



PhD in INGEGNERIA GESTIONALE / MANAGEMENT ENGINEERING - 39th cycle

**PNRR 118 PA Research Field: THE ROLE OF PUBLIC BODIES IN SHAPING SUPPLY CHAIN
CONFIGURATION IN THE WAKE OF THE GREAT US-CHINA DECOUPLING**

Monthly net income of PhDscholarship (max 36 months)

€ 1450.0

In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity

**Motivation and objectives of the research
in this field**

The rise of sustainability concerns among citizens influence organizations' localization decisions. Reshoring enables approaching sustainability in a cooperative way throughout the entire supply chain. Trust and long-lasting relationships with a smaller number of regional suppliers can provide higher performance.

Reshoring allows to improve the supply chain sustainability as it requires a closer collaboration between production and development functions which usually are in the home country and it allows to better match supply and demand, resulting in decreasing product leftovers, which yields environmental benefits because of lowered resource consumption and waste emissions from production.

Indeed, in line with the Industrial Strategy of the European Union, Public Administrations - like Lombardy Region - intend to promote economic sustainability and circularity through the improvement of the energy performance of the production, commercial, logistics and supply chain service sites. Moreover, Public Administrations promote the adoption of more advanced digital technologies in the various stages of the processes, also to increase the productivity of the entire supply chain.

Lombardy Region intends to support the strengthening, resilience and competitiveness of the production and supply chains and industrial ecosystems of its territory, developing interconnections between companies, also in collaboration with universities, research institutions,



	<p>financial intermediaries, foundations and other strategic players in economic and territorial development, in support of reshoring and green and digital transition. The European Union is interested in providing incentives to the manufacturing sector and there are several European countries, such as Italy, where specific supporting programs for re-shore the activity have being carried out in the luxury and textile industries that are fully driven by the strength of the "Made in Italy" effect. Lombardy Region drives projects that are developed within the context of the collection of textile waste. The objective is the consolidation of the existing activity through the optimization of service logistics through new collection methods and tools, the industrialization of the model with investments in the garment selection and sorting process and the digitization of the process.</p>
<p>Methods and techniques that will be developed and used to carry out the research</p>	<p>The methods concern the analysis of the literature of the relocation strategies including original research framework to find relevant literature lacks and research gaps. The methods that will be developed are exploratory studies based on the collection of empirical data and on the analysis of case studies, experimental campaign and targeted interviews. After collecting and analyzing the data, another relevant method will be to run a quantitative simulation model. In particular, the optimization of the localization decision is a topic that has received a great deal of attention in the last decades, and it has been acknowledged that today it is evaluated under a broader lens, giving relevant weight to supply chain issues as well as to strategic factors.</p> <p>Regarding the techniques, the experimental campaign of the simulation could be based on Design of Experiments (DOE). Moreover, a Simulation Model Development Process (SMDP) is useful to robustly run the simulation campaign and gather reliable outputs. Finally, Analysis of Variance (ANOVA) is the statistical technique applied to the results of the simulation campaign.</p>
<p>Educational objectives</p>	<p>The main educational objectives consist of learning methodological tools (e.g., systematic literature review, case studies and mathematical models) to contribute to</p>



	<p>scientific knowledge both academic and practitioner oriented. Expected educational objectives are scientific papers, conferences and dissemination events, tools for planning the execution flow, business models, frameworks and guidelines to support the decision-making process of supply chain managers.</p> <p>The educational objective should be the understanding of the re-shoring strategies since they can bring several drivers like quality, market proximity and competence development. Reshoring enables approaching sustainability in a cooperative way throughout the entire supply network: trust, strong and long-lasting relationships with a smaller number of regional suppliers can provide greater performance.</p> <p>Reshoring allows to improve the supply chain sustainability as it requires a closer collaboration between production and development functions which usually are located in the home country and it allows to better match supply and demand, resulting in decreasing product leftovers, which yields environmental benefits because of lowered resource consumption and waste emissions from production.</p> <p>Reshoring strategy allows the increase of digital transformation of the supply chain that influences the revenues, as it allows to play with the price of the finished products offered on the market. A higher level of automation and digitization indeed, permits the production of tailor-made products for which customers are willing to pay higher prices. The variation in price directly impacts the cost of logistics, overhead, retailers' margins and taxes as these, according to the model, are all functions of the price itself.</p> <p>The different degrees of digital transformation achieved by companies are linked to research and development effort, as well as associated investment in machinery and equipment and related overhead expenses.</p>
Job opportunities	<p>Job opportunities open both in academia, as in post-doctoral positions, research fellow and in private companies and public administration as strategy analyst investigating the supply chains and delocalization strategies with reference to global value chains,</p>



	reconfiguration of business models, strategic competencies and governance. The researcher will become an expert in analyzing sustainability and resilience practices in reference to global value chains. Moreover, the researcher will be able to measure organizations' environmental performance improvement as well as the circularity practices of material flows. Finally, the researcher will be able to: (i) measure the development of integrated eco-innovation interventions (eco-planning and eco-design, energy and water saving, reduction of emissions into the atmosphere) and use of renewable energies; (ii) promote the integrated recovery activity in waste management; (iii) improve the energy performance of the production, commercial, logistics and supply chain service sites.
Composition of the research group	2 Full Professors 3 Associated Professors 2 Assistant Professors 3 PhD Students
Name of the research directors	Roberto Cigolini

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Additional support - Financial aid per PhD student per year (gross amount)	
Housing - Foreign Students	--
Housing - Out-of-town residents (more than 80Km out of Milano)	--

Scholarship Increase for a period abroad	
Amount monthly	725.0 €
By number of months	6

National Operational Program for Research and Innovation	
Company where the candidate will attend the stage (name and brief description)	
By number of months at the company	0
Institution or company where the candidate will spend the period abroad (name and brief description)	
By number of months abroad	6



Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information

Educational activity: available
Teaching assistantship: available
Computer: laptop available
Desk: available