



PhD in INGEGNERIA GESTIONALE / MANAGEMENT ENGINEERING - 39th cycle

**PARTENARIATO PNRR Research Field: RESILIENCE AND SUSTAINABILITY OF GLOBAL
SUPPLY CHAINS AND RE-SHORING STRATEGIES**

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	<p>Digital transformation is leading to new configurations of "local" and "global" rather than to a return of manufacturing to advanced industrial economies. Several technologies are emerging that are close to information technologies and operational technologies is transforming many manufacturing processes as well as services organizations. In this complex scenario, how can companies deal with technological shifts to ensure human-centered twin transition? Re-shoring initiatives should combine high levels of digitalization with environmental, social, and economic performance reinforcing the attention to individual and collective well-being. The re-shoring initiatives are localization strategies able to reduce the complexity of global supply chains in the direction of local and market-specific value chains that could keep up with the new requirements of customization, responsiveness, and sustainability. The first research objective intends to analyze the main challenges and opportunities in planning logistic flows in global value chains. The rise of sustainability concerns among customers influences firms' localization decisions. The amount of fossil fuels required to move products across the state or even across the country is substantially less than moving items from overseas. A local and automated production close to consumers allows the company to shorten reaction times, make manufacturing more flexible and lessen the carbon footprint during the development and transportation</p>



	<p>processes.</p> <p>The expertise of supply partners fosters communication, and the resulting shared learning creates an extended visibility along the supply chain and a sustainable competitive advantage. The second research objective intends to discuss the increasing of resilience and sustainability of the global value chains with respect to the reconfiguration of business models, strategic competencies, and governance. The third research objective aims to provide guidelines, tools, interpretative frameworks, and quantitative models that can be adopted by managers and policymakers to improve the profitability and competitiveness of the firms and of the strategic networks by analyzing the drivers and performance assessment of the reshoring phenomenon.</p> <p>CUP: D43C22003120001 Numero di Decreto di concessione: 1551 del 11/10/2022</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 campaigns, and targeted interviews. After collecting and analyzing data, another relevant method lies in building and running a quantitative simulation-based model.</p> <p>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. Regarding the techniques, the experimental campaign of the simulation could be based on Design of Experiments (DOE). Moreover, a Simulation Model Development Process 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 in learning</p>



	<p>methodological tools (e.g., systematic literature review, case studies and mathematical models) to contribute to 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 lie in understanding the re-shoring strategies since they can bring several drivers like quality, market proximity and competence development.</p> <p>Re-shoring may be an optimal strategy for firms in developed countries aiming to keep their international competitiveness while increasing their flexibility. Re-shoring strategies are driven by proximity to market and innovation technologies and account equally to home and emerging countries as regions of destinations, with the aim of benefitting from a delocalized structure with different local supply chains, improving their resilience and sustainability. Re-shoring strategies may ensure advances in technologies and at the same time may combine the integration between technologies and people working. Robots can perform an expanded array of factory tasks, like for example manipulating small electronic parts, picking, and packing individual products. These machines can work side by side with humans and be trained by factory-floor operators. Factory automation allows a single worker to be enormously productive in a short period of time, effectively reducing the labor cost.</p> <p>The rapid rise in productivity correlated with automation drives a virtuous pro-growth cycle by creating wealth and boosting demand, which translates into more jobs and therefore new opportunities in both manufacturing and services. Flexible, intelligent-assembly robots also should enable contract manufacturers to serve an increasingly diverse range of customers, creating new opportunities for other companies to target attractive micro-segments.</p>
<p>Job opportunities</p>	<p>Job opportunities open both in academia, as in post-doctoral positions, research fellowships and in private companies and public administrations as strategy analyst</p>



	<p>investigating the supply chains and delocalization strategies with reference to global value chains, reconfiguration of business models, strategic competencies, and governance.</p> <p>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 companies' environmental and social performance improvement as well as logistics assessment of functional performance of material and information flows.</p>
Composition of the research group	<p>1 Full Professors 1 Associated Professors 1 Assistant Professors 1 PhD Students</p>
Name of the research directors	Roberto Cigolini

Contacts	
roberto.cigolini@polimi.it	

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

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
<p>Educational activity: available teaching assistantship: available computer: laptop available desk: available</p>