

DOTTORATO DI RICERCA IN FECHNOLOGY, INNOVATION AND MANAGEMENT (DTIM)



PHD PROFILE, II YEAR STUDENTS, A.A. 2018/2019

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- **Title of the research:** "Manufacturing subnetworks in international companies: characteristics, capabilities and management models"
- Tutor: Prof. Matteo Kalchschmidt

OUTLINE OF THE RESEARCH

The globalization of companies has characterized the development of modern economies for decades and nowadays plays a fundamental role in creating increasingly competitive markets. In order to analyze the complexity of the phenomena underlying the internationalization of manufacturing companies, over the years a rich literature about International Manufacturing Networks (IMNs) has been published; the focus has gradually shifted from analyzing the role of single plants within the supply chain to considering the whole network as a plurality of plants that are globally widespread, jointly connected and mutually dependent.

However, there is little empirical evidence on how an international company can be managed through the decomposition of the network into *groups of factories* (subnetworks) with homogeneous characteristics, i.e. groups of factories which work with the same production processes, produce products with similar characteristics or serve the same markets.

In order to fill this gap, my research aims to achieve a structured and comprehensive analysis of how international companies organize and manage their supply chain using subnetworks. The final aim of the research is to understand how to divide the overall network in smaller and more manageable entities and thus to reduce the complexity of IMNs.

The research is carried out through 3 connected activities:

- Achieve a clear and precise definition of the concept of subnetwork: the objective is to examine ambiguities and inaccuracies of previous studies, contextualize the definition and help in setting the criteria for the identification of subnetworks within international companies;
- Build a theoretical and practical framework on the categorization of subnetworks: the goal is to understand what are the characteristics of different types of subnetworks, and to create a model that helps in managing complexity within IMNs. The dimensions to be analyzed for each type of subnetwork concern: a) the configuration (where to locate the factories, how to organize the supply chain, what resources are needed), b) the coordination (formalization, centralization, information exchange, competencies and know-how) and c) the strategy (manufacturing goals, decision-making approach, innovation in a perspective of Industry 4.0);
- Verify and test the model created through comprehensive case studies on international companies, in order to build an "on site" experience and to allow a benchmark among different industries.



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From a practical point of view, the research aims at providing valid support and a valuable tool for both managers and academics to better organize the structure of companies working in an international context. Through the analysis of each subnetwork, the ultimate goal is to preserve the competitiveness of the company in the long term, helping to identify anomalies in the strategy or management of the network.

For these reasons, my research project includes cooperation with multinational companies. In order to generalize the results of the research, collaborations could be established with companies working in an international environment, even if not global organizations. These collaborations would allow a challenging exchange of information and mutual advancement of know-how.