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Analysing employees' performance with AI

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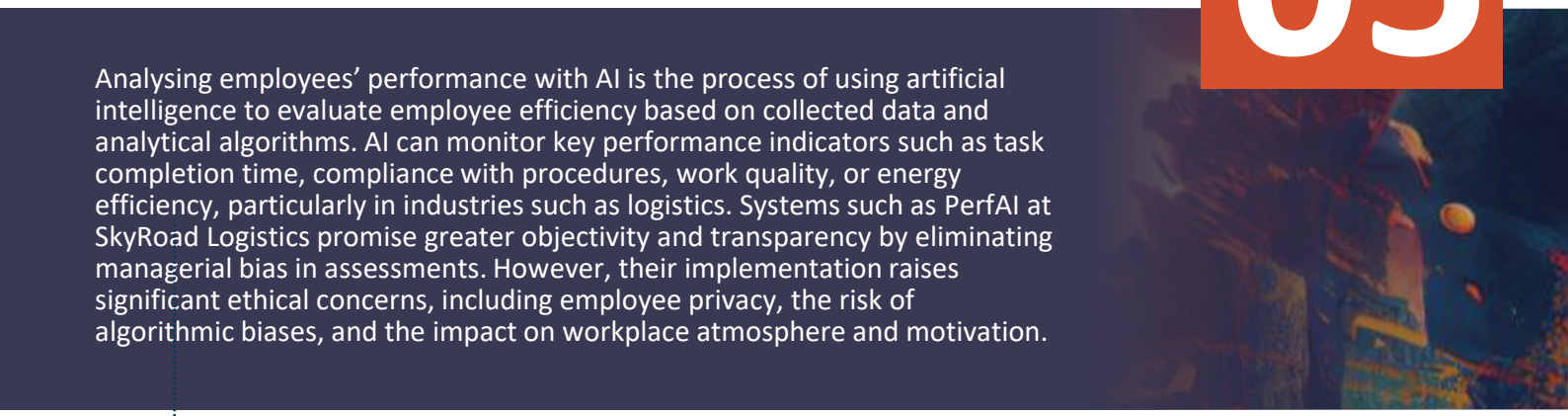
Analysing employees' performance with AI

CASE STUDY: 05



Analysing employees' performance with AI is the process of using artificial intelligence to evaluate employee efficiency based on collected data and analytical algorithms. AI can monitor key performance indicators such as task completion time, compliance with procedures, work quality, or energy efficiency, particularly in industries such as logistics. Systems such as PerfAI at SkyRoad Logistics promise greater objectivity and transparency by eliminating managerial bias in assessments. However, their implementation raises significant ethical concerns, including employee privacy, the risk of algorithmic biases, and the impact on workplace atmosphere and motivation.

Goal/Purpose

The primary goal of this case study is to critically assess the ethical implications of using AI-driven performance assessment tools in the workplace. It explores how AI can enhance efficiency and objectivity while raising concerns about employee privacy, bias, and fairness in evaluations. The study aims to determine whether AI-driven assessments truly benefit employees or contribute to surveillance, stress, and workplace inequalities.

Expected Learning Outcomes

After completing the case, the learners will be able to:

01 Analyse the ethical challenges of AI-based employee monitoring, including privacy, transparency, and fairness;

02 Understand the potential risks of algorithmic bias in performance evaluations;

03 evaluate the psychological and professional impact of AI-driven assessments on employees;

04 explore strategies for designing ethical AI systems that balance efficiency with employee well-being;

05 develop guidelines for responsible AI implementation in workforce management.

Suggested Methodological Approach

In-class work in groups

Keywords

Ethical AI in HR; Workplace surveillance; AI bias in performance evaluation; Employee rights and privacy; Algorithmic transparency; Fairness in AI-driven HR; Psychological impact of AI monitoring; Responsible AI implementation

Session Objective

To engage students in critically assessing the ethical implications of AI systems in workforce management – particularly through the lens of bias, fairness, transparency, and privacy – using the SkyRoad Logistics case study.

Session Structure

01 Introduction of Key Concepts (20–25 minutes)

Begin the session with short presentations and examples to explain:

- **Bias in AI** refers to the way algorithms can inherit or amplify historical biases in data, leading to unfair treatment of certain individuals or groups.
- **Fairness** means ensuring that AI systems evaluate all employees consistently and equitably based on clear, objective criteria.
- **Transparency and explainability** are crucial so that users can understand how AI decisions are made and on what basis, avoiding the risks of opaque 'black box' systems.
- **Privacy concerns** arise when AI-based monitoring collects biometric or behavioural data, potentially crossing boundaries between professional oversight and personal intrusion.

02 Presenting the Case Study (10–15 minutes)

Provide an overview of:

- SkyRoad Logistics and its innovation focus;
- internal challenges that led to developing **PerfAI,** the AI-powered performance evaluation tool;
- ethical concerns outlined in the case, i.e. constant monitoring, data privacy, potential biases, impact on morale, and customer perception.

Distribute or display relevant pages from the case (pages 2–11), ensuring that the students are familiar with:

- the company context;
- how **PerfAI** works and what types of data it uses;
- the potential positive and negative impacts on employees and operations

03 Group Discussion & Case Analysis (40–50 minutes)

Activity Setup:

- Divide students into small groups (3–5 students each).

Task:

Each group will discuss and answer the **five ethical questions** found on pages 12 and 13. These address:

1. **Bias in demand models**
2. **Transparency of AI decision-making**
3. **Protecting data privacy**
4. **Avoiding unrealistic performance expectations**
5. **Accountability for AI-driven decisions**
6. **Provide each group with a worksheet or digital space to note their responses.**

Encourage the groups to:

- identify trade-offs (e.g. efficiency vs. privacy);
- consider both employee and employer perspectives;
- propose safeguards or policies to mitigate risks.

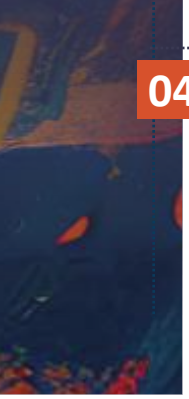
04 Group Presentations and Debrief (20–30 minutes)

Have each group present a brief summary (3–5 minutes) of their findings. Focus on:

- how they would address **bias and fairness**;
- whether **PerfAI** is ethically implementable, and under what conditions;
- their stance on the use of biometric and behavioural monitoring.

After all presentations, facilitate a class-wide discussion:

- Where did the groups agree or differ?
- Are there universal ethical principles emerging?
- Should AI ever be fully trusted in performance management?



SkyRoad Logistics is a cutting-edge transportation company specialising in sustainable and technology-driven freight solutions.

Headquartered in Rotterdam, the Netherlands, the company offers international cargo transport, last-mile delivery, and specialised logistics for high-value goods. With a fleet of electric trucks, AI-powered route optimisation, and a strong commitment to reducing carbon footprints, SkyRoad Logistics is redefining the future of the transport industry

History & Growth

SkyRoad Logistics was founded in 2015 by Mark Jensen, a former logistics manager who was frustrated by inefficiencies in the transportation sector.

While working for a major freight company, Mark noticed the growing problem of delayed deliveries, high fuel costs, and increasing environmental concerns. Determined to find a solution, he teamed up with software engineer Lisa van der Meer and sustainable energy expert Daniel Novak to create a company that would blend cutting-edge technology with eco-friendly transportation. The company started with just five electric trucks and a small team, focusing on local deliveries in the Netherlands. By 2018, SkyRoad Logistics had expanded to cover Germany and Belgium, securing contracts with major e-commerce companies. Their breakthrough came in 2020 when they launched SkyRoute AI, an intelligent system that uses machine learning to optimise delivery routes, reducing costs and emissions by 30%.

Today, SkyRoad Logistics operates in 15 European countries with a fleet of over 500 vehicles. The company is pioneering autonomous delivery trucks and drone-based last-mile logistics, ensuring faster and more sustainable transport solutions. Their mission is simple: to build the most efficient, green, and technology-driven logistics company in the world.

Business Profile

The company operates a state-of-the-art fleet of over 500 vehicles, including fully electric long-haul trucks, hydrogen-powered freight carriers, and autonomous last-mile delivery vans. Each vehicle is equipped with AI-driven telematics, ensuring real-time tracking, predictive maintenance, and maximum fuel efficiency.

SkyRoad's fleet also includes temperature-controlled cargo trucks, which are designed for transporting pharmaceuticals, perishable goods, and high-value electronics.

What sets SkyRoad Logistics apart is its strong commitment to sustainability and innovation. The company's proprietary SkyRoute AI system optimises delivery routes, reducing costs and carbon emissions by up to 30%. Its investment in solar-powered charging stations and hydrogen refuelling hubs across Europe further supports its goal of zero-emission logistics. SkyRoad Logistics primarily serves e-commerce giants, retail chains, and manufacturers looking for sustainable and efficient supply chain solutions. Operating in 15 European countries, the company continues to expand its market reach, partnering with businesses that prioritise green logistics and advanced transport technologies.

Driven by a clear mission, namely "To revolutionise global logistics through technology, sustainability, and efficiency, ensuring a cleaner and smarter future for transportation", SkyRoad Logistics is committed to shaping the future of the transport industry. By constantly innovating and embracing sustainable solutions, the company is paving the way for a more efficient and environmentally-responsible logistics sector.

Employees & Internal Policies

Business Profile

SkyRoad Logistics employs a dedicated team of over 1,200 professionals across its European operations.

The workforce is divided into key departments, each playing a crucial role in ensuring efficient and sustainable transport solutions. The largest group consists of 750 truck drivers, responsible for long-haul freight transport and regional deliveries. These professionals operate the company's fleet of 500+ electric, hydrogen-powered, and autonomous vehicles, ensuring goods reach their destinations on time. Despite advanced automation, human oversight remains essential, particularly for handling specialised cargo, responding to unexpected route changes, and ensuring compliance with local transport regulations.

Another 250 employees work in logistics coordination and monitoring, overseeing fleet operations from SkyRoad's central control hubs. These teams rely on the SkyRoute AI system to track vehicle performance, optimise delivery schedules, and predict maintenance needs. However, the rapid expansion of the fleet and growing operational complexity have put pressure on these teams, as monitoring hundreds of vehicles in real time requires constant attention and fast decision-making. Additionally, the company employs 150 warehouse and last-mile delivery specialists, who manage cargo handling, drone-based deliveries, and urban logistics. The final 50 employees work in management, R&D, and sustainability initiatives, driving innovation and expanding SkyRoad's green transport capabilities. Despite its cutting-edge technology, SkyRoad Logistics faces challenges in scaling its monitoring and coordination systems. The company is actively seeking AI enhancements, automated reporting tools, and additional specialists to maintain efficiency as the fleet and service network continue to grow.

Internal Policies

SkyRoad Logistics, despite being a technology-driven and data-oriented company, has struggled with inconsistent internal policies, particularly in performance assessment and employee incentives.

While the company prides itself on innovation and efficiency in logistics, its internal evaluation systems have been subjective and frequently changing, leading to dissatisfaction among employees.

One of the major issues has been the lack of a standardised performance assessment framework. Instead of using clear, measurable KPIs, evaluations were often based on shifting priorities and managerial discretion. This resulted in unequal treatment of employees, where some workers received bonuses or promotions based on subjective judgments rather than objective performance metrics. Truck drivers in particular voiced concerns over the inconsistent bonus structure. Initially, incentives were based on delivery times, but later, the company introduced new factors, such as vehicle energy efficiency, customer feedback, and compliance with AI-recommended routes, without clear communication or transition plans. Many employees felt punished for factors beyond their control, such as traffic conditions or technical failures in electric trucks.

The monitoring and logistics coordination teams also faced frustration. Their workload increased significantly with fleet expansion, yet performance expectations kept changing. Some employees were rewarded for efficiency in crisis management, while others were penalised for the same issues under a different evaluation model introduced months later.

As a result, employee dissatisfaction grew, leading to internal conflicts and resistance. Many workers believed that performance reviews and bonus distributions were unfair and non-transparent, causing motivation issues.

Tool for Performance Assesment

Tool Description

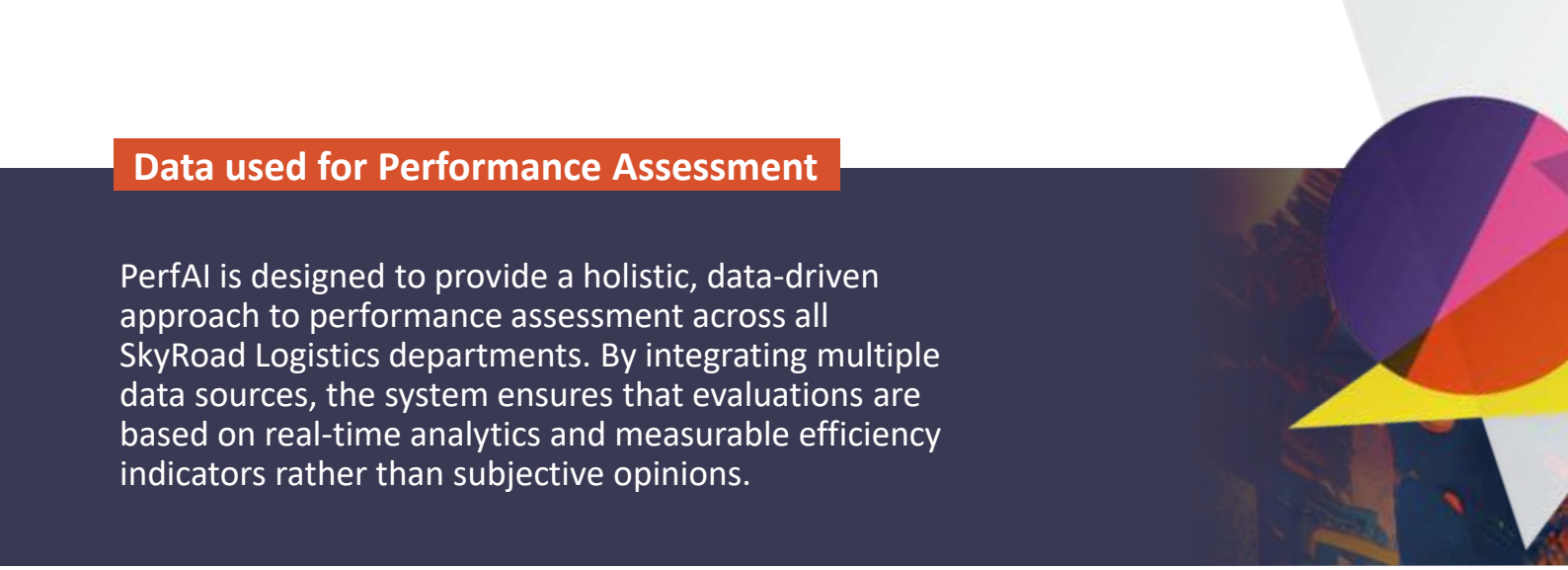
In response to growing employee dissatisfaction and inconsistent performance evaluations, SkyRoad Logistics is introducing PerfAI, a cutting-edge AI-powered performance assessment tool designed by external developers especially for SkyRoad Logistics to bring transparency, fairness, and efficiency to employee evaluations.

PerfAI will automate performance tracking across all departments, ensuring that assessments are based on objective data rather than subjective managerial opinions. The system will collect real-time metrics from various sources, including fleet telematics, delivery times, route efficiency, customer feedback, and operational KPIs to create a comprehensive and unbiased performance score for each employee. For truck drivers, PerfAI will analyse factors such as on-time delivery rates, fuel or battery efficiency, route adherence, and safe driving behaviour. Unlike previous models, the system will consider external factors such as weather, traffic, and vehicle condition, ensuring that drivers are not penalised for circumstances beyond their control. For logistics coordination teams, PerfAI will assess decision-making speed, accuracy in crisis management, and overall efficiency in optimising fleet performance. It will also track workloads to prevent employee burnout and unfair work distribution.

The tool will feature a transparent dashboard accessible to employees, where they can track their own performance, see improvement areas, and understand exactly how bonuses and promotions are determined. Additionally, PerfAI will provide personalised recommendations for professional growth, suggesting training programmes or workflow optimisations tailored to each worker.

Data used for Performance Assessment

PerfAI is designed to provide a holistic, data-driven approach to performance assessment across all SkyRoad Logistics departments. By integrating multiple data sources, the system ensures that evaluations are based on real-time analytics and measurable efficiency indicators rather than subjective opinions.



For truck drivers, PerfAI will monitor delivery performance by tracking on-time deliveries, adherence to assigned routes, and time spent on breaks. Driving behaviour will also be analysed, including acceleration and braking patterns, speed consistency, and lane discipline. To improve fuel and energy efficiency, the system will measure energy or fuel consumption per route, idle time, and vehicle wear caused by driving style. Additionally, real-time GPS tracking will record location history, time spent at rest stops, and deviations from planned routes. To ensure driver wellness, the system will incorporate biometric fatigue detection by analysing steering grip pressure and eye movement via dashboard cameras, as well as voice tone analysis from in-cabin communication systems.

For logistics coordination teams, PerfAI will assess operational efficiency based on response times to delivery issues, success rates in rerouting during disruptions, and the number of incidents resolved per shift. AI-driven analysis of internal communications will evaluate response speed, tone, and adherence to company protocols. The system will also track decision-making accuracy, comparing recommended solutions with actual decisions and measuring their impact on delivery efficiency.

For warehouse and last-mile delivery teams, PerfAI will measure productivity by tracking the number of packages handled per hour, sorting and loading accuracy, and adherence to safety protocols. Employee movement analysis will assess time spent in different warehouse zones, the efficiency of movement paths, and the frequency of physical breaks. Additionally, for customer-facing employees, the system will incorporate facial expression and speech tone analysis during deliveries, using smart delivery glasses to enhance customer interaction tracking.

Beyond role-specific metrics, PerfAI will also gather data on workplace presence and behaviour, including time spent at workstations, the frequency of informal breaks, and interactions with colleagues.

Health and stress indicators will be analysed through AI-driven sentiment analysis of internal e-mails and messages, identifying signs of fatigue or frustration. The system will further track compliance with company policies, monitoring participation in mandatory training sessions and the use of approved digital tools.

Key Aspects to be Analysed

Impact on Employees' Performance

PerfAI has the potential to bring both positive and negative impacts to employees at SkyRoad Logistics. On the positive side, the system's data-driven approach offers a transparent and objective method of performance assessment.

Employees will no longer have to rely on subjective evaluations from managers, which can often feel arbitrary. With clear, measurable metrics provided by PerfAI, workers can track their own progress, receive personalised feedback, and identify areas for improvement. This transparency may increase motivation and job satisfaction, as employees will feel more confident in how their performance is evaluated. Additionally, the system's ability to highlight strengths and provide tailored development recommendations can help employees grow in their roles and advance their careers. Over time, PerfAI's focus on efficiency and personalised development could lead to a more empowered workforce.

However, there are also significant negative implications. The extensive data collection and monitoring could lead to feelings of invasion of privacy, as employees may become uncomfortable with constant tracking of their behaviour, both professional and personal. The analysis of sensitive data – such as driving habits, biometric fatigue indicators, and sentiment analysis of communications – could cause anxiety or stress, especially if workers feel they are being constantly judged or surveilled.

Additionally, the system's reliance on algorithms might not fully capture the complexities of human performance. Employees may feel that they are being penalised for factors beyond their control, such as traffic conditions or sudden technical malfunctions, which could lead to resentment or demotivation. If not properly communicated and managed, the introduction of PerfAI could result in a decrease in trust between employees and the management, impacting morale and overall company culture.

Impact on Customers' Perceptions

The introduction of PerfAI could have a mixed impact on the customers' perceptions of SkyRoad Logistics. On the positive side, customers may appreciate the enhanced efficiency and reliability that comes from the more data-driven performance assessments of employees

With AI optimising delivery routes, tracking driver performance, and improving logistics coordination, customers are likely to experience faster deliveries, higher accuracy, and fewer errors. The transparency and efficiency of the system could improve customer trust in SkyRoad's ability to meet deadlines and handle deliveries with greater care. Additionally, the personalised service driven by the AI system may lead to more tailored solutions for customers, improving their overall experience and satisfaction.

On the negative side, customers may feel uneasy if they become aware of the extent to which employee behaviour is being monitored, especially if it affects last-mile deliveries or customer-facing interactions. The use of facial recognition or voice tone analysis during deliveries might raise concerns about privacy and data security, especially if customers feel they are being indirectly surveyed or analysed. If PerfAI leads to employees feeling overburdened or stressed due to excessive monitoring, it could negatively affect customer interactions, with employees possibly coming across as less engaged or responsive. Customers might also perceive the company as prioritising operational efficiency over personal relationships, which could lead to a loss of the human touch that some customers value. If not carefully managed, this balance between technology and personal service could influence how loyal customers view the company in the long term.

The Fallibility of the System

Despite the advanced capabilities of PerfAI, the system is not without its potential fallibilities. One major concern is that, while PerfAI relies on data-driven algorithms, it may still struggle to account for the complexity and nuance of human behaviour.

For example, the system's reliance on quantifiable metrics such as delivery times, fuel efficiency, or route adherence may fail to capture contextual factors such as unforeseen road closures, bad weather, or delays caused by external forces. Additionally, the AI's learning algorithms may unintentionally reinforce biases if not properly calibrated, leading to unfair assessments of certain employees based on patterns in the data. Employees in high-stress or physically demanding roles, such as drivers, may also be unfairly penalised for factors outside their control, such as traffic or equipment malfunctions, causing frustration and resentment. Furthermore, the system's heavy reliance on continuous monitoring could lead to data overload, where too much information becomes difficult to interpret or act upon, potentially leading to flawed decision-making.

> *The accuracy of the system's insights depends on clean, accurate data, and if the data collection or interpretation is flawed in any way, the entire performance evaluation process could be compromised, impacting employee morale and the company's reputation.*

Questions to Consider

Ethical Challenges in Performance Assessment

01 Bias in Data and Predictions [1]

Predictive demand algorithms often rely on historical data, which may contain inherent biases. If these biases are not properly addressed, the system could unintentionally favour certain routes, customers, or employees over others, leading to inequitable distribution of work and unfair treatment of some employees.

02 The Lack of Transparency and Accountability [2]

As demand prediction algorithms become more complex, it can be difficult for employees and managers to fully understand how decisions are made. This lack of transparency raises concerns about accountability, as employees may feel powerless to challenge predictions that affect their workload or working conditions.

03 Privacy Concerns [3]

Predictive demand systems require large amounts of customer and employee data to function effectively. If sensitive information is not handled properly, the risks include privacy violations, data breaches, or a loss of trust between the company and its customers or employees.

04 Over-Promising and Under-Delivering [4]

AI-driven demand prediction could result in excessively tight delivery windows or unrealistic performance expectations, potentially leading to overworked employees and compromised customer satisfaction. Predictions that are too optimistic might lead to service failures, damaging the company's reputation.

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3 Alhitmi, H. K., Mardiah, A., Al-Sulaiti, K. I., & Abbas, J. (2024). Data security and privacy concerns of AI-driven marketing in the context of economics and business field: an exploration into possible solutions. Cogent Business & Management, 11(1), 2393743.

4 Bareis, J., Roßmann, M., & Bordignon, F. (2023). Technology hype: Dealing with bold expectations and overpromising. TATuP-Zeitschrift für Technikfolgenabschätzung in Theorie und Praxis, 32(3), 10-71.

Questions

Q1

How can we ensure that demand prediction models are free from bias and provide equitable outcomes for both employees and customers?

To reduce bias, it is important to use diverse, representative, and high-quality datasets that reflect the full range of employee roles and customer types. Regular audits should be conducted to identify and correct any patterns of unfairness. Additionally, involving cross-functional teams in model development – including ethics experts, HR, and frontline workers – can help spot and prevent biased assumptions early on.

Q2

What measures can be taken to increase transparency in how demand predictions are made and how they impact employees?

Transparency can be improved by using explainable AI (XAI) tools that show which factors influence predictions. Companies should communicate clearly with employees about how the system works, what data is used, and how predictions affect decisions (e.g. workloads or bonuses). Involving employees in training sessions or consultations also helps build trust and understanding.

Q3

How can the company protect customer and employee privacy while still using data for demand predictions?

To protect privacy, the company should limit data collection to only what is necessary (data minimisation), anonymise or pseudonymise data wherever possible, and implement strong cybersecurity measures. Consent should be obtained transparently, and clear data governance policies must define who can access what data and for what purpose.

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Questions (cont.)

Q4

What steps can be implemented to avoid over-promising delivery times and ensure that demand predictions are realistic and achievable?

To avoid over-promising delivery times and ensure that demand predictions are realistic and achievable, companies should rely on solid historical data that accounts for seasonality and variability in demand. It is important to incorporate buffer times to handle unexpected delays or changes in demand. The continuous monitoring and regular updating of forecasts using real-time data allows businesses to adjust plans based on current conditions. Collaboration between departments such as operations, sales, and customer service helps align internal capabilities and ensures that commitments made to customers are feasible. Clear and transparent communication with customers about possible uncertainties in delivery schedules is also crucial to manage expectations effectively. Additionally, using advanced AI models that can explain their predictions and confidence levels supports better human oversight and validation of forecasts

Q5

How can the company maintain accountability for decisions made by AI systems, especially when they affect employees' workloads and performance expectations?

To maintain accountability for decisions made by AI systems, especially when they impact employees' workloads and performance expectations, companies need to ensure human oversight where managers review and approve AI recommendations before applying them. A clear governance framework should define roles and responsibilities related to AI decision-making and accountability. AI systems must provide transparency and explainability so that both employees and managers understand the reasoning behind workload assignments and performance targets. Regular audits and impact assessments should be conducted to check for bias, fairness, and overall effects on employee well-being. It is also important to have feedback channels that allow employees to raise concerns or challenge AI-driven decisions. Lastly, training and awareness programmes help employees and managers understand AI capabilities and limitations, encouraging responsible use of automated decisions.

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