

Digital Transformation and Innovation in the Insurance Sector: Processes, Technologies, and Challenges

Adam Śliwiński

Warsaw School of Economics, Poland
asliwin@sgh.waw.pl

Łukasz Kuryłowicz

Warsaw School of Economics, Poland
lkuryl@sgh.waw.pl

Renata Pajewska-Kwaśny

Warsaw School of Economics, Poland
rpajew@sgh.waw.pl

Abstract

The digital transformation of the insurance sector improves risk assessment, pricing, distribution, and claims management. Key technologies driving these changes include artificial intelligence, machine learning, big data analytics, and automation. These advancements primarily drive process innovation, aligning with Barras's reverse innovation cycle rather than traditional product innovation.

Key technologies such as telematics, Internet of Things, predictive analytics, and robotic process automation streamline operations and improve customer experience. However, challenges remain in ensuring AI transparency and interpretability. While digital transformation is still in its early stages, its continued development will shape the industry's efficiency, competitiveness, and regulatory landscape.

This article examines the current state of digital transformation in insurance, exploring key technological trends, their impact on core insurance processes, and the challenges associated with AI adoption. By analyzing recent innovations considering underwriting, pricing, claims management, and distribution, we assess the industry's position within the broader framework of financial services innovation.

Additionally, we address the regulatory and ethical considerations surrounding AI-driven decision-making, emphasizing the need for transparency, explainability, and consumer trust in the digital insurance landscape.

Keywords: AI, digitalization, insurance processes