unique insights.

This method provided a comprehensive understanding of the subjects discussed, contributing significantly to the overall findings of the study.

Document Collection

During the interviews, relevant documents and references were collected to create a solid knowledge repository for drawing conclusions.

CASE STUDIES: AI IMPLEMENTATION STRATEGIES

Based on the empirical data, four AI implementation strategies have been identified. These strategies are either externally or internally oriented. They also differ in their core focus: some emphasize the development of standardized AI solutions for user adoption (strategies 1 and 3), while others focus on cultivating a digital mindset among managers, employees, and other stakeholders (strategies 2 and 4).

The case companies employ multiple strategies as they navigate both internally and externally directed AI initiatives. This multifaceted approach allows them to address diverse needs and opportunities within their internal operations and market environments. However, for clarity and depth of understanding, this section will examine each strategy individually. By breaking down the strategies one at a time, we highlight how each strategy contributes to AI adoption within the companies.

External	**1. Product** Research & Design Return on Investment	**2. Project** Facilitate & Test Scope-oriented
Internal	**3. Process** Pilot & Scale Efficiency-driven	**4. Problem** Dedicated Team Budget-driven
	Standardized solutions	Digital Solutions

The four AI implementation strategies can be used alone or together. Moreover, each strategy comes with specific recommendations. Sometimes, doing one thing well can be just as effective as doing many things superficially. For example, focusing on identifying and prioritizing AI use cases helps you discover concrete, actionable examples specific to your company. By following this single recommendation, it becomes easier to understand AI's business potential and implement relevant AI solutions, even if other strategies or recommendations are not applied.

PRODUCT

The **Product-Oriented AI Implementation Strategy** involves new product development of standardized AI solutions for adoption by its global customer base.

This strategy begins with fuzzy front-end **Research and Development** (R&D) activities, where innovative ideas are generated and explored. These initial activities are crucial for identifying potential AI projects that have market relevance and align with the company's strategic goals.

The company employs a stage-gate model[1] specifically adapted for AI projects to manage these ideas effectively. The model ensures that each idea progresses through a series of well-defined stages, with gates acting as decision points. At each gate, the feasibility and potential of the idea are evaluated before it moves to the next stage. This structured approach helps in systematically prioritizing, refining, and developing AI initiatives.

In the next stage, a business case is developed for each AI project. The business case must demonstrate a solid **Return On Investment** (ROI) to justify further development of a marketable solution.

Operating in a specialized market driven by a natural science perspective on production, the company places a high emphasis on data quality and the precision of its AI models.

> *"We've ramped up strategically and operationally, and employed more highly skilled data scientists, to drive our machine learning projects. We handle the full AI chain ourselves as we have a deep understanding of the data structures and the machine learning flow. And not least we continuously validate that the AI insights and outputs delivered create value for our customers." (Director of Machine learning, Food Industry)*

Accurate and reliable data is essential for developing AI solutions that meet the stringent requirements of their industry. Therefore, the company invests significantly in data management and model validation processes to uphold the highest standards of quality and precision. These standards are of utmost importance to the customers and are the primary reason they implement the solutions.

Recommendations

1. **Progress from ideas to solutions:** Adopt a stage-gate model to manage AI projects, with well-defined stages and decision points (gates) to evaluate and prioritize project ideas before moving forward.

2. **Focus on ROI:** For each AI project, develop a business case that demonstrates a solid ROI to ensure that projects are both innovative and economically viable.

3. **Marketable Solutions:** Ensure that the business case includes a clear path to market, detailing how the AI solution will be commercialized.

4. **Leverage Industry-Specific Knowledge:** Develop AI solutions that are tailored to the specific needs and challenges of your industry.

5. **Collaborate with Experts:** Engage with industry experts and stakeholders to ensure that AI solutions are relevant and effective for your customer base.

---

[1] The stage-gate model is a project management approach that divides the development process into distinct stages, each followed by a gate where decisions are made about whether to proceed to the next stage.

PROJECT

The **Project-Oriented AI Implementation strategy** involves developing both customer-specific and marketable solutions, including a customizable GenAI platform tailored to each customer's business needs.

The company assists private and public sector customers in adopting AI, for example, by concentrating on specific use cases that demonstrate AI's value while also considering technical and organizational change management costs. These use cases are identified through **a facilitated process**, where senior managers pinpoint employee groups engaged in business tasks that justify an AI implementation. For instance, tasks that are time-consuming, challenging to recruit for, or monotonous, leading to retention issues.

The next step involves engaging middle managers and employees to discover a combination of AI solutions that can assist with specific aspects of their work.

> *We focus on the employees and what they do: What tasks are you performing? Which systems are you using? What data do these systems access? The goal is to copy their work process, not to optimize it. Then some optimizations automatically occur because we digitalize parts of the work. This approach makes it easier for everybody to understand the project scope. (Head of AI, IT Industry)*

The aim is to replicate work tasks rather than optimize them, ensuring the project scope is clear and comprehensible for everyone involved. As tasks are replicated, optimization will be achieved naturally, in a way that is both understandable and acceptable in the organization. This approach emphasizes change management and fostering a digital mindset through involvement. Likewise, the new AI solutions are considered digital employees, requiring training and management like human staff.

Before releasing the technical solutions, the company **tests** them thoroughly by trying to "hack" the AI using incorrect prompts to induce errors. This helps identify and fix potential issues, ensuring the AI systems are robust and reliable. It also helps protect the customer company's data and ensure compliance, such as preventing the AI from making false or costly promises to the customer's clients.

Recommendations

1. **Specific Use Cases**: Identify and prioritize AI use cases that demonstrate business value.

2. **Collaborative Identification Process**: Involve senior managers to pinpoint employee groups engaged in business tasks that justify AI implementation.

3. **Digital Employee Concept**: Treat AI solutions as digital employees that require training and management to ensure that they are well-maintained.

4. **Engage Middle Managers and Employees**: Ensure buy-in by involving middle managers and employees in discovering AI solutions that can assist with specific aspects of their work.

5. **Emphasize robust change:** Focus on change management and test AI solutions rigorously before release to ensure successful implementation.

PROCESS

The **Process-Oriented AI implementation strategy** emphasizes the integration of AI into internal processes to enhance efficiency through standardized, scalable solutions while maintaining ethical standards and human oversight.

By asking: Why are we performing this process? Do we need it? AI is leveraged to transform existing internal processes through simplification, task elimination, and automation. This transformation is driven by tailored large language models (LLMs), chatbots, and AI agents. Despite aiming for high levels of automation, all final decisions are made by human decision-makers, ensuring that human judgment remains central to the company's operations.

The company selects specific business areas as testbeds for AI development projects, involving global branches to address cultural concerns and process variations. Successful process transformations from pilot projects within one area are then scaled to other areas within the organization. Experiences and lessons learnt from internal AI projects also inform customer-facing AI projects.

To ensure user adoption, the company mandates the use of the new AI solutions by discarding prior processes and support systems. This approach ensures that employees fully transition to and utilize the new AI solutions.

> *"Sure, developing a business case can be important, but it is much more important to do a risk assessment to understand the AI's impact on daily operations, reputation, and compliance. But once implemented, nobody talks about AI anymore, because it turns out AI was just a tool for process transformation." (Country manager, IT Industry)*

Recognizing the importance of risk management, transparency, and trust, the company has established an Ethical Board, supported by an Ethical Assessment Framework. The board evaluates all AI projects based on their impact on daily operations, external reputation, and legal compliance, deciding whether development and implementation should (dis)continue.

Recommendations

1. **Pilot Projects**: Identify, simplify, and test the automation potential of existing manual labor-intensive processes.

2. **Balance Automation and Human Judgement**: Maintain human oversight for final decisions to uphold ethical standards.

3. **Ethical Board**: Establish a board to assess the impact of each AI project on operations, reputation, and compliance.

4. **Scale Successes**: Expand successful pilots to other areas.

5. **Mandate Adoption of AI:** Enforce transition to new AI solutions by discarding old processes to ensure full adoption.

"Through our experience over the past eight years, we now understand the capabilities and limitations of AI. AI can be viewed as data that 'speaks' and that requires protection and monitoring. We must therefore focus on 'seat belts' and 'speed limits' in the 'AI race' to make the tech trustworthy. And make sure no harm is done through risk assessment, risk management, and cybersecurity measures."

(Chief Technology Officer, IT Industry)

PROBLEM

The **Problem-Oriented AI Implementation strategy involves** establishing **a dedicated AI team**, funded by a fixed percentage of the company's annual IT expenses. This **AI budget** is renegotiated yearly and is expected to grow, reflecting the increasing strategic importance of AI in the company's operations.

The company's AI strategy is structured around four key tracks:

1. **Strategy and Governance**: Establishing a framework and oversight for AI initiatives.

2. **General Tools**: Leveraging generative AI to enhance overall employee productivity, i.e., GenAI for enhanced employee productivity, using tailored LLMs.

3. **Targeted Solutions**: Developing AI applications to address specific operational challenges, e.g., predictive analysis for delay management, incident management, and equipment maintenance.

4. **Transformation of Core Business Areas**: Integrating AI to fundamentally improve core business areas.

The AI team is responsible for following technological advancements and identifying relevant AI technologies that tackle problems related to core business objectives.

> *"I focus on, and all business leaders should focus on, important problems: what is important to your company? We can create technologies for anything and spend a lot of money on it. But if AI doesn't align with why your company exists and supports its core objectives and competitiveness, then it's a waste of resources." (Vice president of AI, Transport Industry)*

Change management and employee training are key components of the company's implementation strategy. The AI team engages in continuous communication about new AI solutions, dedicating significant time to participating in meetings and conducting various training sessions. The aim is to ensure that employees acquire the necessary technical skills, motivation, and digital mindset. This is particularly important as user adoption of the company's AI solutions is voluntary.

Recommendations

1. **Establish a Dedicated Team**: Form a specialized team responsible for AI initiatives, with the expertise and resources needed to drive AI projects.

2. **Allocate a Fixed Budget**: Dedicate a specific percentage of the annual IT budget to AI projects. Review and adjust the budget annually.

3. **Focus on Core Business Problems**: Prioritize AI projects that address key business challenges and align with the company's core objectives.

4. **Develop an AI Strategy**: Focus on high-impact projects that improve efficiency, reduce costs, or enhance customer satisfaction.

5. **Emphasize Change Management and Training**: Invest in change management and employee training to ensure staff have the necessary skills, motivation, and mindset to adopt AI solutions.

USE-CASES: LEVERAGING AI TECHNOLOGIES

All interviewees agree that AI adoption begins with identifying specific business needs and exploring how AI technologies can meet these needs and create value.

In this section, we aim to inspire the creation of use cases by presenting four types of AI technologies (Murray et al., 2021). First, we explore two types of augmentation technologies: 1) technologies (i.e., GenAI) that provide task assistance to enhance task efficiency (Agrawal, 2024), and 2) decision-support technologies like predictive analytics, with the potential to transform business operations through data-driven insights. These two types of technologies emphasize human agency.

Next, we explore automation technologies: 3) AI agents that execute predefined steps to minimize human intervention, and ensure efficiency, and 4) machine learning systems that make assessments based on large-scale data sets. Machine learning systems can automate knowledge work that otherwise requires significant manual labor, time, and domain expertise, potentially transforming the work, the organization, and ultimately, the entire industry. These technologies emphasize system capabilities.

Human Capabilities	**1. Assist** Tasks GenAI	**2. Augment** Decisions Predictive Analytics
System Capabilities	**3. Automate** Process steps AI agents	**4. Assess** Data Machine Learning
	Efficiency	Transformation

Exploring the potential of different types of technologies in use cases can help organizations better understand how to leverage AI to address their unique business challenges and drive innovation. However, implementing AI rarely involves deploying a single solution. Instead, a combination of various AI technologies, comprising **both automation *and* augmentation**, is often needed to create a seamless and user-friendly experience. This integrated approach ensures that the strengths of different AI technologies are leveraged to address complex business needs (Raisch & Krakowski, 2021).

Below, we provide illustrative examples of AI use cases, covering the business need, the applied technologies, the skill development needs, business value, and associated challenges.

ASSIST: TASKS

All five case companies report that their employees use GenAI to assist them in performing work tasks, with four out of five case companies stating

productivity and overall work experience by integrating Microsoft Office 365 with Copilot without switching tools. that GenAI plays a key role in their current AI strategies. By integrating GenAI tools like Copilot, tailored to ensure the safe use of company data, employees can work more efficiently.

Use Case: GenAI assistance for office work

Business need: Increase employee

Technology: The integration of Copilot within Microsoft Office 365 allows users to leverage AI directly within familiar applications like Word, Excel, Outlook, and Teams.

Task assistance: Copilot is seen as a collaborative partner that assists human work in various ways: it automates meeting recaps and action points, thereby easing participants' cognitive load; provides quick overviews of long email chains through email summarization; enables unified searches across multiple tools; helps draft and refine communications with linguistic refinement; and assists in efficiently drafting documents and presentations, enhancing overall productivity.

Skill development needs: Even though users are familiar with office tools, they need new skills to interact effectively with GenAI. This includes creating effective prompts, validating AI outputs, and understanding the technology's limitations. Without proper training, users may not fully utilize GenAI, leading to suboptimal outcomes. Investing in training programs and establishing responsible use guidelines are essential to maximize AI benefits.

Business Value: Automating office tasks leads to higher productivity. Additionally, reliance on Copilot reduces the need for direct communication among colleagues, streamlining many content and communication processes.

Challenges: The shift in communication patterns may affect team dynamics, necessitating adjustments in how teams interact and collaborate.

Recommendations

1. **Meeting Management:** Implement AI tools that can automatically generate summaries and action items from meetings.

2. **Email Summarization:** Use AI to summarize lengthy emails, allowing employees to quickly grasp the key points.

3. **Unified Search:** Implement AI-powered search functions that can access data across various platforms and applications.

4. **Content creation:** Use AI to draft and refine emails, reports, and other documents, ensuring clarity and professionalism.

5. **Develop prompting Skills:** Invest in training programs that teach employees how to create effective prompts, validate AI outputs, and interact with AI tools responsibly.

AUGMENT: DECISIONS

In the case companies, AI models are used to process vast amounts of data from internal and external sources quickly and accurately to make predictions that inform decision-making.

Use case: Predicting Traffic Delays

Business need: The AI system replaces manual predictions and decisions regarding traffic delays in train operations.

Technology: The AI model processes real-time data from schedules, traffic conditions, and historical delays. Using machine learning and predictive analytics, the model identifies patterns indicating potential delays. It then predicts delays for specific trains and routes, alerting the operations center with expected durations and affected routes.

Decision-making: Operations center employees evaluate predictions and take proactive measures like rerouting or adjusting schedules. They inform train conductors and update passengers about potential delays through mobile apps, station displays, and announcements, ensuring passengers have timely updates for informed travel decisions.

Skill development needs: Initially, operations center employees need to acquire new technical skills to understand the AI system and make data-driven decisions based on its output. As the AI's predictions become more accurate and automated over time, employees must develop monitoring and oversight skills to intervene when necessary. Maintaining skills in traditional delay operations will remain crucial, as the operations center will revert to these methods in the event of a system failure.

Business Value: The AI model enhances operational efficiency by continuously predicting traffic delays, significantly easing the workload of operations center employees. As predictions become more precise over time, the system has the potential to transform the entire approach to managing train operations, creating a more reliable, passenger-friendly, and resilient transportation network.

Challenges: Implementing the AI system requires significant investment in technology and training. Ensuring data security and compliance with privacy regulations is crucial. Regular updates and maintenance are needed for effectiveness. Employees may resist adoption, and there could be concerns about job displacement.

Recommendations

1. **Data analysis:** Implement AI systems that gather and analyze (real-time) data and relevant to your company and industry.

2. **Predictive Analytics:** Develop AI models tailored to your business needs to predict outcomes like equipment failures, market trends, or customer behavior, allowing for proactive measures.

3. **Decision-Making:** Train employees to interpret AI predictions and take preemptive actions, such as adjusting production schedules, rerouting shipments, or modifying marketing strategies.

4. **Skill Development:** Invest in training programs that focus on developing technical and decision-making skills among existing employees.

5. **Continuous Improvement:** Establish a feedback loop where AI predictions and decisions are regularly reviewed and used to improve the system and the employees' skills.

AUTOMATE: PROCESS STEPS

In some of the case companies, AI agents are used to automate repetitive tasks and speed up processes. Automation cuts operational costs, including labor, training, and error correction, leading to more efficient resource allocation.

Use case: AI agent for Employee Transfers

Business Need: Numerous employee transfers between departments occur annually, typically at the beginning of the year. This process requires significant administrative handling and the use of multiple IT systems, creating a burden on managers who must complete it within a specific timeframe. Since managers perform this process infrequently, they forget the steps, leading to numerous questions for HR and mistakes that HR must correct. To address these challenges, an AI agent has been implemented.

Technology: The AI agent leverages Robotic Process Automation (RPA) and intelligent Chatbot technology to perform the employee transfer process. It follows predefined steps, ensuring that administrative tasks are completed in the correct order. The necessary employee information is automatically retrieved from IT systems and registered in the systems used by HR, IT, and other relevant departments. If any information is missing, the AI agent prompts the manager to provide it before proceeding.

Skills Development Needs: All (new) managers must be informed that using the AI agent for employee transfers is mandatory. By automating this task and offering intuitive assistance, the AI agent minimizes the need for additional training.

Business Value: Automating the transfer process reduces the time and resources spent on administrative tasks, allowing managers, HR, and IT to focus on other responsibilities. It ensures a smooth transfer process by minimizing manual intervention, thereby lowering the risk of errors and delays. This leads to significant cost savings for the organization.

Challenges: Balancing AI benefits with setup costs (software, hardware, integration, maintenance) is essential. Regular updates and maintenance might be needed to ensure effectiveness, security, data protection, and regulatory compliance.

Recommendations

1. **Identify Processes**: Look for step-by-step processes that involve significant administrative handling and are prone to errors.

2. **Leverage AI agents**: Utilize RPA and intelligent chatbots to implement AI agents that perform predefined steps.

3. **Seamless Integration**: Ensure the AI agent integrates smoothly with existing IT systems and retrieves necessary information.

4. **Minimize Training Requirements**: Design the AI agent to be intuitive and user-friendly, reducing the need for training.

5. **Data Protection and Compliance**: Ensure the AI agent complies with data protection regulations and maintains the privacy of sensitive information.

ASSESS: DATA

Instead of being programmed for specific tasks, Machine learning (ML) models find patterns in large datasets and improve over time. They can analyze complex data sets accurately, spotting details that humans might miss. By looking at past and current data, ML models can predict quality issues before they happen, allowing for proactive solutions. This makes them ideal for manufacturing environments.

Use case: Enhancing Quality and fair payment with Machine learning

Business Need: There is a need for precise quality measurements to ensure fair payments based on the quality of produce. This accuracy is also crucial for optimizing the use of produce in subsequent stages of the supply chain.

Technology: ML models analyze complex data from instruments and images to identify patterns and correlations for quality control. This automates the quality assessment process, providing consistent and objective evaluations of quality.

Data Assessment: The system calculates payments to farmers based on quality assessments. The processing company uses a user-friendly instrument, with built-in ML, to analyze images of corn kernels during sorting. The system classifies kernels into different quality grades and automatically adjusts payments accordingly, incentivizing farmers to maintain high standards.

Skill development needs: Domain experts need a basic understanding of machine learning and data science to collaborate effectively with data scientists, ensuring the development of accurate and reliable ML models for fair quality assessments. User-friendly interfaces for ML systems can ease adoption and reduce the learning curve for non-technical users.

Business value: Automated and objective quality assessments reduce human error and ensure fair evaluations. Farmers are compensated accurately based on the quality of their produce, promoting fairness and transparency. Early detection of issues allows farmers to take corrective actions, improving overall crop quality and yield.

Challenges: Implementing ML systems requires significant upfront costs. Developing and maintaining accurate ML models also demands ongoing investment in data science expertise and computational resources.

Recommendations

1. **Implement Automated Evaluations:** Use ML models to automate quality assessments, ensuring consistent and objective evaluations.

2. **Leverage Predictive Analytics**: Utilize ML to analyze historical and real-time data, predicting potential quality issues before they occur.

3. **Enhance Data Integration and Analysis**: Integrate data from various sources, such as sensors and images.

4. **Invest in Skill Development**: Provide training for domain experts to understand the basics of ML and data science. This enables effective collaboration with data scientists and ensures the development of accurate and reliable ML models.

5. **Promote Fair and Transparent Practices**: Use objective quality assessments. This promotes transparency and trust among suppliers and customers, incentivizing high standards and improving overall product quality.

(RE)SKILLING: WAYS OF BUILDING EXPERTISE

The interviewees agree that regardless of which AI solution is implemented, some training is essential to ensure successful adoption. This training is crucial for comprehending how the AI solution works, its capabilities, and its limitations. Training also helps employees understand how to integrate the AI solution into their daily work.

> *"Everyone needs to complete at least 40 hours of education each year. Last year,*
> *the employees in my department spent at least 25 hours on mandatory AI training.*
> *Even if they don't use AI in their current roles, they need to learn about it because*
> *AI is our future." (HR director, IT Industry)*

By investing in re- and upskilling training programs and hiring AI specialists, organizations can ensure that their AI solutions are effectively adopted and utilized, leading to greater overall success.

1. **Hiring New Staff with Technical Expertise**

Bringing in new talent with specialized AI skills, such as data scientists and machine learning specialists, can significantly accelerate the implementation and adoption of AI technologies within an organization. These professionals provide the essential technical expertise to develop AI solutions. Additionally, they can train and support other employees, ensuring effective use of AI technologies. Collaboration between AI specialists and employees with deep domain knowledge is crucial (Van den Broek et al., 2021), particularly in highly specialized industries, as it lays the foundation for creating innovative AI solutions aligned with industry-specific needs.

2. **Training Existing Staff**

Investing in the continuous education and upskilling of current employees ensures that the workforce remains competitive and capable of working with AI technologies. This can be achieved through workshops, online courses, certifications, and hands-on training programs that focus on AI fundamentals (prompt engineering, output interpretation and validation, etc.), data analysis, and machine learning techniques.

3. **Maintaining Critical Skills**

Maintaining operational skills that are foundational to the business is essential. This involves identifying and retaining key competencies, especially in industries involving critical societal infrastructure, such as the energy sector, or where passenger safety is paramount. In these fields, it is crucial to preserve employee skills in manual operations to ensure preparedness in case of system failures. As AI solutions increasingly manage everyday operations, these manual skills must be actively maintained through drill exercises and simulation systems. This ensures that employees remain ready to handle any unexpected challenges, thereby safeguarding operational integrity and safety.

4. Managing Human actors and artificial intelligence

As AI technologies become more integrated into business operations, managers need to adapt their strategies to manage both human and AI resources effectively. This requires developing skills for ethical AI use, including understanding and implementing guidelines to ensure AI systems operate transparently and fairly (Berente et al., 2021). Managers must be able to address potential biases in AI algorithms and maintain accountability for AI-driven decisions. Moreover, transparency in AI decision-making processes is essential for building trust among employees and stakeholders. Managers should acquire the skills to ensure that AI systems' operations and decision-making criteria are understandable and accessible to those affected by them. This transparency helps demystify AI technologies and fosters a culture of trust and collaboration within the organization and with its stakeholders.

REFERENCES

Berente, N., Gu, B., Recker, J., & Santhanam, R. (2021). Managing artificial intelligence. *MIS quarterly*, 45(3).

Constantiou, I., Joshi, M. P., & Stelmaszak, M. (Eds.). (2024). Research Handbook on Artificial Intelligence and Decision Making in Organizations. Edward Elgar Publishing.

Constantiou, I., Joshi, M., & Stelmaszak, M. (2023). Organizations as digital enactment systems: A theory of replacement of humans by digital technologies in organizational scanning, interpretation, and learning. *Journal of the Association for Information Systems*, 24(6).

Murray, A., Rhymer, J. E. N., & Sirmon, D. G. (2021). Humans and technology: Forms of conjoined agency in organizations. *Academy of Management Review*, 46(3), 552-571.

Neeley, T., & Leonardi, P. (2022). Developing a digital mindset. *Harvard Business Review*, 100(5-6), 50-55.

Prasad Agrawal, K. (2024). Towards adoption of generative AI in organizational settings. *Journal of Computer Information Systems*, 64(5), 636-651.

Radhakrishnan, J., & Chattopadhyay, M. (2020). Determinants and barriers of artificial intelligence adoption - A literature review. *IFIP WG 8.6 International Conference on Transfer and Diffusion of IT*. Springer International Publishing, 89-99.

Raisch, S., & Krakowski, S. (2021). Artificial intelligence and management: The automation–augmentation paradox. *Academy of management review*, 46(1), 192-210.

Van den Broek, E., Sergeeva, A., & Huysman, M. (2021). When the Machine Meets the Expert: An Ethnography of Developing AI for Hiring. *MIS quarterly*, 45(3).

Vial, G. (2021). Understanding digital transformation: A review and a research agenda. *Managing digital transformation*, 13-66.

OTHER REFERENCES

A Jumpstart to AI & Data Science Project Management, Data Science Process Alliance, 2023.

Denmark's GenAI Paradox: From Lagging to Leading, Boston Consulting Group, March 2024.

Responsible use of AI assistants in the public and private sectors, Whitepaper, Dansk Industri & Netcompany, 2024.

Strategisk indsats for kunstig intelligens: Et styrket fundament for ansvarlig udvikling og anvendelse af kunstig intelligens i Danmark, December 2024.

RESEARCH TEAM

Sabine Madsen

Ioanna Constantiou

Carmelo Cennamo