



PhD in INGEGNERIA GESTIONALE / MANAGEMENT ENGINEERING - 38th cycle

PNRR_352 Research Field: LOGISTICS & E-COMMERCE: INNOVATIVE MODELS AND SOLUTIONS FOR THE LAST-MILE DELIVERY IN THE FOOD INDUSTRY

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

In the last decade Business to Consumer (B2C) e-commerce has gained increasing importance in many countries, and online initiatives are proliferating across different industries. This trend was enhanced by the Covid-19 pandemic. If compared to offline market, B2C e-commerce opens new challenges for companies. One of the most critical ones is the higher complexity of the logistics activities, and many scholars agree that the most critical logistic process is the last-mile delivery. As a matter of fact, this is the interface between the merchants and the customer, and it is very expensive. Besides, online customers are very demanding in terms of the service level. Thus, companies has to find new ways to meet challenging service level targets, while assuring process efficiency to stay competitive. Moreover, increasing pressure is also paid to environmental sustainability of the logistics processes. Among the different industries, the food one deserves special attention. On the one hand, it has several peculiarities that make the logistics processes even more challenging. When talking about grocery products, the basket size is big but highly variegated (requiring special trucks for the delivery), the time-window for the delivery is limited (having additional constraints on the delivery tour), and the interaction with the customer is usually longer (affecting the maximum number of deliveries per tour). Moreover, new competitors offering flash deliveries have entered the market, further increasing the expectations of



	<p>customers in terms of service level. When talking about food deliveries from restaurants, once again the order-to-delivery time is very challenging. All these peculiarities require the food industry to be analysed independently, and solutions developed in other context should hardly be implemented. On the other hand, the e-commerce market in the food industry is still limited if compared to other sectors, but it has a very high CAGR, and it is expected to go on growing significantly in the next years. Thus, it becomes important to understand how to face the challenges, to assure economic and environmental sustainability.</p> <p>These being the premises, the main objective of the research programme is to investigate how logistics operators can face the challenges of the B2C e-commerce market in the food industry, thus focusing on innovative technological and/or logistics solutions and new business models, with the ultimate goal of assuring economic and environmental sustainability. Different delivery contexts (e.g. urban/rural, local/national) should be considered in the analysis.</p> <p>The contents developed during the PhD programme strongly meet the needs of companies operating in this market, while being aligned with the needs of economic and sustainable processes as stimulated by the targets related to innovation/digitalization (Mission 1), ecological transition (Mission 2) and sustainable mobility (Mission 3) of the Recovery Fund (PNRR).</p>
<p>Methods and techniques that will be developed and used to carry out the research</p>	<p>In this research project the following methodologies could be applied:</p> <ul style="list-style-type: none"> - review and analysis of existing studies and publications; - developing a framework to classify and compare different logistics and technological innovative solutions; - modelling of logistics processes to estimate the expected impacts of innovative solutions; - case studies in order to analyse the best practices and technological solutions and identify their critical success factors; - action research to support the implementation of the most promising proposed solutions



<p>Educational objectives</p>	<p>The main educational objectives of the research project are the following:</p> <ul style="list-style-type: none"> - develop the capability to analyse the complexity of the possible ways to face the logistics challenges in the B2C e-commerce market, with special reference to the food industry; - build the capacity to develop qualitative and quantitative models to compare different solutions supporting B2C logistics in the food industry; - develop the capacity to support logistics operators in selecting the proper ?logistics strategy?, and the related solutions / processes, in the e-commerce market. <p>The candidate will then develop advanced competence and research skills according to these objectives. The candidate will also learn methods and tools to design and conduct a research project, following the appropriate methodologies for data collection and analysis, and to present and publish results both in academic journals and practitioner magazines</p>
<p>Job opportunities</p>	<p>The opportunities for a PhD graduate in this research area are:</p> <ul style="list-style-type: none"> - Career in logistics operators that support companies operating in the B2C e-commerce market; - Food companies and retailers operating in the B2C e-commerce market; - Advisory on B2C e-commerce & Logistics; - Academic career in the field of Logistics.
<p>Composition of the research group</p>	<p>2 Full Professors 4 Associated Professors 3 Assistant Professors 5 PhD Students</p>
<p>Name of the research directors</p>	<p>Angela Tumino, Riccardo Mangiaracina</p>

<p style="text-align: center;">Contacts</p>	
<p>angela.tumino@polimi.it, riccardo.mangiaracina@polimi.it</p>	

<p style="text-align: center;">Additional support - Financial aid per PhD student per year (gross amount)</p>	
<p>Housing - Foreign Students</p>	<p style="text-align: center;">--</p>
<p>Housing - Out-of-town residents</p>	



(more than 80Km out of Milano)	--
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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)	Brivio & Viganò
By number of months at the company	6
Institution or company where the candidate will spend the period abroad (name and brief description)	The PhD student will spend a period of at least 6 months abroad to interact with researchers and participate in joint activities potentially foreseen in the project, according to specific needs. Indeed, the project is highly interdisciplinary, and this favors the collaboration with foreign research centers where the candidate can acquire in-depth knowledge on the theme.
By number of months abroad	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
<p><i>Funding for educational activities: 4.900,00 Euros for three years.</i></p> <p><i>Teaching assistantship: There are various forms of financial aid for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.</i></p> <p><i>Desk availability: shared use Computer availability: individual use</i></p>