

The High-Tech Start-Up Eco-System in Zanzibar: Some Old-Fashioned Questions about a Modern Technology

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KEY TAKEAWAYS

Across key policy documents, the Revolutionary Government of Zanzibar has embraced technology, in particular digital technology, as a key ingredient to its long-term development vision. There is some, but only occasional discussion of the particular role of promoting a high-tech start-up eco-system.

This policy brief asks the question, Should Zanzibar Aspire to Being a High-Tech Start-up Hub?

This policy brief asks five questions that need to be incorporated into this discussion before Zanzibar makes any decision about whether to pursue this policy goal.

- Why do we need to focus on the start-up eco-system when Zanzibar already has a start-up culture?
- Is the focus on start-ups too restrictive?
- Why does Zanzibar need to host a start-up when it is so easy to enjoy the benefits of start-ups that were created elsewhere?
- What lessons have been learned from the last time that Tanzania-Zanzibar launched a program of import substitution?
- Where is comparative advantage in the policy discussion?

Executive Summary

In September 2024 the Zanzibar Research Centre for Socio-Economic and Policy Analysis (ZRCP) organized a conference – ‘Embracing Technology and Innovation and Catalysing a Vibrant Startup Ecosystem in Zanzibar’.

The discussion of technology start-ups filled the presentations, response from the discussants, and questions from the audience.

The Revolutionary Government of Zanzibar are promoting technology, both domestically and through foreign investment. There are some indications they are discussing the role of a high-tech start up eco-system

This policy brief engages with a very specific debate and resulting question - Should Zanzibar Aspire to Being a High-Tech Start-up Hub?

This policy brief asks five questions that need to be incorporated into this discussion before Zanzibar makes any decision about whether to pursue this policy goal.

—Why do we need to focus on the start-up eco-system when Zanzibar already has a start-up culture?

—Is the focus on start-ups too restrictive?

—Why does Zanzibar need to host a start-up when it is so easy to enjoy the benefits of start-ups that were created elsewhere?

—What lessons have been learned from the last time that Tanzania-Zanzibar launched a program of import substitution?

—Where is comparative advantage in the policy discussion?

1. Introduction

Last week (September 2024) I attended a conference – ‘Embracing Technology and Innovation and Catalysing a Vibrant Startup Ecosystem in Zanzibar’. It was the third annual conference⁵⁰ organised by the Zanzibar Research Centre for Socio-Economic and Policy Analysis (ZRCP)⁵¹. It was certainly a high-level gathering, the guest

of honour, the President of Zanzibar Hussein Mwinyi spoke, as did the Second Vice President Hemed Suleiman Abdalla, the resident representative of The United Nations Development Program (UNDP), and the Ambassador to the Netherlands. Luminaries sponsoring the conference included the President’s Office, the Bank of Tanzania, the Embassy of the Kingdom of the Netherlands, UNDP, United States Agency for International Development (USAid), and the Zanzibar Startup Association. The conference revolved around a recent ZRCP publication – a research, policy, and analysis rich scoping study, ‘The Start-Up Ecosystem in Zanzibar 2024’ presented by Dr Twahir Khalfan⁵². I made a presentation about innovation and technology in which I asked some old-fashioned questions about modern technology. This policy brief expands on that presentation.

The discussion of technology start-ups filled the presentations, response from the discussants, and questions from the audience, and the understanding of what exactly constituted a start-up seemed varied. What is a start-up?

For the sake of this policy brief I am happy to use the definition from ZRCP (2024:13), where they are defined as,

“a registered innovative business that is within the 5 years of operation aiming to positively disrupt the existing market by producing new products or services and it is typically designed to grow quickly”.

This definition of a start-up is not intrinsically about technology or innovation and could encompass a business in a traditional low-technology sector, such as textiles, processing seaweed, or assembling electronic components. Nor was the definition necessarily about start-ups being launched by Zanzibari's, and could apply to foreign based start-ups investing in Zanzibar. Despite this, throughout the conference, there was an undercurrent of both technology-innovation oriented start-ups and that Zanzibari's should be central players in the start-up process. As a consequence, this policy brief engages with a very specific debate and resulting question,

Should Zanzibar Aspire to Being a High-Tech Start-up Hub?

This policy brief does not seek to answer this question. This policy brief recognises that this question is one being discussed at the highest levels of government, and is being debated amongst academics, journalists, and the Zanzibar tech and business community. This policy brief asks five questions that need to be incorporated into this discussion before Zanzibar makes any decision about whether to pursue this policy goal.

These questions are:

- Why do we need to focus on the start-up eco-system when Zanzibar already has a start-up culture?
- Is the focus on start-ups too restrictive?
- Why does Zanzibar need to host a start-up when it is so easy to enjoy the benefits of start-ups that were created elsewhere?
- What lessons have been learned from the last time that Tanzania-Zanzibar launched a program of import substitution?
- Where is comparative advantage in the policy discussion?

2. A High-Tech Start-Up Ecosystem and Government Policy: Some Faint Stirrings

The Revolutionary Government of Zanzibar has embraced technology, in particular digital technology, as a key ingredient to its long-term development vision. Vision 2050 is a plan for Zanzibar to achieve Upper-Middle Income status by 2050 and to operationalise the several decades of 7% annual GDP growth that this would require⁵³. The Digital Economy is one of seven priority sectors that underpin this vision, also including agricultural production, finance and investment, tourism, industrialisation and trade, the blue economy, and oil and gas. Vision 2050 lauds both a direct and an indirect benefit to Zanzibar from the digital economy,

“Zanzibar also stands to benefit from the digital economy as digitalisation picks up pace globally, both as an economic industry by its own merit as well as an enabler for the prosperity of other sectors”⁵⁴.

There is no specific discussion of a high-tech start-up ecosystem in Vision 2050. The specific tech-related targets and associated policy interventions in Vision 2050 include investing in communications (the fibre optic network), investment in ICT training especially coding lessons for students, technology-focused innovation, and modernising the school curriculum to include developments in science, technology and innovation at all levels⁵⁵.

The more recent Zanzibar Digital Government Strategy, 2023-2027 seeks to ensure that the government and associated public institutions improve their digital capacity to eliminate institutional fragmentation, to more effectively deliver public services, and modernise governance⁵⁶. Those sectors that the government are prioritizing for a digital shift include combating tax avoidance, transforming Zanzibar into a cashless economy, land management, public procurement, and births and identity registration⁵⁷. There is some discussion relevant to high-tech start-ups. The 2023-2027 digital strategy discusses creating Digital Special Economic Zones (SEZs), an SEZ geared towards the promotion of digital industries, offering various tax and other incentives, and providing *“advanced digital infrastructure, such as high-speed internet connectivity, cloud computing, and artificial*

*intelligence (AI) technologies*⁵⁸. Digital SEZs are described as having a *“regulatory framework designed to foster innovation and entrepreneurship, making it easier for businesses to start and grow”*. This fits nicely with the ZRCP definition of start-ups, but the concept of digital SEZs is described as being only *“embryonic”* in Zanzibar⁵⁹.

The Development Plan 2021-2016 reiterates the enthusiasm of the government towards the digital economy, and seeks to operationalise Vision 2050 in a more concrete policy agenda. The development plan sees technology as not just about policy but as being about wider social transformation,

*“For the next five years, Zanzibar society needs to be transformed from information to knowledge-based society where different industries and regions have various adaptations by digitalization, ICT, design, research, tourism, cultural heritage, new media, and connectivity, collaboration, and innovation”*⁶⁰.

Echoing the other policy documents, the bulk of the Development Plan 2021-2026 seeks to promote the use of modern technology in Zanzibar, to support education and training, especially providing coding lessons in schools and universities, to establish an ICT Qualification & Certification Training Centre, and to promote Fourth Industrial Revolution technologies⁶¹. As in the Digital Government Strategy, there are some hints that the government is thinking about tech start-ups. Listed as a ‘key target’ but not discussed in detail anywhere else is the goal to *“Establish an ICT incubation center and start-ups ecosystem”*⁶².

Elsewhere in government is the Silicon Zanzibar Initiative which has an explicit focus on attracting investment from African and global tech companies into Zanzibar. The initiative is led by the Ministry of Investment and Economic Development and *“aims to transform the island into a leading hub for Pan-African tech companies”*⁶³. The focus of Silicon Zanzibar is tech-investment, not specifically in start-ups.

Among wider Zanzibar civil-society is the Zanzibar Start-up Association which has an unambiguous focus on *“Nurturing a Stronger Startup Ecosystem in Zanzibar”* and describes its mission as

*“To facilitate, organize and mobilize Zanzibar’s startup ecosystem and stakeholders to advocate and lobby for the improvement of policy, legal and regulatory environments that support the growth, competitiveness, and sustainability of startups and social enterprises in Zanzibar”*⁶⁴.

The start-up association has no explicit focus on the high tech and encompasses start-ups across all economic sectors and technologies.

3. Why do we need to Focus on the Start-up Eco-system when Zanzibar already has a start-up culture?

Tanzania already has one of the highest rates of business start-ups in the world. In 2016 one study estimated that there were 5 million non-farm businesses operating in Tanzania, which implied that one in every four people owned a business⁶⁵. Official government survey statistics for 2022 found that own-account workers, defined as “*persons who perform work for profit or family gain in their own non-agricultural enterprises*” constituted 28.7% of total employment in the Tanzania mainland and 41.7% of total employment in Zanzibar⁶⁶. These figures are broadly equivalent to an 18-country data set, which found that 50% of the extremely poor in urban areas (living on less than one dollar a day) operate a non-agricultural business⁶⁷. By comparison, in the US, government survey data shows that in 2015 only 12.1% of workers were self-employed, a figure that had been trending downwards over two decades⁶⁸.

The policy problem for Zanzibar is not in starting, but in growing existing businesses or attracting established businesses to invest in Zanzibar. It is not lots of small firms that will make a difference for Zanzibar, but a small number of productive large firms. Across Africa enterprise surveys have traditionally found that exporting is typically done by large, 100+ employee firms⁶⁹. In Tanzania, between 2003 and 2009 17 firms (the top 1% of all firms) accounted for 60% of all exports⁷⁰. A Tanzanian firm with 100+ workers is 82% more likely to become a global exporter than a medium sized firm⁷¹. There is also a strong positive correlation between firm size and productivity. Survey results show that in Tanzania average labor productivity is 95% higher in large firms (50+ workers) than in small (10-49 worker) firms⁷². When the size of a firm moves from 5 to 30 employees value added per employee doubles, from 5 to 100 three times higher, and from 5 to 200 3.5 times higher. A 200-worker firm produces as much in 17 minutes and a worker in a 5-employee factory in one hour⁷³.

As per the definition, it is easy to conclude that many of these tiny businesses do not represent true 'start ups'. Recall from the definition given by ZRCP (2024:13) that a start-up is typically designed to grow quickly and within five years of starting operations is aiming to have a disruptive impact on its market. This is clearly not true for much of the new and tiny business sector in Tanzania and other developing countries. A survey of small businesses in India for example found that 80% of them had no dedicated room of their own, very few had machines or a vehicle, and the most common assets were a table, scales and pushcarts. The median small business generated about \$2 a day, just enough to secure the survival of one family member. Most of these businesses are almost identical to many others locating in the same geographic area and have no prospect of growing and becoming profitable⁷⁴.

A focus on incubating new businesses is to focus policy attention to something Zanzibar is already good at doing. The next section shows that such a policy focus on start-ups will miss many of the key constraints on business growth. Could more of those tiny businesses in Zanzibar become true start-ups as per the ZRCP definition if the government focused on the ease of doing business rather than on building a start-up ecosystem?

4. Is the focus on Start-Ups too Restrictive?

Section 2 showed that while Tanzania has a deeply embedded start-up culture, many of these tiny businesses face no prospect of growing into a larger and more profitable size, let alone reaching the 50 or 100 employee thresholds associated with exporting and becoming productive. There is a danger that an exclusive focus on the narrow definition of start-ups, that they should be anticipating rapid expansion in sales and output, and aspire to disrupt the market, will miss the most important constraints on firm growth.

The World Bank Doing Business surveys focused on the entire range of constraints faced by firms. The 2020 survey of Tanzania (and 189 other countries) found that Tanzania ranked 162nd (from 190 countries) in the ease of starting a business, revealing that a start-up policy would tackle a key constraint to firm growth. This finding refers to the specific problem of starting a formal-sector business, with all the relevant licenses, permissions, and registration for taxation. Most of the businesses started in Zanzibar start and remain in the informal sector transitioning to the formal sector is another constraint on the growth of firms that is will not be tackled by a policy tilt to the start-up ecosystem. The World Bank survey also showed that Tanzania performed poorly in relation to dealing with construction permits (149th), trading across borders (182nd), and paying taxes (165th), but did relatively better on getting electricity (85th), and getting credit (67th)⁷⁵. A more recent enterprise survey of 600 firms in Tanzania (including 103 firms in Zanzibar) found that the top constraints faced by small firms (5-19 employees), included getting access to finance (44% of the sample), getting reliable electricity (13%), and taxes (12%)⁷⁶. These findings give clear policy directions to the government as to how to prioritise policy interventions to ease doing business in Zanzibar, and so helping existing firms to grow. While Zanzibar does relatively well in terms of credit and electricity for the entire business sector, these are specific problems faced by smaller firms.

Focusing on the ease of doing business rather than on building a start-up ecosystem is a policy intervention of broader relevance and one that is better attuned to the realities of contemporary Zanzibar – the mass of small firms that face constraints on growing. This focus would also attune to best practice elsewhere. In Rwanda for example, when the Rwanda Development Board (RDB) was established in 2006 it brought together all government agencies responsible for investor experience under one organizational roof. This included those key agencies responsible for business registration, investment promotion, environmental compliance clearances, export promotion, and other necessary approvals. This enabled new investors to register online at the RDB website and receive a certificate in a few days. The RDB was able to act as a one-stop shop, to assist firms to acquire all the necessary permissions, visas, and connections to utilities⁷⁷. The RDB along with the wider government of Rwanda have worked to improve the regulatory and governance environment for investors. Between 1996 and 2019 there were sharp improvements in the effectiveness of policy implementation as measured by World Bank Governance Indicators and measures of regulatory quality⁷⁸. By 2019 Rwanda ranked second in Sub-Saharan Africa and 38th in the world for the ease of doing business⁷⁹. Specifically in relation to starting a business by 2019 Rwanda had surpassed the performance of the average high-income country⁸⁰. The number of days required to start business was reduced from 18 days to only 3 days. The cost of starting business was as well reduced from 235% of per capita income to 4%⁸¹. Zanzibar is currently writing legislation to establish a similar one-stop-shop – this really is a policy priority!

5. Why does Zanzibar need to host a start-up when it is so easy to enjoy the benefits of start-ups that were created elsewhere?

The Silicon Zanzibar Initiative is clear in its ambitions to attract investment from high-tech start-ups from African and global tech companies. While technology, innovation, and entrepreneurship are all enticing, there is much less effort to explain why they should be done in Zanzibar.

Children in Zanzibar derive life-long benefits from vaccinations, does this mean the vaccination has to be invented and developed in Zanzibar?

Why does Zanzibar need to produce high-tech when consuming it is so easy and often free?

On my way to the ZRCP conference I used google maps (free), looked through the BBC website to catch up on some news from home (free), and looked at a couple of youtube videos to watch highlights from the recent US Presidential debate between Kamala Harris and Donald Trump (free). A couple of weeks ago I flew to Dar Es Salaam airport from Zanzibar, thankfully avoiding the scrum of taxi drivers outside, I was able to book a taxi to my hotel using Uber. I don't pay directly for Uber but it is reflected in the fare as the company receives a commission for all journeys. I wanted a taxi app that works across the world, not a Zanzibari specific taxi app. Recent research⁸² used data on one million trips in Chicago in 2017 covering the objective data on driver speed, acceleration, braking, and phone handling and recorded measures of customer satisfaction, the study found a positive impact of the Uber app on the quality of driver performance. Other studies have found a strong and positive impact on firm productivity from 'aggregator platforms' that bring together existing buyers and sellers and permit the market entry of smaller firms. Two OECD studies use yearly data on the number of visits to online platforms' websites and yearly firm-level data on value added, labor input, productivity and total assets. They find a positive relationship between yearly labor productivity growth of incumbent firms and the activity of online platforms operating in the

same country and activity area. They use 2.6 million observations, 1,400 online platforms and cover 28 countries between 2013 and 2018⁸³. Small Zanzibari firms have the opportunity to join such aggregator apps (like Amazon) to meet global customers. What is the need to start such apps in Zanzibar?

Something closer to (Zanzibari) home is M-Pesa, which was launched in Kenya in 2007 and combines M (money) and Pesa (Swahili for money) into a mobile phone-based money service. MPesa allows users to deposit, withdraw, transfer money, pay for goods and services, and access credit and savings. The app was created in Nairobi, a start-up capital of Africa, and was a joint project between Safaricom the largest mobile network operator in Kenya and the international conglomerate Vodaphone. M-Pesa has become a famous story in international development, within three years it was the most successful phone based financial service in the developing world. Though developed in Kenya, by early 2013 it had five million registered users in Tanzania. Some commentators have raised concerns about the market dominance of M-Pesa and its resulting ability to enjoy monopoly profits to the detriment of consumers. Is this a rationale for creating a Zanzibar alternative through a start-up ecosystem? Maybe? But we need to ask more questions. Why is it better for Zanzibar to expend the time and energy, and large start-up costs (recall M-Pesa required the pooled resources of Safaricom and Vodaphone to be launched) rather than regulating M-Pesa through competition laws or else encouraging more foreign investment into the mobile phone financial services sector? Why not encourage the Indian firm PayTM⁸⁴ to invest in Tanzania and expand its market into East Africa?

The emphasis on the start-up ecosystem is about giving existing tech consumers more options, what about those Zanzibari's who don't have any existing access to tech?

A recent article in the Zanzibar Investment and Business Insights (ZIBI) Magazine highlighted that while there are potential benefits for utilising "leveraging AI-powered data analytics", particularly in tourism, education, health care, and government public services, the hurdles to the use of AI don't include the absence of local AI start-ups, but instead the lack of internet connectivity, the high-cost of internet for businesses and consumers, and the lack of relevant skills to use the technology⁸⁵.

There are dangers, in the digital divide between developed and developing countries, or within developing countries between the online and the offline, representing a new form of global inequality. In 2019 between 70 and 95% of adults across OECD countries used the internet, principally on smartphones. This figure was 95% for those aged 16-24 but only 58% for those aged 55-74. In 2018 among OECD

adults with low or no formal education the figure was only 40% (OECD, 2020a). For developing countries with physically isolated and rural areas the issue has assumed particular prominence. The Indian government provided subsidies to operators providing mobile connections across 11,000 predominantly rural areas. South Africa likewise provided special licenses with favorable terms for providers willing to enter targeted rural areas⁸⁶.

6. What Lessons have been Learned from the Last Time that Tanzania-Zanzibar Launched a Program of Import Substitution?

At independence Tanzania in 1961 had a tiny industrial sector that was largely foreign-owned, and dominated by low value-added agro-processing. In 1961 launched a 1960s-style start-up ecosystem. The government used tariffs on manufactured imports and subsidies to firms to make domestic manufacturing start-ups more profitable. The policy was initially quite successful in terms of expansion and diversification of industrial sector. The first five textile mills in Tanzania (such as Sunguratex and Kilitex) were established between 1961 and 1968, as well as Kioo Limited for glass bottle manufacturing and Aluminium Africa (ALF) for aluminium products⁸⁷.

This start-up ecosystem, than called an import substitution development strategy was adopted across Africa, but by the early 1990s the World Bank and others had declared it to have been an economic failure. Between 1965 and 1985 average GDP growth across Africa was less than one-percent per annum. Two-thirds of Africans in 1985 had lower per capita incomes than in the mid-1970s. Africa experienced negative export growth between 1981 and 1986, while exports from the Asian Newly Industrialised countries increased thirteen-fold between 1970 and 1986. The World Bank explained, “*the main factors behind the stagnation and decline were poor policies*” which included “*protectionist trade policies*”⁸⁸. The revival in economic growth across Africa after c2000 has been widely explained in reference to the surge in the price of those commodities (such as oil and copper) exported by Africa⁸⁹. But many are agreed that African countries were better able to benefit from commodity exports because of economic reform that had made them more open to international trade and foreign investment⁹⁰.

In Tanzania (and Zanzibar) labour productivity grew rapidly in response to investment in domestic manufacturing in the 1960s, but during the 1970s the contribution of industry to overall economic growth became negative. By the 1980s many of the new textile mills were operating at only 10% of capacity. The Morogoro Shoe Company built with donor finance to produce shoes for export to the East African market, became a famous case study in development economics as its output never reached more than 4% of installed capacity. As efficiency and profits fell, industry became increasingly dependent on subsidies. By the end of the 1970s 11% of total government expenditure was dedicated to direct subsidies to parastatals⁹¹.

The terminology – start-up ecosystem – may be new but the underlying economics is little changed. If Zanzibar makes an effort to produce domestically what was previously being imported, this is similar in essence to the 1960s vintage import substitution development strategy. Various government policy reports confirm this.

“there is considerable untapped potential for forward and backward linkages through import substitution and export-oriented development both on land and from the sea”⁹².

“A well-developed and competitive industrial base for domestic and export markets through import substitution and export orientation respectively where appropriate”⁹³.

“Limit the import of products competing with similar ones produced locally”⁹⁴.

Proponents of a high-tech start-up ecosystem need then to ask the question, what lessons have been learned from the last time that Tanzania-Zanzibar launched a program of import substitution?

7. Where is comparative advantage in the policy discussion?

In the two hundred years since being developed by pioneering economist David Ricardo in the early nineteenth century the theory of and empirical evidence in support of comparative advantage has been one of the most important foundational concepts in economics. The theory of comparative advantage states that if every country produces that good or service in which they have a comparative advantage and imports those goods and services in which they have a comparative disadvantage then everyone will gain from trade and the level of world incomes will increase⁹⁵. The policy of economic liberalisation, especially the shift to freer international trade, pursued by Zanzibar and Tanzania since the mid-1990s rests upon the doctrine of comparative advantage.

7.1. Comparative Advantage in Africa

The basic model of comparative advantage was re-formulated in recent decades by two Swedish economists as the Heckscher-Ohlin model. The model assumes comparative advantage is derived from factor endowments. If for example a country has an abundance of land, land will be cheap, so too will be those goods and services (such as agriculture) which are intensive in the use of land in their production. The country will have a comparative advantage in goods and services intensive in the use of its abundant factor (here land). Conversely a country will gain from importing those goods and services in which it has a comparative disadvantage. A country will only produce at high cost those goods and services which are intensive in the use of its scarce (and hence) expensive factor.

A series of seminal studies of comparative advantage by Oxford University economist Adrian Wood found that comparative advantage explained a large share of trade in Africa and developing countries more generally. Using data on land, labour, and education levels one study found that Africa has a unique combination of high land and low skill levels of workers implying that Africa has a comparative advantage in agriculture⁹⁶. Another study found that a measure of comparative advantage across 111 countries explained 60% of the variation in the composition of exports (the ratio of primary to manufactured exports)⁹⁷.

7.2. Does Zanzibar have a Comparative Advantage in Agriculture

Some of the studies quoted above found that Africa as a whole has a comparative advantage in agriculture. There is further evidence for this proposition in the case of Ethiopia (105.9 people per square km), Tanzania (77), and Kenya (93.1) that have relatively low levels of population density, and so ample land available for agriculture. In Zanzibar (768.2) population density is more than ten times higher than in mainland Tanzania, meaning that Zanzibar does not have any long-run comparative advantage in agriculture. The population density of Zanzibar even exceeds that in Mauritius (626) and China (151) that have both shifted out of agriculture in manufacturing, and also India (488) and Rwanda (578) where the development strategy has come to focus on high-end service-sector exports. The density of population in Zanzibar will put upward pressure on land prices, necessitate the conversion of agricultural into residential land, and increase the density of urban building. Outside of some specialist agriculture niches, like cloves and seaweed, especially when combined with agro-processing, the long-term comparative advantage in Zanzibar will lie in cities.

Table One: Population Density in Zanzibar and Other Countries

Country	Population Density (population per square km, 2021)
Zanzibar	768.2
Mauritius	626
Rwanda	578
India	488
China	151
Kenya	93.1
Tanzania	77
Ethiopia	105.9

7.3. Does Zanzibar have a Comparative Advantage in High-Tech Start-Ups

The key ingredient in a high-tech start-up is skilled labour. Those various government policy documents discussed in section 2 recognised this with their strong emphasis on human capital development and coding lessons. The ZRCP study of the start-up ecosystem in Zanzibar confirmed this, as their survey found that 75% of start-up founders in Zanzibar had either a Bachelor or Masters degree, this figure rose to 95% once those with a diploma or professional certification were included (ZRCP, 2024:23).

Table two shows that tertiary enrolment in all-Tanzania (7.5%) was similar to Rwanda (7.02%), Ethiopia (10.3%), but much lower than Kenya (19.3%), India (28%), Mauritius (40.6%), and China (60.2%). These latter countries not only have much higher rates of tertiary sector enrolment, they also have large cities in which those university graduates have agglomerated to form large pools of high-tech workers. Such tech-cities include Bangalore in India (population 14 million), Nairobi in Kenya (4.4 million), Shenzhen in China (17.6 million). The pool of tech-labour is beyond anything among the 800,000 population of Stone Town in Zanzibar.

The key influence on the future composition of exports is how its endowments (and so comparative advantage) evolve relative to those of other countries and regions. To catch up with Kenya would require more than trebling tertiary enrolment in Tanzania-Zanzibar, not one State University of Zanzibar (SUZA) and one Karume Institute of Science and Technology (KIST), but three SUZAs and three KISTs, this would take decades and a vast investment of public resources. This in turn would have an opportunity cost, fewer resources available for health, basic education, and infrastructure.

Table Two: Gross Enrolment in Tertiary Education in Zanzibar and Other Countries

Country	Gross Enrolment in Tertiary Education (2021)
Zanzibar	
Tanzania	7.5%
Rwanda	7.02%
Ethiopia	10.3%
Mauritius	40.6%
China	60.2%
India	28%
Kenya	19.3%

7.4. Does Zanzibar have a Comparative Advantage in Labor Intensive Manufacturing

The studies discussed in section 6.1. showed that countries will have a comparative advantage in manufacturing when they have an abundant supply of labour (dense population). These studies noted that an abundant supply of skilled labour will generate a comparative advantage in knowledge intensive or high-tech services or manufacturing, and unskilled labor a comparative advantage in low-skill-intensive services or manufacturing. The foundation of low-skill manufacturing is literacy. Factories require workers to be literate, to operate machinery and to follow written instructions. Table three shows that Zanzibar (85.3%) has relatively high rates of literacy and that these rates are higher than comparable countries, including Tanzania (82%), Kenya (82.88%), India (76.3%), Rwanda (75.9%), and Ethiopia (51.77%). Rates are much lower than in China (99.8%) and Mauritius (92.15%) but these countries are experiencing labor shortages and rising wage costs, so shifting out of the sort of labour-intensive, low-skill manufacturing that could be done in Zanzibar.

A comparative advantage in low-skill manufacturing is at best a potential. Research shows that some countries, even with a strong comparative advantage still fail to produce and export in labor-intensive manufacturing. Zambia, Malawi, and Ghana have a long-history of failing to exploit their own potential in manufacturing because of various factors, being landlocked, poor-quality governance, lack of educated labor, and poor infrastructure⁹⁸.

Table Three: Literacy Rates in Zanzibar and Other Countries

Country	Literacy Rate (2021)
Zanzibar	85.3%
Tanzania	82%
Kenya	82.88%
India	76.3%
Rwanda	75.9%
Ethiopia	51.77%
Mauritius	92.15%
China	99.8%

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