



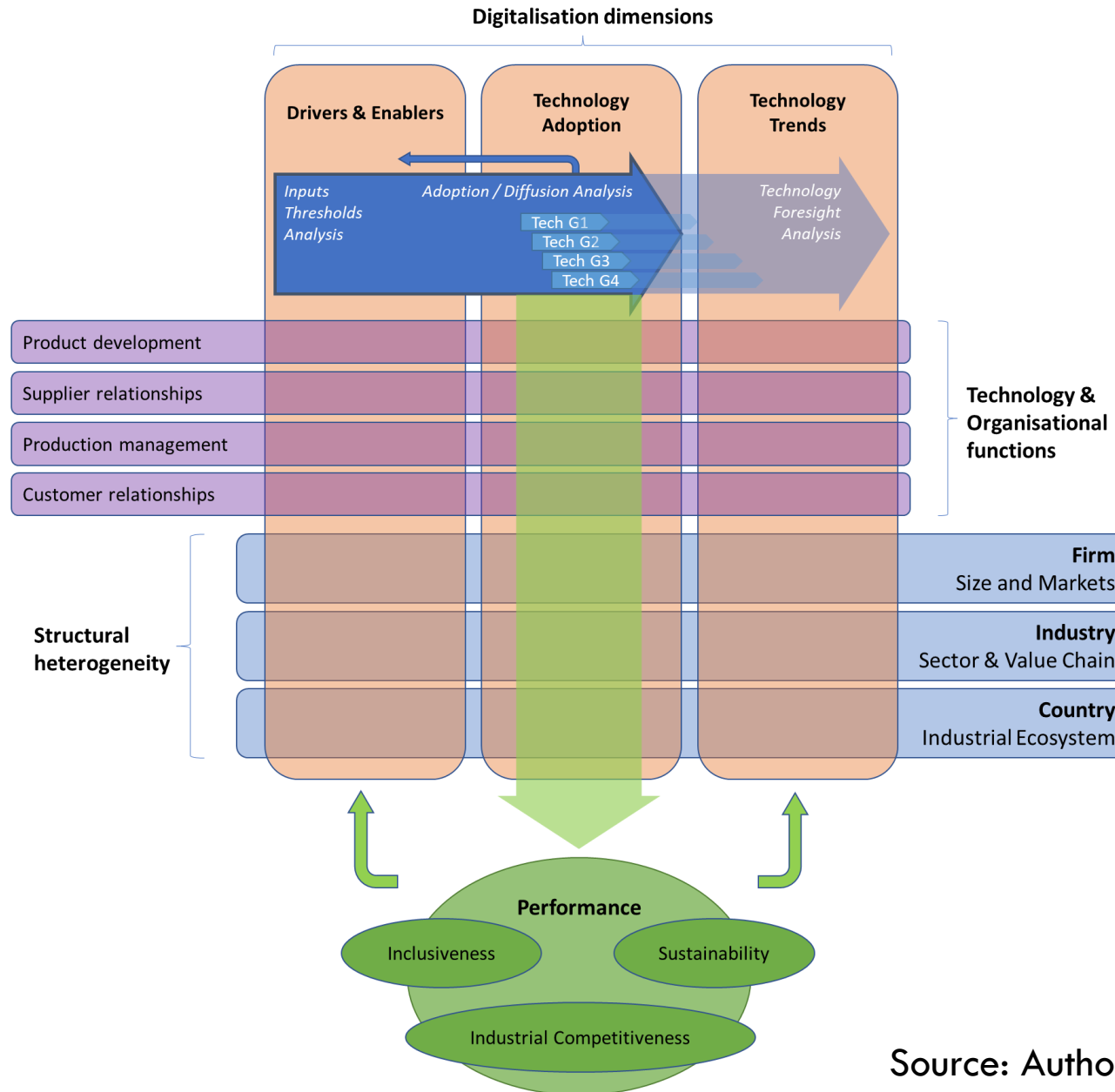
CCRED
CENTRE FOR COMPETITION,
REGULATION AND
ECONOMIC DEVELOPMENT

Advanced digital technologies in South African manufacturing: Emerging issues

Elvis K. Avenyo
Senior Researcher

- ❑ Importance of digital industrialisation to reverse SA's de-industrialisation and engender structural transformation (CCRED, 2019)
 - ❑ Advanced manufacturing and automation increase productivity; develop and integrate into value chains
- ❑ South Africa is unprepared to fully adopt and adapt frontier digital technologies for sustainable structural transformation (IDTT 2022; DCDT 2021; CCRED, 2019)
 - ❑ General lack of understanding of digital industrialisation in SA firms

Multi-level framework to analyse digitalisation



Source: Authors

□ The Digital Skills Survey 2021

- Collaboration between the IDTT and SARChI-ID, supported by the DTIC
- SETAs: manufacturing and engineering services (MerSETA), chemicals (CHIETA), and textiles and fibre processing (FP&M SETA)
- Conducted in March 2021, via emails using standard survey questionnaire: LA cases; UNIDO

Table 2: Breakdown of survey

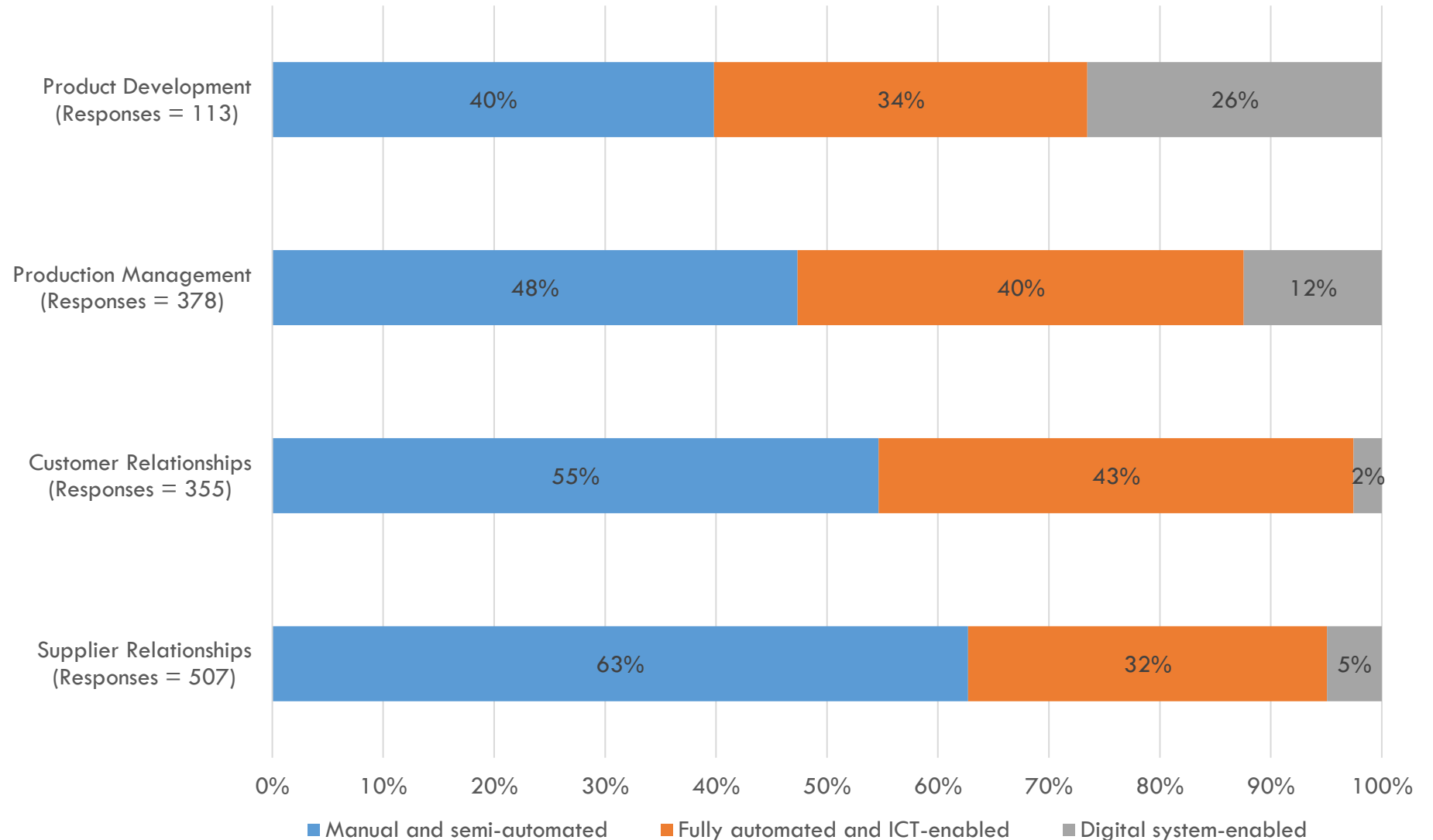
Invitations	7,432
Response Rate	≈7%
Total Responses	516 MerSETA (67%); CHIETA (17%); FP&M (16%)

- Use knowledge gleaned from a unique online survey of three manufacturing sector education and training authorities (SETAs) - CHIETA, MerSETA, and FP&M

Technology classifications by business function

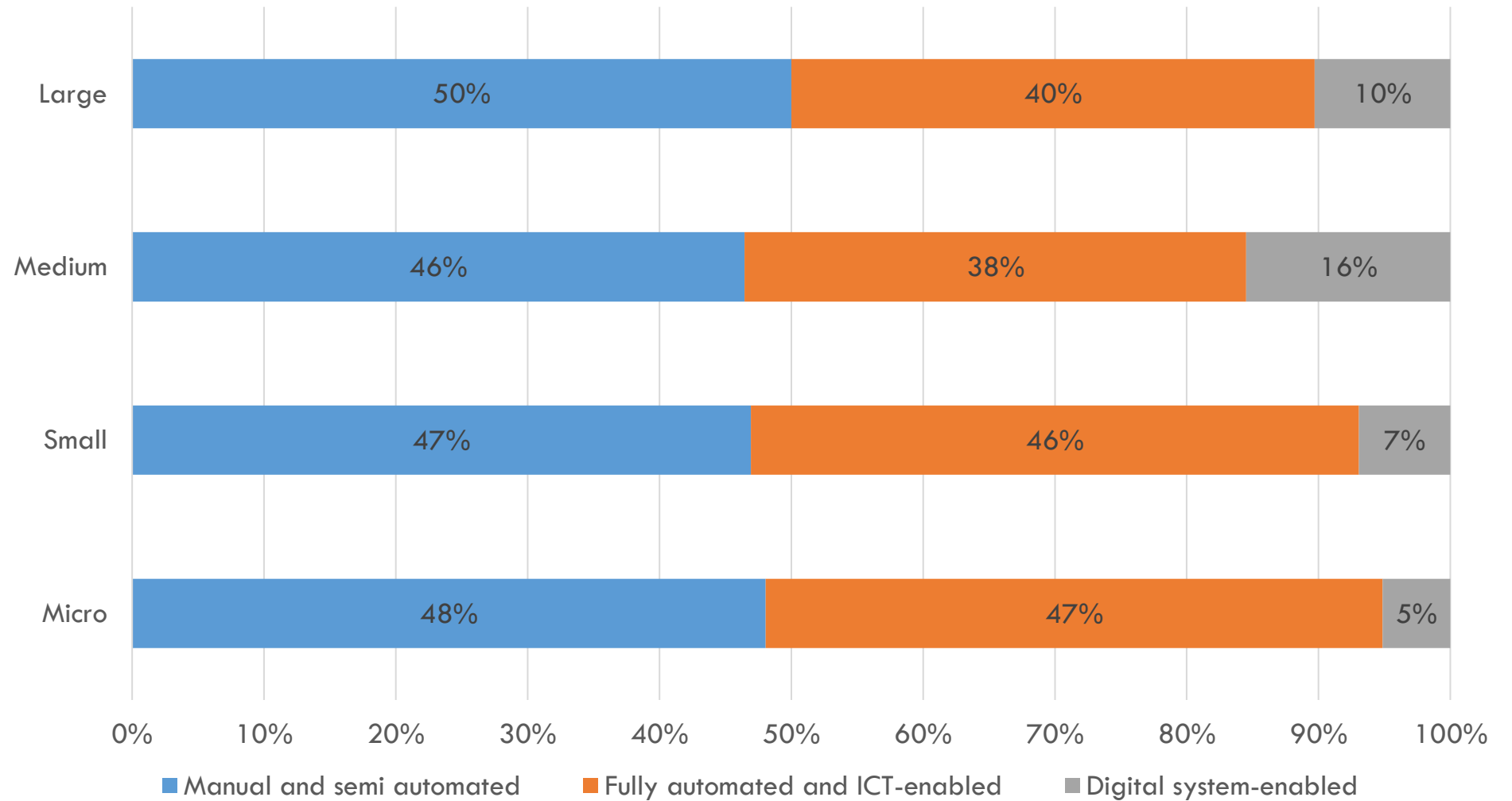
❑ Firms reliant on manual and semi-automated technologies

❑ PD and PM have higher adoption rates of more advanced technologies



Technology by firm size

- ❑ Medium-sized firms leading adoption of digital system-enabled technologies
- ❑ Micro- and small-sized firms dominating in automation and ICT-enabled technologies

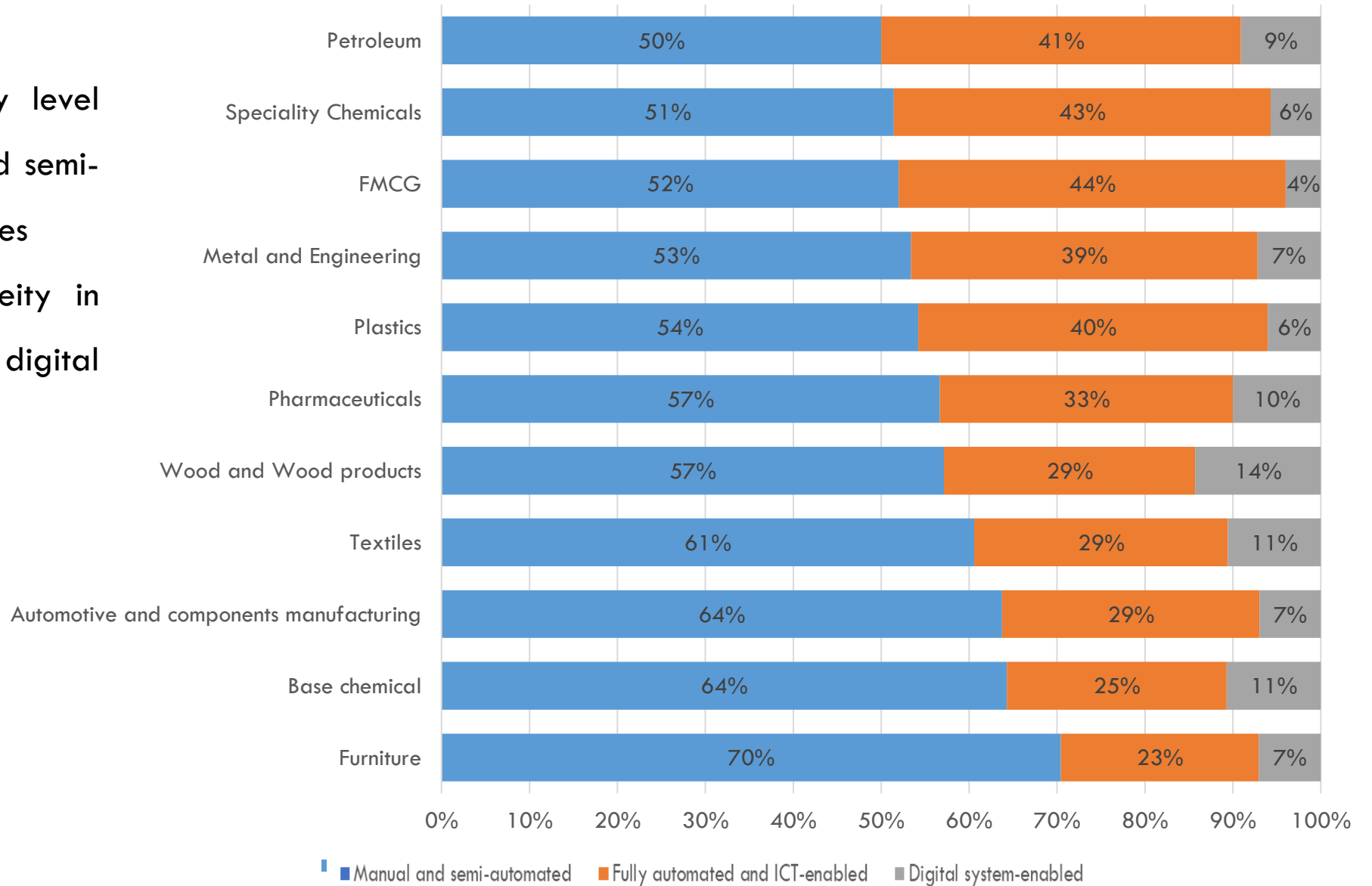


Source: Authors

Notes: Small - Sales valued at between R11 and R50 million in the 2019/20 financial year, Medium - Sales valued at between R51 and R250 million 2019/20 financial year, and Large - Sales valued at more than R250 million 2019/20 financial year.

Status quo of technology infrastructure: Industry breakdown

- ❑ Firms at the industry level reliant on manual and semi-automated technologies
- ❑ Observed heterogeneity in adoption of digital technologies
 - ❑ Leaders
 - ❑ Laggards



- ❑ Results show a mix of factors that influence the adoption of digital technologies across the three business functions under consideration.
- ❑ Cost-related constraints = crucial determining factor of adoption.
 - ❑ Supplier and customer relations business functions most affected
- ❑ Older, export-orientated, and foreign-owned firms displayed higher degrees of digital technology adoption.
 - ❑ Across all business functions.
- ❑ Human capital is essential for the adoption of digital technologies across the functions.
 - ❑ Emphasising the importance of STEM skills.

- ❑ Digital industrialisation fundamental to structural transformation
 - ❑ Escape middle-income technology trap
- ❑ Inequality between firms in the adoption and use of advanced digital technologies
 - ❑ Uneven speed and scale
- ❑ Digital divide across several levels of analysis (SETA, industry, and firm size)
- ❑ Opportunities for regional (digital) industrial policy.

Thank you!
elvisa@uj.ac.za