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## ADAPTABILITY IN MANAGING INNOVATIVE PROJECTS WITHIN THE BANI ENVIRONMENT

**Abstract.** *This paper explores the challenges and opportunities faced by project managers in the context of development innovation projects within the BANI (Brittle, Anxious, Nonlinear, and Incomprehensible) environment. The BANI framework represents a rapidly changing and uncertain landscape characterized by volatility, uncertainty, complexity, and ambiguity. In such an environment, traditional project management approaches often fall short in addressing the unique requirements and dynamics of development innovation projects. The objective of this research is to identify key strategies and best practices that project managers can employ to effectively navigate and manage development innovation projects in the BANI environment. The study combines literature review and expert interviews to gather insights and perspectives from both academia and industry. The findings highlight the need for project managers to embrace flexibility, adaptability, and resilience in their approach to managing development innovation projects. It emphasizes the importance of fostering a culture of experimentation, collaboration, and continuous learning to drive innovation in such environments. The research identifies the significance of leveraging technology and digital tools to enhance project monitoring, communication, and decision-making processes. The paper concludes by providing a set of recommendations and practical guidelines for project managers operating in the BANI environment. These include adopting an agile project management approach, establishing cross-functional teams, fostering stakeholder engagement and co-creation, and implementing robust risk management strategies. By shedding light on the challenges and opportunities specific to development innovation projects in the BANI environment, this research contributes to the existing body of knowledge on project management. It serves as a valuable resource for project managers, researchers, and practitioners seeking to enhance their understanding and effectiveness in managing projects in similar volatile and complex contexts.*

**Keywords:** *innovation; development trends; competencies; BANI environment; case study*

### Introduction

In today's rapidly changing and uncertain world, project managers are increasingly faced with the challenge of managing development innovation projects within the BANI (Brittle, Anxious, Nonlinear, and Incomprehensible) environment [1]. The BANI framework represents a complex and volatile landscape characterized by constant disruption, unpredictable

market dynamics, and rapidly evolving technologies. In such an environment, traditional project management approaches often prove inadequate in addressing the unique requirements and dynamics of development innovation projects.

Development innovation projects refer to initiatives aimed at creating and implementing novel solutions to address social, economic, and environmental challenges. These projects often involve multidisciplinary teams,

cutting-edge technologies, and a high degree of uncertainty. They require project managers to navigate through ambiguity, embrace flexibility, and foster a culture of experimentation and collaboration.

The BANI environment adds another layer of complexity to the management of development innovation projects. It encompasses four key dimensions.

*Brittle.* The environment is characterized by fragility and vulnerability, where sudden disruptions and shocks can have significant impacts on the project. This calls for project managers to be prepared for unexpected events and develop resilience to mitigate risks effectively.

*Anxious.* The BANI environment is rife with uncertainty and anxiety, making it challenging to predict future trends and outcomes. Project managers must possess the ability to handle ambiguity, make informed decisions under uncertainty, and continuously adapt their strategies.

*Nonlinear.* The BANI environment is characterized by nonlinearity, where small changes can lead to disproportionate and unpredictable effects. This necessitates project managers to embrace agile approaches that allow for iterative and adaptive project planning and execution.

*Incomprehensible.* The environment is complex and difficult to comprehend fully. The interplay of various factors, including social, economic, and technological aspects, adds to the complexity. Project managers need to adopt systems thinking and engage in continuous learning to understand the intricate dynamics at play.

The objective of this research is to explore and identify effective strategies and best practices that project managers can employ and develop competencies to successfully manage innovation projects in the BANI environment. By understanding the unique challenges and opportunities presented by this environment, project managers can enhance their ability to drive innovation, mitigate risks, and achieve project success. This research contributes to the existing body of knowledge on project management and supports the advancement of effective project management practices in the face of rapid change and uncertainty [2; 3].

**The purpose** of the article is to present trends in the innovative competencies development projects and the global environment of BANI to search for new opportunities and strategies to ensure sustainable systems and market success.

## Trends in the innovation development

The field of innovation development is constantly evolving, influenced by emerging technologies, shifting societal needs, and global challenges. Here are some significant trends that are shaping innovation development.

*Digital Transformation.* The integration of technologies like artificial intelligence, machine learning, big data analytics, cloud computing, and IoT is driving innovation across industries. Organizations leverage these technologies to optimize processes, improve customer experiences, and create new digital products and services.

*Sustainability and Green Innovation.* There is a growing emphasis on sustainable development and environmentally friendly solutions. Companies are incorporating sustainable practices into their innovation processes, focusing on renewable energy technologies, eco-friendly materials, circular economy models, and sustainable supply chains.

*Open Innovation and Collaboration.* Organizations recognize the value of collaboration and open innovation. They actively seek external partnerships, engage with startups, and create innovation ecosystems to foster knowledge sharing, co-creation, and access to diverse expertise.

*User-Centric Design and Human-Centered Innovation.* Innovation development is driven by user needs and experiences. Design thinking methodologies and user-centered approaches help organizations empathize with end-users, understand their pain points, and develop solutions that meet their specific needs and preferences.

*Agile and Lean Approaches.* Agile methodologies, such as Scrum and Kanban, are widely adopted in innovation development. These iterative and flexible approaches enable teams to adapt quickly, gather feedback, and deliver incremental value. Lean principles are also applied to streamline innovation workflows by eliminating waste and optimizing processes.

*Disruptive Technologies.* Emerging technologies like AI, blockchain, virtual reality, and 3D printing are catalysts for disruptive innovation. They have the potential to transform industries, create new business models, and revolutionize existing products and services.

*Data-Driven Innovation.* The availability of vast amounts of data is revolutionizing innovation processes. Organizations leverage data analytics and predictive modeling to gain insights, identify trends, and make data-informed decisions, uncovering new opportunities and driving competitive advantage.

*Agile Governance.* Traditional hierarchical governance models are being replaced by agile and flexible structures. Organizations adopt decentralized decision-making processes, empower cross-functional teams, and embrace adaptive governance frameworks to foster innovation and respond swiftly to market changes.

*Social Innovation.* Addressing social challenges and creating positive social impact is gaining importance. Social innovation initiatives tackle issues like healthcare, education, poverty, inequality, and sustainable

development through cross-sector collaborations and innovative business models [4].

*Continuous Learning and Innovation Culture.* Organizations foster a culture of continuous learning and innovation to stay competitive. Emphasizing experimentation, learning from failures, and encouraging a growth mindset create a dynamic and innovative work environment.

These trends underscore the dynamic nature of innovation development, emphasizing agility, collaboration, user-centricity, sustainability, and technological advancements. Staying updated on these trends and leveraging them effectively can help organizations achieve successful innovation outcomes in today's competitive landscape.

### **Management of innovative projects in the BANI environment**

Management of innovative projects in the BANI environment requires a strategic and adaptive approach that addresses the unique challenges posed by volatility, uncertainty, complexity, and ambiguity. Here are key considerations for effectively managing innovative projects in the BANI environment.

*Embrace Agility and Flexibility.* Adopt agile project management methodologies, such as Scrum or Kanban, to enable flexibility and adaptability in the face of changing circumstances. Agile approaches emphasize iterative development, frequent feedback loops, and collaboration, allowing project teams to respond swiftly to emerging challenges and capitalize on new opportunities [5].

*Develop a Robust Innovation Strategy.* Define a clear innovation strategy that aligns with the organization's overall goals and objectives. This strategy should outline the project's scope, objectives, target outcomes, and success criteria. It should also consider potential risks and uncertainties inherent in the BANI environment and identify strategies to mitigate them.

*Foster a Culture of Innovation.* Cultivate an organizational culture that values innovation, encourages creative thinking, and rewards risk-taking. Promote an environment where team members feel empowered to generate and explore new ideas, experiment with different approaches, and learn from failures. Encourage cross-functional collaboration and knowledge sharing to foster innovation across the organization [6].

*Stakeholder Engagement and Co-creation.* Actively engage with stakeholders throughout the project lifecycle to ensure their input, involvement, and ownership. Involve stakeholders in the co-creation process, seeking their perspectives and insights. By engaging stakeholders early on, project managers can better understand their needs, align project objectives, and increase the chances of project success.

*Robust Risk Management.* Develop a comprehensive risk management plan that identifies and addresses potential risks associated with the BANI environment. Continuously monitor the external landscape, assess risks, and implement mitigation strategies. Regularly review and update the risk management plan to adapt to changing circumstances.

*Leverage Technology and Digital Tools.* Utilize technology and digital tools to enhance project management processes and collaboration. Project management software, communication platforms, and virtual collaboration tools facilitate real-time communication, document sharing, progress tracking, and remote team collaboration, which are particularly valuable in the BANI environment [7].

*Regular Evaluation and Course Correction.* Establish mechanisms for regular project evaluation and performance monitoring. Use key performance indicators (KPIs) to track progress, measure success, and identify areas for improvement. Based on evaluation results, be prepared to make course corrections and adapt project plans accordingly to ensure project outcomes align with the evolving BANI environment.

*Emphasize Ethical Considerations.* Consider the ethical implications of innovation projects in the BANI environment. Ensure that projects adhere to ethical standards, address potential social and environmental impacts, and align with the values of the organization and stakeholders. Foster responsible innovation practices that promote positive societal outcomes.

*Collaborative Ecosystems.* Foster partnerships and collaborations with external entities, such as universities, research institutions, startups, and other organizations, to leverage diverse expertise and resources. Collaborative ecosystems enable access to a broader range of knowledge, skills, and innovative ideas, enhancing the project's potential for success.

By adopting these strategies, project managers can effectively navigate the challenges of managing innovative projects in the BANI environment. These approaches foster agility, collaboration, stakeholder engagement, and continuous learning, enabling projects to thrive in the face of volatility, uncertainty, complexity, and ambiguity, and driving successful innovation outcomes.

### **Enhancing competencies in innovation Agile project management within a BANI Environment**

Managing innovation projects with Agile methodologies in a BANI environment requires specific development competencies. Here are some key competencies for effective innovation project management in this context.

*Agile Methodologies.* Familiarity with Agile frameworks like Scrum or Kanban is essential.

Understanding Agile principles, practices, and ceremonies enables effective project planning, iterative development, and adaptability to changing requirements.

*Cross-Functional Collaboration.* In a BANI environment, where boundaries between industries blur, it is crucial to collaborate with cross-functional teams. Development competencies should include the ability to facilitate collaboration, encourage diverse perspectives, and foster effective communication among team members.

*Flexibility and Adaptability.* The BANI environment is characterized by rapid change and uncertainty. Development competencies should include the ability to embrace uncertainty, adapt quickly to changing circumstances, and adjust project plans and priorities accordingly.

*User-Centric Mindset.* Innovation projects in a BANI environment often focus on addressing user needs and delivering value. Development competencies should include a deep understanding of user-centered design principles, empathy for end-users, and the ability to incorporate user feedback throughout the project lifecycle [8].

*Iterative Development.* Agile methodologies emphasize iterative development cycles. Development competencies should include the ability to break down complex projects into manageable iterations, prioritize features or deliverables, and continuously improve based on feedback and insights gained from each iteration.

*Continuous Learning and Improvement.* A culture of continuous learning and improvement is crucial in a BANI environment. Development competencies should include a willingness to experiment, learn from failures, and apply insights to enhance future projects.

*Adaptive Planning.* Agile project management requires a flexible and adaptive approach to planning. Development competencies should include the ability to create and adjust project plans incrementally, considering evolving market trends, emerging technologies, and customer feedback.

*Stakeholder Management.* Effectively managing stakeholders is vital in a BANI environment. Development competencies should include the ability to identify and engage with key stakeholders, manage their expectations, and ensure their involvement throughout the project to maximize support and alignment.

*Risk Management.* Innovation projects in a BANI environment may involve inherent risks. Development competencies should include the ability to identify, assess, and manage risks effectively. Applying risk management techniques, such as risk mitigation strategies and contingency planning, helps navigate uncertainties.

*Agile Leadership Tools and Practices.* Proficiency in using Agile leadership tools and practices is essential for effective innovation project management.

Development competencies should include familiarity with project management software, Agile collaboration tools, and techniques like backlog management, sprint planning, and visual management [9].

By cultivating these development competencies, project managers can successfully navigate the challenges of managing innovation projects in an Agile manner within the dynamic BANI environment [10].

## Case study

In the practice of managing innovative projects, there are several views on the key competencies of project managers. In this case, we have selected ten key competencies that take into account the properties of the BANI environment (table).

*Table 1 – The chosen case yielded findings that identified ten essential competencies, considering the characteristics of the BANI environment*

№	Competencies	Benchmark (1-10)	Actual (1-10)
1	Sustainability	5	7
2	Leadership and Adaptability	4	8
3	Systems thinking	5	7
4	Creativity and innovation	5	6
5	Emotional intelligence	6	8
6	Ability to learn	4	6
7	Decision making under uncertainty	5	7
8	Collaboration and communication	5	7
9	Strategic thinking	5	8
10	Adaptation to digital technologies	6	9

A study was conducted on a cohort of 15 students who were actively involved in the VIMACS project and the European Union ERASMUS + program, which provided financial and technical support through the DAAD and WORK4CE projects. The students underwent training in Digitalization in Project Management and Innovation Project Management within the BANI environment.

The findings of the study, presented in Table 1 and Figure, revealed the competency levels of the selected project. These levels were determined through an expert assessment, involving a survey of eight specialists in the field of innovation project management. The assessment followed the IPMA Delta assessment scheme [11].

The case study demonstrated a significant improvement in the students' competence in Leadership and Adaptability, as well as their ability to adapt to digital technologies. Furthermore, all competencies surpassed the established benchmark.

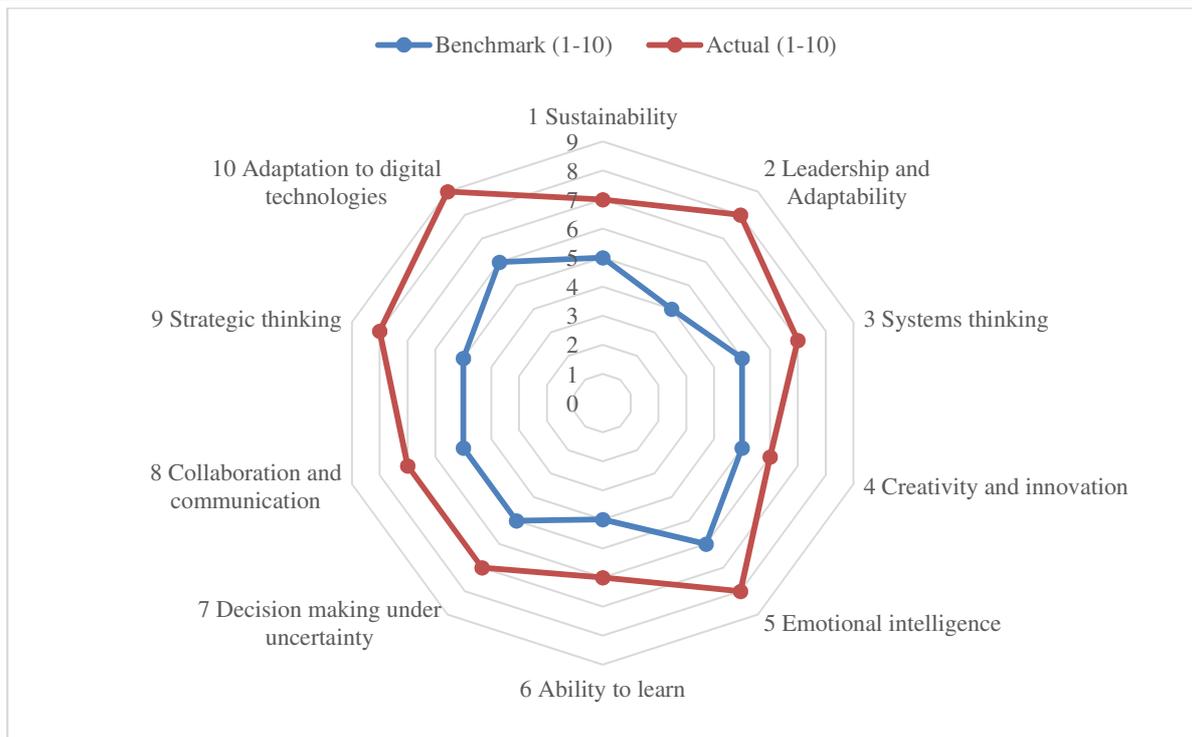


Figure – The findings that identified ten essential competencies, considering the characteristics of the BANI environment

### Conclusion

In conclusion, the field of development innovation project management in the BANI environment presents unique challenges and opportunities for project managers. The BANI framework, characterized by its brittleness, anxiety, nonlinearity, and incomprehensibility, necessitates a fresh approach to managing projects aimed at addressing social, economic, and environmental challenges.

Throughout this paper, we have explored strategies and best practices that project managers can employ to navigate the BANI environment successfully. The findings highlight the importance of flexibility, adaptability, and resilience in project management. Embracing an agile approach, fostering a culture of experimentation and collaboration, and leveraging technology and digital tools are crucial elements in driving innovation in the BANI environment.

Moreover, the research underscores the significance of stakeholder engagement, cross-functional teamwork, and robust risk management strategies. By embracing these practices, project managers can effectively mitigate the challenges presented by the BANI environment and capitalize on its opportunities.

The trends in innovation development further emphasize the need for project managers to stay abreast of emerging technologies, sustainability concerns, open collaboration, user-centric design, and data-driven

approaches. These trends shape the context in which development innovation projects operate and provide valuable insights into the evolving nature of project management practices.

By combining theoretical insights from the literature and practical perspectives from industry experts, this research contributes to the existing body of knowledge on development innovation project management in the BANI environment. The recommendations and guidelines presented in this paper serve as a valuable resource for project managers, researchers, and practitioners seeking to enhance their understanding and effectiveness in managing projects in similar volatile and complex contexts.

As the BANI environment continues to evolve, project managers must remain adaptable and continuously learn and adapt their strategies. By embracing the principles and practices outlined in this paper, project managers can navigate the challenges of the BANI environment, drive innovation, and achieve project success in the pursuit of positive social, economic, and environmental outcomes.

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## **АДАПТИВНІСТЬ В УПРАВЛІННІ ІННОВАЦІЙНИМИ ПРОЄКТАМИ В СЕРЕДОВИЩІ BANI**

Досліджено проблеми та можливості, з якими стикаються керівники проєктів у контексті інноваційних проєктів розвитку в середовищі BANI (крихке, тривожне, нелінійне та незрозуміле). Структура BANI представляє швидко мінливий і невизначений ландшафт, який характеризується мінливістю, невизначеністю, складністю та неоднозначністю. У такому середовищі традиційні підходи до управління проєктами часто не враховують унікальні вимоги та динаміку розвитку інноваційних проєктів. Метою цього дослідження є визначення ключових стратегій і найкращих практик, які менеджери проєктів можуть використовувати для ефективної навігації і управління інноваційними проєктами розвитку в середовищі BANI. Дослідження поєднує в собі огляд літератури та інтерв'ю з

експертами, щоб зібрати ідеї і точки зору як з наукових кіл, так і з промисловості. Отримані результати підкреслюють необхідність для керівників проектів використовувати гнучкість, адаптивність і стійкість у своєму підході до управління інноваційними проектами розвитку. Він наголошує на важливості виховання культури експериментів, співпраці та постійного навчання для стимулювання інновацій у таких середовищах. Дослідження визначає важливість використання технологій і цифрових інструментів для покращення моніторингу проектів, комунікації та процесів прийняття рішень. Документ завершується наданням набору рекомендацій і практичних вказівок для керівників проектів, що працюють у середовищі BANI. Вони включають застосування гнучкого підходу до управління проектами, створення міжфункціональних команд, сприяння залученню зацікавлених сторін і спільної творчості, а також впровадження надійних стратегій управління ризиками. Висвітлюючи виклики та можливості, характерні для інноваційних проектів розвитку в середовищі BANI, це дослідження робить внесок у наявний масив знань з управління проектами. Він служить цінним ресурсом для менеджерів проектів, дослідників і практиків, які прагнуть покращити своє розуміння та ефективність управління проектами в аналогічних нестабільних і складних контекстах.

**Ключові слова:** інновації; тенденції розвитку; компетенції; середовище BANI; бізнес-кейс

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