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CREATIVE PRINCIPLES FOR MANAGING INNOVATION PROJECTS IN BANI ENVIRONMENT

Abstract. *In the dynamic landscape of innovation, where environments are increasingly characterized as Brittle, Accelerating, Nonlinear, and Incomprehensible (BANI), traditional project management approaches fall short of addressing the complexities and uncertainties that arise. This abstract explores a set of creative principles tailored for the effective management of innovation projects within BANI environments. Drawing inspiration from agile frameworks, design thinking, and open innovation, these principles aim to navigate the brittleness, acceleration, nonlinearity, and incomprehensibility inherent in such contexts. Adaptive leadership, rapid prototyping, and scenario planning emerge as key components, fostering a culture of continuous learning and cross-functional collaboration. Emphasizing innovation metrics beyond traditional KPIs, the abstract advocates for an ecosystem thinking approach to holistically comprehend the intricate interplay of factors within BANI environments. By integrating these creative principles, organizations can position themselves to not only adapt to the challenges presented by BANI but to thrive amid uncertainty, turning it into a catalyst for innovative growth. The world of innovation is facing unprecedented challenges. The acronym BANI – Brittle, Anxious, Nonlinear, and Incomprehensible – aptly captures the current environment characterized by fragile systems and interconnectedness. A single event can trigger cascading disruptions across industries and continents. Heightened uncertainty and anxiety. Rapid change and unforeseen events create constant pressure and require agility in decision-making. Non-linear trajectories and emergent phenomena. Traditional planning becomes obsolete in a world where cause and effect are blurry and unexpected outcomes arise. An incomprehensible information landscape. The sheer volume and complexity of data make it difficult to discern truth and make informed decisions. By embracing these creative principles, we can transform innovation projects from rigid endeavours into dynamic journeys of exploration and discovery. In the face of the BANI environment, embracing creativity, learning from failures, and pivoting quickly are the keys to unlocking ground-breaking ideas and shaping a better future.*

Keywords: *creative principles; managing innovation; projects; BANI environment*

Introduction

In the contemporary landscape of rapid technological advancements and unprecedented societal shifts, the business environment is increasingly characterized by its inherent volatility, uncertainty, and

complexity. Coined as BANI, which stands for Brittle, Accelerating, Nonlinear, and Incomprehensible, this environment presents unique challenges for managing innovation projects. Traditional project management methodologies often prove insufficient in addressing the

intricacies of a BANI setting. Therefore, this introduction sets the stage for exploring a set of creative principles specifically tailored for the effective management of innovation projects within BANI environments (fig. 1).



Figure 1 – The stage for exploring a set of creative tools and techniques specifically tailored for the effective management of innovation projects within BANI environments

Navigating this BANI environment demands a paradigm shift in managing innovation projects. Traditional, linear approaches built on predictability and control no longer suffice. Instead, we need to embrace creative tools and techniques that foster resilience, adaptability, and a spirit of exploration. Let's look at these tools and techniques.

Embrace experimentation and iteration. Move beyond detailed planning and rigid timelines. Rapid prototyping, agile methodologies, and continuous learning are key to navigating uncertainty and discovering unexpected opportunities.

Cultivate a culture of curiosity and questioning. Challenge assumptions, explore diverse perspectives, and encourage out-of-the-box thinking. Embrace serendipity and unexpected discoveries as stepping stones to innovation.

Prioritize collaboration and co-creation. Build diverse teams with complementary skills and perspectives. Foster open communication, trust, and psychological safety to encourage collaboration and collective intelligence.

Focus on empathy and human-centred design. Understand the needs and challenges of your target audience, even if they haven't explicitly articulated them. Develop solutions that are not only technologically advanced but also address real-world problems and resonate with users.

Be adaptive and learn continuously. Embrace ambiguity and change as opportunities for learning and growth. Monitor your progress, iterate quickly, and adjust your approach based on real-time feedback and emerging insights.

Build resilience and antifragility. Develop systems and processes that can withstand unexpected shocks and emerge stronger from disruptive events. Focus on adaptability, redundancy, and resourcefulness to navigate crisis and uncertainty.

Leverage technology strategically. Use technology as a tool to empower creativity, collaboration, and data-driven decision-making. However, be mindful of its limitations and focus on human-centred applications that enhance, not replace, human ingenuity.

Embrace responsible innovation. Consider the ethical implications of your innovations and prioritize solutions that benefit society at large. Be transparent, accountable, and mindful of potential unintended consequences.

Let's look at creative tools and techniques for the effective management of innovation projects within BANI environments.

Background on BANI Environments. The term BANI encapsulates the fragility of systems, the accelerating pace of change, the nonlinear relationships between variables, and the inherent difficulty in comprehending the complexities at play. Understanding this backdrop is crucial for formulating adaptive strategies.

Rethinking Project Management. Conventional project management approaches, designed for more stable environments, face limitations in the face of BANI dynamics. The introduction highlights the need for a paradigm shift, necessitating a set of creative principles that align with the unique challenges posed by BANI.

Significance of Creative Tools. Emphasizing the role of creativity, the introduction explores how creative tools can act as a catalyst for innovation in BANI environments. These tools are not merely guidelines; they represent a proactive and adaptive approach to project management that embraces uncertainty as a source of opportunity.

Overview of Creative Tools. A brief overview is provided, teasing the key creative tools that will be explored in-depth. These include agile frameworks, design thinking, open innovation, adaptive leadership, rapid prototyping, scenario planning, cross-functional collaboration, innovation metrics, continuous learning culture, and ecosystem thinking.

Objective of Exploration. The introduction outlines the objective of the subsequent exploration — to delve into each creative principle and elucidate how it contributes to effective project management in BANI environments. This exploration aims to equip project managers, leaders, and innovators with actionable insights for navigating the challenges inherent in today's volatile and dynamic business ecosystems.

As we embark on this exploration of creative principles, the goal is to offer a comprehensive

understanding of how these principles can be applied synergistically to not only manage but thrive amidst the uncertainties and complexities of BANI environments.

Literature review

The effect of today's turbulent environment means that organisations need to improve their competitive advantage and swiftly respond to changing technology and markets. An organisation's ability to continuously innovate its products and business systems is essential to its future success. However, this ability to stimulate innovation is highly dependent upon the stock of potential ideas and problem solutions, which are available to feed the innovation process [1].

This paper presents an integrated approach to innovation management that focuses on managing the needs of all major participants, resulting in optimal joint investment in creative idea development and implementation [2].

The situation of variability, uncertainty, complexity and ambiguity of the environment requires companies to use a creative approach to business design and management. The ability to adapt, organizational flexibility and manoeuvrability of businesses is provided by a creative approach to their design and innovative development of these systems. In the current situation, companies must look for radically new approaches to business design and management practices that correspond to the state of their environment [3].

Project management principles can support innovation in organizations by fostering creativity and ensuring clear requirements, schedules, and risks are identified and managed [4].

In the current economic conditions, the utilization of present-day techniques in innovation project management is a main thrust of development framework improvement. One of the key positions in the

advancement of extended administration is the commercialization of innovative work comes about. The commercialization of innovative work results is unequivocally connected to the marketing of innovations [5].

The transformation of values of the high technology projects from a VUCA to a BANI environment model is presented in [6].

Innovative development of educational systems in the BANI environment is proposed in [7].

Inspirational Development of Education Establishment. Astana IT University Case described in [8].

Creative principles for managing innovation projects in BANI environment overview

Managing innovation projects in a BANI (brittle, accelerating, nonlinear, and incomprehensible) environment requires a unique set of creative principles to navigate the complexities and uncertainties associated with rapidly changing landscapes. The creative principles tailored for managing innovation projects in a BANI environment are presented in fig. 2.

Let's look at each principle.

Agile Frameworks. Embrace agile methodologies that allow for flexibility and quick adaptation to changing circumstances. Iterative development cycles and frequent reassessment of project goals can better accommodate the brittleness and acceleration inherent in BANI environments.

Design Thinking. Apply design thinking principles to foster a human-centric approach. Understand the needs and behaviours of users, iterate based on feedback, and rapidly prototype solutions. This approach helps address the nonlinearity of BANI environments by promoting constant user engagement and empathy.

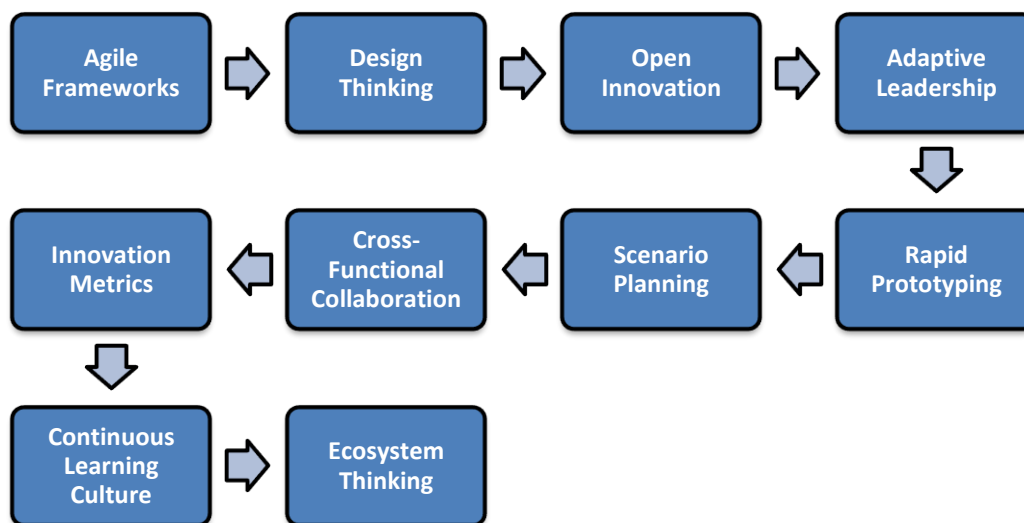


Figure 2 – The creative principles tailored for managing innovation projects in a BANI environment

Open Innovation. Foster collaboration and open innovation by engaging external partners, customers, and stakeholders. Utilize diverse perspectives to generate creative solutions and insights. In a BANI environment, where comprehensibility is a challenge, leveraging collective intelligence becomes imperative.

Adaptive Leadership. Cultivate adaptive leadership that can navigate through ambiguity. Leaders should encourage a culture of experimentation, learning from failures, and adjusting strategies accordingly. Adaptive leadership helps manage the inherent incomprehensibility of the environment by promoting resilience and learning.

Rapid Prototyping. Emphasize rapid prototyping to quickly test and validate ideas. This principle aligns with the accelerating nature of BANI environments, allowing teams to bring concepts to life swiftly and make informed decisions based on tangible prototypes.

Scenario Planning. Incorporate scenario planning to anticipate potential future developments and uncertainties. By envisioning various scenarios, teams can proactively develop strategies to respond to the nonlinear and unpredictable aspects of a BANI environment.

Cross-Functional Collaboration. Encourage cross-functional collaboration and interdisciplinary teams. This approach helps tackle complex challenges by integrating diverse skills and perspectives, contributing to the resilience needed in a BANI environment.

Innovation Metrics. Develop innovative metrics that go beyond traditional Key Performance Indicators (KPIs). Metrics should capture the adaptability, learning, and responsiveness of the project, providing insights into progress within the incomprehensible aspects of the BANI environment.

Continuous Learning Culture. Foster a culture of continuous learning where employees are encouraged to acquire new skills and stay updated on industry trends. This principle aligns with the accelerating pace of change in BANI environments, ensuring teams remain adaptable and well-equipped to face evolving challenges.

Ecosystem Thinking. Embrace ecosystem thinking by considering the broader network of interconnected elements. This approach helps navigate the nonlinear dynamics of BANI environments, recognizing that innovations often arise from the complex interactions within the ecosystem.

By incorporating these creative principles, organizations can enhance their ability to manage innovation projects effectively in BANI environments, leveraging uncertainty as a source of opportunity and growth.

Contribution of creative principles to sustainable performance of innovative projects

Creative principles play a significant role in contributing to the sustainable performance of innovative projects. Integrating creativity into project management processes can enhance problem-solving, promote collaboration, and foster a culture of continuous improvement. Let's look at key contributions of creative principles to the sustainable performance of innovative projects (table 2).

Table 2 – Key contributions of creative principles to the sustainable performance of innovative projects

N	Principle	Level of contribution (1-10)
1	<i>Agile Frameworks</i>	6
2	<i>Design Thinking</i>	5
3	<i>Open Innovation</i>	7
4	<i>Adaptive Leadership</i>	5
5	<i>Rapid Prototyping</i>	4
6	<i>Scenario Planning</i>	4
7	<i>Cross-Functional Collaboration</i>	6
8	<i>Innovation Metrics</i>	5
9	<i>Continuous Learning Culture</i>	4
10	<i>Ecosystem Thinking</i>	6

This case study was done by a group of 9 experts, selected from Ukraine, Kazakhstan and Azerbaijan. Results presented by spider diagram in fig. 3 shows us three priorities of contribution – *Agile Frameworks, Cross-Functional Collaboration and Ecosystem Thinking.*

Integrating creative principles into innovative projects fosters an environment that stimulates creativity, encourages collaboration, and supports adaptability. This, in turn, contributes to the sustainable performance of projects by fostering innovation, addressing challenges effectively, and ensuring continuous improvement.

Conclusion

In conclusion, the creative principles outlined for managing innovation projects in a BANI (Brittle, Accelerating, Nonlinear, Incomprehensible) environment represent a strategic framework that recognizes and addresses the unique challenges posed by the ever-changing dynamics of contemporary business landscapes. The adaptability and responsiveness inherent in agile methodologies, coupled with the human-centric approach of design thinking, provide a solid foundation for navigating the brittleness and acceleration characteristic of BANI environments.

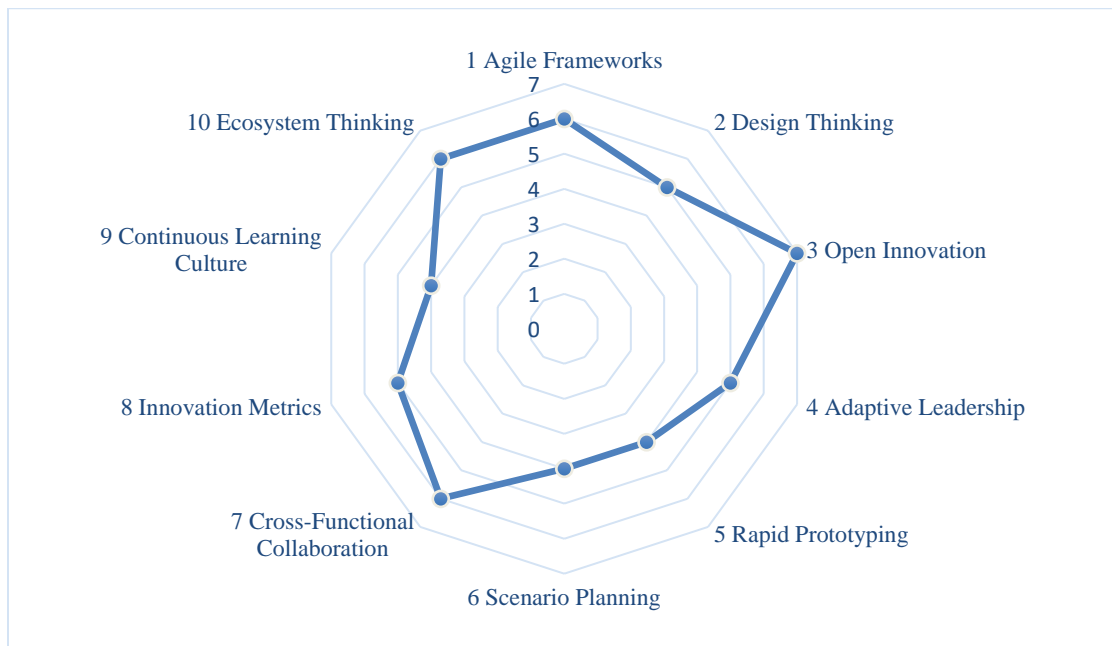


Figure 3 – Spider diagram of contributions of creative principles to the sustainable performance of innovative projects

The emphasis on open innovation underscores the importance of collaboration, acknowledging that diverse perspectives and collective intelligence are essential in tackling the nonlinear and incomprehensible nature of these environments. Adaptive leadership emerges as a linchpin, guiding teams through ambiguity and fostering a culture of experimentation and resilience.

Rapid prototyping becomes a crucial tool for testing and validating ideas swiftly, aligning with the accelerating pace of change in BANI environments. Scenario planning anticipates potential futures, offering a strategic advantage in navigating through the incomprehensibility of an environment marked by rapid and unpredictable shifts.

Cross-functional collaboration and interdisciplinary teams emerge as fundamental components, recognizing the complexity of challenges within BANI environments. This collaborative approach, along with a continuous

learning culture, ensures that teams remain adaptable and well-equipped to face evolving uncertainties.

Innovation metrics that go beyond traditional KPIs provide a nuanced understanding of progress within the incomprehensible aspects of the BANI environment. Finally, an ecosystem thinking approach encapsulates the interconnected nature of elements within these environments, acknowledging that innovations often arise from the complex interactions within the ecosystem.

Collectively, these creative principles not only provide a robust framework for managing innovation projects in BANI environments but also foster a mindset that views uncertainty as an opportunity for growth and transformation. By embracing these principles, organizations can position themselves not merely to weather the storm of change but to thrive amidst the chaos, turning challenges into catalysts for innovation and sustained success.

References

1. Brennan, A., & Dooley, L. (2005). Networked creativity: a structured management framework for stimulating innovation. *Technovation*, 25, 1388–1399. <https://doi.org/10.1016/J.TECHNOVATION.2004.08.001>.
2. Yu, O. (2017). Innovation Management: A Need-Centered Optimal Joint Investment Approach. 2017 Portland International Conference on Management of Engineering and Technology (PICMET), 1–12. <https://doi.org/10.23919/PICMET.2017.8125358>.
3. Garafonova, O., Lazarenko, Y., Marhasova, V., & Yashchenko, I. (2020). Startup project development as a basis for the development of intellectual capital, management and increasing competitiveness. *Herald of Khmelnytskyi national university*. <https://doi.org/10.31891/2307-5740-2020-288-6-31>.
4. Paletz, S. (2012). Project Management of Innovative Teams. , 421-455. <https://doi.org/10.1016/B978-0-12-374714-3.00017-3>.
5. Aruneshwar D. K., & Rajasekar, D. (2018). Innovative Application Development of Consumer Loyalty Management Schemes. *International Journal of Supply Chain Management*, 7, 174–176.
6. Bushuyev, S., Piliuhina, K., Chetin, E. (2023). Transformation of values of the high technology projects from a VUCA to a BANI environment model. *Innovative Technologies and Scientific Solutions for Industries*, N 2 (24), pp. 191–199.

7. Bushuyev, Sergey, Bushuyeva, Natalia, Murzabekova, Svetlana, Khusainova, Maira, (2023). Innovative development of educational systems in the bani environment. *Scientific Journal of Astana IT University*, Vol 14, DOI 10.37943/14YNSZ2227.

8. Bushuyev S., Murzabekova S., Biloshchyskyi A. (2023). Inspirational Development of Education Establishment. Astana IT University Case. IEEE International Conference on Smart Information Systems and Technologies (SIST).

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КРЕАТИВНІ ПРИНЦИПИ УПРАВЛІННЯ ІННОВАЦІЙНИМИ ПРОЄКТАМИ В СЕРЕДОВИЩІ BANI

Анотація. У динамічному середовищі інновацій, де середовище все частіше характеризують як крихке, прискорювальне, нелінійне та незрозуміле (BANI), традиційні підходи до управління проєктами не здатні вирішити складності та невизначеності, які виникають. Досліджено набір творчих принципів, розроблених для ефективного управління інноваційними проєктами в середовищі BANI. Черпаючи натхнення в гнучких фреймворках, дизайнерському мисленні та відкритих інноваціях, ці принципи спрямовані на навігацію через крихкість, прискорення, нелінійність і незрозумілість, властиві таким контекстам. Адаптивне лідерство, швидке створення прототипів і планування сценаріїв стають ключовими компонентами, що сприяють розвитку культури постійного навчання і міждфункціональної співпраці. Наголошуючи на метриках інновацій за межами традиційних KPI, анотація виступає за підхід екосистемного мислення для цілісного розуміння складної взаємодії факторів у середовищі BANI. Інтегруючи ці творчі принципи, організації можуть не лише адаптуватися до викликів, які представляє BANI, але й процвітати в умовах невизначеності, перетворюючи його на каталізатор інноваційного зростання. Світ інновацій стикається з безпрецедентними викликами. Абревіатура BANI – Brittle, Anxious, Nonlinear, and Incomprehensible – влучно відображає поточне середовище, яке характеризується крихкими системами і взаємозв'язками. Одна подія може спровокувати каскадні збої в галузях і на континентах. Підвищена невпевненість і тривога. Швидкі зміни та непередбачені події створюють постійний тиск і вимагають спритності у прийнятті рішень. Нелінійні траєкторії та емерджентні явища. Традиційне планування застаріває у світі, де причинно-наслідкові зв'язки розмиті, тож виникають несподівані результати. Незрозумілий інформаційний ландшафт. Величезний обсяг і складність даних ускладнюють розпізнавання правди та прийняття обґрунтованих рішень. Дотримуючись цих творчих принципів, ми можемо перетворити інноваційні проєкти з жорстких зусиль на динамічні подорожі досліджень і відкриттів. У середовищі BANI сприйняття креативності, навчання на невдачах і швидка зміна є ключем до розкриття новаторських ідей і формування кращого майбутнього.

Ключові слова: креативні принципи; управління інноваціями; проєкти; середовище BANI

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