



# FORCE Workshop

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Thursday, 8 July 2021

# General remarks



- Remarkable and seminal contribution on industrial policy debate.
- Deep understanding of the major technological changes.
- Theoretical framework, findings and proposals.
- Holistic approach and perspective.
- International dimension on productive sphere and interdependencies.
- Focused analysis on several aspects (e.g. macro-economic; climate/ecological; SME's, public policy role).

# Introduction



- Three crucial dimensions in a non-deterministic approach: natural prerequisite, social prerequisite and international prerequisite.
- Need to further highlight internal contradictions or interrelated issues in those dimensions.
- For example:
  - natural prerequisite: technological maturity vs commercial cost-efficiency dimension (--> additional cost over existing technologies emitting greenhouse gases); complementarity and holistic transition (e.g. electric vehicles with green hydrogen produced electricity).
  - social prerequisite: economic regulation and competition policy; a conducive business environment for small companies.
  - international prerequisite: complex and interconnected global value chains (GVCs), strategic niches (e.g. S.Korea, Taiwan – semiconductors/electronics)

# Climate change and its connections with industry



- Areas of intervention and almost complete substitution of fossil fuels for energy production ..... (pp. 6):
  - - not only a technological issue - need to emphasize the barriers down this pathway which inhibits the 'green transition' (e.g. downstream barriers; investments and access to finance; low rates of adoption).
  - - technical feasibility, complementarity and intermittency (e.g. optimal combination of new green technologies available)
  - - cost-efficiency perspective (technology as first step, operational capability, commercial feasibility and adoption rates is the next stages).
- --> targeted policies to focus on those issues and tackle differentiated challenges across the upstream and downstream domains.

# Macroeconomic issues



- Technological availability might not be enough. Not only the maturity of technologies as a challenge...(pp. 7): commercial feasibility (cost-efficiency), complementarity, diffusion, integrated transition (e.g. EVs-electricity production, and charging infrastructures; storage and intermittency of renewables).
- --> An additional comment on the organisational and operational dimensions (e.g. wider interventions, new business models). For example, circular economy, and food waste issue require more complex interventions.

# Macroeconomic issues



- Need to discuss for the “funding infrastructures” necessary to facilitate diffusion and adoption of new technologies.
- Beyond upstream discussion (R&D). More focus on the dimension of technology adoption rates (e.g. SMEs) - requiring different set of policy instruments (grants vs loans) and differentiated priorities (e.g. not necessary R&D expenses).
- Not only the extent of intervention but also the form of policy intervention --> a major question is “what kind of precise and differentiated policies we need to accelerate adoption” (e.g. SMEs level) taking into account differentiations and peculiarities (e.g. across size, sector and geography).

# New and green industrial policies



- Market's mechanism inadequacy...(pp. 10):
- Green transition is not just about technology but about transformative changes that affect the way value is created and captured in a sustainable way inside a given economy.
- Questions as reflections to the holistic approach (pp. 12):
  - How a green industrial policy tackles this issue?
  - Which is the policy form appropriate to accelerate green transition (e.g. upstream-downstream, production-adoption, consumption, different tools such as grants, loans, cascade funding, subsidies, vouchers, procurement)?
  - What is the role of mission-oriented policies in green transition (see Mazzucato, 2021)?
  - SMEs reference (pp. 13): lack of financial resources --> low rate of investments --> low rate of technology adoption --> 'eviction effect'\* (Aghion et al, 2021).

\* Firms that invest significantly in new industrial equipment substantially lower their likelihood of going out of business and vice versa (compared to firms that do not make such an investment).

# The contrasting views of the previous and still dominant economic paradigm and the emerging one



- ‘Trickle down dogma’ still present in technology domain (pp. 16).
- New forms of inequality: digital gap/divide and technological backwardness (e.g. micro companies lagging behind as well as peripheral economies) (pp. 17).
- New socio-economic cleavages: access to knowledge, advanced technologies, digital ecosystem in different levels (individuals, firms, economies)



# What industry



- Industrial role and manufacturing as a growth engine [pp. 19] - cumulative processes, technological spillovers, multiplier effects, backward/forward linkages, added value etc.
- Reshoring trend and the challenges [pp. 20] (e.g. embeddedness of specific sectors, such as micro-electronics; complex and internationalised GVCs).
- Debate on regulation issues (e.g. innovation-centric vs price-centric – Gilbert, 2020). Need to mention economic regulation and competition policies [pp. 21].

# Eastern and southern periphery



- Leapfrogging strategies [in pp. 24] (Kevin Lee, 2019): strategic technology niches (e.g. short-cycle); strategic alignment to GVCs; added value and know how (from OEM to ODM/OBM); dynamic comparative advantage (from trade-based determined by endowment conditions to technology-based specialization).
  - Technological revolution and industrial strategies as a means to promote a geographically balanced industrial growth
  - Integral role for peripheral regional and SMEs
  - More policy effort in building ecosystems within peripheral economies (e.g. SMEs with state-of-the-art productive capacity aligned to GVCs albeit lack of wider and embedded, organised industrial ecosystems and local value chains).
  - Not only R&D expenditures but also technology adoption rates for low-tech SMEs, as part of a two-pronged industrial growth strategy.

# Annual Report on European SMEs 2020-2021

## Flash Eurobarometer 486



The **Flash Eurobarometer 486** shows that, in the EU-27 in 2020, a much larger proportion of micro SMEs than of small and medium-sized SMEs were **focusing only on basic digital technologies** and not on advanced digital technologies (36.5% of micro SMEs versus 29.2% of small SMEs and 26.9% of medium-sized SMEs).

Moreover, 20.3% of micro SMEs were of the opinion that there was **no need to introduce any digital technologies at all**. In contrast, only 15.8% of small SMEs and 9.8% of medium-sized SMEs shared this opinion.

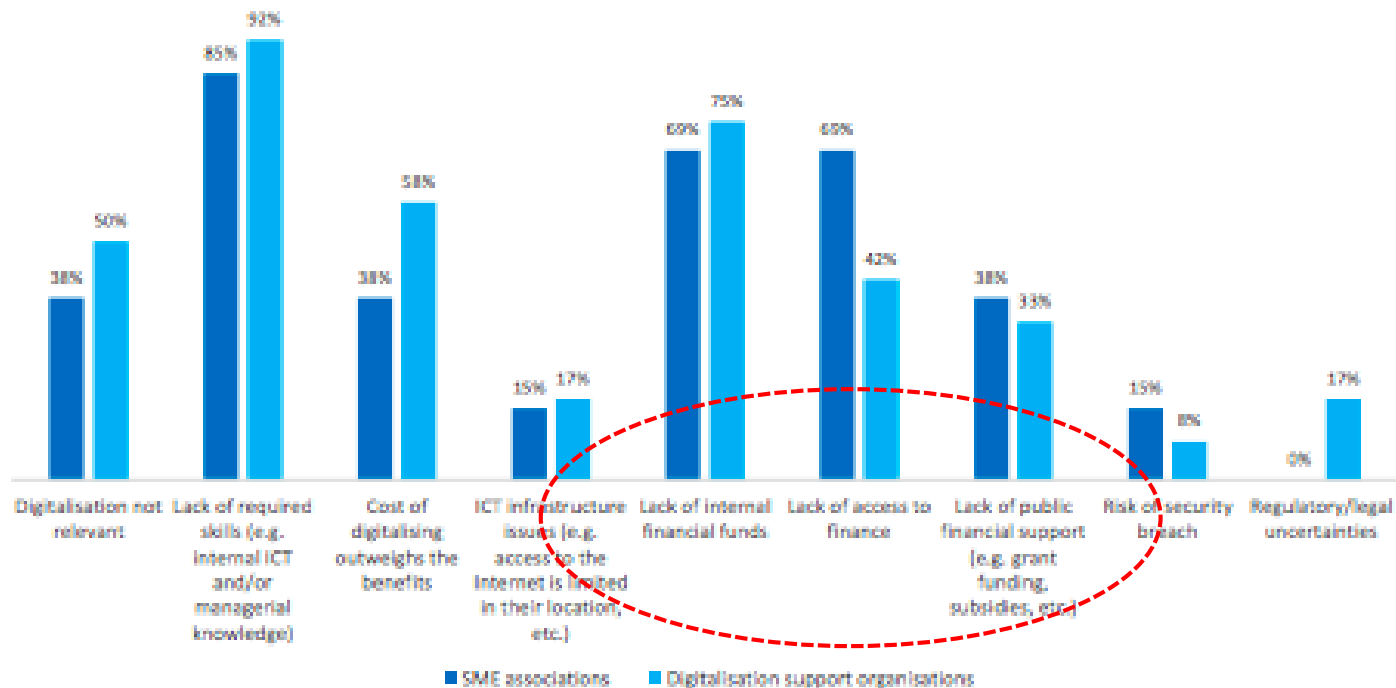
**A much smaller proportion of micro SMEs than of small and medium-sized SMEs were of the opinion that advanced digital technologies should be introduced** or stated that they had already introduced them (19.9% of micro SMEs versus 29.9% of small SMEs and 37.5% of medium-sized SMEs).

Source: European Commission, 2021

# Annual Report on European SMEs 2020-2021



**Figure 57 Reasons why EU SMEs do not digitalise their activities**



*Source: Survey of SME associations and SME digitalisation support organisations run by LE Europe in November/December (see page 28 for details)*

# Annual Report on European SMEs 2020-2021

**Table 20: Barriers faced by SMEs in their digitalisation – views of national SME associations and SME digitalisation support organisations (% of survey respondents having selected a particular barrier)**

Barrier	State of the digitalisation of SMEs			
	No digitalisation	Very limited digitalisation	More extensive digitalisation	Very extensive digitalisation
Lack of required skills (e.g. internal ICT and/or managerial knowledge)	92%	88%	42%	26%
Lack of internal financial funds	88%	79%	50%	33%
Lack of access to finance	58%	67%	58%	35%
Lack of public financial support (e.g. grant funding, subsidies, etc.)	46%	46%	42%	22%
ICT infrastructure issues in rural areas	33%	38%	33%	26%
ICT infrastructure issues in urban and semi-urban areas	13%	22%	21%	17%

*Source: Survey of SME associations and SME digitalisation support organisations run by LE Europe in November/December (see page 28 for details)*

# Annual Report on European SMEs 2020-2021



A first cluster of Member States (BG, EL, HU, IT, LV, PL, RO, SK) in which small and medium-sized SMEs clearly lagged behind their peers in other EU-27 Member States. o

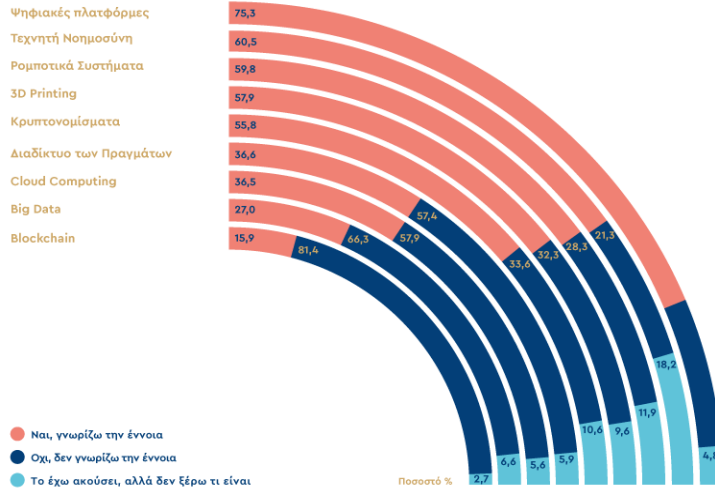
A second cluster of Member States (AT, CY, CZ, DE, EE, ES, FR, HR, LT, LU, PT, SI) in which the digitalisation of small and medium-sized SMEs was broadly similar to the EU-27 average.

A third group of Member States (BE, DK, FI, IE, MT, NL, SE ) in which small and medium-sized SMEs markedly outperformed their peers in the other two groups.

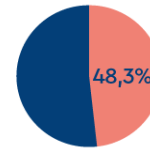
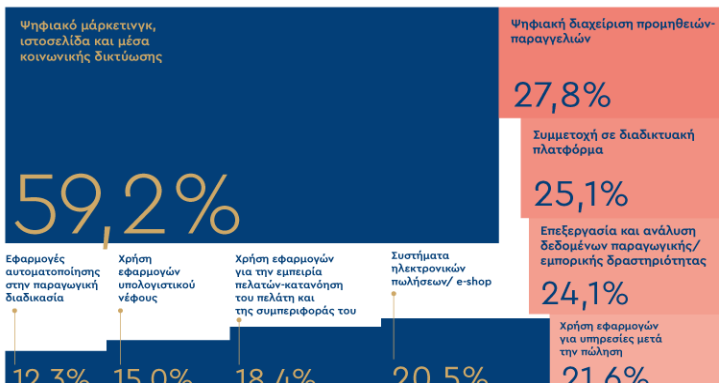
Source: European Commission, 2021

# Annual SME's Report 2020, IME GSEVEE - Survey

## Γνώση εννοιών ψηφιακού περιβάλλοντος

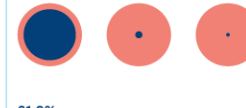
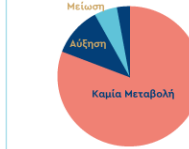


## Ενσωμάτωση σύγχρονων τεχνολογικών εφαρμογών

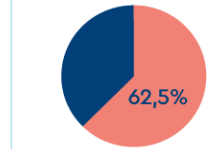


### «Δεν χρειαζόμαστε ενημέρωση»

Υψηλότερο ποσοστό αρνητικών απαντήσεων συγκεντρώνεται στη Μεταποίηση, έναντι των Υπηρεσιών και του Εμπορίου.



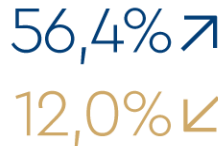
10,7% δηλώνει τι οι αλλαγές προκάλεσαν αύξηση στον αριθμό τους.



### «Δεν έχω κάποια έλλειψη»

Υψηλότερο ποσοστό μη-έλλειψης συγκεντρώνεται στη Μεταποίηση, έναντι των Υπηρεσιών και του Εμπορίου.

## Επίδραση τεχνολογίας



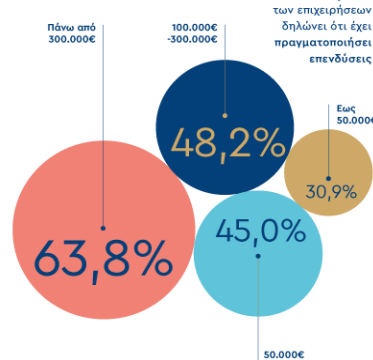
των επιχειρήσεων δηλώνει ότι οι τεχνολογικές εξελίξεις επηρεάζουν ή θα επηρεάσουν θετικά την επιχειρηματική τους δραστηριότητα.

των επιχειρήσεων δηλώνει ότι επηρεάζονται ή θα επηρεαστούν αρνητικά από τις εξελίξεις.

## Ποσοστό επιχειρήσεων που πραγματοποίησε επενδύσεις ανά κατηγορία επένδυσης



## Επενδύσεις



43,6% των επιχειρήσεων δηλώνει ότι έχει πραγματοποιήσει επενδύσεις

## Πηγή χρηματοδότησης επενδύσεων



## Ανασταλτικοί παράγοντες επενδύσεων

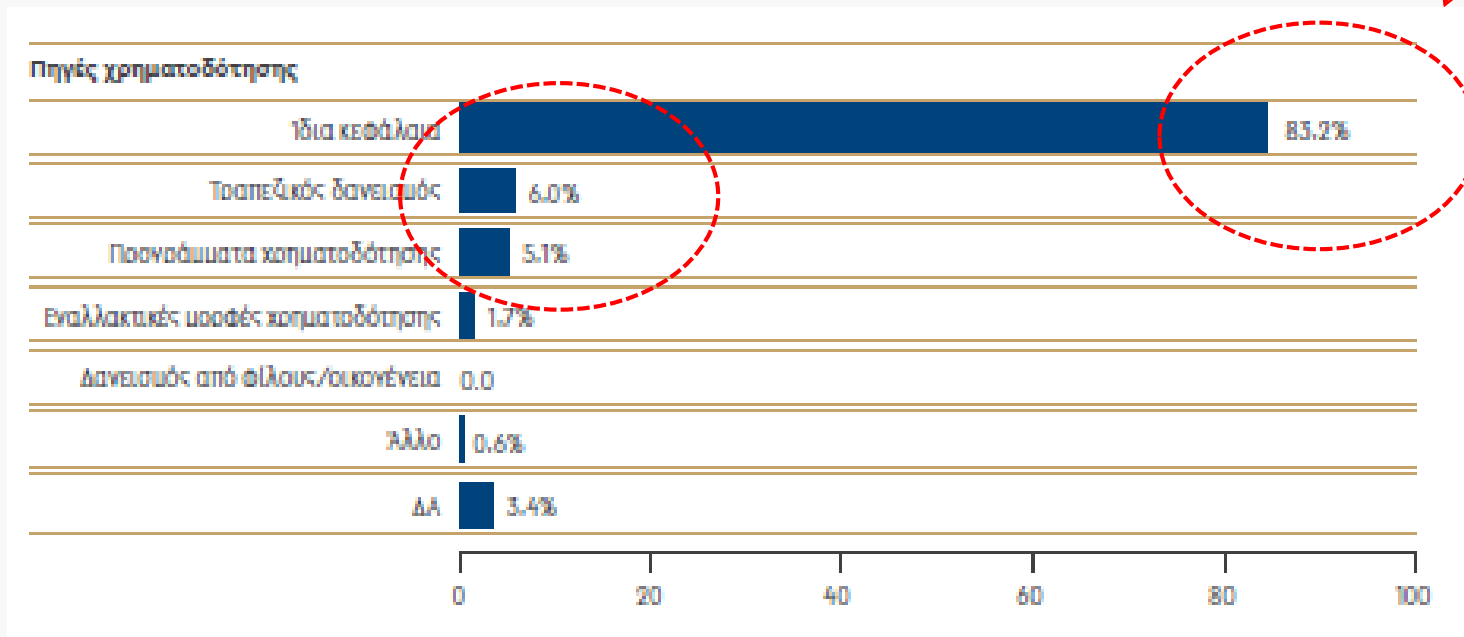


The 'vicious cycle' of technological backwardness: Low level of investments (less than 1/2), 1/4 less than 5K, 1/4 less than 5K (3-years basis), basic digital technologies, own funds, lack access to financial resources. A small fast-growing part (mainly born-digital and established export-oriented companies with tradable products) and a large part characterised by a very low rate of technological adoption.

## Sources of investments



- Internal financial funds: 83,2% of firms invested on digital technologies adoption.



- Banking loans (6%) and public financial support (5,1%).

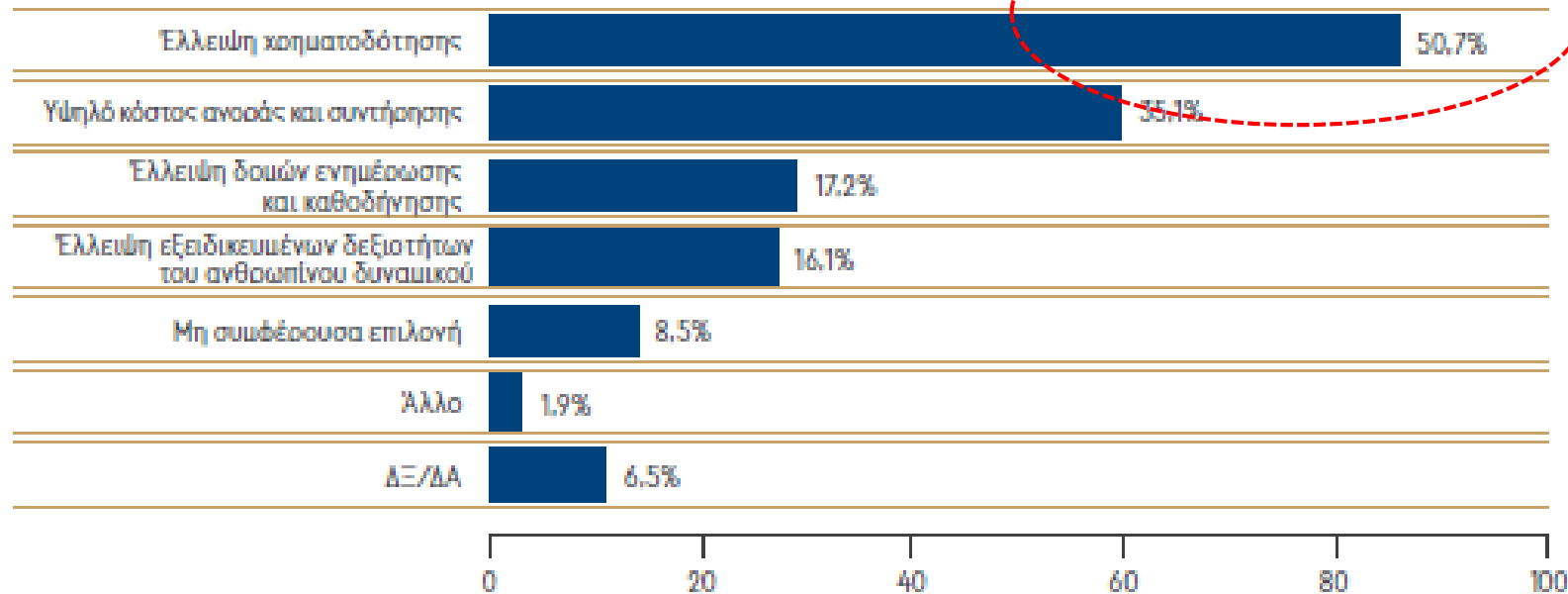


## Major barriers to investments



- Major barrier: Lack of access to finance (50,7%) and High cost for purchasing and maintenance (35,1%).

### Βασικότερα εμπόδια



## Major remarks



1. Low level of investments on digital technologies
2. Digital adoption in certain low complexity and low value-added applications/activities
3. Limited and piecemeal understanding on digital technologies
4. Different rates of technology adoption (e.g. size, sector/niches, born-digital/high-tech vs low tech sectors)
5. -- > Multi-level and fine-grained policies focused on SME's technological advancement: new technological equipment adoption, novel funding instruments, infrastructures/innovation spaces, skills, clusters and synergies.



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