

Adopting and Implementing AI in Organizations: A Review from a Project Management Perspective

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Abstract

Purpose: This paper analyzes key factors influencing AI project management, drawing on case studies, industry reports, and scholarly literature. It investigates the motivations behind AI adoption, the challenges encountered during implementation, and the outcomes of AI-driven initiatives. By reviewing existing literature on AI project management, analyzing case studies of successful and unsuccessful AI implementations, and identifying emerging trends and best practices, the paper aims to provide a comprehensive understanding of AI project management. This will empower organizations to make informed decisions and maximize the potential of AI technology. The insights gained will offer guidance to project managers, business leaders, and policymakers on harnessing AI's power while mitigating risks; AI isn't neutral, it reflects the biases inherent in its training data. How do project managers navigate ethical dilemmas related to AI decision-making? We'll address fairness, transparency, and accountability.

Methodology/approach: The case studies were prepared from the documents stored in the companies' databases, and an attempt was made to collect the information comprehensively and analyze it. Data are analyzed utilizing inductive and deductive qualitative content analysis. The resulting categories are considered communicational core messages and are included in the developed change story.

Findings: The analysis of the provided texts highlights the critical intersection of artificial intelligence (AI) and project management, emphasizing the unique challenges and strategies necessary for successful AI implementation within organizations. Both case studies, focusing on Spotify and Hansab, illustrate how AI can transform traditional processes and enhance operational efficiency.

Keywords: Project management, Artificial intelligence, AI

Introduction

Managing artificial intelligence (AI) projects effectively requires a distinct approach compared with traditional software projects. The unique characteristics of AI projects, such as their reliance on data, iterative nature, and need for specialized skills, necessitate tailored management strategies. The following is a comprehensive guide on how to manage AI projects effectively and the key differences from traditional software projects. (Wang, 2019)

AI projects often involve machine learning (ML) and deep learning (DL) models that require large datasets for training and validation. Unlike traditional software projects, where logic is explicitly coded, AI projects rely on algorithms to learn patterns from data and make predictions or decisions based on this learning. This fundamental difference affects the management of these projects (Data Camp, 2021).

As organizations increasingly depend on Artificial Intelligence (AI) and data-centric paradigms for insights, decision-making, and actionable outcomes, there exists a pressing necessity for novel theories, frameworks, and methodologies that can assist them in the following domains: Implementing efficacious strategies and policies for the governance of AI and Big Data; Optimizing processes for the development and deployment of analytical models and Machine Learning (ML) algorithms; Formulating innovative Key Performance Indicators (KPIs) and operationalizing actionable dashboards; Overseeing and staffing teams dedicated to AI, ML, and data science; Structuring analytical functions and capabilities within organizational frameworks; Designing, staffing, and directing governance committees focused on AI, data, and analytics; Mitigating risks associated with AI and Big Data Analytics projects and their deployment; and Enhancing the maturity of AI and Big Data capabilities (Goul, 2019).

While many organizations have reached a stage where they experiment and develop early prototypes based on Artificial Intelligence (AI), most fail to effectively deploy and maintain AI systems in productive use (Benbya et al., 2020). Similarly, 76% of organizations report problems implementing AI systems throughout the organization (Awalegaonkar et al., 2019). As a result, AI implementation proves to be difficult in practice, and much of the expected value remains unrealized (Tarafdard et al., 2019).

The applications of Artificial Intelligence (AI) and Big Data are increasingly recognized as critical strategic assets, as they empower organizations to distinguish themselves from their competitors through the provision of innovative data-driven products and services, the attainment of heightened operational agility and decision-making efficacy, the advancement of novel business insights, and the facilitation of more expedited and streamlined decision-making processes.

One of the number one obligations of project managers is to make certain that the implementation of AI gear aligns with the strategic goals of the organization. This includes accomplishing a radical desires evaluation to discover regions in which AI can upload value, along with enhancing method efficiency, improving decision-making, or presenting predictive analytics. Project managers have to paintings intently with stakeholders to outline clear goals and consequences for AI integration, making sure that those desires are practical and achievable.

The management of AI projects at Consult is a multi-method approach that draws on elements from traditional project management, agile practices, and AI workflow practices. (Vial, Cameron, 2022)

Therefore, organizations that want to add AI as a new feature to their services must prepare as best as possible to solve problems and satisfy customers.

Managing AI projects in organizations requires a multifaceted approach that combines traditional project management, agile practices, and AI-specific workflows (Vial et al., 2022). AI's unique characteristics, such as its experimental nature and context sensitivity, pose challenges to project management and necessitate organizational changes (Engel et al., 2021). Successful AI PM involves resolving conflicts arising from different logic: traditional PM, agile, and AI workflow (Vial et al., 2022). Strategies for effective AI project management include adapting to AI's experimental character, addressing context sensitivity, managing the black box nature of AI, and meeting learning requirements (Engel et al., 2021). By implementing these approaches, organizations can increase the success rates of AI projects and fully capitalize on AI's potential for competitive advantage.

Key strategies include enhancing project management competencies to adapt to AI-driven environments, as highlighted by Oyekunle, Darkwah & Olusesi (2024), who emphasize the importance of skill-based development programs and fostering an innovation-friendly culture. PM skills are crucial for successful AI implementation in organizations. Emphasizing skill development, fostering innovation, and adopting AI technologies are key to staying competitive in dynamic environments.

Managing AI projects within an organization requires a multifaceted approach that addresses both the technical and organizational challenges inherent in AI implementation. According to recent studies, one of the key challenges is the paradoxical tension between viewing data science work as craft versus mechanical work, which necessitates active management to sustain value creation (Hopf et al., 2023). Additionally, organizations must navigate the ethical and legal complexities associated with AI, which involves translating ethical principles into effective practice and addressing operational challenges such as defining the scope of AI governance, harmonizing standards, and measuring the impact of governance initiatives (Mökander et al., 2022).

This preparation includes the strategic investment in specific organizational resources, such as human or IT resources (Enholm et al., 2021; Mikalef & Gupta, 2021). Therefore, organizational capabilities represent a promising theoretical lens to study how organizations can successfully cope with the AI implementation challenge to create value from AI (Weber, Engert, 2022).

Industrie and organizations practitioners seeking to better *manage* their AI projects can only draw on a limited number of studies. For example, research has examined the tensions that arise when domain experts and developers interact during the AI system development process, as well as data accessibility issues that arise during AI projects (e.g., van den Broek et al., 2021; Vial et al., 2021).

Furthermore, we offer precious insights and actionable hints for practitioners to conquer the AI implementation project found in practice.

The literature also emphasizes the importance of AI governance as a means to manage risks and ensure ethical compliance. This includes embedding governance in the values and procedures of development teams (Coates & Martin, 2019), as well as defining and positioning AI governance within the broader organizational structure (Mäntymäki et al., 2022). Furthermore, a comprehensive approach to AI governance should consider the management of data, machine learning models, and AI systems across multiple dimensions, aligning with existing IT and data governance frameworks (Meske et al., 2020).

Effective management of AI projects involves addressing the tension between different perspectives on data science work, ensuring ethical compliance through AI governance, and integrating AI governance with existing organizational structures. Organizations should focus on risk management, ethical principles, and continuous education to empower employees in the face of these challenges. By doing so, they can harness the benefits of AI while mitigating associated risks (Coates & Martin, 2019; Hopf et al., 2023; Mäntymäki et al., 2022; Meske et al., 2020; Mökander et al., 2022).

Methodology

To gather existing knowledge on managing AI, a thorough literature review was conducted. This involved identifying relevant articles from academic databases such as Google Scholar, JSTOR, and ResearchGate. Articles were selected based on their relevance, publication date (preferably within the last five years), and citation frequency to ensure the information was current and impactful.

The selected articles were carefully reviewed, and key findings were summarized and analyzed to identify common themes, gaps, and areas for further exploration. These findings suggest that managers should be ready for any changes in technology word and AI now is an opportunity for project managers to learn how to control and organize this new technology on their organization.

Furthermore, the literature review revealed that many companies and organization that Added AI as a new feature did not explain their process and chalengies,, which may have influenced the findings. Future research should aim to address these limitations by employing more robust research designs and larger sample sizes.

Despite these limitations, the literature review provides valuable insights into how project managers should manage AI as a new feature and lays the foundation for the current study. By building upon the existing knowledge and addressing the identified gaps, this research aims to contribute to a deeper understanding of management and its implications for artificial intelligence.

Strategic Planning for AI

Implementing AI in organizations requires strategic planning to address challenges and maximize benefits. Key considerations include enhancing efficiency, adaptability, and competitiveness while navigating ethical issues, data protection, and employee adaptation (Zabranskyi, 2024). Successful AI implementation demands agile decision-making processes and a focus on resolving various implications for business and society (Das, 2023). Organizations should integrate AI technologies like machine learning and predictive analytics to revolutionize operations and foster innovation. Robust data governance, AI talent acquisition, and cultivating a culture of innovation are crucial for effective AI adoption (Olutimehin et al., 2024). Despite the potential for creating new business models and competitive advantages, many organizations struggle to leverage AI effectively. Further research is needed to develop AI capabilities and integrate them into business strategies to enhance various value streams (Perifanis & Kitsios, 2023).

This topic is an active research area. Lee et al (2023) provide a conceptual framework and research agenda for understanding the organizational context and implementation of AI in organizations; also, Reim, Åström & Eriksson (2020) present a four-step roadmap to guide the implementation of AI for business model innovation in organizations: "(1) understand AI and organizational capabilities needed for digital transformation; (2) understand current BM, potential for BMI, and business ecosystem role; (3) develop and refine capabilities needed to implement AI; and (4) reach organizational acceptance and develop internal competencies."

To effectively leverage AI, businesses must approach its adoption strategically, aligning it with existing challenges and potential opportunities (Reim, Åström & Eriksson, 2020). This requires a deep understanding of AI, its capabilities, and its potential impact on business models and overall strategies. Naturally, the incorrect question to ask is, "I need AI in my business—how can I implement it?" A better question to ask is, "I have some big business objectives/challenges—how can AI help me deliver or address them?" Ideally, executives should be pulling AI in where it will be most useful and necessary, but in practice, there is typically some push and pull because AI is such a new topic and has the potential to disrupt entire business models (Burgess, 2017, p. 91).

According to Marr (2019) the transformation of business models or even complete industries is a significant phenomenon that can be caused by AI. Through his consultative engagements with prominent corporations and governmental entities, he has observed the critical necessity of formulating an effective artificial intelligence and data strategy that facilitates the identification of paramount business prospects and obstacles that artificial intelligence can assist in addressing. Upon achieving consensus regarding the artificial intelligence strategy, the subsequent implementation of AI becomes considerably more manageable, ultimately resulting in tangible business outcomes. He suggests: "Make sure you approach AI strategically and don't apply AI to an outdated business model and approach Artificial Intelligence strategically" (pp. 323-324).

The first step in formulating a comprehensive AI strategy is to identify specific business objectives and challenges that AI can help address. Businesses should focus on how it can enhance existing processes and drive value. This may involve reimagining existing business models or even transforming entire industries (Burgess, 2017; Marr, 2019).

As suggested by Burgess (2017) developing a robust AI strategy involves several key steps:

AI Maturity Assessment: Evaluate the organization's current level of AI maturity across different functions and departments. Some areas may still operate manually, while others may have initiated automation projects, and some might already have AI projects underway; determining the size of the gap is important here.

AI Opportunity Heat Map: Conduct a thorough assessment to identify potential AI opportunities within each area, considering strategic alignment, current challenges, and potential benefits.

Business Case Development: For each promising opportunity, create a comprehensive business case outlining potential benefits, costs, and risks associated with AI implementation. This requires identifying data sources, necessary AI capabilities, and potential synergies with other initiatives.

Change Management Plan: Recognize that implementing AI often necessitates significant organizational change. Develop a plan to address potential resistance, provide training and support, and ensure a smooth transition.

AI Roadmap: Create a medium to long-term plan outlining specific AI project workstreams, timelines, dependencies, and responsibilities. This roadmap should align with the overall AI strategy and contribute to the broader business strategy.

Crucially, the AI strategy should be viewed as a living document, subject to continuous review and revision in response to technological advancements and evolving business needs. By strategically planning for AI, businesses can effectively leverage its transformative power to achieve their goals and stay ahead in an increasingly competitive landscape.

So, organizations must develop comprehensive strategic plans to effectively integrate and leverage these transformative technologies. Strategic planning for AI encompasses a multifaceted approach that begins with a thorough assessment of an organization's AI readiness. This evaluation examines current technological infrastructure, data assets, and workforce capabilities, helping to identify gaps and areas for improvement in preparation for AI adoption.

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Central to any AI strategy is its alignment with overarching business objectives. Leaders must identify specific problems or opportunities where AI can provide significant value, rather than implementing AI for its own sake. This targeted approach ensures that AI initiatives directly contribute to the organization's goals and provide measurable benefits. Data strategy forms a critical foundation for AI success. It is well known that AI systems rely heavily on high-quality, relevant data, making a robust data strategy essential. This includes developing comprehensive policies for data collection, storage, governance, and ethics. Organizations must ensure they have access to sufficient quantities of clean, well-organized data to train and operate their AI systems effectively.

Building AI capabilities often requires specialized skills, necessitating a focus on talent acquisition and development. Strategic plans should address the recruitment of AI experts and data scientists, as well as programs for upskilling existing employees to work effectively with AI technologies. Creating a workforce that can develop, implement, and maintain AI systems is crucial for long-term success.

As AI systems become more prevalent and powerful, ethical and legal considerations take on increased importance. Organizations must proactively address concerns related to bias, privacy, transparency, and accountability. This involves staying abreast of evolving regulations and implementing robust governance frameworks to ensure responsible AI use. Infrastructure and technology planning is another key component of AI strategy. Organizations need to account for the necessary computational resources, software platforms, and integration with existing systems required to support AI initiatives. This may involve significant investments in cloud computing, specialized hardware, or custom software development.

Implementing AI often leads to significant changes in workflows and job roles. A well-thought-out change management strategy is essential to ensure smooth adoption and minimize resistance. This involves clear communication, knowledge management, training programs, and possibly reorganizing teams to better support AI-driven processes. Many organizations find success by starting with small-scale pilot projects. This approach allows them to test AI applications, learn from experiences, and refine their strategies before scaling up. Pilot projects can provide valuable insights into the practical challenges and benefits of AI implementation within the specific context of the organization.

Given the rapid pace of AI advancement, strategic plans should be flexible and include mechanisms for ongoing learning, evaluation, and adaptation. Regular reviews of AI strategies ensure they remain aligned

with technological developments and evolving business needs. Finally, collaboration and partnerships play a vital role in successful AI strategies. Organizations should consider forming strategic alliances with AI vendors, research institutions, or other organizations to access expertise and stay at the forefront of AI developments. These partnerships can provide valuable resources, knowledge, and capabilities that may be difficult or costly to develop internally. By addressing these interconnected areas in their strategic planning, organizations can position themselves to harness the full potential of AI while mitigating associated risks and challenges. As AI continues to transform industries, a well-crafted strategic plan becomes increasingly vital for maintaining competitiveness and driving innovation in the digital age.

Change management

Organizations are increasingly adopting artificial intelligence (AI) as a new feature to drive innovation, enhance efficiency, and gain a competitive edge. However, integrating AI into existing processes and systems can be a complex and challenging undertaking.

Also, adding AI as a new feature, creates some changes in firms and organizations, so the the managers should know how to manage tasks and lead employees.

Change management begins with clearly defining the change and assessing its potential impact on business performance. This includes identifying risks and understanding how the change will affect various processes, systems, and employees. (asq.org, 2024)

The successful management of change is crucial to any organization in order to survive and succeed in the present highly competitive and continuously evolving business environment. However, theories and approaches to change management currently available to academics and practitioners are often contradictory, mostly lacking empirical evidence and supported by unchallenged hypotheses concerning the nature of contemporary organizational change management.1

AI will fundamentally change the way companies work – how they operate and how they compete (Lakhani and lansiti, 2020).

Two facets of organizational readiness for change are described: change commitment, or the extent to which organizational members exhibit shared resolve or determination to implement the change; and change efficacy, or the extent to which organizational members share a sense of confidence in their collective capabilities to implement change. (Weiner, 2020, p. 215)

The field of artificial intelligence (AI) and its impact on work, workers, and the workplace has already gained significant attention to warrant several dedicated special issues on the topic in journals, such as HRMR, IJHRM, and Human Resource Management (HRM). (Malik & Budhwar, 2023, p. 6)

How organizations are dealing with AI as a new feature

Organizations may face negative or positive changes like Increased Productivity and Efficiency, Skill Transformation and Workforce Dynamics, Enhanced Decision-Making, Cost Implications, Cultural and Ethical Considerations, Change Management, and Continuous Learning.

One of them is **increased Productivity and Efficiency**. AI software enhances productivity by automating repetitive tasks like code generation, testing, and debugging. This allows developers to focus on more complex and creative aspects of software development, ultimately speeding up the development lifecycle and reducing time-to-market for new products. AI tools can analyze vast amounts of data to identify bugs and suggest improvements, leading to higher quality code and fewer errors in the final product. (intelivita.com, 2024)

Moreover, **Skill Transformation and Workforce Dynamics** are positive dimensions in AI development.

As AI takes over routine tasks, the roles of software developers are evolving. Developers will need to adapt by acquiring new skills related to AI and machine learning, shifting their focus from traditional programming to data management and model training. This transformation may lead to a demand for

different skill sets in the labor market, prompting organizations to invest in upskilling their employees to ensure they remain competitive.(brainhub.eu , 2024)

Enhanced Decision-Making

AI can provide valuable insights through predictive analytics, helping organizations make informed decisions based on data trends and user behavior. This capability allows for quicker responses to market changes and customer needs, enabling organizations to stay agile in a competitive landscape. (Muro, M., & Whiton, J, 2020)

Cost Implications

While the initial investment in AI technology can be high, the long-term benefits often include cost savings through increased efficiency and reduced error rates. Automating tasks can lead to lower labor costs and faster project completion, which can significantly impact an organization's bottom line (intelivita.com, 2024).

Cultural and Ethical Considerations

The integration of AI into software development raises important cultural and ethical questions. Organizations must navigate issues related to data privacy, algorithmic bias, and the potential for job displacement. Establishing ethical guidelines and ensuring transparency in AI processes are crucial for maintaining trust among employees and customers (evalueserve.com, 2024).

Change Management and Continuous Learning

Implementing AI software necessitates a robust change management strategy. Organizations must prepare their workforce for the transition, fostering a culture of continuous learning and adaptation. AI can assist in this process by providing feedback on change initiatives and helping organizations iterate on their strategies for improved outcomes (evalueserve.com, 2024).

Case studies

Spotify

Spotify uses artificial intelligence in a ton of smart ways to create an incredible listening experience across its audio streaming platform. This includes an AI DJ feature that curates a personalized selection of music for you based on your preferences, AI that translates podcasts into different languages, AI-powered music and podcast recommendations, and AI-driven search capabilities (marketingaiinstitute, 2024). Spotify manages and drives AI as a new feature through a combination of advanced algorithms, extensive data analysis, and user engagement strategies. Here's an overview based on the provided information:

AI Management at Spotify

1. Data Collection and Analysis:

Spotify utilizes vast amounts of user data, including listening habits, song preferences, and interactions with the platform. This data is crucial for training AI algorithms that power personalized music recommendations. The company continuously collects data from user activities, such as searches, listens, and likes, which informs the AI models and enhances their accuracy over time.

2. Recommender Systems:

Spotify employs a hybrid approach that integrates both content-based filtering and collaborative filtering. Content-based filtering analyzes the attributes of songs (e.g., genre, tempo, instrumentation) to match them with user preferences. Collaborative filtering, on the other hand, identifies similarities between users to recommend songs based on what similar users enjoy. This dual approach allows Spotify to provide more nuanced and effective recommendations.

3. Algorithm Development:

The algorithms used for music recommendations are constantly refined and updated. Spotify's AI systems analyze patterns from millions of users and their interactions, allowing the platform to adapt to changing musical tastes and trends. This real-time processing of data ensures that recommendations remain relevant and engaging for users.

4. User Engagement and Feedback:

Spotify actively engages with its user base to gather feedback on the effectiveness of its AI-driven features. By understanding user satisfaction and preferences, Spotify can adjust its algorithms to better meet user needs. The company also encourages user interaction with features like Discover Weekly and Spotify Wrapped, which provide personalized insights based on listening habits.

5. Continuous Improvement:

Spotify invests in research and development to enhance its AI capabilities. This includes exploring new machine learning techniques and improving data quality through robust cleaning and preprocessing methods. The goal is to ensure that the AI systems are not only accurate but also scalable as the user base grows.

6. Integration of Human Expertise:

While AI plays a significant role in music recommendations, Spotify also incorporates human curation to add a layer of context and cultural relevance to the recommendations. This combination of human insight and machine learning helps create a more holistic music discovery experience.

Conclusion

Spotify's management of AI features is characterized by a strategic blend of data-driven algorithms, user engagement, and continuous refinement of its recommendation systems. By leveraging both content and collaborative filtering, along with ongoing user feedback, Spotify aims to enhance the personalization of music recommendations and improve overall user satisfaction. This approach not only drives user engagement but also positions Spotify as a leader in the music streaming industry.

Spotify faces several challenges in driving AI as a new feature in the music streaming industry, and it employs various strategies to manage these challenges effectively. Here's an overview based on the insights from the search results:

Challenges of Implementing AI at Spotify

1. Data Quality and Availability:

AI systems rely heavily on high-quality data for training and operation. Ensuring that the data collected from user interactions is accurate, relevant, and comprehensive can be challenging. Inconsistent or incomplete data can lead to poor AI performance and user dissatisfaction.

2. Integration with Existing Systems:

Integrating new AI features with Spotify's existing infrastructure poses technical challenges. Ensuring seamless communication between AI systems and current music management systems requires careful planning and execution.

3. User Trust and Adoption:

Gaining user trust in AI-driven features is crucial. Users may be skeptical about the accuracy and relevance of AI recommendations. Educating users about how AI works and demonstrating its benefits are necessary steps to encourage adoption.

4. Regulatory Compliance:

With increasing scrutiny on data privacy and security, Spotify must navigate regulatory challenges related to user data. Ensuring compliance with laws such as GDPR while leveraging user data for AI features is a complex balancing act.

5. Scalability:

As Spotify's user base grows, the AI systems must be scalable to handle increased data volumes and user interactions without compromising performance. This requires ongoing investment in infrastructure and technology.

Management Strategies for AI Implementation

1. Robust Data Management:

Spotify emphasizes the importance of data quality by implementing rigorous data cleaning and preprocessing techniques. This ensures that the data used for training AI models is reliable and relevant.

2. Collaborative Development:

The company collaborates with its IT department and other stakeholders to facilitate the gradual integration of AI features. This collaborative approach helps address technical challenges and ensures that new systems align with existing processes.

3. User Engagement and Education:

Spotify engages with users to gather feedback on AI features, which helps refine the algorithms and improve user satisfaction. Additionally, the company provides educational resources to help users understand the benefits of AI-driven recommendations.

4. Focus on Compliance:

Spotify has designed its AI initiatives with data privacy in mind, incorporating anonymization and encryption techniques to protect user information. This proactive approach helps mitigate regulatory risks.

5. Investment in Infrastructure:

To support the scalability of AI features, Spotify invests in cloud-based services and microservices architecture. This infrastructure allows the company to adapt to growing data demands while maintaining performance.

Conclusion

Spotify's journey in driving AI as a new feature involves navigating various challenges, including data quality, integration, user trust, regulatory compliance, and scalability. By implementing robust data management practices, fostering collaboration, engaging users, ensuring compliance, and investing in scalable infrastructure, Spotify effectively manages these challenges and continues to enhance its AI capabilities in the competitive music streaming industry.

Hansab

The CASHX AI project aims to revolutionize ATM cash management by leveraging artificial intelligence to automate and optimize the process. This paper outlines the key goals and strategies of the CASHX project, which include reducing unnecessary cash replenishment trips, improving ATM uptime and service quality, and lowering operational costs while enhancing revenue from service fees. By implementing AI-driven forecasting, optimization, and automation techniques, the CASHX project seeks to modernize the traditionally manual and error-prone ATM cash management system.

Introduction

As Hansab is an Estonian technology firm responsible for managing the cash flow of 360 ATMs with a small team of five specialists. The current manual monitoring process is labor-intensive and inefficient, leading to increased operational costs and service discrepancies (hansab.com, 2024)

ATM cash management is a critical yet complex process that involves accurately forecasting cash demand, optimizing replenishment schedules, and ensuring ATMs remain well-stocked to meet customer needs. However, the current state of ATM cash management is often manual, labor-intensive, and prone to errors, leading to suboptimal performance and high costs. The CASHX AI project aims to address

these challenges by applying advanced artificial intelligence and machine learning techniques to transform ATM cash management into a more efficient, data-driven operation.

Objectives

The primary objectives of the CASHX project are:

1. Reducing unnecessary cash replenishment trips by at least 10%
2. Improving ATM uptime and service quality
3. Lowering operational costs and enhancing revenue from service fees

By achieving these goals, the CASHX project seeks to optimize ATM cash management, reduce waste, and provide better service to customers while also improving the financial performance of ATM networks.

The primary issues faced by Hansab include:

Manual Monitoring Process: The existing approach is resource-heavy and prone to human error, affecting service quality; Inaccurate Cash Flow Predictions: Manual predictions lead to cash shortages or overfills, impacting customer service; Unnecessary Cash Transports: Inefficient routing results in increased operational costs and environmental impacts; Impact on Service Fees: Non-optimized management directly affects revenue and customer satisfaction; Resource Misallocation: Significant human and financial resources are wasted on manual processes.

Based on these issues and challenges Hansab faced, they mapped out an AI Model Development. The AI model is designed to predict ATM cash service requirements using machine learning. The key components include:

Data Inputs

The model utilizes historical data on cash withdrawals, deposits, and local events to forecast cash needs accurately.

Development Phases

1. Proof of Concept (POC): Validate the feasibility of the AI solution using historical data.
2. Initial Setup: Develop and test a comprehensive machine-learning solution in a controlled environment.
3. Production-Ready MVP: Finalize the solution components for production, ensuring compatibility with business processes.
4. Increased Reliability: Enhance the infrastructure for better data collection and analysis, preparing for scalability.

In artificial intelligence projects, certain technical considerations must be taken into account. These cases have similarities with other software projects, but they are different in detail.

Key technical aspects include:

- Data Quality: Implementing robust data cleaning and preprocessing techniques to ensure high-quality data.
- Integration: Developing middleware to facilitate seamless communication between new AI systems and existing ATM management systems.
- Model Accuracy: Utilizing ensemble learning techniques to improve prediction reliability.

Challenges and Solutions:

1. Data Quality and Availability: Established partnerships for richer data access and utilized synthetic data generation when necessary.
2. Integration with Existing Systems: Collaborated with Hansab's IT department for gradual integration.
3. Regulatory Compliance: Designed the project with data privacy in mind, incorporating anonymization and encryption techniques.
4. User Adoption: Engaged stakeholders early through demonstrations and training to build trust in the AI system.
5. Scalability: Used cloud-based services and microservices architecture to ensure performance as the solution expands.

Expected Outcomes:

The CASHX AI project is anticipated to yield significant benefits, including:

- Improved operational efficiency and reduced costs.
- Enhanced customer satisfaction through better cash availability.
- Opportunities for scalability, allowing Hansab to offer this technology to other banks and ATM operators.

The CASHX AI project exemplifies how AI can transform traditional processes into efficient, predictive systems. By addressing the challenges of manual ATM cash management, AS Hansab aims to not only improve its operational capabilities but also contribute to environmental sustainability through reduced transport frequency. This case study serves as a valuable example for other organizations looking to implement AI solutions effectively.

Spotify's approach to AI management showcases a strategic blend of data-driven algorithms, user engagement, and continuous refinement of its recommendation systems, addressing challenges such as data quality, integration, user trust, and scalability. The company employs robust data management practices and fosters user engagement to enhance the effectiveness of its AI-driven features, ultimately positioning itself as a leader in the competitive music streaming industry.

Conversely, Hansab's CASHX AI project aims to revolutionize ATM cash management by automating and optimizing processes through AI. The project addresses significant operational challenges, such as manual monitoring and inaccurate cash flow predictions, by implementing machine learning techniques to predict cash service requirements. Hansab's focus on data quality, integration with existing systems, and regulatory compliance reflects the complexities organizations face when adopting AI technologies.

In conclusion, effective management of AI projects necessitates a multifaceted approach that combines traditional project management principles with AI-specific strategies. Organizations must prioritize data quality, user engagement, and ethical considerations while navigating the technical and regulatory challenges associated with AI implementation. By doing so, they can harness the transformative potential of AI, drive innovation, and achieve competitive advantages in their respective industries. The insights from these case studies serve as valuable guidance for organizations looking to successfully integrate AI into their operations, ensuring that they not only meet current demands but also prepare for future advancements in technology.

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