Journal of Policy Options · RESDO

Cluster-Based Economic Development: Life Cycle Stages and Policy Implications

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Abstract
Economic development has always been a dynamic and evolving goal, with both national and local governments continuously grappling with the challenge of designing and implementing policies and programs that maximize the efficient use of their limited resources. In their efforts to stimulate growth and optimize resource allocation, governments must balance competing priorities and adapt to ever-changing economic landscapes. One of the more recent approaches gaining traction in this field is the cluster-based economic analysis and strategy development model. This approach focuses on identifying and fostering clusters of interconnected businesses, industries, and institutions within a specific geographic region. By promoting collaboration and innovation within these clusters, governments can drive economic growth, improve competitiveness, and enhance productivity. The cluster-based strategy encourages the concentration of resources in key areas where regions or nations have a competitive advantage, allowing for more targeted investment and policy-making. This method has shown promise as a tool for enhancing regional economic development, encouraging specialization, and boosting overall economic resilience. This study reviews key literature and examines various cluster-based economic policies implemented by different governments. Building on this review, it introduces the concept of "the cluster life cycle" as a critical factor in determining the support requirements for clusters at different stages of development. To investigate this concept, a survey was conducted with 30 participants from three distinct clusters, each at a different maturity stage. The survey was designed based on a comprehensive review of international cluster support programs, ensuring it captured a broad perspective on the types of assistance needed for cluster growth. This paper presents and analyzes the findings from the study, which was conducted among cluster members in the Eskişehir-Bilecik-Kütahya Region of Turkey. The focus of the research was to identify the specific types of support necessary to foster the development and advancement of these clusters. By exploring the unique needs of clusters at various life cycle stages, this study provides valuable insights into how tailored support strategies can enhance cluster growth, competitiveness, and sustainability in regional economies. The results offer practical implications for policymakers and stakeholders involved in promoting cluster-based economic development in Turkey and beyond.
Keywords: Cluster-Based Development, Economic Growth, Regional Policy
JEL Codes: R11, O25, L52

1. INTRODUCTION

In recent years, clusters have garnered significant attention from both politicians and researchers. The presence of one or more regional clusters is often considered a crucial factor for regional prosperity, as noted by Porter (2003). This has made clusters particularly attractive to policymakers, who view them as engines of economic growth. Since the late 1980s, various national and local governments in countries such as Germany, Brazil, Japan, South Korea, the Spanish Basque Country, France, and others have actively pursued policies aimed at fostering the development of these clusters. The rationale behind these policies is grounded in the belief that clusters generate substantial economic benefits. By concentrating interconnected businesses, industries, and institutions within a particular region, clusters create synergies that enhance innovation, productivity, and competitiveness. As a result, many policymakers argue that clusters should receive public support to sustain and maximize these economic gains. The argument is that public investment in clusters not only strengthens regional economies but also contributes to national growth and long-term prosperity. This widespread support for cluster policies underscores their perceived importance as a tool for economic development and competitiveness in the global economy.

A cluster is defined as "a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities" (Porter, 1998). Clusters are unique in that they rarely align with traditional industrial classification systems, which often fail to capture the full spectrum of actors and the complex relationships that drive competition within clusters (Porter, 1998). Unlike conventional industrial policies that often focus on individual sectors or industries, cluster-based support mechanisms should adopt a more holistic approach. These mechanisms must account for the diverse network of businesses, suppliers, service providers, research institutions, and other stakeholders within a cluster. The objectives of cluster policies should therefore differ from those of traditional industrial policies, aiming not just to support isolated industries but to foster collaboration, innovation, and knowledge sharing among the interconnected entities within the cluster. This approach enables clusters to enhance their collective competitiveness, drive regional economic development, and adapt to changing market conditions more effectively than standard industrial policies would allow.

For clusters to be effectively nurtured through public policy and private sector initiatives, a systematic understanding is

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needed of the factors that contribute to their creation and development, as well as the elements that determine the success or failure of clusters and related policies. However, much of the existing literature focuses on defining and evaluating clusters as static entities, rather than delving into the dynamic processes that drive their emergence and sustain them over time. While it is crucial to invest in the foundational assets—such as infrastructure, human capital, innovation systems, and supportive regulatory environments—that enable clusters to form, there is no single, guaranteed formula for their success (Bresnahan et al., 2001). The development of clusters is highly context-specific, influenced by a variety of regional, industrial, and institutional factors. Each cluster's evolution is shaped by unique local conditions, making it difficult to replicate successful cluster models universally. Policymakers and private sector leaders must therefore adopt a flexible, adaptive approach that considers the specific circumstances in which clusters emerge and thrive, while also being responsive to the changing needs and challenges faced by businesses within the cluster. Understanding and addressing these nuances is essential for developing strategies that not only promote the initial formation of clusters but also support their long-term growth and resilience.

There is surprisingly little empirical analysis, either at the macro or micro level, regarding the impact of cluster-oriented policies on firm performance. Despite widespread adoption of such policies, their effectiveness has not yet been scientifically proven (Martin et al., 2010). The lack of robust, data-driven studies makes it difficult to conclusively assess whether cluster-based initiatives lead to measurable improvements in firm productivity, innovation, or competitiveness. As a result, while the theoretical benefits of cluster policies are widely accepted, the empirical evidence supporting these claims remains limited. This underscores the need for more comprehensive research to evaluate the true effectiveness of cluster-oriented strategies and to better understand how these policies influence the success of firms within clusters. This article aims to establish a fundamental assumption for support programs targeting clusters. Its objective is to enhance the underlying logic of these programs, helping to prevent the adoption of impractical models that are likely to result in failure.

From existing case studies, it is evident that clusters tend to follow a life cycle composed of distinct phases, such as emergence, growth, and decline, each characterized by different dynamics (Menzel et al., 2009). The needs, challenges, and priorities of cluster participants vary depending on the developmental stage of the cluster. Consequently, cluster policies must be adaptable and evolve in response to these shifting requirements (Arthurs et al., 2009). By recognizing the life cycle and the evolving nature of clusters, policymakers and program designers can develop more effective and sustainable support strategies that address the specific needs of clusters at different stages, thereby increasing the likelihood of long-term success and stability. Since cluster members are pivotal to the success of "cluster support policies," it is crucial to uncover their expectations regarding the type of support they require to accelerate the development of their clusters. This study aims to determine whether the prioritization of activities requiring public support differs based on the stage of development a cluster is in, as perceived by its members.

The paper is structured in a clear and organized manner. First, in section 2.A, we provide a general definition of clusters, outlining their core characteristics and explaining how interconnected businesses and institutions within a specific geographic region form a cluster. Following this, section 2.B delves into cluster support policies, detailing the public and private initiatives aimed at fostering cluster growth and enhancing their competitiveness. Section 2.C reviews the Cluster Life Cycle Theory, which explains the distinct stages clusters go through, from emergence and growth to maturity and potential decline. In section 2.D, we explore the specific activities that clusters may require support for, focusing on how these needs vary depending on the cluster's life cycle stage. Section 3 introduces the research question, which investigates whether the prioritization of support needs among cluster members changes according to the cluster's developmental phase. Section 4 outlines the methodology used in the study, providing an explanation of how data was collected, analyzed, and interpreted to answer the research question. The results are presented in section 5, where we discuss the differences in support needs identified by cluster members at various stages of development. The paper concludes in section 6, offering key insights from the study and suggesting directions for future research, along with recommendations to improve the effectiveness of cluster support policies.

2. LITERATURE REVIEW

Clusters are defined as geographic concentrations of interconnected companies and institutions operating within a specific field. These clusters encompass a wide range of related industries and entities that play a vital role in fostering competition (Porter, 1998). Due to their shared proximity—both in terms of geography and activities—these companies benefit from several types of positive location-specific externalities. Among these externalities are enhanced access to specialized human resources and suppliers, which allows businesses to tap into talent and materials that are tailored to their needs. Clusters also experience knowledge spillovers, where companies benefit from the exchange of ideas and innovations within the concentrated area.

Moreover, the close proximity of competing firms within a cluster often generates significant pressure for continuous improvement and innovation, as businesses are compelled to enhance their performance to remain competitive. This direct competition acts as a catalyst for companies to adopt new technologies, refine processes, and develop more efficient ways of operating. The geographical closeness also fosters frequent interactions between businesses and specialized customers and suppliers, creating opportunities for knowledge exchange and collaboration. These interactions allow firms to gain valuable insights, adapt to market demands more quickly, and tailor their products and services to better meet customer needs.

As a result, clusters create a dynamic ecosystem where collaboration and competition coexist, driving firms to push the boundaries of innovation while benefiting from shared resources and expertise. This environment not only leads to improved productivity and competitiveness for individual firms but also enhances the overall economic performance of

the entire cluster. The synergies created by clustering enable businesses to thrive in ways that would be difficult to achieve in isolation, positioning them for sustained growth and success in their respective industries. Companies operating within clusters benefit from increased efficiency, as they can tap into specialized assets and suppliers that offer quicker response times than what would be possible if they operated in isolation. This access to resources enables businesses to streamline operations and react more swiftly to market demands. Moreover, the close proximity of companies and research institutions fosters higher levels of innovation. Knowledge spillovers, coupled with frequent interactions between businesses, customers, and other entities, generate a steady flow of new ideas and drive intense pressure to innovate. The collaborative nature of clusters also lowers the cost of experimentation, making it easier for firms to test new concepts and technologies in a supportive environment.

Clusters further encourage entrepreneurial activity, with higher rates of business formation seen in these concentrated areas. Start-ups, which often depend on external suppliers and partners for their early success, can readily find the necessary resources within a cluster. Additionally, clusters provide a safety net for entrepreneurs, as the dense concentration of companies in the same field offers ample local employment opportunities. This reduces the risks associated with business failure, as entrepreneurs can more easily transition into roles at other companies in the cluster, ensuring that the expertise and knowledge within the industry remain localized and accessible (Porter, 1998). A survey indicates that in numerous empirical studies on agglomeration, increasing the size of a cluster—typically measured by the employment in a specific sector within a particular region or by the local density of employment—results in notable productivity gains. Specifically, a doubling in the size of a cluster has been shown to lead to productivity improvements ranging from 3% to 8% (Rosenthal et al., 2004). These findings highlight the significant advantages that can arise from the concentration of economic activity, where proximity and scale contribute to more efficient operations, knowledge sharing, and enhanced innovation, all of which collectively boost productivity.

Although there is an extensive body of literature emphasizing the importance of clusters, a proven model for initiating or supporting cluster development remains elusive. While investing in the foundational assets necessary for cluster emergence—such as infrastructure, skilled labor, and technological capabilities—is crucial, there is no "magic recipe" or simple formula (e.g., combining a prestigious university with venture capitalists) that guarantees success. Instead, various pathways can lead to the formation of a successful cluster, including fostering technological opportunities, cultivating an educated workforce, and nurturing entrepreneurial talent. Often, these long-term investments in national or regional capabilities may appear to yield limited returns over an extended period before they finally contribute to significant cluster growth. This gradual buildup can be misleading, as the underlying conditions for cluster success—such as innovation ecosystems and talent development—take time to mature. Only after these components reach a critical threshold does the cluster experience a rapid phase of expansion and productivity (Bresnahan et al., 2001). This uncertainty highlights the need for patience and sustained investment in building the essential elements of a successful cluster, recognizing that results may take time to materialize. This is why there is widespread consensus that governments should focus on reinforcing and building upon emerging clusters, aiming to upgrade them rather than attempting to create entirely new ones. The process of cluster upgrading involves first recognizing the presence of a cluster and then working to remove obstacles, reduce constraints, and eliminate inefficiencies that hinder productivity and innovation within the cluster (Porter, 2010). By doing so, governments can create an environment that promotes growth and innovation, allowing existing clusters to thrive.

In this study, we briefly highlight three cluster-related policy examples from Latin America, South Korea, and Finland. In Latin America, three types of clusters are identified when formulating cluster-oriented policies. The first type is survival clusters composed of micro- and small-scale enterprises. These clusters exist primarily due to unfavorable macroeconomic conditions rather than entrepreneurial competence or dynamism, and their competitive potential is often limited. Support measures for these clusters typically aim at improving conditions for survival, as they play a vital role in creating employment opportunities. The main goal is to break the cycle of low skills and low investment that perpetuates their challenges. The second type includes more advanced and differentiated mass producers, which flourished during the import-substitution era but now face significant pressure as economies open up to global competition. For these clusters, the key challenge is to create an environment that fosters learning, innovation, and constant upgrading, enabling them to remain competitive in the global market. Finally, clusters of transnational corporations are characterized by dominance of foreign firms, not only in final assembly but also in parts production. These clusters are often showcases of best-practice manufacturing. Policies targeting these clusters focus on leveraging the expertise of foreign firms to stimulate the upgrading of domestic companies by involving them in the supply chain of transnational corporations. This integration can help domestic firms enhance their capabilities and adopt best practices, boosting the overall competitiveness of the cluster (Meyer-Stamer et al., 1999).

The current cluster policy in Korea primarily operates within the confines of physical boundaries, such as municipal and provincial administrative zones. However, corporate activities often extend beyond these administrative limits, leading to discrepancies between the geographical scope of government support and the actual range of business activities. As a result, there is a need to reframe government support based on economic zones, taking into account the interconnections among different companies. By shifting to this approach, issues such as excessive competition between regional clusters and overlapping support within similar industries can be addressed. Additionally, fostering cooperation across cities and provinces could enhance the efficiency of budget allocation and ensure more strategic support for cluster development (Yim, 2005). Another challenge arises in assigning a cluster to a specific stage of development, especially when it is in transition. A cluster is made up of diverse participants, all of whom may be at different stages of growth. While certain parts of a cluster may remain in an earlier phase, other sections may advance along the development trajectory. Focal points of activity, where synergies between actors are most prominent, tend to move more

rapidly through the cluster life cycle, while peripheral participants may lag behind. Consequently, the classification of a cluster within a particular phase depends largely on the development of its focal points, which can evolve as the cluster progresses through its various stages (Menzel et al., 2009). This dynamic nature of clusters underscores the complexity of providing appropriate support at different stages and ensuring all components of the cluster can advance cohesively. Emerging clusters typically consist of only a few, often relatively small companies with limited numbers of employees, and these businesses are often dispersed across wide areas, both geographically and technologically. For an emerging cluster to evolve into a growing cluster, it must achieve a critical mass, where the growth rate of companies within the cluster surpasses that of companies operating outside of the cluster. The key to this transformation is the creation of synergies around a central focal point, which serves as a hub of innovation and collaboration for the cluster's participants (Arthur, 1994; Feldman, 2005; Klepper, 2007). These synergies may arise from shared resources, knowledge spillovers, or close interaction between businesses, research institutions, and suppliers, allowing the cluster to harness collective expertise and drive innovation. Once these collaborative interactions reach a tipping point, the cluster can accelerate its growth and attract more companies, skilled labor, and investment, further enhancing its competitiveness. This process of fostering synergies is vital to ensuring that an emerging cluster can transition into a growing, thriving cluster that sustains long-term economic development and innovation. The forces driving the emergence of a cluster are distinct from those required to sustain its continued growth. While increasing returns, such as economies of scale, and external effects, like knowledge spillovers, can help maintain a cluster's momentum once established, the initial spark for its creation is far more challenging and risky to ignite. Research indicates that two key factors for a cluster's emergence include being linked to a sizable and growing demand and having access to an adequate supply of crucial resources, such as skilled labor. These elements provide the foundational infrastructure needed for a cluster to begin taking shape.

In addition to these factors, firm-building and market-building capabilities are equally critical for cluster formation. Pioneers within the cluster—whether businesses, institutions, or government bodies—must make significant and systematic efforts to enhance the organizational and technological capabilities of the cluster. This involves fostering innovation, building strong networks, and ensuring that businesses are equipped to meet the demands of the market. These pioneers often play a pivotal role in promoting collaboration, knowledge sharing, and capacity development across the cluster, laying the groundwork for future growth and competitiveness. The combination of demand, skilled labor, and the deliberate development of firm and market-building capabilities creates the conditions necessary for a cluster to transition from a nascent stage to a more established, growing ecosystem (Bresnahan et al., 2001).

The needs and concerns of cluster participants evolve depending on the stage of development the cluster is in, and, consequently, cluster policies must adapt to meet these changing requirements. In the early stages of cluster formation, key priorities include developing specialized research and development (R&D) infrastructure, fostering linkages between firms and institutions, enhancing firm capabilities, securing access to talent, and creating a shared vision for the cluster's future. These elements are essential for establishing a solid foundation that encourages collaboration and innovation within the cluster. As clusters transition into the growth stage, new challenges emerge. The arrival of new firms may shift the dynamics of strategic alliances that were once central to the cluster's R&D activities. This influx may also necessitate new approaches to managing the rising demand for skilled labor and access to risk capital. Growing clusters often require policies that support scaling up human and financial resources to meet these increased demands. Furthermore, as firms within the cluster expand into national or even international markets, the need for managerial talent capable of handling the complexities of a geographically dispersed enterprise becomes increasingly critical. A lack of experienced leadership at this stage can limit the growth potential of cluster firms.

Additionally, the competitive landscape may evolve as foreign competitors or new technologies emerge, which could necessitate internal restructuring to enhance operational efficiencies or prompt renewed investment in R&D to stay ahead of innovation trends. This ongoing dynamism causes the structure and composition of the cluster to change over time, requiring continuous adaptation by both firms and policymakers to ensure long-term success (Arthurs et al., 2009).

It is essential to clearly define the areas where cluster initiatives need or should receive support. According to cluster theory, competitive advantage arises not only from the resources and capabilities within individual firms but also from the assets and capabilities embedded in the geographically proximate business environment. Empirical studies have demonstrated that clustering can have significant positive impacts, including higher rates of new firm formation, enhanced productivity, greater innovation, and improved profitability and growth for firms within the cluster (Gordon et al., 2005).

However, top-down, direct policies aimed at supporting clusters are likely to fail, particularly when they attempt to control specifics such as which industries or technologies should be promoted. Such detailed intervention often misaligns with the organic nature of cluster development. Instead, effective policies should embrace a form of "benign neglect," allowing significant decentralization and flexibility in choosing initiatives. These policies should focus on creating enabling conditions, such as fostering market demand, establishing open standards, ensuring access to skilled workers, and addressing key supply-side factors. Emphasizing education and the development of relevant institutions are also crucial components of successful cluster support policies (Bresnahan et al., 2001). Finding a source of demand that can ignite the growth of a cluster is critical for its development, and this should be a focal point of policy efforts. By identifying and stimulating demand in key areas, clusters can experience the initial momentum needed to grow and thrive (Bresnahan et al., 2001).

In addition, public policies that support pre-competitive research and cooperative R&D have been instrumental in fostering the development of technology centers and technological infrastructures globally. These infrastructures have been defined as "a set of collectively supplied, specific, industry-relevant capabilities intended for application in two or more user organizations" (Justman et al., 1995). These shared resources provide firms with access to cutting-edge

technology and expertise, facilitating innovation and collaboration across industries. Clustering also accelerates the diffusion of knowledge gained through these collaborative efforts. Local industrial policy plays a crucial role in enhancing infrastructure, particularly by strengthening training, testing, and certification facilities. These improvements help ensure that businesses within a cluster can access the skills, resources, and standards necessary to maintain their competitiveness and adapt to evolving market conditions (Humphrey et al., 2000). Through these collective efforts, clusters can continue to evolve and drive regional economic growth.

3. METHODOLOGY

Survey techniques have frequently been employed in cluster analysis to gather customized data on key cluster dynamics. Unlike relying on official statistics, survey methods collect data from a sample rather than a full population, which often results in a dataset that is not entirely comprehensive. Another limitation is the lack of standardization in survey design, making it difficult to compare findings across different studies conducted by other researchers. However, the custom nature of surveys used in cluster analysis allows the research to be highly specific, not bound by existing statistical categories. This enables researchers to directly target stakeholders and collect data tailored to the specific issues under investigation within the cluster (Arthurs et al., 2009). To test our hypotheses, a non-parametric test was conducted. The sampling region was identified as Eskisehir-Bileck and Kutahya due to the presence of three cluster initiatives at different maturity stages in the cluster life cycle. These initiatives include:

Ceramic Cluster – Established
Railways Cluster – Developing
Aviation Cluster – Latent

A total of 30 participants from these three cluster initiatives were given a brief overview of the study and took part in a one-day workshop. During the workshop, participants were asked to evaluate a survey containing 44 questions across four components, using a Likert scale ranging from 0 to 5 (see Appendix 1). Each participant was tasked with prioritizing the support needs for each of the 44 activities relevant to their own cluster. Additionally, participants were encouraged to add any missing activities they felt were relevant but not covered in the survey. To ensure the survey's validity, it was initially tested with a small, controlled group composed of representatives from different clusters and experts in the field. This pilot test helped refine the survey and ensured that the data collected would accurately reflect the support needs and priorities of the clusters under study. The tailored design of the survey allowed for a more focused examination of each cluster's specific needs and challenges, contributing to a more insightful cluster analysis.

4. RESULTS

The survey results were analyzed using SPSS, employing the non-parametric Kruskal-Wallis test. The findings, presented in the appendix, show that certain hypotheses with a p-value less than 0.05 indicate that the prioritization of specific activities by cluster members depends on the maturity stage of the cluster's life cycle. In contrast, those with a p-value greater than 0.05 led to the rejection of the null hypothesis, meaning that for these activities, the cluster life cycle stage does not significantly influence their prioritization. Several activities were found to change in priority depending on the cluster's maturity. These include establishing a legal entity representing the cluster, building the capacity of this legal entity, coordinating cluster initiation, and raising awareness among cluster members. Similarly, organizing get-togethers for cluster members, holding sector-specific events, developing and promoting a common brand, as well as lobbying and promotional activities, were found to be prioritized differently at various stages of the cluster's development.

Other key activities also showed significant variations in priority, such as investment promotion, local market development, and fostering access to international business networks and cooperation with other clusters. The importance of conducting basic and advanced analyses of the cluster also varied, as did the need to identify a clear strategy and road map for the cluster's development. Additionally, the importance of support programs for applying for financial aid programs changed based on the cluster's stage of maturity.

Regarding labor market development, priorities such as the development of basic, qualified, and high-tech labor markets shifted as clusters progressed through different life cycle stages. Infrastructure-related activities, such as upgrading the quality and reducing the costs of raw materials and inputs, along with investments in shared infrastructure, were also influenced by the maturity stage of the cluster. Further priorities that evolved based on the cluster's development included university-industry cooperation programs, establishing units to provide continuous market information, and improving access to strategic information sources. The importance of programs supporting supply development, shared production facilities, and warehousing utilities, along with collective purchasing efforts, were similarly affected by the cluster life cycle. Moreover, energy efficiency and renewable energy programs, as well as the establishment of test and analysis facilities, were prioritized differently depending on the cluster's stage. As clusters matured, the dissemination of best practices, managing collective industrial life, organizing collective transportation and shift planning, and ensuring product certification and accreditation were also found to be activities that gained or lost importance. These findings highlight the dynamic nature of clusters and the shifting needs for support as they move through different stages of development.

5. CONCLUSION

Based on our research, it is evident that the support needs of clusters in the Eskisehir-Bilecik-Kutahya region shift according to their maturity in the cluster life cycle. However, this study does not allow for a precise distinction between the specific types of support required at different stages of cluster maturity. This highlights the need for further research to classify and better understand the types of support needed at each phase of the cluster life cycle. This study lays a foundation for future research in the field of cluster support. As mentioned in the methodology, the research was

conducted in a specific and geographically limited region, where the focus was on clusters at varying stages of maturity. The findings from this context may not fully reflect the perspectives or support needs of cluster members in other regions or different economic environments. It is likely that cluster initiatives in other territorial or economic settings may have differing priorities when it comes to the support they require. To gain a more comprehensive understanding of how cluster support needs evolve, further studies should be conducted in different regions, particularly in less economically developed areas of Turkey that have active cluster initiatives. One of the fundamental challenges in regional cluster policy design is that these policies are often shaped by a range of interests and goals. There is no one-size-fits-all solution for cluster development, and the question arises of which regions or cluster initiatives can learn from one another. This diversity in regional cluster needs calls for tailored approaches to cluster policy design and support programs. Identifying the specific support requirements of clusters is crucial, as these clusters play a central role in driving the success of support programs. Understanding the evolving needs of clusters ensures that the policies in place can effectively support them at various stages of their development, ultimately contributing to the success and sustainability of the regional economy. Building on these findings, a further study could focus on identifying the underlying factors that shape effective cluster policies and exploring how best to deliver these supports to clusters. As cluster initiatives and cluster-based economic policies become more widespread, there will be an increasing demand for systematic evaluations of their impact. This calls for future research aimed at assessing the effectiveness of various programs and initiatives designed to support clusters at different stages of their development. In addition to evaluating the success of these programs, it will be crucial to incorporate the perspectives of cluster members themselves. Their insights and experiences will provide valuable input into understanding what works and what doesn't in cluster support. A study that includes the perception of cluster members could serve as an essential step in refining and improving cluster support strategies. The current study, while limited in scope, offers a starting point for such evaluations, providing a rough base from which future research can build. Understanding both the quantitative outcomes of these policies and the qualitative feedback from cluster participants will be key to developing effective, adaptive cluster policies that meet the specific needs of regions and industries.

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