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ShortBio

Paula Morella Avinzano received her bachelor's and master's degree in industrial engineering from University of Zaragoza in 2017 and 2019, respectively, and her master's degree in production and logistics operations and a university expert in Supply Chain 4.0 in 2020. In 2022, she obtained a PhD in Industrial Engineering (cum laude) from the University of Zaragoza. She joined the Department of Design and Manufacturing Engineering, University of Zaragoza in 2019, where she worked as a researcher in the field of Industry 4.0 until 2022, when she joined TECNALIA as a data analytics researcher. Her activity focuses on the research of technologies for creating more sustainable and resilient supply chains. Paula is also the author/co-author of 10 publications in high-impact journals and conferences and has co-directed more than 15 undergraduate or master's thesis projects.

Research outputs

Quantifying Hidden Carbon Emissions Induced from Curbside Capacity Loss in Urban Freight Operations

Gil Gallego, A., Lambán, M. P., Royo Sánchez, J., Sánchez Catalán, J. C. & Morella Avinzano, P., Feb 2026, In: Applied Sciences (Switzerland). 16, 4, 2149.

Evaluation of Loading and Unloading Zones Through Dynamic Occupancy Scenario Simulation Aligned with Municipal Ordinances in Urban Freight Distribution

Gil Gallego, A., Lambán Castillo, M. P., Royo Sánchez, J., Sánchez Catalán, J. C. & Avinzano, P. M., Jan 2026, In: Applied Sciences (Switzerland). 16, 1, 100.

Methodologies in digital twin for manufacturing industry: A systematic literature review

Aznar Lapuente, G., Morella Avinzano, P., Lamban Castillo, M. P. & Seneviratne, D., Jan 2026, In: Future Generation Computer Systems. 174, 107997.

Study and Characterization of New KPIs for Measuring Efficiency in Urban Loading and Unloading Zones Using the OEE (Overall Equipment Effectiveness) Model

Gil Gallego, A., Lambán, M. P., Royo Sánchez, J., Sánchez Catalán, J. C. & Morella Avinzano, P., Jul 2025, In: Applied Sciences (Switzerland). 15, 14, 7652.

Measuring industry 5.0: a kpi-based approach to resilience, sustainability, and human centrality

Gutierrez Nadal, I., Morella Avinzano, P., Aznar Lapuente, G., Cantini, G., Graziani, A. R., Irazustabarrena Murgiondo, A. & Sierra, E., 18 Jun 2025, p. 1. 1 p.

AI Based Solutions for Manufacturing Mass Customization

Usatorre, L., Morella, P., Sedano, I., Clavijo, S. & Aguayo, A., 2025, *Advances in Artificial Intelligence in Manufacturing II - Proceedings of the 2nd European Symposium on Artificial Intelligence in Manufacturing, 2024*. Alexopoulos, K., Makris, S. & Stavropoulos, P. (eds.). Springer Science and Business Media Deutschland GmbH, p. 180-193 14 p. (Lecture Notes in Mechanical Engineering).

Definition of Standardized Digital Product Passport: A Use Case to Make Solar Panels More Sustainable

Morella, P., Aznar-Lapuente, G., Gutierrez, I., Lambán, M. P., Royo, J. A., Suso, C. R. & Esteban, M., 2025, *Enterprise Interoperability XI - Enterprise Interoperability Through Data, Artificial Intelligence and Robotics*. Vrochidis, S., Gialampoukidis, I., Ducq, Y. & Hribernik, K. (eds.). Springer Science and Business Media Deutschland GmbH, p. 165-175 11 p. (Proceedings of the I-ESA Conferences; vol. 12).

Using IoT Technologies to Facilitate Human – Machine Communication: A Use Case for Setup Time Acquisition

Morella, P., Sánchez, J. C., Lambán, M. P. & Royo, J. A., 2025, *Lecture Notes on Data Engineering and Communications Technologies*. Springer Science and Business Media Deutschland GmbH, p. 338-343 6 p. (Lecture Notes on Data Engineering and Communications Technologies; vol. 239).

Value-Driven Industrial Transformation: A Methodology for the Evaluation of 6 Big Losses in Manufacturing Environments from a Triple Perspective

Irazustabarrena, A., Morella, P., Lambán, M. P., Razquin, A. R. & Lanz, I. E., 2025, *Lecture Notes on Data Engineering and Communications Technologies*. Springer Science and Business Media Deutschland GmbH, p. 276-281 6 p. (Lecture Notes on Data Engineering and Communications Technologies; vol. 276).

Real-Time Production Scheduling and Industrial Sonar and Their Application in Autonomous Mobile Robots

Burillo, F., Lambán, M. P., Royo, J. A., Morella, P. & Sánchez, J. C., Mar 2024, In: *Applied Sciences (Switzerland)*. 14, 5, 1890.

A New Indicator for Measuring Efficiency in Urban Freight Transportation: Defining and Implementing the OEEM (Overall Equipment Effectiveness for Mobility)

Les, A., Morella, P., Lambán, M. P., Royo, J. & Sánchez, J. C., Jan 2024, In: *Applied Sciences (Switzerland)*. 14, 2, 779.

Technologies Associated with Industry 4.0 in Green Supply Chains: A Systematic Literature Review

Morella, P., Lambán, M. P., Royo, J., Sánchez, J. C. & Latapia, J., Jun 2023, In: *Sustainability (Switzerland)*. 15, 12, 9784.

Vertical Farming Monitoring: How Does It Work and How Much Does It Cost?

Morella, P., Lambán, M. P., Royo, J. & Sánchez, J. C., Apr 2023, In: *Sensors*. 23, 7, 3502.

Development of real-time indicators to assess and improve the energy efficiency of machine tools

Lambán, M. P., Morella, P. A., Sánchez, J. C., Les, A. D., Royo, J. E. & Quero, F. E., 2023, *Selected peer-reviewed full text papers from the 10th Manufacturing Engineering Society International Conference, MESIC 2023*. Morales-Palma, D., Martínez-Donaire, A. J., Borrego, M., Centeno, G. & Vallengano, C. (eds.). Trans Tech Publications Ltd, p. 443-449 7 p. (Advances in Science and Technology; vol. 132 AST).

Evaluating the impact of new trends in urban freight transportation attending the triple bottom line: A case study

Morella, P., Pilar Lambán, M., Royo, J. & Carlos Sánchez, J., Dec 2022, In: *Computers and Industrial Engineering*. 174, 108756.

Using industry 4.0 to face the challenges of predictive maintenance: A key performance indicators development in a cyber physical system

Pilar Lambán, M., Morella, P., Royo, J. & Carlos Sánchez, J., Sept 2022, In: *Computers and Industrial Engineering*. 171, 108400.

Developing and Implementing a Lean Performance Indicator: Overall Process Effectiveness to Measure the Effectiveness in an Operation Process: Overall Process Effectiveness to Measure the Effectiveness in an Operation Process

Ng Corrales, L. D. C., Lambán, M. P., Morella, P., Royo, J., Sánchez Catalán, J. C. & Hernandez Korner, M. E., 12 Feb 2022, In: *Machines*. 10, 2, p. 133 1 p., 133.

Study and Analysis of the Implementation of 4.0 Technologies in the Agri-Food Supply Chain: A State of the Art: A state of the art

Morella, P., Lambán, M. P., Royo, J. & Sánchez, J. C., 13 Dec 2021, In: *Agronomy*. 11, 12, p. 2526 1 p., 2526.

The Importance of Implementing Cyber Physical Systems to Acquire Real-Time Data and Indicators

Morella, P., Lambán, M. P., Royo, J. A. & Sánchez, J. C., 21 May 2021, In: *J. 4, 2, p. 147-153 7 p.*

Determining and Applying Productive, Environmental and Economical Indicators and Indexes to a Cyber Physical System for Greening Process of Supply Chain

Morella, P., Lambán, M. P., Royo, J., Sánchez, J. C. & Hernández Korner, M. E., 2021, *Lecture Notes in Intelligent Transportation and Infrastructure*. Springer Nature, p. 3-20 18 p. (Lecture Notes in Intelligent Transportation and Infrastructure; vol. Part F1390).

Development of a new kpi for the economic quantification of six big losses and its implementation in a cyber physical system

Morella, P., Lambán, M. P., Royo, J., Sánchez, J. C. & Latapia, J., 21 Dec 2020, In: Applied Sciences (Switzerland). 10, 24, p. 1-17 17 p., 9154.

Development of a New Green Indicator and Its Implementation in a Cyber–Physical System for a Green Supply Chain

Morella, P., Lambán, M. P., Royo, J., Sánchez, J. C. & Corrales, L. D. C. N., 18 Oct 2020, In: Sustainability. 12, 20, p. 1-19 19 p., 8629.

Doctoral theses

Indicadores 4.0: estudio, definición e implementación de indicadores en sistemas ciberfísicos

Morella Avinzano, P. (Author), Lamban Castillo (Supervisor) & Royo (Supervisor), 2022