
The Impact of Artificial Intelligence and Digitalisation on the Development of Intellectual Property–Based Organisational Creativity

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Abstract:

Purpose: This article analyses the evolution of organizational creativity in the context of digitalization and artificial intelligence (AI).

Design/Methodology/Approach: Traditional models based on individual competencies and social interactions are being transformed by AI-driven digital ecosystems, which enhance innovation efficiency and accelerate time-to-market. Through a systematic literature review and case studies of medium and large enterprises (2015–2025), the study identifies technological, organizational, and cultural factors influencing AI-supported creative processes and intellectual property (IP) management.

Findings: The findings indicate that effective AI integration requires developing digital competencies, transformational leadership, and a culture fostering innovativeness. The study also highlights emerging legal and ethical issues, including authorship, accountability, and data licensing. It proposes a conceptual model that integrates technology, knowledge management, and organizational culture to support sustainable innovation.

Practical implications: The article contributes to theory by extending classical creativity frameworks (Amabile; Nonaka and Takeuchi) to the digital and AI context, while offering practical guidance for managers and decision-makers on leveraging human-AI co-creation alongside IP protection.

Originality/value: The results confirm that the use of artificial intelligence, digital tools, and integrated knowledge management systems leads to significant changes in the dynamics and effectiveness of innovation processes.

Keywords: Organizational creativity, artificial intelligence, digitalization, intellectual property, innovation, knowledge management.

JEL codes: O33, O34, D83, M15, O31.

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1. Introduction

The contemporary economy is increasingly based on knowledge and innovation, and intellectual property (IP) is an important strategic resource for organizations. Innovation is no longer just a source of competitive advantage - in many industries, it determines the survival of companies and their ability to respond quickly to market changes.

The rapid development of digital technologies, such as artificial intelligence (AI), big data analytics, the Internet of Things (IoT), and blockchain, is transforming traditional models of organizational creativity.

These technologies make it possible to more effectively generate new ideas, prototype products, manage knowledge, and protect intellectual property, while creating new challenges related to data security and the risk of IP infringement.

Despite numerous studies on innovation and IP management, there is still no comprehensive picture of how digital technologies affect creative processes in organizations. This article addresses the research question: how do new technologies change the processes of creating, developing, and managing intellectual property in enterprises? The analysis of this issue requires consideration of both technical and organizational aspects, including knowledge management models, innovation culture, and limitations resulting from the increasing automation of creative processes.

This article aims to review and synthesize the current state of knowledge on the impact of digital technologies (artificial intelligence, big data, the Internet of Things, blockchain) on the creative processes that lead to the creation of intellectual properties in organizations.

Scope of research:

- Characteristics of technologies supporting innovation and IP creation,
- Identification of the relationship between the use of technology and the effectiveness of creative processes,
- Analysis of challenges related to the implementation of technology in the area of intellectual property management,
- Formulation of practical recommendations for innovation managers and IP strategists.

The analysis covers medium and large enterprises with formal innovation and intellectual property management procedures in place between 2015 and 2025.

The study does not account for country-specific legal regulations or the characteristics of startups with low levels of process formalisation.

2. Research Methodology

The purpose of this article is to develop a theoretical conceptual model that integrates classical concepts of organizational creativity with modern approaches based on digitization and artificial intelligence (AI).

The study is qualitative in nature, based on a critical synthesis of the literature and an analysis of selected cases of organizations that have implemented digital solutions in the areas of innovation and intellectual property (IP) management in practice.

2.1 Research Approach and Strategy

A conceptual-analytical approach was adopted, typical of exploratory research in management sciences, focused on building a theoretical model by integrating empirical and conceptual achievements (Jaakkola, 2020). A two-pronged methodological strategy was used in the study:

- A comprehensive literature review, enabling the identification of key factors and theoretical relationships.
- Illustrative case studies, allowing for the presentation of practical examples of the integration of digital technologies with creative processes and IP management.

This methodological combination not only allows for a synthetic presentation of the current state of our knowledge, but also for the verification of theory through practical observations and the identification of good practice patterns.

2.2 Stage 1 – Analysis of Scientific Literature

The literature review was conducted using a systematic and thematic approach, covering both classical concepts of creativity and knowledge management (Amabile, 1996; Nonaka and Takeuchi, 1995) and contemporary research on digitalization, AI, and agile innovation methods (Davenport and Kirby, 2016; Ries, 2011; Wahl, Füller and Hutter, 2022; Alaassar, Mention and Kryzhanivska, 2025; Łobacz and Tylzanowski, 2023; Wyrozębski, 2022; Gohr, Rodríguez *et al.*, 2025).

The literature search was conducted in the Scopus and Web of Science databases using the following keywords: organizational creativity, digital transformation, artificial intelligence, knowledge management, and intellectual property. Publications from recent years from leading scientific journals in the field of innovation management, entrepreneurship, and digital technologies were included.

The analysis focused on identifying recurring themes and connections between:

- The digital technology,

- Creative processes,
- Organizational factors (e.g., innovation culture, transformational leadership, knowledge management),
- Innovation results and organizational value.

The goal of this stage is to identify mechanisms that support organizational creativity in the context of digital transformation and to determine how information technologies influence the creation and protection of intellectual property.

2.3 Stage 2 – Analysis of Organizational Cases

The research's second stage involved analysing cases of organizations that have successfully integrated digital technologies into creative processes and intellectual property management. The selection of cases was deliberate and based on the following criteria:

- the availability of source data,
- the degree of digital transformation,
- the importance of the organization in terms of innovation and IP management.

The selected organizations represent various sectors: technology, industry, creative, and services, and include Estée Lauder, IBM Watsonx, Chiesi, Ontex, Walmart, ARM Ltd, Dyson, and Spotify. The data sources included industry reports, company studies, scientific publications, and publicly available sources, ensuring the transparency and reliability of the analysis. The study used comparative and interpretative analysis methods aimed at identifying patterns of good practice in the following areas:

- the use of AI in creative processes,
- digitization of innovation management,
- intellectual property protection,
- risk management and ethical aspects.

2.4 Stage 3 – Conceptual Model Design

Based on the results of literature analysis and case studies, a conceptual model was developed, incorporating technological, organisational, and creative factors. The model illustrates the relationships between:

- digital infrastructure and AI tools (technological factor),
- organizational creativity and knowledge management processes (process factor),
- organizational determinants (innovation culture, leadership, cooperation structure),

- innovation effects and intellectual property value (result factor).

The model takes into account feedback loops, the iterative nature of innovation processes, and the role of end users in open co-creation platforms (open innovation, crowdsourcing). The model can be operationalized in future research through quantitative indicators that describe the level of digitization of innovation processes, the intensity of AI use in idea generation, and the effectiveness of IP management.

2.5 Limitations and Nature of the Analysis

The study is a critical synthesis of knowledge and exploratory theoretical mapping. The conclusions are based on integrating existing research and observations, while keeping an open mind and being aware of the limitations that come with not having primary data.

Despite these limitations, the approach adopted captures the complex relationships between technology and creative process, and provides a starting point for further empirical research on the impact of AI and digitalization on the development of an organization's intellectual capital.

The results can be used both to verify the concept in the context of medium and large enterprises and as a basis for developing tools to support strategic decisions in the area of innovation and IP management.

3. Literature Review

3.1 Classical Approaches to Creativity and Innovation

Creative thinking and innovation have long been recognized as key sources of competitive advantage in organizations, forming the foundation for development in both the private and public sectors.

Classic models, such as Amabile's three-factor model (1996), indicate that organizational creativity is the result of the synergy of three elements: individual competence, internal motivation, and a supportive work environment.

In turn, Nonaka and Takeuchi's SECI concept (1995) emphasizes the dynamic interaction of explicit and tacit knowledge, in which the social internalization of experience and the conversion of knowledge into specific product solutions play a key role.

Both approaches provide a solid theoretical framework for analysing creative and innovative processes, but they do not account for the impact of modern digital technologies, particularly artificial intelligence (AI). In the context of digital transformation, there is a growing need to reinterpret classical models in relation to

learning, generative, and autonomous systems, which increasingly co - create creative processes.

New technologies, especially AI, are significantly transforming traditional innovation processes, affecting both operational and strategic aspects of management. AI supports creativity by automating data analysis, pattern recognition, and accelerating hypothesis testing (Davenport and Kirby, 2016). Agrawal, Gans, and Goldfarb (2018) emphasize the strategic role of AI in product development – it enables precise business decisions and increases innovation efficiency.

The integration of AI with agile innovation methods, including Lean Startup (Ries, 2011), allows for accelerated hypothesis verification, prototype optimization, and intellectual property management (Wang and Wu, 2025; Liu, 2024).

Generative models support the transformation of hidden knowledge into explicit knowledge, accelerating creative processes and product innovation (Nonaka and Takeuchi, 1995; Secundo *et al.*, 2024). AI does not replace humans – it expands their cognitive and expressive capabilities, enabling more complex forms of interaction and democratizing access to creative tools (Kai-Fu Lee and Chen Qiufan, 2021).

3.3 Critical Perspectives – Technological Colonization of Creativity

Parallel to optimistic visions, there are also critical voices pointing to the risks of AI in creative processes. Generative algorithms can lead to the homogenization of creativity and a reduction in cultural diversity, as models learn from dominant historical data (Sham, 2024; Manovich and Arielli, 2024; Staszewska-Jedynasty, 2025).

AI prefers statistically most probable solutions, which suppresses the experimental nature of creativity and can lead to “flat” effects, devoid of depth and intuition. A meta-analysis by Holzner, Maier, and Feuerriegel (2025) shows a moderate increase in creative efficiency but a significant decrease in the diversity of ideas in processes co-created with AI.

Critics also emphasize the need to redefine authorship and intellectual property in the context of human-technology collaboration (Crawford, 2023; Lucchi, 2025; Mammen *et al.*, 2024).

3.4 Organizational Culture, Sustainable Development, and Regulatory Frameworks

Empirical research suggests that AI capabilities are only effective when combined with an organizational culture that promotes knowledge sharing and collaboration (Gazi *et al.*, 2024; Florek-Paszowska and Ujwary-Gil, 2025).

At the same time, it is necessary to develop a regulatory framework for authorship, data licensing, and the audit trail of creative processes (Lucchi, 2025; Mammen *et al.*, 2024). The integration of technology, organizational culture, and legal regulations creates the conditions for responsible and sustainable innovation.

3.5 Conclusions from the Literature Review

Artificial intelligence is redefining creativity and innovation, shifting them towards human-technology co-creation. AI accelerates innovation processes, supports decision-making, and generates new forms of knowledge, but it also carries the risk of homogenization and ambiguity in terms of authorship. The effectiveness of AI use depends on three pillars:

- Technology - quality, transparency, and the ability to collaborate with humans.
- Organizational culture – openness, experimentation, and cognitive diversity.
- The legal and ethical framework – protection of creators and transparency of processes.

4. The Impact of Artificial Intelligence and Digitization on Creative Processes – Case Studies

Case studies of medium-sized and large enterprises demonstrate that AI and digitization serve as catalysts for change in creative processes. The mechanisms include:

- Automation of analytical tasks – e.g., Estée Lauder uses AI to predict the properties of cosmetic ingredients and market preferences, which shortens the product development cycle.
- Iterative learning and prototyping – IBM Watsonx AI Labs supports the conversion of tacit knowledge into explicit knowledge and rapid hypothesis testing, in line with SECI and Lean Startup.
- Human-AI co-creation – ARM Ltd provides design tools to partners in an open innovation model, integrating creativity with IP management.
- RandD process optimization – Chiesi uses autonomous AI systems to prioritize pharmaceutical experiments, analyse biological and chemical data, and personalize therapies.
- Support for strategic and operational decisions – Walmart, HandM, and Zara use AI to forecast trends, optimize inventory, and personalize offers.
- Integration of interdisciplinary teams and innovation ecosystems – Dyson and Tesla use AI for virtual prototyping and simulation, increasing efficiency and reducing time to market.
- Creative and platform sector – Spotify, Netflix, and Electronic Arts use AI for recommendations, content design, and supporting artists' publishing strategies.

4.1 Synthesis and Conclusions

Case studies reveal that AI transforms organizational creativity in four dimensions:

- Epistemological – redefining sources and forms of knowledge through the integration of data and algorithms,
- Process – accelerating innovation cycles and shortening implementation times,
- Cultural – increasing the importance of team learning, openness, and adaptability,
- Strategic – integrating AI with competitive advantage and resource management.

To fully leverage AI, technology must be harmoniously integrated with organizational culture, employee competencies must be continuously developed, and a robust governance framework must be in place to ensure legal compliance and ethical use. The conceptual model presents systemic organizational creativity, combining individual competencies, employee motivation, knowledge exchange, AI, and process digitization, while also considering a culture of innovation and transformational leadership.

The theoretical framework provides a basis for further empirical research and operationalization of variables to analyse the relationship between digital technologies, organizational factors, and innovation outcomes.

5. Theoretical Research Framework / Conceptual Model

Organisational creativity is currently understood as the result of complex interactions between individual employee competencies, their internal motivation, and a supportive work environment (Amabile, 1996).

The SECI model of Nonaka and Takeuchi (1995) indicates that knowledge generation in organizations is based on the dynamic exchange of tacit and explicit knowledge, enabling the transformation of individual experiences into product and process innovations.

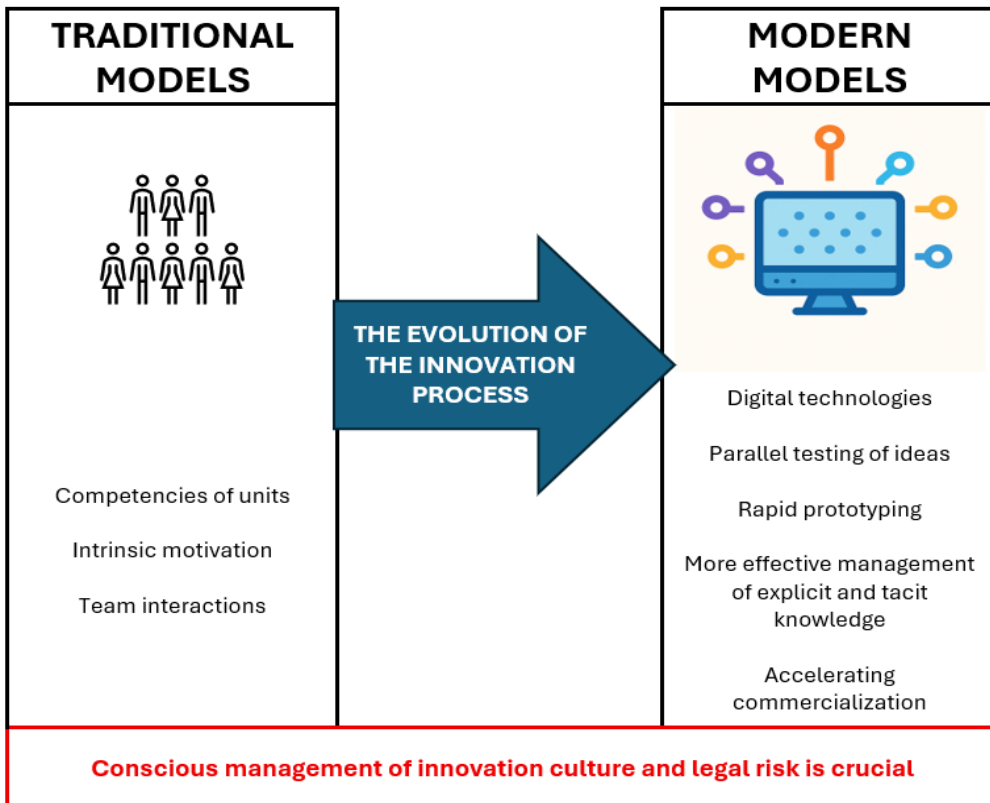
However, contemporary approaches need to be expanded in the context of the growing role of digital technologies and artificial intelligence (AI), which are redefining the nature of creative and organizational processes.

In the proposed model, digital technologies—including AI, virtual and augmented reality (VR/AR), and online collaboration platforms—act as catalysts for creative and innovative processes. They enable the generation of ideas, automation of analysis, identification of patterns, and faster verification of hypotheses (Davenport and Kirby, 2016; Füller, Hutter and Krüger, 2020).

The integration of these technologies with Agile and Lean Startup methodologies (Ries, 2011) promotes iterative concept testing and the effective creation of intellectual property, including products, services, and know-how.

The effectiveness of creative processes also depends on a culture of innovation, transformational leadership, and the capabilities of dynamic organizations (Bass and Avolio, 1994; Teece, Pisano and Shuen, 1999).

Figure 1. Conceptual model of the impact of digital technologies and AI on creative processes and organizational value creation



Source: Prepared based on Amabile (1996), Nonaka and Takeuchi (1995), Teece et al. (1999), Davenport and Kirby (2016), Holzner et al. (2025).

The Conceptual Model views organizational creativity as a multi-level system in which digital technologies form the foundation and catalyst for creative activities. This foundation supports the development of processes for generating ideas, transferring knowledge, and co-creating in digital environments.

The result of these processes is the creation of intellectual property—patents, products, services, and know-how—which generate organizational value in the form

of competitive advantage, improved operational efficiency, and the development of a sustainable culture of innovation.

At the same time, these processes further strengthen the development of an organization's creative capabilities, creating a feedback mechanism between technology and organizational creativity.

The model emphasizes the role of supporting factors such as leadership, knowledge management, and organizational culture, which strengthen the interactions between technology, processes, and the effects of innovative activity. The whole forms a coherent system in which the integration of people, knowledge, and digital technologies plays a key role in generating sustainable value in a knowledge-based economy.

This model provides a theoretical foundation for further empirical research, including the operationalization of variables and the analysis of relationships between digital technologies, organizational factors, and innovation outcomes.

6. Analysis and Discussion of Results

An Analysis of literature and case studies indicates a significant impact of digital technologies, including AI, online collaboration platforms, and digital simulation tools, on creative processes in organizations. Generative AI systems enable parallel testing of multiple solution variants, reducing prototype development time by as much as 30-50%.

Digital tools also streamline the collection of feedback from teams and users, improving the effectiveness of innovation processes and the quality of final products and services. The development of digital technologies opens up new opportunities for knowledge management and intellectual property protection. The use of cloud computing, blockchain, and advanced analytical tools enables the tracking of intellectual property rights and the identification of potential infringement risks.

At the same time, the implementation of generative AI presents legal and organizational challenges, especially in determining authorship and protecting the content created. Organizations must strike a balance between an open innovation model that fosters creativity and the protection of strategic intellectual resources.

Digital technologies accelerate the commercialization of innovation, shortening the time from idea to market launch. Digital prototyping and predictive analytics support quick and accurate decision-making on RandD priorities, increasing organizational flexibility and adaptability to change.

Case studies show that AI supports creative processes on several levels:

- Creativity catalyst – AI automates repetitive tasks and models data, freeing up the cognitive potential of teams.
- Learning by doing – digital tools support iterative testing of solutions in line with Lean Startup and SECI logic.
- Human-machine collaboration – humans contribute intuition and context, while AI provides computing power and data analysis, creating a hybrid creative process.
- The importance of culture and leadership – successful AI implementation requires an open, trusting culture and transformational leadership.
- A new paradigm of systemic creativity – creativity becomes a distributed capacity among people, data, and algorithms, with new roles such as data curator and co-creation architect.

Table 1. Comparison of traditional and modern models of organizational creativity.

Comparative category	Traditional model (SECI, Amabile, classical approaches)	Modern model (digital, AI, Lean/Agile, open innovation)	Effects and potential risks
Sources of creativity	Individual competencies, internal motivation, experience	Data, algorithms, simulations, human-AI interaction	Greater scalability of ideas, but the risk of dehumanizing the creative process
The nature of knowledge	The dominance of hidden knowledge (tacit knowledge), social communication	Integration of explicit and tacit knowledge supported by technology (AI, IoT, VR)	Faster knowledge conversion, but with the risk of losing context and uniqueness
The process of creating innovation	Sequential, linear (ideation → prototype → implementation)	Iterative, parallel, automated (Lean Startup, Agile)	Shorter innovation time, but higher risk of incorrect algorithmic decisions
The role of technology	Supporting (communication and analysis tools)	Central – AI, big data, VR/AR, blockchain, cloud	Automation and personalization, but also the risk of cyber threats and loss of control
Organizational culture	Hierarchical, based on experience and routine	Agile, based on collaboration, openness and experimentation	Greater adaptability, but with the risk of instability and dispersion of responsibility
Knowledge management	People-to-people exchange (meetings, mentoring, documentation)	Digital platforms, collaborative tools, generative AI	Increased access to knowledge, but the risk of information overload
IP Creation	The result of long-term RandD processes and	The result of human-AI collaboration, automation of ideation	More innovation in less time, but confusion about

	individual creativity	and prototyping	authorship and IP rights
The pace of commercialization	Slow – long project cycles	Fast – thanks to digital prototyping and data analysis	Increased market flexibility, but quality risk with accelerated implementation
Organizational effectiveness	Moderate, depending on employee competences	High – supported by data, automation and predictive analytics	Increased productivity, but potential risk of homogenizing creativity
Risks and limitations	Limited pace of innovation, dependence on key people	Excessive automation, copyright issues, ethical issues	The need for balance between technology and a culture of innovation

Source: Prepared based on: Nonaka and Takeuchi (1995), Amabile (1996), Davenport and Kirby (2016), Agrawal et al. (2019), Secundo et al. (2024).

In summary, the evolution of creative models is moving from individual competencies and social interactions towards digital and hybrid systems. Contemporary approaches increase efficiency and shorten time-to-market, but require the development of digital competencies, transformational leadership, and conscious management of organizational culture. Success depends on the ability to integrate technology with human creativity and to protect strategic knowledge assets, which is the foundation for sustainable innovation in the digital economy.

7. Conclusions and Recommendations

The analysed literature and case studies of companies from various industries have allowed us to formulate key conclusions regarding the impact of new technologies on creative processes in organisations.

The results confirm that the use of artificial intelligence, digital tools, and integrated knowledge management systems leads to significant changes in the dynamics and effectiveness of innovation processes. At the same time, legal, ethical, and organizational challenges arise that require conscious design of models for human-technology collaboration.

7.1 Research Conclusions

An analysis of the literature and case studies suggests that new technologies act as catalysts for creativity, accelerating the generation and selection of ideas and enabling the testing of conceptual variants in a shorter time. The effectiveness of these tools depends on an organizational culture that fosters openness, experimentation, and collaboration.

The development of digital and managerial competencies is crucial for effective human-technology collaboration and the proper interpretation and use of AI-generated results. In the legal and ethical sphere, it is necessary to continue developing principles regarding authorship, responsibility, and transparency of creative processes supported by generative algorithms.

7.2 Recommendations for Management Practice

1. AI integration with humans in a central role – while AI can support the creative process, strategic decision-making, the evaluation of innovation value, and the interpretation of results must remain the domain of humans.
2. Development of knowledge management systems – organizations should implement digital platforms and tools that support team learning and interdisciplinary collaboration.
3. Culture and competencies – it is essential to foster a culture open to experimentation and to invest in the development of digital, design, and leadership competencies.
4. Ethical and legal principles – organizations should implement regulations regarding responsibility, transparency, and intellectual property protection in AI-supported processes.
5. Creating interdisciplinary innovation teams – integrating IT specialists, designers, lawyers, and managers allows technology to be effectively linked to creative and business processes.

7.3 Recommendations for Public Policy and Research

In the context of the dynamic development of digital technologies, it is necessary to strengthen the institutional capacities responsible for supervising innovation processes.

Regulatory authorities should develop analytical capabilities to assess the risks associated with generative systems and monitor their impact on the labor market, competitiveness, and consumer protection. It is also essential to support cross-sectoral cooperation between businesses, universities, and public institutions, which accelerates the transfer of knowledge and technology and promotes the creation of mature innovation ecosystems.

Public policy should promote open standards and system interoperability, support the SME sector, and facilitate access to modern technologies, knowledge, and intellectual property protection. In the long term, it is also essential to develop the digital skills of the population and to create a coherent legal framework for AI-

assisted creation, covering authorship, data licensing, and responsibility for algorithm-generated content.

The implementation of digital technologies should take into account the Sustainable Development Goals SDG 9 and SDG 16, promoting open, responsible, and inclusive innovation.

Future research should employ quantitative and qualitative methods to analyse the impact of AI on productivity, diversity of ideas, organizational structure, and implementation effectiveness. It is also worth exploring legal and ethical issues, as well as tools for assessing cognitive balance in processes co-created by humans and AI.

Effective creativity management in the digital age requires not only modern tools, but above all an organizational culture based on openness, responsibility, and cooperation. AI is becoming the foundation of innovation, but humans continue to play a central role, as creators of meaning.

8. Conclusion

The article demonstrates how the advancement of artificial intelligence and digital tools is transforming creative processes within organizations. Case studies of companies such as Estée Lauder, IBM Watsonx, Chiesi, ARM, Ontex, and Spotify indicate that integrating AI with process digitization enables faster idea generation, parallel testing of conceptual variants, and scaling creativity in complex organizational structures.

The transition from traditional models of creativity based on individual competencies to integrated digital ecosystems requires a new approach to organizational culture, competency development, and the creation of a coherent legal and ethical framework. Iterative organizational learning is key—testing, verifying results, and integrating explicit and tacit knowledge, in accordance with the principles of Lean Startup and the SECI model (Nonaka and Takeuchi, 1995).

Human-technology collaboration is becoming the foundation for effective innovation, sustainable development, and competitive advantage. Fully exploiting the potential of AI requires a holistic, responsible approach that combines technology, organizational culture, and legal regulations, while maintaining the central role of humans as creators of meaning in a knowledge-based economy.

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