

Big Data Analysis

L3 : Hui-Xue CHU, Yanmin HUANG, Nathalie LAMBERT, Hoang Phuong Dung NGUYEN

L2 : Aïssata DIAW, Gabin OBRECHT, Mathias VANNESTE, Joseph GOMES

1. Business Process Modeling and AI (Nathalie LAMBERT)

AI is revolutionizing the modeling and management of business processes with innovative methodologies and significant optimizations.

Firstly, it uses deep learning techniques to automatically generate activity labels, and explainable AI techniques (XAI) to guarantee the transparency of predictions. Research shows that AI and machine learning (ML) have a transformative impact on business model innovation and digital transformation. Its automation of tasks improves productivity and reduces costs. Its impact also extends into a variety of fields, thanks to the improved customer service provided by chabots, for example.

However, companies need to understand AI and develop capabilities to exploit its full potential. A proposed four-stage roadmap for AI implementation highlights the importance of understanding AI capabilities, fostering organizational acceptance and addressing challenges.

Finally, generative artificial intelligence (GAI) opens up new perspectives for business models, but requires ethical regulation and an advanced technological infrastructure.

In summary, AI is a powerful tool for optimizing business processes and modeling, enabling innovation and competitive differentiation across all sectors. The responsible and ethical deployment of AI offers many advantages for business models, but it is crucial to use it responsibly and ethically, taking into account technological developments and environmental concerns. Its integration into BPM not only improves efficiency and accuracy, but also enables innovation and competitive differentiation between sectors.

2. Business Process Analysis and AI (Hui-Xue CHU)

This executive summary outlines the important role of artificial intelligence (AI) in business process management, noting its importance in automation, advanced data analysis, and semantic modeling. It points out how AI application areas such as predictive analytics and deep learning, as well as approaches such as robotic process automation, can transform business processes and improve competitiveness and efficiency.

To begin with, the summary also mentions the impact of AI on business processes in different areas such as customer management, marketing and sales, as well as its role in improving competitiveness and efficiency and reducing costs. In addition, they emphasize the

role of AI in establishing transparency, accountability, and fairness within companies, as well as the ability of AI to address societal challenges such as natural disaster prediction.

However, there are still challenges to integrating AI into business process management (BPM), such as the gap between algorithmic complexity and human understanding, data quality, and other issues.

As a result, business and IT departments need to work closely together to provide high-quality data to accommodate this flexible environment.

In short, this summary emphasizes the importance of businesses remaining open to incorporating new technologies to remain competitive in the marketplace. In addition, a comprehensive overview of the impact, integration, challenges and future vision of AI in business process management, not to mention its role in transforming and optimizing business operations, is provided.

3. Business Process Monitoring and AI (Yanmin HUANG)

The summary of Gabin's article summarizes and analyzes, mainly discusses the impact of artificial intelligence (AI) and machine learning (ML) on various industries, such as business process management, mostly on predictive monitoring and health analysis. Artificial intelligence has the potential to automate repetitive tasks and analyze together with large amounts of data, enabling enterprises to predict and solve operational bottlenecks, thus improving efficiency and profits. On the other way, the abstract also discusses methods such as hyperparameter optimization and recursive neural networks, which can enhance predictive ability and resource allocation.

The summary text jointly mentions that the use of technical tools such as normative business process monitoring (PrBPM) and generation of adversarial networks (GAN) to overcome the challenges of small data sets, ensure the interpretability moreover transparency of artificial intelligence-driven processes. It emphasizes the transformative potential of artificial intelligence and machine learning in manufacturing, and health care besides finance, additionally involves ethical considerations and data management model interpretability.

4. Business Process Mining and AI (Hoang Phuong Dung NGUYEN)

Joseoh summary article summarises the convergence of Artificial Intelligence (AI) technology with process mining and the potential to enhance business processes through data analytics. The article highlights the combination of AI, robotic process automation (RPA), and deep learning to improve operational efficiency and strategic decision-making for managers.

The document highlights how AI-driven process mining can identify areas of business processes that need to be optimised for continuous improvement and enhanced performance.

They highlight the importance of extracting knowledge from existing data, analysing it accurately and proactively improving processes.

The use of AI brings new challenges to business operations, requiring the right technology infrastructure, a data-driven organisational culture and the right regulatory framework. The success of digital transformation depends on close collaboration between AI experts, process analysts and business decision makers.

Focusing on the potential benefits and new opportunities at the intersection of AI and business processes, these articles argue that technological advances can optimise processes, detect anomalies and predict future behaviour. And The common theme of these papers is the revolutionary potential of AI and process mining to improve business processes.