IESE Business School University of Navarra Global Executive MBA

GEMBA Module 3
2 credits

[IND4.0] INDUSTRY 4.0

Introduction

The term Industry 4.0 was introduced in 2011 by Chancellor Dr. Angela Merkel and Germany´s Academy of Engineering, Acatech. It describes the widespread integration of information and communication technology in industrial manufacturing with the goal to increase efficiency of processes in terms of time and working capital. Addressing Industry 4.0 from a purely technological perspective, however, falls short of the significant potential in process improvement and the creation of new business models. This also has implications on the organizational structures of companies. If they want to realize the full potential of synergies created by the connection of digital and physical, i.e., data-driven insights and new shop-floor technology-enabled flexibility, organization and culture in many industries will have to change. With the accelerating pace of innovation (both in cyber and in physical), companies will have to be more agile than ever before to adapt to an ever-changing environment. Mark Twain captured the essence of the necessary change in mindset when he said: *"It Ain't What You Don't Know That Gets You Into Trouble. It's What You Know for Sure That Just Ain't So."*

The sessions on Industry 4.0 will connect to the sessions in "Driving Digital Transformation" and "Artificial Intelligence" in two ways: a) digital transformation is a key ingredient to enable companies to realize the full potential of Industry 4.0 and b) Artificial intelligence is a tool that will thrive in the data rich environments of factories and supply chains. At the same time the sessions on Industry 4.0 / Cyber-physical systems will help to understand why services and trade have been disrupted by digital already – but industry[1] so far has not been affected. This has a lot to do with the cyber-physical frontier, i.e., the fact that it is very challenging to take digital insights to physical products (➔ Moravec's Paradox).

Objectives

The objective of this segment is to provide GEMBA students with a better understanding of the ongoing revolution in industry, as well as its implications for business from a general management perspective. The course accelerates the participants´ knowledge journey by helping them address their current and future issues on this respect.

[1] We will use the term "industry" in its original sense here: "industry" means a factory where tangible material enters on one side, is transformed in the factory, and emerges as a product on the other side.

Methodology

The sessions will contain mini lectures, case discussions and a company visit. Personal study, team learning, and quizzes will be required (50hrs)

Evaluation

Participants will be evaluated based on three major elements:

- Quizzes and mini report: 50%
- Individual class participation: 50%

Competencies

Basic Competences

CB6. Possess and understand knowledge that provides a basis or opportunity to be original in the development and / or application of ideas, often in a research context.

CB7. The students know how to apply the knowledge acquired and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their area of study CB8. The students can integrate knowledge and face the complexity of formulating judgments based on information that, being incomplete or limited, includes reflections on social and ethical responsibilities linked to the application of their knowledge and judgments.

CB9. Students know how to communicate their conclusions and the knowledge and ultimate reasons that support them to specialized and non-specialized audiences in a clear and unambiguous way.

CB10. Students possess the learning skills that allow them to continue studying in a way that will be largely self-directed or autonomous.

General Competences

CG10 – To acquire the vision of a global citizen when dealing with the multicultural aspects present in the international market.

Specific Competences

CE14 – To optimize systems of operations and logistics chains with special attention to processes, queues, and inventory management.