Enhancing the performance of complex engineering systems through industrial clusters: issues, challenges, and opportunities

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Master thesis

Abstract
Today, industry clusters play an important role in the global economic structure. A cluster is a geographic concentration of related companies, organizations, and institutions in a particular region. From a company's view, cluster helps to improve its productivity and competitiveness; from a nation's view, cluster can raise the economic performance and improve the progress of whole industry.

This thesis studies five industry cases in the world, it describes the development and performance of industry clusters in these countries, and by comparing different aspects of the clusters, the paper shows the similarities and differences of the clusters, especially it analyzes the challenges and risks in the clusters.

Industrial clusters have unique competitive advantage but also have potential challenge and risk. Because of the organizational structure of industrial cluster and geographic boundary, they limit the further development of the cluster. Creating boundaryless organization makes the main body of industrial clusters full of activity, and improves the flexibility of clusters and the adaptability to the change of the outer environment.

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Alt of these efforts are struggling with the difficult challenges of complexity, comparability, credibility, and completeness (Ranganathan, 1998).