

Digitalization and Innovation in Supply Chain

Master's Degree: Supply Chain Management

Subject: Innovation decisions: simulations, analysis and technologies

Credits: 6 ECTS

Program: Master in Supply Chain Management

Modality: On-campus (Full-Time)

Semester: Second

Type: Mandatory

Language of instruction: English

Academic year: 2025/2026

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1. Presentation

The subject "Digitization and innovation in the supply chain" is fundamental in the current context of business and logistics management. Digitalization has become a key pillar for optimizing processes, improving efficiency and adapting to a constantly evolving business environment. In this sense, the subject provides students with the tools and knowledge necessary to understand and take advantage of digital technologies in the field of the supply chain.

Firstly, the subject addresses the fundamental concepts of digitalization and its impact on the supply chain, including process automation, systems integration and data management. Students gain a deep understanding of how digitalization can transform the way logistics operations are planned, executed and controlled.

In addition, the subject explores the latest trends and innovations in technologies applied to the supply chain, such as the Internet of Things (IoT), artificial intelligence (AI), blockchain and data analytics. Students learn to evaluate the potential of these technologies to improve visibility, traceability, and decision-making in the supply chain.

Likewise, the impact of digitalization on inter-company collaboration, inventory management, reverse logistics and sustainability is delved into. Students understand how digital innovation can drive the creation of more agile, responsive and customer-oriented supply chains.

The subject also addresses the challenges and opportunities associated with the implementation of digital solutions in the supply chain, including aspects of cybersecurity, organizational change and talent management. Students develop critical skills to identify, evaluate, and implement digital technologies strategically and sustainably.

In summary, the subject prepares students to face the challenges of the digital era, providing them with the knowledge and skills necessary to lead digital transformation in logistics and business environments.

2. Program's learning outcomes

The program-related learning outcomes are distributed as follows:

2.1. Knowledge

- RAT 1 The graduate will be able to describe correctly complex supply chains and their adaptation to the organization's needs for permanent change.
- RAT 2 The graduate will be able to assertively identify developments in information technology applied to supply chain management.

- RAT 3 The graduate will be able to describe correctly a schedule and cost contingency scenario based on the results of a quantitative risk analysis in the development of the supply chain business.

2.2. Skills

- RAT 7 The graduate will be able to provide clear and precise explanations of any knowledge/information, both orally and in writing, in Catalan, Spanish and a third language, particularly English.
- RAT 8 The graduate will be able to apply digital technologies (at the right time) in their field of expertise.
- RAT 10 The graduate will know how to apply the knowledge acquired in new or unfamiliar environments, as well as in multidisciplinary contexts related to the supply chain area by means of the resolution of practical cases.
- RAT 11 The graduate will be able to apply in an efficient way the keys of e-Commerce to the area of operations and logistics in a multi-channel environment.
- RAT 12 The graduate will be able to adequately coordinate individual and team efforts and skills for the correct development and fulfilment of operational objectives.
- RAT 15 The graduate will be able to assertively interpret the complementary concepts of planning and execution in a practical and efficient manner.

2.3. Competences

- RAT 17 The graduate will be able to come up with innovative, creative and entrepreneurial solutions in professional situations.
- RAT 18 The graduate will be able to evaluate the sustainability and social impact of the proposals presented, with ethical, environmental and professional responsibility.
- RAT 19 The graduate will be able to apply the gender perspective in the professional tasks.
- RAT 21 The graduate will be able to restructure in an efficient way the teams of the company's functional departments involved in the supply chain.
- RAT 22 The graduate will be able to adequately integrate the innovation elements in the supply chain management of a company or organization.
- RAT 25 The graduate will be able to evaluate the business risks for their correct use in the development of action plans related to the supply chain.

3. Subject's learning outcomes

The graduate will be able to apply the gender perspective in the professional tasks.

- RAM 5 The graduate will be able to accurately analyze the impact of business decisions in the area of operations and logistics, preparing a report on a real company case.
- RAM 6 The graduate will be able to devise predictive models for application in the context of the supply chain, through the study of statistical measurement and data collection tools.
- RAM 7 The graduate will be able to reliably use mathematical optimizers to improve the supply chain, by carrying out a group project.
- RAM 8 The graduate will be able to evaluate the impact of new technologies on supply chain activities by carrying out a SWOT analysis.

4. Contents

- **Topic 1:** Digital transformation: impacto de las nuevas tecnologías en las actividades de Supply Chain
 - Conceptos fundamentales de la transformación digital

- **Topic 2:** Robotics & Automatization
 - Applied technologies
 - Impact on operational efficiency
 - Talent management and organizational change
 - Ethical considerations

- **Topic 3:** E-Commerce, E-Logistics and Multichannel: New business models supported by a different design of the Supply Chain
 - Evaluation of e-commerce and its impact on the supply chain
 - Design of the supply chain for e-commerce and multichannel
 - Logistics for e-commerce
 - New business models

- **Topic 4:** Support technologies that support the execution of activities throughout the Supply Chain
 - Supply chain management systems
 - Warehouse management technologies
 - Transportation management systems
 - Information technologies and data capture

- Digital platforms and data analytics
- **Topic 5:** Innovation Management: Impact of the introduction of new products and new processes in the Supply Chain
- Importance of innovation in the supply chain
 - Development of new products and processes
 - Impact on the supply chain
 - Collaboration with suppliers and business partners
 - Change management and continuous improvement

5. Methodology

The methodology applied to this subject, framed within the educational model of EAE Business School, LifEd, is detailed in the following table:

| PRESENTIAL MODALITY | | |
|---------------------|----------------------------|------------------------------------------------------------------------------------------------|
| Learning Outcomes | Teaching Methodology | Training Activities |
| Knowledge | Lecture | Conferences |
| | Presentation sessions | Student presentations |
| | Audiovisual-based learning | Analysis of audiovisuals |
| | Tutorials | Meetings to resolve doubts Follow-up meetings |
| Skills | Project work | Problem-solving Information searching and processing Presentation of reports and/or work |
| | Case-based learning | Information searching and processing Problem-solving |
| Competencies | Game-based learning | Challenges |
| | Inquiry-based learning | Research tasks |
| | Project work | Report preparation - Presentation of reports or work |

6. Grading system

Continuous assessment

| Grading system | Weight |
|------------------------------------------------------------------------------|--------|
| Block 1: Exercises, Problems, Report Preparation, Assignments, Presentations | 40 % |
| Block 2: Participation and Oral Presentations | 20 % |
| Block 3: Final Evaluation Test | 40 % |

Block 1 will consist of:

- Two individual evaluable activities. 10% each.
- Two group projects or reports. 10% each.

Block 2 will consist of:

- Participation and oral presentations – 20%.

Block 3 will consist of:

- An exam - 40%.

The final grade for the course will be obtained by weighting the three blocks. The minimum weighted grade required to pass is 5.0.

If the student fails Block 1 or Block 3 (or both) with a grade lower than 5.0, they may retake that block or blocks. This grade will average with the other blocks, and the maximum final grade the student can receive is 5.0.

If the student is unable to attend the initial evaluation, and can provide a justified reason (see regulations of the University of Lleida), they may take the exam on the date set for recovery.

Students who do not attend evaluative activities with a weight exceeding 50% will receive a general course grade of “Not presented.”

Alternative Evaluation

The single evaluation consists of a single exam that accounts for 100% of the course. The exam, and therefore the course, is passed with a grade of 5 out of 10 in this final test. If a grade lower than 5.0 is obtained, the student has the right to a recovery exam.

To opt for the single evaluation, it is necessary to send a written request to the coordination during the first 15 business days of the course. The procedure to follow to opt for this single evaluation is established in the specific rules of EAE.

Plagiarism is a fraudulent activity that can lead to severe penalties, both academic and legal. Academic honesty is one of the pillars of the educational commitment of the School, and the members of its

teaching community are especially aware and prepared to detect such actions. Given the difficulty often involved in conceptualizing plagiarism, it has been deemed appropriate to clearly define its content and scope in these regulations and policies.

Plagiarism is understood as the appropriation of works or other people's work by passing them off as one's own; that is, without explicitly crediting their origin. Plagiarism can consist of the unauthorized total or partial copying of someone else's work, or presenting the copy as an original work, impersonating the true author. Some examples of plagiarism are:

- Submitting someone else's work as if it were your own, regardless of whether the copy is total or partial.
- Paraphrasing a text by rephrasing it with other words, but making small changes in the language to disguise it and without citing sources.
- Buying or obtaining a work and presenting it as one's own.
- Relying on an idea or phrase from another person to write a new paper without citing the author of the work.

As established in Article 10 of the Academic Code of Conduct for Students at EAE Barcelona, without prejudice to the academic sanctions resulting from its application, the Academic Commission will promote the legal actions that correspond in case plagiarism could violate applicable regulations regarding intellectual property.

7. Bibliography

- Basu, R. (2023) *Managing Global Supply Chains: Contemporary global challenges in Supply Chain Management*. London ; New York: Routledge, Taylor et Francis Group.
- Kurz, D.B. (no date) *Digital Supply Chain Leadership: Reshaping Talent and organizations*. Routledge.
- Mattera, M. and Gava, L. (2021) 'Facing TBL with IOT: Creating value and positively impacting business processes', *Social Responsibility Journal*, 18(1), pp. 178–201. doi:10.1108/srj-02-2020-0074.
- Tiwari, M.K. et al. (2024) 'Supply chain digitisation and management', *International Journal of Production Research*, 62(8), pp. 2918–2926. doi:10.1080/00207543.2024.2316476.
- How digitalization can drive sustainable supply chains (no date) World Economic Forum. Available at: <https://www.weforum.org/stories/2024/09/digitalization-sustainable-supply-chains-least-developed-countries/> (Accessed: 16 December 2024).