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The Formation and Development of Construction Clusters in the Conditions of Regional Development

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ABSTRACT

Objective: *This research aims to evaluate the effectiveness of regional investment construction clusters by addressing gaps in existing models, specifically those that overlook key elements such as inter-network relationships, cluster management, and transaction cost savings.* ***Methods:*** *A systemic approach combining quantitative and qualitative analysis was employed to examine the dynamics of regional construction clusters. The study focused on small, medium, and large construction firms, intermediaries, and public-private partnerships, using a lifecycle analysis to assess cluster development stages from emergence to decline.* ***Results:*** *The study revealed that current models fail to consider the complexities of cluster interactions and the role of public-private partnerships in fostering regional development. Key findings highlight the need for a balanced management structure that allows both centralization and autonomy, promoting collaborative outcomes among stakeholders.* ***Novelty****: This research introduces a holistic approach to cluster evaluation, incorporating both tangible and intangible factors such as social development, transaction cost savings, and the integration of local and regional resources. The findings offer new insights into managing investment-construction clusters for sustainable growth and socio-economic development.*

INTRODUCTION

The evaluation of the effectiveness of cluster practices in regional investment construction remains a largely unexplored area within the scientific literature, particularly in terms of how to fully assess their impact on both the local and broader economic landscapes [1], [2]. Existing mathematical models used in various countries often focus on measuring the outcomes of leading enterprises within clusters using a combination of quantitative and qualitative metrics [3]. While these models provide some insights into the success of individual enterprises or industries, they tend to overlook crucial elements such as the dynamics of inter-network relationships, the efficiency of cluster management systems, and the transaction cost savings generated by collaboration within the cluster. These missing elements are vital for understanding the full potential of a cluster, especially in fostering sustainable growth and development.

The concept of a "construction complex," first introduced in the 1980s, laid the groundwork for recognizing the need for coordination across various stakeholders within the construction industry [4], [5]. Initially, this concept aimed to enhance collaboration among different actors in the construction sector, which included

construction firms, supply chain partners, and regulatory authorities [6], [7]. As economic conditions evolved, this concept expanded into the broader term of "investment-construction complex," which recognizes the integration of construction activities with investment processes. This shift highlights the necessity for more robust coordination not only between construction firms but also between a diverse range of actors, including infrastructure providers, educational institutions, financial bodies, and even public sector regulators. The investment-construction complex emphasizes that the efficient functioning of these interconnected entities is essential to delivering high-quality construction products and services that meet the growing demands of the market.

Over time, the role of these actors has become increasingly interconnected, making it clear that regional construction clusters cannot operate in isolation. Instead, they must work in tandem with regional socio-economic development goals to address the broader challenges of infrastructure, urbanization, and economic growth [8], [9]. These clusters offer a unique opportunity to combine the strengths of private enterprises with the support of state mechanisms in the form of public-private partnerships [10]. However, for such partnerships to succeed, it is crucial to focus on developing effective management systems that account for the complexities of multi-stakeholder collaboration, ensuring that all parties—whether they be small, medium, or large construction firms, regulatory agencies, or educational institutions—work together in a harmonious and synergistic manner. This collaboration is key to advancing the shared goal of producing high-quality construction outcomes while simultaneously driving regional social and economic development.

RESEARCH METHOD

This research adopts a systemic approach to studying the dynamics of regional investment construction clusters. The primary methodology involves a comprehensive analysis of cluster elements, including small, medium, and large construction firms, intermediaries, market infrastructure organizations, and scientific institutions. The research combines both quantitative and qualitative analysis to examine the system's structure, focusing on interaction complexities and governance mechanisms. It also considers the influence of state bodies in fostering public-private partnerships to enhance cluster development. A lifecycle analysis is applied to understand the stages of cluster development: emergence, growth, maturity, and decline. This methodology aims to address the current gap in evaluating cluster effectiveness by incorporating network relations, transaction cost savings, and social development aspects.

RESULTS AND DISCUSSION

The lack of a unified methodology for evaluating the effectiveness of cluster practices in scientific literature highlights a critical gap in understanding the true potential of clusters. Existing mathematical models used across various countries assess the overall results of leading enterprises within clusters, but they often fall short by not

addressing the inherent characteristics of networks, management systems, transaction cost savings, inter-network relations, and the social aspects of development. These limitations suggest that a more holistic approach is needed to assess cluster effectiveness, one that accounts for both the tangible and intangible elements that drive cluster success.

The concept of the "construction complex" emerged in the 1980s as a response to the growing need for large-scale coordination within the construction industry. It signified the necessity for synergy among various entities—construction firms, financial services, scientific research institutions, and educational bodies—operating within a specific region. This integration is particularly critical in the context of real estate development, where the relationship between investment and construction activities is crucial. The term "investment-construction complex" has evolved to define the network of entities, including construction, infrastructure, scientific, and financial services, that must work cohesively to meet regional development goals.

The regional investment-construction cluster, as identified in this study, encompasses small, medium, and large enterprises, intermediary service providers, market infrastructure organizations, and educational and research institutions. These entities must collaborate to facilitate a competitive and sustainable construction environment. A key finding is that managing such a cluster requires a nuanced approach, recognizing the need for both public and private sector involvement. The role of state bodies, as equal participants in the cluster, reflects the increasing importance of public-private partnerships in fostering regional development.

The complexity of cluster interactions necessitates a flexible and adaptive management structure, as the cluster operates both autonomously and in tandem with external environments. The system is partially centralized, yet allows for the self-organization of business entities. This balance of centralization and autonomy is crucial for the dynamic nature of the investment-construction cluster. The cluster's territorial limitations further emphasize the need for localized solutions tailored to the specific socio-economic conditions of the region.

Key features of the investment-construction cluster include emergence, hierarchy, subordination, and unity among its elements. These principles align with system theory, demonstrating how individual components of the cluster combine to form a cohesive whole, where the interactions among participants lead to collective outcomes not achievable by individual entities alone. The integration and adaptability of the cluster to external changes, coupled with its dynamic and feedback-driven nature, underscore its ability to evolve and sustain itself over time.

The regulation of cluster activities is grounded in several guiding principles, including scientific approaches, harmonization of regional and industrial interests, and effective integration of various sectoral and regional stakeholders. The principles also emphasize the importance of maintaining a competitive environment within the cluster while fostering cooperation among participants. Special principles focus on maximizing the use of local resources, supporting small and medium-sized enterprises, and

encouraging international cooperation, which are essential for the long-term success of the cluster.

Finally, the life cycle of the cluster, as outlined by G.F. Tokunova, offers a useful framework for understanding the stages of development in the investment-construction cluster. From the emergence stage, where initial connections are established, to the maturity stage, where the cluster's economic and social advantages become apparent, the cluster evolves through stages that reflect both internal growth and external influences. At the final stage, the cluster may experience conflict due to competing interests, necessitating coordinated efforts to maintain stability and foster continued growth.

In conclusion, while the existing models and principles for cluster management provide a foundational understanding, the unique characteristics of the investment-construction cluster call for a tailored approach that considers regional, socio-economic, and technological factors. Through careful management and strategic collaboration, these clusters can drive sustainable regional development and provide a model for other industries seeking to foster collaborative growth.

CONCLUSION

Fundamental Findings : This study identifies the critical role of inter-network relationships, transaction cost savings, and the management of public-private partnerships in regional investment-construction clusters. These elements, often overlooked in existing models, are essential for fostering sustainable growth and development in the construction sector. A more holistic evaluation approach is necessary to capture the full potential of clusters. **Implications :** The findings underscore the need for tailored management strategies that address both the complexities of multi-stakeholder collaboration and the socio-economic conditions of the region. Effective integration of small, medium, and large enterprises, along with state involvement, is key to achieving long-term regional development and competitive construction environments. **Limitations :** The research acknowledges the absence of a unified methodology for evaluating cluster practices, with existing models failing to account for intangible elements like social development and inter-network dynamics. This gap highlights the need for future studies to refine evaluation frameworks for clusters. **Future Research :** Future research should focus on developing comprehensive models that integrate both tangible and intangible factors affecting cluster effectiveness. Additionally, studies exploring the impact of technological advancements and policy changes on cluster dynamics will further enrich the understanding of their long-term viability and success.

REFERENCES

[1] I. R. Ruiga, E. S. Kovzunova, E. V. Rogozinskiy, and E. K. Sivtsova, "Assessment Methodology Of The Clusters' Effectiveness Impact On The Region Innovation Stability," in *European Proceedings of Social and Behavioural Sciences EpSBS*, 2021, pp. 235–243. doi: 10.15405/epsbs.2021.09.02.25.

[2] V. Grebenik, Y. Tarasenko, D. Zerkin, and M. Masolletti, "THE RUSSIAN PRACTICE OF

APPLYING CLUSTER APPROACH IN," pp. 1–7.

[3] Sedlmayr Benedikt, Köcker Gerd Meier zu, and Schneider Konstantin, "Cluster Development Guide," 2020.

[4] J. H. Shim, N. H. Ham, and J. J. Kim, "Collaborative BIM-Based Construction Coordination Progress Modeling Using Extended Collaborative Process Modeling (exCPM)," *Buildings*, vol. 14, no. 2, 2024, doi: 10.3390/buildings14020358.

[5] Z. Lafhaj, S. Rebai, W. AlBalkhy, O. Hamdi, A. Mossman, and A. Alves Da Costa, "Complexity in Construction Projects: A Literature Review," *Buildings*, vol. 14, no. 3, 2024, doi: 10.3390/buildings14030680.

[6] M. Szóstak, J. Konior, and M. Sawicki, "Technology and Management Applied in Construction Engineering Projects," *Appl. Sci.*, vol. 12, no. 22, pp. 1–5, 2022, doi: 10.3390/app122211823.

[7] X. Han, W. Yan, and M. Lu, "Research on the coordination mechanism of major industrial project engineering and construction multi-agents based on structural holes theory," *PLoS One*, vol. 16, no. 8 August, pp. 1–21, 2021, doi: 10.1371/journal.pone.0255858.

[8] C. Cui, Y. Liu, A. Hope, and J. Wang, "Review of studies on the public–private partnerships (PPP) for infrastructure projects," *Int. J. Proj. Manag.*, vol. 36, no. 5, pp. 773–794, 2018, doi: 10.1016/j.ijproman.2018.03.004.

[9] P. A. Oyieyo, "Emerging Challenges in the Completion of Construction Projects through Public Private Partnerships: Empirical Literature Review," *J. Build. Constr. Plan. Res.*, vol. 08, no. 04, pp. 263–272, 2020, doi: 10.4236/jbcpr.2020.84017.

[10] P. V. de Paula, R. C. Marques, and J. M. Gonçalves, "Critical Success Factors for Public – Private Partnerships in Infrastructure Development," *MDPI*, vol. 9, no. 195, pp. 1–22, 2024.

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