POLITECNICO DI MILANO

PhD in INGEGNERIA GESTIONALE / MANAGEMENT ENGINEERING - 41st cycle

THEMATIC Research Field: OPERATIONAL EXCELLENCE AND SUSTAINABILE INNOVATION IN HIGH-END MANUFACTURING

Monthly net income of PhDscholarship (max 36 months)
1500.0 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	Operational excellence and environmental sustainability have traditionally been treated as distinct strategic domains, one focused on efficiency and performance, the other on responsibility and long-term resilience. However, in high-end industries such as luxury manufacturing, these two dimensions increasingly converge. The growing demand for sustainable practices, coupled with the need to preserve craftsmanship, quality, and exclusivity, calls for new managerial models that balance operational efficiency with environmental stewardship. The motivation behind this PhD project lies in addressing this dual challenge by exploring how operational excellence principles, such as lean management, digital transformation, and continuous improvement, can be integrated with environmental sustainability strategies in high-end industries. The research aims to identify frameworks, practices, and enabling technologies that support both superior operational performance and measurable reductions in environmental impact. The main objectives are to: 1. Investigate how high-end firms operationalize sustainability within their production and supply systems; 2. Analyze the synergies and trade-offs between operational excellence and environmental goals; 3. Develop and validate an integrated framework or model

	supporting sustainable operational excellence in the luxury sector; 4. Provide actionable insights for both academia and industry to guide future transformations toward circularity and excellence in high-value manufacturing.
Methods and techniques that will be developed and used to carry out the research	The research will adopt a mixed-method approach combining qualitative and quantitative techniques to investigate how operational excellence and environmental sustainability can be effectively integrated within high-end industries. Initially, a systematic literature review will be conducted to map the state of the art on sustainable operations, lean and green management, and circularity in luxury and high-end manufacturing sectors. This phase will support the identification of conceptual gaps and the development of a preliminary analytical framework. Subsequently, the study will employ multiple case studies in leading high-end firms (e.g., luxury fashion, automotive, or design) to explore existing practices, barriers, and success factors in implementing sustainable operational excellence. Data will be collected through semi-structured interviews, process observations, and document analysis. Finally, the research will employ design science and action research approaches in collaboration with industrial partners to refine and test the proposed framework in real organizational contexts, ensuring practical relevance and scientific robustness.
Educational objectives	The research is multidisciplinary in nature: the candidate will develop advanced research skills in the areas of Sustainability, Circularity and Operational excellence. She/he will learn how to design and conduct a research project, adopting the proper methodologies for conducting a literature review, data collection and analysis (survey, structured interviews), to validate results, and to present and publish results in both academic and practictioner outlets.Such learnings are extremely useful in all the further development of the professional career of the PhD candidate. And introducing people with such a higher level

	candidate. And introducing people with such a higher level of education in the economic system gives a strong contribution to increase its competitiveness and degree of innovation.
Job opportunities	Because the subject is at the center of the attention of virtually any company, job opportunities are easily available in any manufacturing company. In addition, consulting companies also value the specific competences on the subject, and also the methodologies learned.
Composition of the research group	1 Full Professors 1 Associated Professors 4 Assistant Professors 6 PhD Students
Name of the research directors	Alberto Portioli

Contacts
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Additional support - Financial aid per PhD student per year (gross amount)	
Housing - Foreign Students	--
Housing - Out-of-town residents	--

Scholarship Increase for a period abroad	
Amount monthly	750.0 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
The PhD candidate will have access to a comprehensive educational and research environment. They will participate in doctoral-level courses on operations management, sustainable manufacturing systems, data analysis, and qualitative research methods. Educational activities will be complemented by seminars and workshops organized within the School, the research group and through international networks. The candidate may also take part in teaching assistantship activities, supporting master’s courses in Industrial and Innovation Management, thereby strengthening their pedagogical skills.The research group has two shared offices, where desks are available and are shared. In addition, departmental open-space areas are available, where desks can be booked when needed.If required, the candidate may use their allocated research funds to purchase a personal laptop

suitable for their research activities.
A regular on-site presence of at least three days per week is required to ensure integration within the research group, active collaboration, and participation in academic activities. The vacation periods generally include three weeks in August and one week during the Christmas holidays and are agreed upon with the PhD supervisor.
The research will be carried out in close collaboration with industrial and academic partners, offering opportunities for joint projects, participation in international conferences, and research visits abroad.

For the overall development of their capabilities, PhD candidates will work on sinergical projects to favour empirical data collection and network development for their career. Projects will give candidates the opportunity to work in groups (peers and other senior professors).

If coherent with the development of their doctoral program, the PhD candidate will have the opportunity to be involved in: teaching activities, tutoring to master students, tutoring to PhD candidates for administrative processes.

Funding for educational activities: 6.100,00 Euros for three years.