

Automation and its Employment Effects A Literature Review of Automotive and Garment Sectors

paper prepared for JRC-ILO Work of the Future

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Background

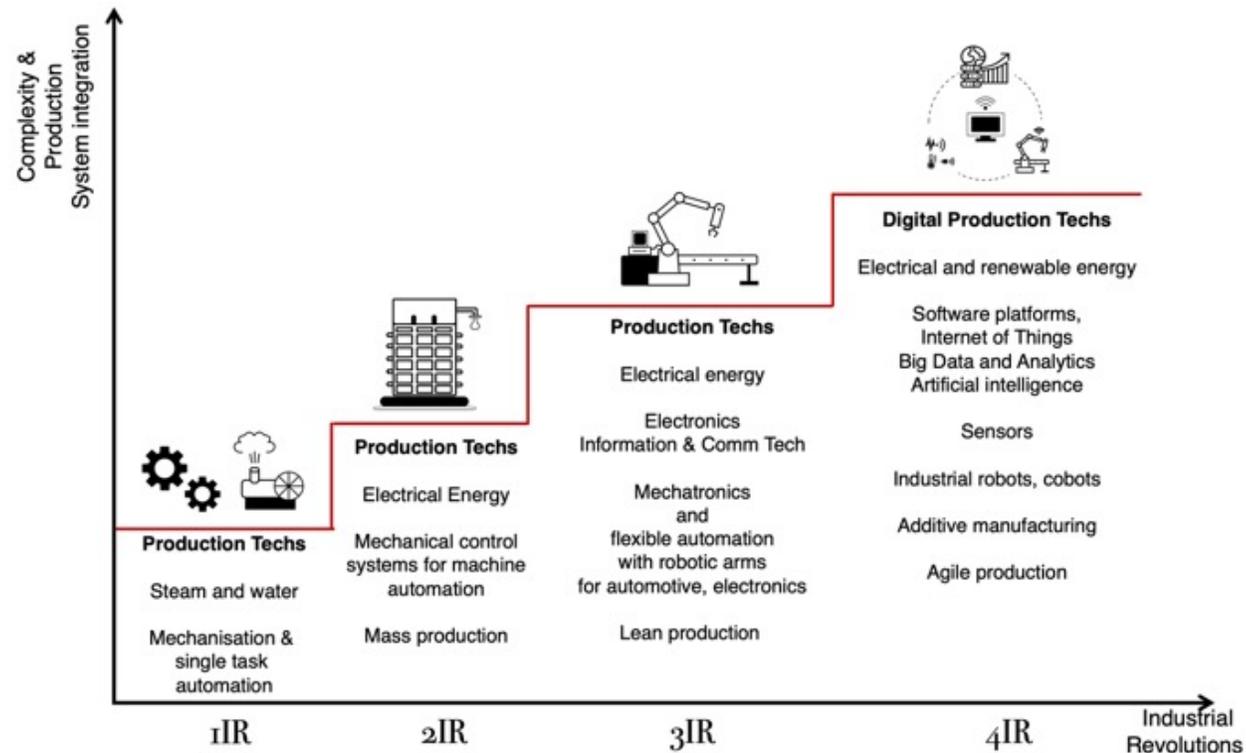
- Is automation stealing jobs?
- Is there any other impact on employment?
- How different is the impact across different sectors?
- The gender dimension

Outline

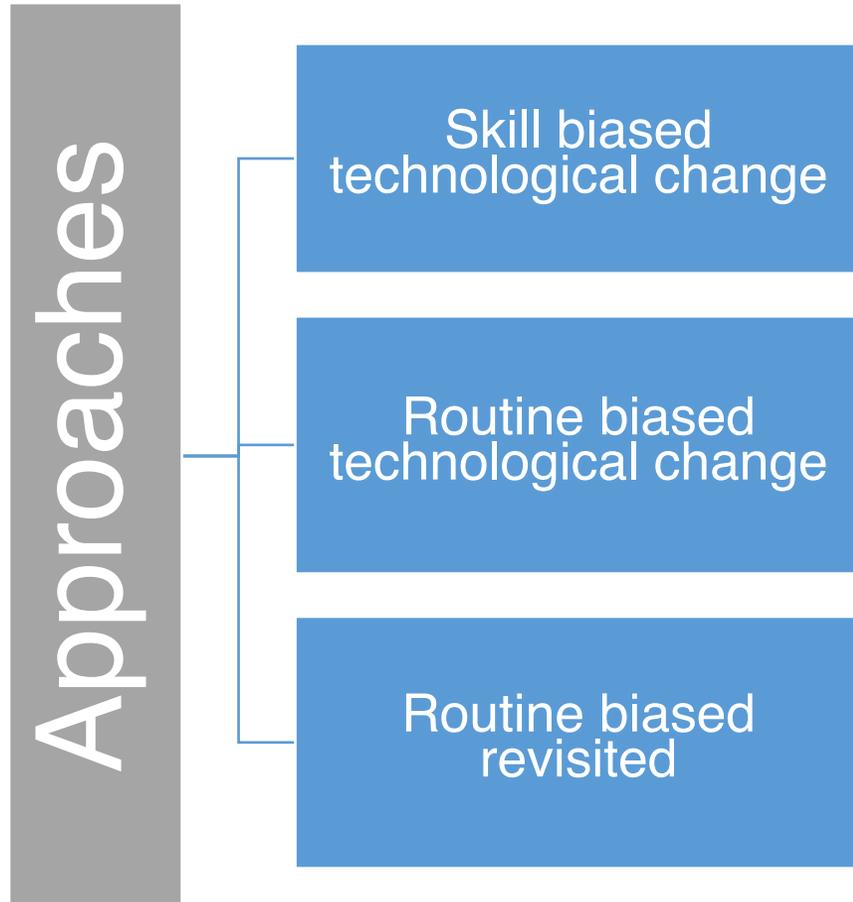
- Approach to study automation - and digitalisation
- Impact of automation on employment
- Impact of automation on gender
- Sectoral focus:
 - Automotive sector
 - Garment sector

Automation and digitalisation: between the past and the future

- How revolutionary is automation?



Impact of automation on employment



Impact of automation on garments

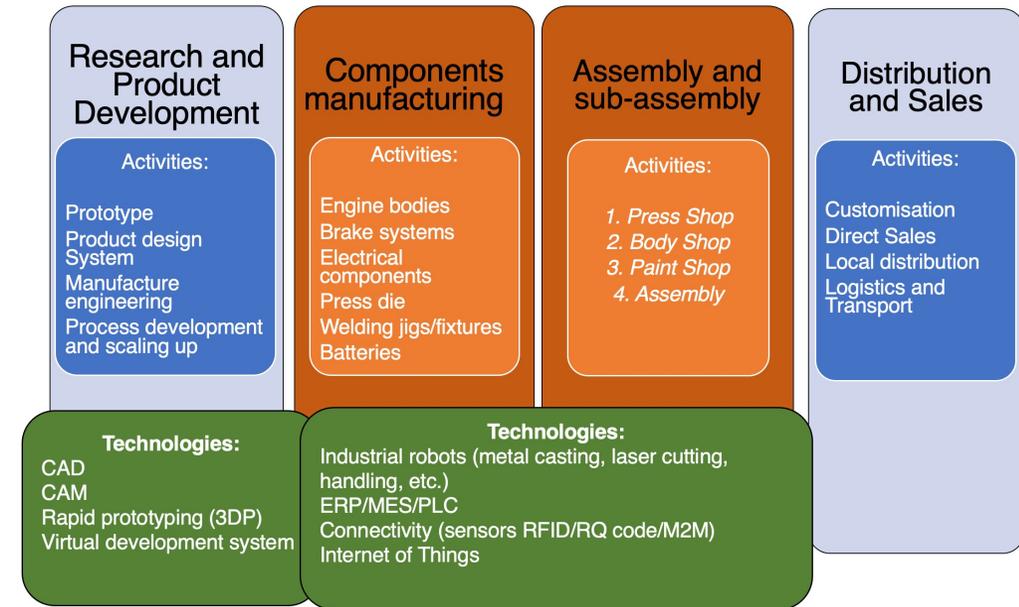
- The gender dimension is scarcely studied, in both developed and developing countries
- Positive outcomes
 - more men affected than women and so easier to enter the job market (gender gap will narrow by 2035 – Suta, 2021)
- Negative outcomes
 - women have higher barriers culturally and historically (globally women account for only 35% of STEM students, men are 33% more likely than women of having access to internet, etc.).
 - IMF study women are at more risk than men because they perform more routine codifiable tasks

Automotive and garments



Impact of automation on the automotive sector

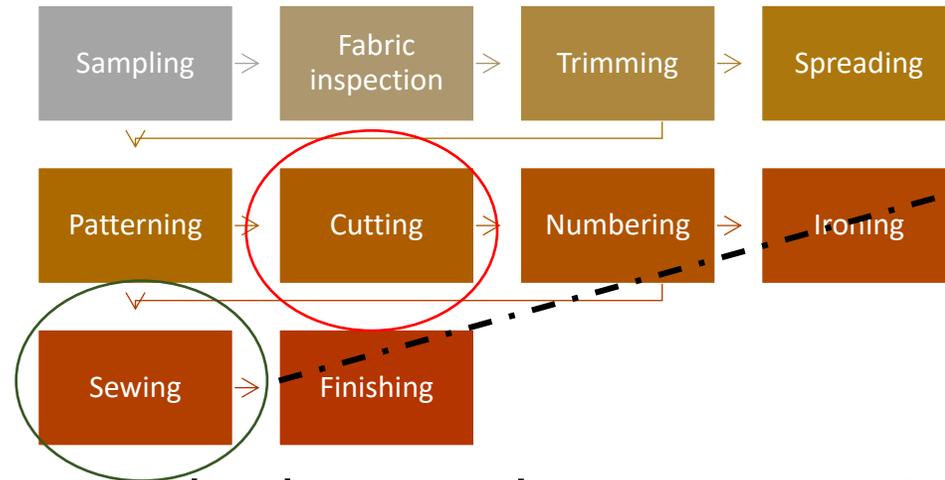
- Production process
- Which technologies
- Determinants
 - costs, volume, quality
 - A game changer different managerial and business model strategies that firms adopt.



- Little evidence of automation displacing labour
 - *Lower cost of labour in CEE countries does not mean lower level of automation, institutional factors count the lion share -Krzywdzinski 2017*
 - *Automation increase segmentation and task standardization - Cagliano et al 2019*
 - *Germany: numerous studies no effects of displacement but changes in employment composition Krzywdzinski 2020*
 - *robot-exposed workers have a higher probability of keeping a job at their original workplace, thus having higher stability, although they may end up to perform different tasks (Dauth et al., 2017).*
 - *Drahokoupil 2020 no evidence of cuts in employment EE – but focus mixed on digitalisation/automation*

Impact of automation on the garment sector

- Production process



contributes to approximately 35% to 40% of total costs, where value addition of garment products lies

- Which technologies:

- CAD CAM used for automated body scanning, + automated sewing, automated identification using RFID to trace product during the whole manufacturing process

- Determinants... the business case

- Three main impediments

And gender – few contributions...

- FRANCE → Fana et al. (2021) on French economy found that gender discrimination within the same job exists and it is a persistent characteristic of the labour market; they also found that gender matters both in terms of work organisation and of distribution of power, with women having less authority and autonomy
- Smith et al. (2008) where they assess that women have a lower degree of autonomy and authority within the same occupation.
- Another study by Babcock et al. (2017) find that women tend to perform less attractive activities compared to men, which can eventually lead to lower promotion possibilities, thus enlarging the gender gap.
- JAPAN → Finally, a study that adopts Frey and Osborne methodology confirms that female workers are more exposed to higher risks of computerization and that the already existing trend of technology and gender bias effects is getting worse with AI type of technology (Hamaguchi and Kondo, 2018)

Conclusions

- Important to distinguish automation and digitalisation processes, first more focused on technologies, second on bundles of existing technologies.
- Interrelated layers of technologies, create complexity, skills, retrofitting capabilities needed.
- There needs to be a business case to automate – *no automation for the sake of it*
- Heterogeneous effects, few cases of displacement?

Thank you

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