



Industry and Innovation

Special Issue Call for Papers

Firms and Innovation in the New Industrial Paradigm of the Digital Transformation

Guest editors

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Background and Objective

While the dramatic shock brought about by the Covid-19 pandemic is currently attracting the attention of academic scholars and policy makers, the topical issues and mega-trends that were boiling down before of its arrival keep on unfolding and still require great attention, though in a transformed scenario. Among these, the unceasing introduction of innovations continues to be the major cause of structural and organizational change of socio-economic systems. In particular, radically new technologies have the disruptive power to open brand new scenarios of economic development. The faster the pace of introductions, the higher is the stress for markets, firms and institutions to change and adapt their businesses, from production to organization and value sharing. After a new innovative wave shatters a system, a new productive paradigm emerges, along with winners and losers. The last technological wave hitting developed and developing and less developed countries nowadays is the so-called "Industry 4.0", though to a different extent and through different channels. A New Industrial Paradigm of Digital Transformation is emerging and unfolding within an evolutionary context, which could be hit by severe shocks, like that posed by the recent burst of Covid-19.

The diffusion of new technologies such as robotics, artificial intelligence, machine learning, blockchain, additive manufacturing and internet of things is having a massive impact on the organization of production. Flexible, adaptive and learning machines constitute a major technological breakthrough if compared to previous mechanization waves where only simple

routine tasks could be automated. Unlike in previous industrial revolutions, automation extends to cognitive and mental tasks, and this redefines the balance between job-destruction and job-creation, as well as the skill-bias of automation that can be expected from the present one. What is more, the widespread availability of data and especially the exponentially increasing power and the decreasing cost of processing them are radically redefining the nature of the informational problems in organizations, and firms in particular.

New technologies such as machine learning, AI, data analytics are not only likely to produce a major impact on labour demand and labour markets, but are also heavily affecting how firms take decisions, how they are organized, how they innovate, urging us to rethink of our theoretical constructs about innovation and firm in the new industrial paradigm. Our theories of organization are based on informational asymmetries, bounded rationality, limited span of control, and the like. But new technologies are likely to cause a radical reduction or at least a major modification of such informational problems. Can existing theories explain organizational phenomena also in an age of extremely cheap information?

The new industrial paradigm associated to the 4th industrial revolution is also affecting the fundamental issues that, not far from one century ago already, Ronald Coase posed at the centre of the “nature of the firm”, calling for a different economics of the firm than that consolidated by addressing these issues with conventional premises and hypotheses. Furthermore, the new paradigm calls for a new set of conditions for firms to survive, compete and succeed, calling for a similar rethinking of our common approach to industrial organisation and dynamics. One crucial aspect involves the competences required to workers for being able to extract fully the value out of the technological investment. Since competences and jobs, are complementary, introducing a new one – by training or hiring – brings in a set of workers, jobs and tasks new to the company. This dynamic affects the width and quality of the firm’s knowledge base, hence its absorptive capacity and its ability to generate new, innovative knowledge. Not only the composition, but also the organization of the knowledge base – the way knowledge workers (are) organise(d), interact, exchange information within and outside the firm – changes. The availability of knowledge resources and the organization of knowledge production are two key ingredients commanding the nature of creative reaction: whether firms will perish, adopt new technologies and/or react creatively.

The impact of this technological revolution is currently intersecting with that of the socio-economic crisis that the Covid-19 pandemic has generated. Rather than downplaying its relevance, this is increasing the multidimensionality of the phenomenon and thus urging different angles of analysis to fully grasp the wave of change it will bring about. It is for this reason that only several works can provide a full-fledged analysis of the impact of this new technological paradigm. The richness of contributions allowed by a special issue will allow to cover the different and complementary issues involved. We thus will encourage authors to submit works with different theoretical and methodological approaches and covering widely the burgeoning literature on the topic.

The objective of the special issue is that contributing to increase our still scarce knowledge of the previously delineated set of research issues, and to other related ones. Its main aim is to collect a coherent set of original and high-quality papers, which could help the interest reader in getting a prompt access to its main theme: “Firms and Innovation in the New Industrial Paradigm of the Digital Transformation”. In particular, the special issue focuses on the changes in the organization of the firms - how firms take decisions, how they are organized, how they innovate - due to the introduction of the new industrial paradigm associated to the 4th industrial revolution and to the changes that the Covid-19 pandemic is posing to its unfolding. The special issue intends to highlight the new set of conditions for firms to survive, compete and succeed, facing the radical change of the external environment and of the shocks to which it is exposed. Finally, the special issue aims to address how firms manage the changes not only in the composition, but also in the organization of the knowledge base commanding the nature of creative reaction: whether firms will perish, adopt new technologies and/or react creatively.

Research Topics

The scope of the special issue is intended to embrace both theoretical and empirical analyses of its focal issues, as well as papers dedicated to its policy implications. The special issue is open to scholars of diverse disciplines, among which, economics and management of innovation and new technologies, economics of the firm, industrial organisation, and organisation science.

Potential themes to be addressed in the special issue include a set of issues that have been affected by the New Industrial Paradigm of Digital Transformation and by its intersection with the Covid19 socio-economic crisis:

- Existence, boundaries and organisation of the firm in the New Industrial Paradigm;
- Firm entry, exit and survival in the New Industrial Paradigm;
- Technological and non-technological changes within and between firms in the New Industrial Paradigm;
- Internationalisation and localisation decisions in the New Industrial Paradigm;
- Innovation policy rationales in the New Industrial Paradigm

In particular, the special issue is open to contributions addressing the following non-exhaustive list of research questions:

- Is the characterisation of the new industrial paradigm still open? Which theoretical and empirical analyses are still needed to increase its understanding, if any?
- How are the boundaries and the organisation of the firm changing within the new industrial paradigm?

- How is the new paradigm affecting the technological regimes within which firms compete and innovate?
- How does structural change intertwine with industrial dynamics in the new paradigm?
- How do firms cope with the complexity of the new paradigm? Which, if one, is the main target of their investments? How do they balance static with dynamic efficiency?
- Is Industry 4.0 a top strategic objective for firms' organisation? Is Industry 4.0 shaping firms' strategies?
- How is the digital transformation visible in the drivers for investments? How is it visible in their policy towards employees, suppliers and customers?
- How do firms deploy their dynamic capabilities to cope with these transformations?
- How will supply chain be, if they are, reengineered?
- Has the innovation process at the level of the firms been affected by the emergence of the new industrial paradigm? Are inventions and innovations more easily achieved?
- Have the new technologies changed the organisation of the innovation processes inside the firms? What are the new sources of innovation?
- How will Industry 4.0 impact competitiveness, growth and inequality?
- How is the Covid19 affecting the previous set of issues?

Important deadlines

- Submissions to the Special Issue due by **March 30th, 2021**
- Publication of the Special Issue in 2023

Related events

The special issue is related, although obviously not exclusively, to the 17th European Network on the Economics of the Firm (ENEF) Workshop, to be held on 21-22 January, 2021 at the University of Bergamo, Italy.

Submission Process

Paper submissions will undergo rigorous editorial screening and double-blind peer review by a minimum of two recognized scholars. The standard requirements of *Industry and Innovation* for submissions apply. Please consult the journal submission guidelines available at <http://www.industryandinnovation.net>.