STRATEGIC MANAGEMENT: INNOVATION AND TECHNOLOGY STRATEGY - THE ROLE OF ARTIFICIAL INTELLIGENCE IN STRATEGIC DECISION-MAKING

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ABSTRACT

This paper discusses innovation and technology strategies with a specific focus on the integration of Artificial Intelligence (AI) into corporate strategic planning. As businesses face growing pressure to adapt in an increasingly digital and competitive landscape, AI has emerged as a transformative tool with the potential to enhance decision-making, streamline innovation processes, and optimize resource allocation. Drawing on, theoretical frameworks and empirical process, this study investigates how AI is reshaping the formulation and execution of innovation and technology strategies. Particular attention is paid to the dual nature of AI's impact: its capacity to generate strategic advantage and the managerial and ethical challenges it poses. Based on an approach, including case studies and thematic analysis, the research highlights emerging patterns in AI adoption, and the organizational capabilities required to manage this technological shift. The findings aim to contribute to both theoretical understanding and managerial practice in the field of innovation and technology strategy.

KEYWORDS: Innovation strategy, technology management, artificial intelligence, digital transformation, strategic decision-making, competitive advantage, organizational change

ABSTRAKT

Dieses Papier befasst sich mit Innovations- und Technologiestrategien unter besonderer Berücksichtigung der Integration künstlicher Intelligenz (KI) in die strategische Unternehmensplanung. Angesichts des wachsenden Drucks auf Unternehmen, sich an eine zunehmend digitale und wettbewerbsorientierte Landschaft anzupassen, hat sich KI als transformatives Instrument herausgestellt, das das Potenzial hat, die Entscheidungsfindung zu verbessern, Innovationsprozesse zu rationalisieren und die Ressourcenzuweisung zu optimieren. Auf der Grundlage theoretischer Rahmenkonzepte und empirischer Verfahren untersucht diese Studie, wie KI die Formulierung und Umsetzung von Innovations- und Technologiestrategien verändert. Besondere Aufmerksamkeit wird dabei der dualen Natur der Auswirkungen von KI gewidmet: ihrer Fähigkeit, strategische Vorteile zu generieren, und den damit verbundenen Herausforderungen für das Management und die Ethik. Basierend auf einem Ansatz, der Fallstudien und thematische Analysen umfasst, beleuchtet die Studie neue Muster bei der Einführung von KI und die organisatorischen Fähigkeiten, die für die Bewältigung dieses technologischen Wandels erforderlich sind. Die Ergebnisse sollen sowohl zum theoretischen Verständnis als auch zur Managementpraxis im Bereich der Innovations- und Technologiestrategie beitragen.

STICHWORTE: Innovationsstrategie, Technologiemanagement, künstliche Intelligenz, digitale Transformation, strategische Entscheidungsfindung, Wettbewerbsvorteil, organisatorischer Wandel

RÉSUMÉ

Cet article traite des stratégies en matière d'innovation et de technologie, en mettant particulièrement l'accent sur l'intégration de l'intelligence artificielle (IA) dans la planification stratégique des entreprises. Alors que les entreprises sont soumises à une pression croissante pour s'adapter à un environnement de plus en plus numérique et concurrentiel, l'IA est apparue comme un outil de transformation susceptible d'améliorer la prise de décision, de rationaliser les processus d'innovation et d'optimiser l'allocation des ressources. S'appuyant sur des cadres théoriques et des processus empiriques, cette étude examine comment l'IA remodèle la formulation et l'exécution des stratégies en matière d'innovation et de technologie. Une attention particulière est accordée à la double nature de l'impact de l'IA : sa capacité à générer un avantage stratégique et les défis managériaux et éthiques qu'elle pose. Sur la base d'une approche comprenant des études de cas et une analyse thématique, la recherche met en évidence les tendances émergentes dans l'adoption de l'IA et les capacités organisationnelles nécessaires pour gérer cette évolution technologique. Les résultats visent à contribuer à la fois à la compréhension théorique et à la pratique managériale dans le domaine de la stratégie d'innovation et de technologie.

MOTS CLÉS: Stratégie d'innovation, gestion technologique, intelligence artificielle, transformation numérique, prise de décision stratégique, avantage concurrentiel, changement organisationnel

INTRODUCTION

Innovation and technology have become critical levers for competitive advantage in today's digital economy. The rapid rise of AI technologies has added a new dimension to strategic decision-making. While AI is widely adopted in operational domains, its integration into strategic innovation planning remains underexplored. There is a lack of clarity on how AI reshapes innovation and technology strategy at the organizational level.

The paper exams some theoretical aspects of strategic management with focus on the integration of Artificial Intelligence (AI) into corporate strategic planning.

RESULTS AND DISCUSSION

Innovation strategy. It refers to a company's deliberate plan to develop new products, services, processes, or business models that generate value and differentiation. An effective innovation strategy guides resource allocation, prioritizes innovation types (incremental, disruptive, radical), and aligns innovation efforts with broader business objectives. It helps firms stay ahead of market trends and respond proactively to emerging customer needs.

Technology management. It is the process of planning, developing, and controlling technological resources to support a company's strategic objectives (Borisov, Radev, Petrov, Kolaj and Arabska, 2023). Proper technology management ensures the effective use of digital tools, R&D investments, and

infrastructure to enhance innovation. It enables companies to translate technological advances into strategic assets and supports sustainable innovation cycles.

Artificial Intelligence. It refers to systems or machines that mimic human intelligence to perform tasks such as learning, problem-solving, and decision-making. AI plays a transformative role in innovation by accelerating data analysis, enabling predictive insights, automating processes, and personalizing customer experiences. It can also support strategic decision-making, but raises ethical, operational, and organizational challenges.

Digital transformation. It is the integration of digital technologies into all areas of a business, fundamentally changing how it operates and delivers value to customers (Petrov, Tsonkov and Borisov, 2025). It drives innovation by enabling new business models, improving agility, and fostering customer-centric approaches (Borisov and Shilev, 2025). Companies that embrace digital transformation often lead in their industries through enhanced efficiency, speed, and scalability.

Organizational change. It refers to the process of transforming a company's structure, operations, or culture in response to internal or external pressures. Innovation and digital transformation often require deep organizational change. Adapting mindsets, processes, and structures is essential to foster innovation, overcome resistance, and ensure successful implementation of new technologies.

Strategic decision-making. It involves choosing actions that determine the long-term direction and performance of an organization (Georgieva and Borisova, 2025). It directly influences innovation strategy, particularly in terms of investment in new technologies, market expansion, and risk management. AI and data analytics are increasingly used to support complex strategic decisions with evidence-based insights.

Competitive advantage. It is the unique position a company achieves by offering superior value to customers compared to its rivals, often through cost leadership, differentiation, or innovation (Borisova, 2024). Innovation and technology are critical sources of competitive advantage. Firms that consistently innovate can create barriers to entry, increase customer loyalty, and achieve market leadership.

Definition and Types of Innovation Strategies. Innovation strategy refers to a plan that guides the allocation of resources to innovation with the goal of creating sustainable competitive advantages. According to Schumpeter (1934), innovation is the driving force of economic development and includes new products, new production methods, new markets, new sources of supply, and new organizational structures.

There are several types of innovation strategies that companies can adopt, depending on their goals and market environment:

1. **Incremental Innovation Strategy**: Focuses on improving existing products, services, or processes. Toyota's continuous improvement philosophy (Kaizen) is a prime example, where small, consistent changes lead to long-term performance gains.
2. **Disruptive Innovation Strategy**: Introduced by Christensen (1997), this strategy involves the development of products or services that create new markets and eventually disrupt existing ones. Netflix's transition from DVD rental to streaming is a well-documented case of disruptive innovation.
3. **Open Innovation Strategy**: Companies collaborate with external partners, including customers, research institutions, or even competitors, to foster innovation. Firms like Procter & Gamble have successfully used open innovation through their "Connect + Develop" initiative.

4. **Radical Innovation Strategy**: Involves high-risk, high-reward projects that lead to breakthrough products or services (Borisov, 2015). These innovations can redefine industries, such as Apple's introduction of the iPhone, which merged several technologies into one revolutionary device.
5. **Sustainable Innovation Strategy**: Also called eco-innovation, it seeks to meet environmental and social goals while driving growth. Tesla's focus on electric mobility and sustainable energy solutions exemplifies this approach.

Theoretical Perspectives on Innovation Strategy. Innovation has long been studied through different theoretical lenses:

- **Schumpeter's Theory of Creative Destruction**: Joseph Schumpeter (1934) argued that innovation is an endogenous process that destroys old economic structures while creating new ones. According to him, entrepreneurs and technological changes are the triggers of economic cycles. Moreover, for him, innovation is not limited to simply creating new products, but also encompasses improvements in production processes, distribution methods, and even business models (product innovation, process innovation, market innovation, organizational innovation, supply source innovation).
- **The Resource-Based View (RBV)**: This theory emphasizes that innovation capabilities are firm-specific resources that can lead to sustained competitive advantage. Firm gain advantage when they possess valuable, rare, inimitable and non-substitutable resources or capabilities. (Barney, 1991).
- **Dynamic Capabilities Theory**: Teece et al. (1997) suggest that firms must possess dynamic capabilities i.e., the ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments. Innovation is a key component of these capabilities.

The Role of Artificial Intelligence in Business Strategy. Artificial Intelligence (AI) is redefining how companies innovate and compete. From automating decision-making to predicting market trends, AI is being integrated into strategic planning processes across industries.

Advantages of AI in Strategic Management. AI is a real asset for developing a business strategy, it has several notable advantages:

1. **Enhanced Decision-Making**: AI enables data-driven decision-making by analysing vast amounts of data faster and more accurately than human analysts. Tools like IBM Watson and Google Cloud AI assist managers in identifying patterns and forecasting trends.
2. **Personalization and Customer Insights**: AI facilitates hyper-personalization by analysing customer data in real time. Amazon, for instance, uses AI to tailor product recommendations, enhancing customer experience and boosting sales (Borisova, 2025).
3. **Operational Efficiency**: AI-driven automation reduces costs and improves efficiency in areas such as supply chain, inventory management, and production. Companies like Siemens have integrated AI into their smart factories to optimize production processes.
4. **Speed of Innovation**: AI accelerates R&D processes by simulating outcomes, testing prototypes, and identifying innovation opportunities faster. In the pharmaceutical sector, AI expedites drug discovery, reducing development time significantly.

Disadvantages and Ethical Concerns of AI in Strategy. Despite its benefits, AI integration presents several challenges:

1. **Loss of Human Intuition**: Strategic decisions often require contextual understanding, emotional intelligence, and creativity, qualities that AI lacks. Over-reliance on algorithms may lead to mechanistic thinking and missed opportunities for innovation.
2. **Bias and Transparency**: AI systems can replicate and amplify biases present in training data. This undermines fairness and can result in discriminatory practices. Moreover, the "black box" nature of many AI models complicates transparency and accountability.
3. **Job Displacement and Organizational Resistance**: AI-driven automation may lead to job loss, creating ethical dilemmas and internal resistance. Managers must carefully balance technological advancement with workforce development.
4. **Security and Data Privacy**: AI systems rely heavily on data. Ensuring the security and ethical use of data is a major concern. Breaches can lead to reputational damage and legal consequences.

Case Studies of AI and Innovation Strategy Integration. AI can therefore be used to carry out many tasks to shape a business strategy, some companies are proof of this, as they are using it today. Alibaba uses AI in nearly all aspects of its operations—from logistics and fraud detection to personalized marketing and dynamic pricing—creating a highly agile business model. Google DeepMind has applied AI to optimize energy consumption in data centers, reducing cooling costs by 40%, showcasing how AI can contribute to sustainable innovation. General Electric (GE) uses AI and predictive analytics for its Industrial Internet of Things (IIoT) platform, which helps in predictive maintenance and efficient operations across sectors like aviation and energy.

Challenges in Implementing Innovation Strategies. Despite the strategic advantages of innovation, firms often encounter obstacles:

High Risk and Uncertainty: Innovation initiatives, especially radical ones, are expensive and uncertain. R&D investments do not always translate into market success.

- **Cultural Barriers**: Organizational culture can hinder innovation if it resists change. Traditional hierarchies and risk-averse mindsets must be replaced by agile and collaborative cultures.
- **Lack of Resources**: Small and medium enterprises often lack the capital and human resources needed to invest in sustained innovation efforts.
- **Measurement Difficulties**: Assessing the impact of innovation, especially non-technological innovations like business model changes, remains complex.

CONCLUSION

Innovation strategy is a critical component of modern strategic management. Whether incremental or radical, innovation drives differentiation, market relevance, and long-term survival. The integration of Artificial Intelligence offers unprecedented opportunities to enhance innovation capabilities, streamline decision-making, and personalize customer experiences. However, it also brings ethical challenges, strategic risks, and organizational disruptions.

Drawing from Schumpeter’s theory, innovation remains the lifeblood of economic transformation. Businesses must develop dynamic capabilities to innovate continuously while managing the inherent risks. A balanced, ethical, and human-centered approach to AI and innovation strategy is essential for creating sustainable competitive advantage in a rapidly evolving global marketplace.

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