POLITECNICO DI MILANO

PhD in INGEGNERIA GESTIONALE / MANAGEMENT ENGINEERING - 41st cycle

THEMATIC Research Field: BUSINESS MODEL INNOVATION IN THE LIFE SCIENCE INDUSTRY THROUGH ARTIFICIAL INTELLIGENCE

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	Digital innovations are reshaping the life-science ecosystem, changing how pharmaceutical companies operate across research, development, manufacturing, regulatory, and commercial functions. Cloud platforms, advanced analytics, machine learning, and digital therapeutics enable richer data flows, break down silos, and support more agile, patient-centric processes. Realizing these benefits requires new governance approaches, cross-functional collaboration, and hybrid skill sets able to navigate scientific, technical, and regulatory complexity.Among these innovations, Artificial Intelligence (AI) plays a pivotal role along the drug-development lifecycle. In discovery and preclinical stages, AI can accelerate target identification and enhance predictive analysis. In clinical research, it can inform protocol design, improve site and patient selection, and enable real-time monitoring. In regulatory and quality domains, AI can streamline documentation and compliance checks. Post-approval, AI supports proactive pharmacovigilance and more precise engagement with healthcare stakeholders.Crucially, AI must create demonstrable value. Gains in speed, quality, safety, access, and patient experience should clearly outweigh costs and risks, and be evidenced with decision-relevant metrics. To manage AI, a responsible approach should be taken, encompassing clinical safety and appropriate human oversight, transparency and explainability, robust privacy and data-governance practices, equity and bias

	mitigation, workforce readiness and structured change management, environmental stewardship, and continuous performance monitoring.Despite strong potential, AI adoption is heterogeneous across functions and stages, reflecting regulatory uncertainty, organizational fragmentation, cultural barriers, and measurement gaps. This research therefore aims to map AI applications across the pharmaceutical value chain, identify drivers and barriers of adoption spanning technology, organization, and environment, assess impacts on processes and performance using clear outcome and value metrics and outline management principles for responsible, sustainable, and cross-functional AI implementation under the theoretical perspective of business model innovation.
Methods and techniques that will be developed and used to carry out the research	The research will adopt a mixed-methods design, combining qualitative and quantitative approaches. Under the supervision of the main supervisor and the research group, the PhD student will (i) conduct desk analyses to consolidate the state of the art on AI adoption in the life science ecosystem, (ii) and collect primary data through structured surveys, semi-structured interviews and, where appropriate, focus groups with key stakeholders (e.g., R&D, clinical operations, medical, data/IT, quality/regulatory), and using the equipment of the Behavioural Research in Immersive Environments (BRIEL) Laboratory. Findings will be triangulated to develop actionable management guidelines for responsible, cross-functional AI implementation, to create value in compliance with ethical, privacy and regulatory requirements.
Educational objectives	Beyond developing a distinctive understanding of the Life Science industry from a Strategic, Entrepreneurial, Innovative and Financial perspective, the PhD Student will learn how to design a sound research project, how to develop new theory and validate it through a robust research design. Moreover, the PhD Student will learn how to interact with the scientific community (i.e., conferences and papers) and with leading companies and Institutions.

Job opportunities	At the end of his/her PhD, the selected Student will have the opportunity to explore – together with the research group and his/her supervisor – different job alternatives, such as remaining in academia with a Post-Doc position within the research group or in other Business Schools; applying for a position in enterprises, consultancy firms or Institutions interested to the distinctive competences and network of contacts developed during the PhD.
Composition of the research group	2 Full Professors 1 Associated Professors 2 Assistant Professors 1 PhD Students
Name of the research directors	Emanuele Lettieri

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 selected PhD Student will be offered the opportunity to develop teaching capabilities through the involvement as a teaching assistant in one/two of the courses chaired by the Professors affiliated to with the research group, also according to her/his attitude and interests. Courses cover topics about Finance, Innovation, Entrepreneurship, Health Care Management, Innovation in Health &Social Care, Accounting, Finance &Control, and Business Administration. There will be also the opportunity to be involved in the development of new educational programs both at the Master of Science level and the post-graduate level (jointly with POLIMI Graduate School of Management - GSOM).The selected PhD Student will have desk availability, even if the opportunity for smart working will be offered for two days per week. 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.

The interaction with key stakeholders requires a fluent knowledge of the Italian language.

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