Skills Development for Innovation & Industrialization in Tanzania: Some Conceptual & Practical Issues

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Plan

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- Importance of skills for innovation & industrialization
- Skills: Status & requirements for industrialization
- Challenges in Skills for Innovation & Industrialization
- Conceptual & Practical issues for skills development
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Introduction

- TDV2025 indicates important aspirations: extreme income poverty reduced; middle income country reached; diversified & semi-industrialised economy reached.
- To realise those aspirations a structural transformation is important, that entails a shift from the agriculture-based economy dominated by raw materials exports to an industry-based economy with higher value-addition production processes (FYDP I)
- Industrialization forms the basis for that transformation where the share of the manufacturing in GDP needs to increase from 5.2% in 2015 to 23% in 2025 (FYDP II p.29; IIDS 2025 p.i)

Introduction …

- Tanzania's aspirations will integrate the global economy, characterised by a free & competitive market
- Thus, innovation becomes imperative for Tanzania to compete in the global market

Introduction …

- Innovation refers to technologies or practices that are new to a given economy or society. They are not necessarily new in absolute terms. These technologies or practices are being diffused in that economy or society (WB 2010: 4)
- For Tanzania to engage in high value-added activities, it requires to boost skills development (TICR 2012: 65)
- Skills are the main determinants of production & innovation; the main complement to firms investments in equipment, machines & other capital goods

Skills are important for Innovation & Industrialization

- Workforce skills at all levels are important for:
  - (a) industrial competitiveness (Lall, 1992:2)
  - (b) resources processing and diversification (Chang & Lin, 2009; Noman et al., 2012)
- According to OECD (2011), skilled workforce refers to capabilities to
  i. Generate knowledge;
  ii. Understand how things work, and
  iii. Understand how ideas & technologies can be improved or applied for industrialization.
- That is, a skilled workforce leads towards better performance of innovative activities.

Status & Requirement of skills

- The current situation indicates that >3/4 of the Tanzanian working population are low skilled workers
- They are concentrated in agriculture (66.3%) followed by elementary occupation (10.9%).

Tanzania current situation of skills

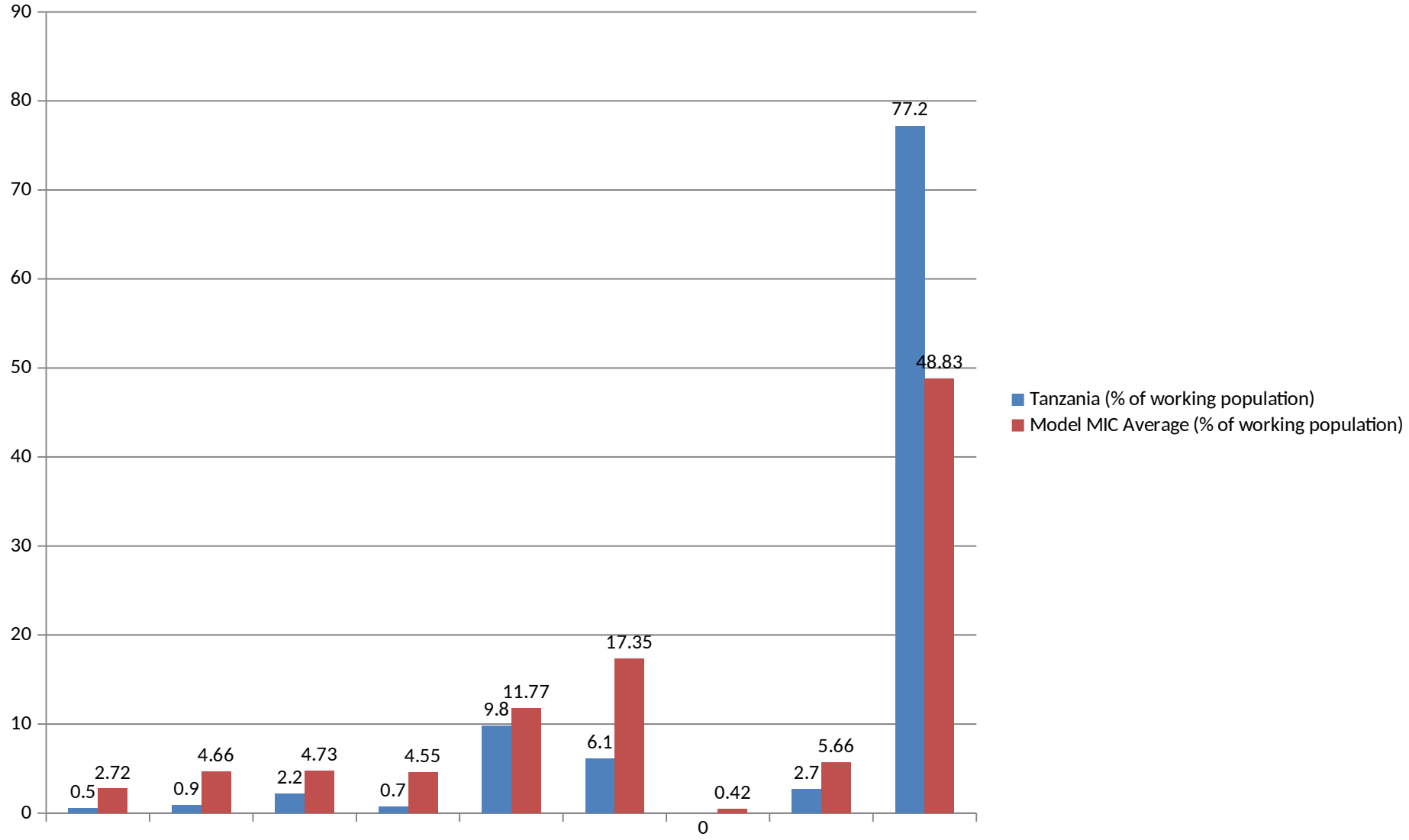
Skill level	Occupation Category	Tanzania (% of working population)
High	Legislators, Managers, Senior Officials	0.5
	Professionals	0.9
	Technicians and associates	2.2
Medium	Office clerks	0.7
	Service workers & shop sales workers	9.8
	Crafts and related workers	6.1
	Skilled agriculture & fishery workers	n.a
Low	Plant & machine operators & assemblers	2.7
	Agricultural & fishery workers	66.3
	Elementary occupations	10.9

Source: ILFS 2014 p. 38

Current Situation of skills …

- Given skills are the main determinant of industrialization, the transformation of agriculture will be effective until changes in skills' composition happen to meet MIC requirements

Skills requirement for MIC



Source: Author's adaptation from ILFS 2014 p. 38

Skills requirement …

- Low skills in Agriculture & elementary occupations exceed the need
- A gap is observed in medium & high skills' levels. To fill these levels requires skills' upgrading
- This implies doubling efforts in the enrolment rates for colleges & higher learning

Skills Challenges in Tanzania

- Firms experience challenges in right skills for innovation & industrialization
  - low skill content: 2/3 of employers have illiterate workers; 80% lack numerate workers & 90% lack IT skilled workers
  - Higher skills adequacy: employers satisfied with their workers' skills in academic, learning, communication & team work, but LESS SATISFIED with presentation, problem solving, initiative & analytical skills
  - Understanding of innovation is poorly rated by employers for STEM graduates
  - Skills misallocation and gap: biggest demand for graduates with higher skills especially in STEM & business

Source: TICR 2012: 65

Some Conceptual & Practical Issues

- There is no single source of skills for innovation & industrialization
  - Formal education
  - Informal education (apprenticeship)
  - Various forms of learning at work
  - Re-skilling (learning or training for new/improved skills
    - Learning at work & re-skilling develop experience-based technical skills

Source: TICR 2015 p. 80; Lall 2001

Conceptual & Practical Issues …

- A strong basic education is fundamental to facilitates skills' graduation into more complex processes .
- VET intake: Std VII (53%); Sec. Educ. (35%); From labour market (11%); more urban than rural (VETA 2015).
- Not being literate = inability to follow written instructions. Lack of numeracy skills at the shop floor level makes difficult the introduction & effective use of modern machines & equipments
- Lack of basic skills affect the effectiveness of in-firm training & increase of cost when shifting from simple to complex production functions.
- Need to increase staff's professional development programmes & provide teaching & learning facilities

Conceptual & Practical Issues …

- Adopt T-shaped model in developing skills. These bring about quick changes
- In addition to your “deep expertise”, you need “broader or core attributes” such learning to learn, communication, teamwork, & problem-solving.
- Only 43% of employers hire employees with such core skills (The McKinsey organisation survey)
- Build capabilities in-house as there is shortage in the labour market.
  - Firms’ clear goal
  - Identify specific & general skills needed
  - Provide training & learning support

Conceptual & Practical Issues …

- Viewing skills development in a "systemic" approach – actors & interactions
- Interactive environment helps read market trends & needs. Skills should be demand-led (relevance ⟷ suppliers firms)
  - Investment & regulatory environment should be made to provide right signals for skills needed
  - The government plays a role of coordination for linkages and provision of orientation/vision
  - Increase the private sector representation on the boards of higher learning institutions
  - Radically give employers a commissioning role in university funding

Conceptual & Practical Issues …

- Use of opportunities while addressing challenges presented by the international mobility of talent
- e.g. “brain drain”: 3/7 reside outside their countries of origin (scientists, engineers, medical doctors)
  - Retention and exposure of workers by providing (1) reward packages (**monetary & non-monetary**); (2) Clear **targets**; (3) **feedback** on their performance; (4) bonuses or salary increase for **staff willing to be multi-skilled**
  - Remove barriers for the regional & international interactions. E.g. the immigration policies should consider short-term facilities for skills mobility
  - Also explore the opportunities presented by diasporas. Most of them gain valuable experiences overseas

Conceptual & Practical Issues …

- Learning should take advantages brought by ICT
- The optic fiber cable (ICT backbone) has been expanded for broadband access, connectivity and efficient services.
- ICT is helpful to support & improve skills in (1) supply management (suppliers, contractors); (2) marketing & branding products; (3) production & operations; (4) sell & finding potential customers (including customer relations); (5) intra-organisational management & administrative tasks (innovation or R&D related activities)

Conceptual & Practical Issues …

- Efforts towards skills development for innovation and industrialization require firms to build “technology & innovation management” skills
- Learn & Organise for continuous innovation (Effective exploitation + strategic flexible Exploration of capabilities)
- Open innovation – Why? To whom? How?
- Business Innovation Model - Target customers? What to provide? How to provide? How to make profit?

Conclusion

- Skills should be considered as priority for innovation & industrialization
- The development of skills is a shared responsibility in order to overcome the challenges and ensure their relevance for a competitive economy

Thanks for your attention

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