

## THE POTENTIAL OF ARTIFICIAL INTELLIGENCE IN INNOVATION MANAGEMENT AS A CATALYST FOR FLOW IN DIVERGENT THINKING AND EUDAIMONIA

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**Purpose:** The purpose of this article is to explore the potential of Artificial Intelligence (AI) to support innovation management processes by stimulating creative thinking - particularly divergent thinking - and by fostering conditions conducive to achieving flow states, autotelic motivation, and deep psychological well-being (eudaimonia).

**Design/methodology/approach:** This is a qualitative, exploratory-theoretical study, enriched with elements of conceptual modeling. The empirical analysis is based on the author's subjective experiences and observations.

**Findings:** The study demonstrates that appropriately designed AI can effectively support flow states, divergent thinking, and eudaimonia, serving as a creative catalyst for innovation.

**Research limitations/implications:** The main limitations involve the availability of technological solutions and the reliance on theoretical analysis and the author's subjective perspective. These limitations highlight the need for further, in-depth research incorporating neuroimaging methods and long-term studies on AI's impact on creativity and well-being.

**Practical implications:** The findings suggest that integrating AI as a tool for supporting flow and creativity can significantly enhance innovation, employee engagement, and well-being. This, in turn, translates into increased effectiveness of innovative teams, improved motivation and satisfaction, and greater organizational value and competitiveness.

**Social implications:** The study emphasizes AI's potential to foster creativity, a sense of meaning, and well-being, which may contribute to the development of more human-centered technologies, the promotion of positive attitudes towards AI, and the inspiration for public policies and CSR strategies focused on quality of life, emotional education, and sustainable social development.

**Originality/value:** The article presents an original perspective on AI as a catalyst for flow, divergent thinking, and eudaimonia. It integrates innovation management with neuroscience, making it a valuable resource for researchers, AI designers, and innovation leaders.

**Keywords:** Human-centered AI, creativity, stimulating dissipative structures, intrinsic motivation, well-being.

**Category of the paper:** Research on innovation management.

## 1. Introduction

The world of innovation is continuously redefining the boundaries of technological, organizational, and cognitive possibilities. Within this evolving landscape, Artificial Intelligence (AI) is emerging as a transformative force - not only enhancing decision-making processes but also co-creating spaces for creativity, reflection, and experimentation. Contemporary innovation management must recognize the human creative factor, which is increasingly shaped by interaction with intelligent systems. This raises an important question: how can AI influence the quality of human creative work - can it replace it, or should it rather become a tool that facilitates flow (Csikszentmihalyi, 1996) and inner fulfillment?

This article represents an interdisciplinary synthesis, merging perspectives from innovation management, neuropsychology, and the philosophy of well-being to highlight AI's potential as a catalyst for flow, an activator of divergent thinking, and a supporter of eudaimonia. Eudaimonia is understood here as a lasting, meaningful, and profound sense of fulfillment (Porczyńska-Ciszewska, 2013). Central to this exploration are also the concepts of the autotelic personality, brain structures involved in creativity, and the neuropsychological aspects of intrinsic motivation, engagement, and workplace happiness (Matacz et al., 2022). At the same time, the article critically reflects on the paradox of AI: while it can support creativity and well-being, poorly managed, it may also erode them. By analyzing both the opportunities and threats associated with AI in creative and organizational environments, the article proposes a framework for the ethical and conscious use of new technologies in the service of humanity.

## 2. Literature Review

Contemporary approaches to innovation are increasingly moving away from a linear “idea-to-implementation” model towards more complex, nonlinear, and iterative frameworks based on exploration, experimentation, and the ability to generate original and useful solutions (Czerwińska-Lubszczyk et al., 2022). Creativity is no longer just the initial stage of innovation - it becomes a continuous component, present at every stage from ideation and research to market implementation. Innovation is not the sole domain of R&D departments but involves the entire organization. Organizational culture, structure, and management should foster creative thinking, interdisciplinary collaboration (Knefel, 2018), and experimentation. Creativity is becoming a universal competence rather than an elite skill.

Research into innovation-supporting environments identifies several key factors for fostering creativity and flow (Czerwińska-Lubszczyk et al., 2022; Gajdzik et al., 2022), including autonomy, cognitive challenge, collaboration and trust (psychological safety), access

to resources (time, tools, knowledge - including AI), and tolerance for failure and experimentation. Organizations cultivating these principles are more likely to develop bottom-up innovations and knowledge cross-pollination (Plucker, Makel, 2010; Ryff, Singer, 2004). Employee creativity should be viewed as a strategic organizational asset, and leaders play a crucial role as facilitators of creative processes (Wyrzykowska, 2020; Ziębicki, 2020; Nitsch et al., 2024; Balicki, Leja, 2025).

The concept of flow refers to a state of deep engagement and concentration, where time seems to vanish and individuals experience satisfaction, enhanced performance, and intrinsic motivation (Csikszentmihalyi, 1990). In creative work, flow merges high productivity with a profound sense of fulfillment. Key conditions for achieving flow include clear goals, immediate feedback, appropriate challenge levels (balance between skill and difficulty), a sense of control and autonomy, deep concentration, and the merging of action and awareness. Flow fosters divergent thinking, innovative ideas, and cognitive risk-taking. Environments that enable flow tend to show higher satisfaction and engagement levels. Flow can be individual or collective (team-based flow) (Matacz et al., 2022).

Not everyone easily achieves flow. A pivotal factor is the autotelic personality - individuals who derive intrinsic satisfaction from the activity itself (Porczyńska-Ciszewska, 2013). Autotelic individuals are characterized by high intrinsic motivation, cognitive openness, a tendency toward exploration, independence, and the ability to concentrate. They are predisposed to engage in creative processes and experience eudaimonia through work. Neuropsychologically, flow is associated with altered brain function and temporary hypofrontality (Csikszentmihalyi, 1990). Creative thinking involves dissipative structures that enable the reorganization of knowledge and the association of ideas (Grygiel, 2015).

Divergent thinking involves generating multiple possible answers to open-ended problems, activating creativity, flexibility, and originality (Będkowski et al., 2022). Its key features include fluency (number of ideas), flexibility (variety), originality (uniqueness), and elaboration (depth). In innovation management, it is essential in the exploratory phase, enabling alternative concepts and breaking cognitive patterns. It supports design thinking, brainstorming, foresight, and breakthrough innovation. Divergent thinking is fostered by openness to experience, psychological safety, intrinsic motivation (especially in autotelic individuals), and flow states. It can be inhibited by time pressure, hierarchical cultures, and conformity. It activates the brain's Default Mode Network (DMN), and its simultaneous interaction with other networks enables the formation of new meaning structures through associative thinking (Radoń, 2018).

AI can support these processes by suggesting non-obvious associations (data analysis), inspiring alternative perspectives, and providing personalized cognitive assistance. Rather than replacing thought, AI can expand it. Applications include generative language models, knowledge-recombining recommendation systems, simulations, and predictive models. However, a paradox exists: AI can either stimulate or suppress creativity, depending on whether it is used in a controlling or empowering manner. Divergent thinking, when supported by the

right culture and technology like AI, can lead to breakthrough ideas, deeper flow states, and fulfillment. AI can act as a catalyst for flow and divergent thinking - provided there is a balance between structure and freedom to enhance, not replace, human imagination.

### **3. Methodology**

The study is qualitative and exploratory-theoretical in nature. Its aim is to provide a conceptual analysis of the potential of AI in relation to psychological constructs such as flow, divergent thinking, and eudaimonia within the specific domain of innovation management. The research method is based on interdisciplinary synthesis, combining perspectives from innovation management, neuropsychology, and the philosophy of well-being.

The rationale for this methodology lies in the exploratory character of the research, which seeks to reveal new relationships between disciplines. Given the emerging nature of AI and its largely unexplored interactions with complex cognitive and emotional human processes in creative work environments, a theoretical and exploratory approach allows for the formulation of novel hypotheses and the development of conceptual frameworks for future empirical research.

The study incorporates elements of conceptual modeling, aiming to organize and present the relationships among the constructs analyzed (AI, flow, divergent thinking, eudaimonia, innovation management) in a coherent theoretical model suggesting their interactions and mutual influence.

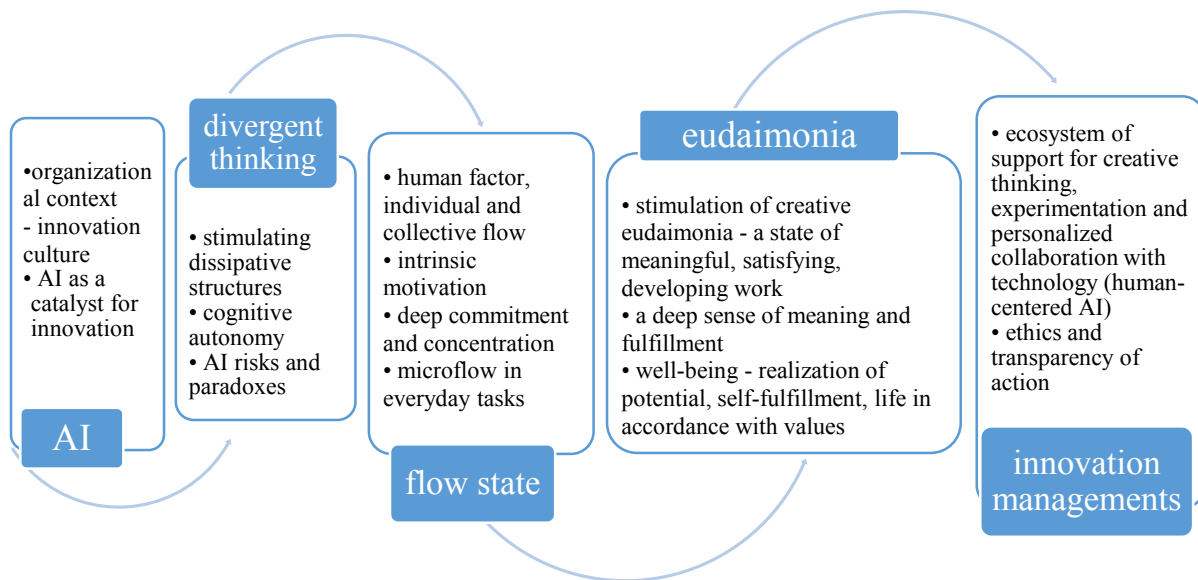
It is important to note that this is a conceptual study. The analysis of AI's potential is based on theoretical premises and the author's subjective insights. This approach is justified by the innovative and exploratory character of the research, which requires preliminary theoretical synthesis before empirical validation.

### **4. Results**

The primary hypothesis explored in this study was: Artificial Intelligence (AI) has significant potential to support innovation management processes by stimulating divergent creative thinking, catalyzing flow states, and fostering deep psychological well-being (eudaimonia) among employees.

The results of the theoretical analysis and conceptual modeling support this hypothesis. A review of literature from innovation management, neuropsychology, and positive psychology reveals that AI possesses inherent capabilities which, when consciously directed, can support

conditions necessary for achieving flow - human-centered AI, e.g., through reducing cognitive barriers, enhancing feedback, personalizing challenges, and stimulating inspiration (Nitsch et al., 2024). Furthermore, AI's ability to suggest non-obvious associations, generate alternative perspectives, and provoke the questioning of assumptions was identified as a key factor supporting divergent thinking and activating relevant neural networks. Finally, AI's capacity to support competence, stimulate development, and affirm meaning in work was recognized as a contributor to the experience of eudaimonia (Figure 1).



**Figure 1.** AI Model as a Catalyst for Flow, Divergent Thinking, and Eudaimonia.

Source: Author's own elaboration.

The theoretical and model-based findings suggest that AI can function as an accelerator of creativity and well-being, confirming the research hypothesis. However, full empirical verification of these relationships will require further studies, including neuroimaging research.

## 5. Discussion

The results - based on qualitative analysis and conceptual modeling - indicate that Artificial Intelligence can be a powerful tool in supporting human creativity, flow states, and eudaimonia, and thereby, innovation management. The study shows that well-designed AI can play a crucial role as a catalyst for human creativity, engagement, and well-being in innovation processes.

This potential lies in AI's capacity to reduce cognitive barriers, enhance feedback, personalize challenges, and stimulate inspiration. This observation is particularly relevant in the digital age, where organizational innovation depends not only on technology but increasingly on the ability to mobilize and support human creative potential.

This research shifts the perspective on AI in innovation management - from being merely an efficiency tool to a potential partner in the creative process, capable of influencing deep psychological states that foster innovation, such as flow, divergent thinking, and eudaimonia.

In terms of divergent thinking, the analysis emphasizes AI's role in suggesting non-obvious connections, inspiring alternative viewpoints, and provoking the reevaluation of assumptions and the redefinition of problems - aligning with the concept of AI as a tool for augmented cognition. It was found that AI can stimulate neural structures responsible for creative thinking - such as dissipative networks and the DMN - by providing novel stimuli and perspectives. This represents a novel insight, integrating technological and neuropsychological perspectives and pointing directly to potential mechanisms through which AI influences creative processes.

Other researchers have already highlighted the significance of flow, divergent thinking, and eudaimonia for innovation (Csikszentmihalyi, 1990; Porczyńska-Ciszewska, 2013; Będkowski et al., 2022). It has also been recognized that environmental factors such as autonomy, challenge, trust, and access to resources (including digital ones) foster these states. The present study contributes to this body of knowledge by offering a conceptual framework that demonstrates how intentional design of interactions with AI can activate these psychological states and processes, thereby becoming a catalyst for creativity. This research introduces novelty by identifying specific ways in which Artificial Intelligence can function as a catalyst for these phenomena - moving beyond the generic notion that technology is merely a resource.

The existing literature has lacked a coherent, interdisciplinary model illustrating how AI can intentionally support these uniquely human aspects of the creative process and well-being. It has been shown that AI is not merely a tool but can become a "co-author" of ideas and a supportive partner - provided that the interaction is properly designed.

Ethical frameworks for Artificial Intelligence in creative work should be grounded in the principles of transparency (understanding how AI operates), co-creativity (AI as a partner, not a dictator), adaptability (responsiveness to user needs), and eudaimonic stimulation (supporting the pursuit of meaning and fulfillment, not merely efficiency). AI should not "program" happiness or instrumentalize human emotions and motivation, but rather serve human agency and development - creating spaces where individuals can discover for themselves what brings them fulfillment. This aligns with the principles of human-centered innovation and human-centered AI workplaces, which form both an ethical imperative and a practical developmental direction.

Of particular importance is recognizing the risks associated with algorithmic nudging and cognitive manipulation. If AI takes over the creative process, diminishes users' sense of agency, or limits exploration, it may lead to reduced intrinsic motivation (especially when tasks become too easy), lower user engagement, and a loss of meaningfulness in work.

The critical analysis of AI highlights a number of limitations and weaknesses, identified as cognitive-motivational paradoxes: namely, that AI - while capable of supporting well-being - can also contribute to its erosion. There is a tension between automation and autonomy,

efficiency and meaning, personalization and exploration restriction, as well as support and dependency. These insights are essential, as they demonstrate that not every AI implementation will be beneficial to human creativity and well-being.

Another important outcome of the analysis is the formulation of conceptual frameworks for designing human - AI interaction in the workplace. These frameworks aim not only to enhance productivity but also to deepen employee engagement, satisfaction, and well-being - including eudaimonia. Translating the constructs of flow and autotelic personality into measurable organizational indicators enables the proposal of new KPIs. For example, instead of focusing solely on the number of ideas generated, organizations could measure subjective satisfaction and sense of meaning among employees using AI, the frequency of experiencing flow, (e.g., via pulse check surveys or self-assessment questionnaires), and the quality of AI use in creative processes-evaluating whether technology supports autonomy and deep engagement or merely automates and dilutes the process.

States such as a sense of meaning, autonomy, personal growth, and high competence levels can be measured using psychometric tools. In the context of talent development strategies, these findings suggest the need to identify and support individuals with autotelic traits and to design working conditions conducive to frequent experiences of flow, e.g., through tasks with clear goals and immediate feedback, which can be facilitated by adaptive AI systems. Thus, AI may enhance competence through constructive feedback, stimulate growth by offering new challenges, and even affirm meaning through participation in socially valuable projects - aligning with a eudaimonic understanding of happiness as the realization of human potential and living in accordance with one's values.

Ethical frameworks for AI in creative work should remain rooted in transparency, co-creativity, adaptability, and the pursuit of eudaimonia. AI should not attempt to "program" happiness or exploit emotional and motivational processes, but rather support human agency and flourishing. Human-centered innovation and human-centered AI workplaces represent both ethical and practical paths forward. Innovation team leaders must ensure a balance between technological support and human agency while cultivating emotional intelligence in the context of AI collaboration.

The results of this study support the hypothesis that Artificial Intelligence has the potential to act as a catalyst for flow, divergent thinking, and eudaimonia in the context of innovation management, and they offer theoretical mechanisms to explain this impact. Future research should focus on empirically verifying these relationships, including through neuroimaging techniques and long-term observational studies. Further investigation is also needed into the specific AI algorithms and models that best support flow in individuals with different personality types, as well as how AI influences the development of autotelic personality traits and metacognitive competencies. Equally important is research on designing organizational cultures that support flow in collaboration with AI while preserving humanistic values (Szmidt, 2017).

In conclusion, this study provides theoretical and conceptual foundations for the design of innovative, human-centered AI work environments. The insights gained may inform the development of new organizational models, talent management strategies, and guidelines for the ethical design of AI systems that support creativity and well-being.

## 6. Conclusions

The conclusions drawn from this qualitative, exploratory-theoretical study involving conceptual modeling clearly indicate that Artificial Intelligence holds significant potential to serve as a catalyst in processes that support human creativity, flow states, and eudaimonia within innovation management.

The theoretical implications of these findings lie in the integration of perspectives from innovation management, neuropsychology, and positive psychology, thereby establishing a new framework for understanding the role of technology in stimulating human creative potential. The study proposes a conceptual model in which AI does not replace but rather augments human cognitive capabilities, facilitating the conditions necessary for achieving flow and activating mechanisms of divergent thinking. It also underscores the importance of the autotelic personality and intrinsic motivation as foundational elements for innovation and sustained engagement.

The practical implications are wide-ranging. The findings suggest that when Artificial Intelligence is designed and implemented through a human-centered AI approach, it can become a valuable tool for organizations. AI can contribute to increased innovation, employee engagement, and well-being, leading to improved team performance and greater competitiveness. This implies a need to rethink talent management strategies, to design work environments that foster flow (e.g., through task personalization and real-time feedback supported by AI), and to develop new KPI metrics that go beyond traditional efficiency measures by incorporating subjective satisfaction, a sense of meaning, and the quality of flow experiences.

Equally important is the training of leaders to understand both the potential and the limitations of AI in the context of human psychology, and to foster a culture grounded in trust and autonomy - essential for creative collaboration with technology. Artificial Intelligence should serve human agency and development, rather than facilitate instrumentalization or replacement.

The conclusions of this analysis emphasize that innovation management in the era of AI requires a deeper understanding of the human mind, motivation, and creative flow. This necessitates a shift away from purely technological or procedural approaches toward the construction of a creative ecosystem, where technology coexists with human capabilities and

organizational culture (Raport FDP, 2020). AI can indeed support these positive phenomena, but only if system design and usage are intentional, ethical, and oriented toward strengthening human autonomy and intrinsic motivation - rather than algorithmic nudging or cognitive manipulation. The full realization of this potential demands continued interdisciplinary research.

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