



Towards a holistic approach to relevant community service education in Tanzania for employment through industrialisation

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Abstract

There has been wide spread outcry by many politicians, parents and guardians, the government and employers on the quality and relevance of education provided at all levels- from pre-school through primary, secondary, tertiary and higher/adult education institutions. The main problem revolves around its inability to prepare students and equip them with sufficient knowledge, skills, and values for formal or self-employment. A critical analysis by writers of this paper/article are of the view that the process of looking for solutions has adopted a narrow conceptualization that put emphasis on skilling, curriculum change and truncated analysis according to levels; instead of advancing the sector-wide approach enunciated in 1997 and without considering necessary support from other sectors to facilitate its realization and to benefit from its impact. As such, the writers are of the view that community services education that embrace a holistic approach that interweave knowledge, skills, values and attitudes; mindset transformation, research, innovation and development, patriotism and hard work; and facilitation is needed to produce desirable outcomes. Hence the gist of this paper/article.

Keywords: community service, holistic approach, mindset transformation

Introduction

There is widespread cry that the education provided at all levels—from pre-school through primary, secondary, tertiary, and higher/adult education institutions—is not preparing students and equipping them with sufficient knowledge, skills, values, and attitudes for formal or self-employment. Many politicians, parents and guardians, the government and employers have thus expressed awe at the quality and relevance of the education on offer. As suggestions for solutions mount, critical analysis seem to point to the direction that narrow conceptualisation can to major emphasis on skilling, curriculum change, and truncated analysis according to levels instead advancing the sector-wide approach, enunciated since 1997, and without considering necessary support from other sectors to facilitate its realisation to benefit from its impact. The writers argue that community service education must embrace a holistic approach that interweave knowledge, skills, values and attitudes; mind-set transformation, research, innovation and development, patriotism and hard work; and facilitation to produce desirable outcomes as explicated in the subsequent sections of this paper.

Explication of Concepts

A community is a social unit (a group of living beings) with common norms, religion, values, customs, or identity. Communities may share a sense of space/place situated in a geographical area (e.g. a country, village, town, or neighbourhood) or in virtual space – communities of intellectuals, which are spatially dispersed throughout the world, but can interact through communication platforms. This paper focuses on internal and external community.

An internal community in the context of this paper comprises various groups within educational institutions—students, staff, management, and organs—that interact to

realise cherished outputs and outcomes. It also includes soft skills—discipline, ethics, hard-work, commitment, self-drive and intra and inter personal skills—developed, mainly within institutions. Successful extension of institutional services to the external community largely depends on the degree to which the soft skills have been internalised and effectively used to translate knowledge and technologies into practice. The main question to be asked here is: To what extent are educational institutions models mirror and not mirror society? In other words, how are these institutions models for emulation by the external community—the industry? That is, from kindergarten to universities; what level of knowledge, skills, values, and attitudes are we imparting among our youth to enable them to be critical thinkers and not just people with robotic minds/Similarly, to what extent have they been institutionalised? These questions require both simple and difficult answers. Some simple questions may include the following.

At kindergarten level have the pupils acquired basic knowledge to differentiate the good from the bad? Have they acquired the basic skills for brushing their teeth and maintaining cleanliness and the like? In the more complex realm, are tough questions posed to teachers and parents - Where do children come from objectively answered? Is tolerance and cooperation being encouraged? Are they giving opportunities to others to kick the ball first or stand in the queue?

At basic education level what level of knowledge, skills, values, attitudes are being facilitated? What are the competence levels of students, staff and administrators in addressing intra institutional problems and conflicts? How is every student performing—quality-wise—and how many are scoring Division Zero and Four in the National Examinations whereas many in the three groups—students,

staff and administrators—just remain complacent? Is each party accountable for the dismal performance? How many teachers with pass degrees are in our schools, those who do not have 60 percent mastery of the subject matter content because they got a pass grade of 40 out of 100 at college/university? Yet they are expected to produce graduates with ‘A’ scores? Even in the holy books it is gallantly written, “You cannot give what you do not have.” Is every student from day one in schools being encouraged and assisted to learn and succeed?

Similarly, are the managers and administrators exerting their full influence on and motivating teachers to teach effectively and ensuring all children learn? Yet, there are talented students who are scoring straight As in Form IV and VI examinations. To us, these are world beaters! What opportunities are we creating for them to study in the best institutions in Tanzania/the world over, so that they can lead the innovation revolutions in our diverse industries? Do our schools have mentorship programmes for such excelling talents?

The Middle and Secondary schools that I attended were places of joy and practice, where knowledge and skill in agriculture, reforestation and animal husbandry, let alone masonry, carpentry, welding, domestic science (cooking and needlework) were taught in the classroom, developed in the workshop or school farm and practised in school compound and extended to the immediate community. Now that basic education institutions are spatially dispersed in the entire country, such good intra school programmes and projects would have gone a long way in preparing students for self-reliance at school and for self-employment upon graduation. They need to be revitalised.

Similarly, although today’s youth and teachers alike castigate the government for not enabling the unleashing of full democracy, in society, the basic question worth posing is: To what extent are democratic practices being grown in our institutions? What concrete measures are being taken to stamp out smoking cannabis, abuse of school girls, defying restrictions on owning mobile telephones that sometimes lead to school fires through dialogue and participatory decision making?

What is even more fascinating in our technical and tertiary institutions as well as universities, where knowledge and skills for employment are supposed to be imparted, the business-as-usual practices have been the order of the day. Despite the change in basic assumptions in curriculum, from content- to competence-based, how many of our TTCs, schools and faculties of education in our universities assumed a proactive role of initiating INSET programmes for training facilitators for all schools, so that they develop competences vital in implementing CBC effectively? Similarly, to what extent have intra- and inter-school professional staff development programmes (SDP) for institutionalising competence-based knowledge and skills for better teaching and learning in schools been initiated and institutionalised? In many developed countries, teachers cannot be promoted to higher grade, until they have attended at least three SDP since last promotion.

Of equal importance, in our vocational training institutions, the question is: To what extent is the subject matter—the content—say in mathematics, chemistry, measurement, geometry, ICT first developed before skilling? What are consumers of products complaining about their products? How can the shortfalls be ameliorated? Why are most VTC

still offering mainly the same old trades— metalwork, vehicle mechanics, cookery, brickmaking; instead of, in addition, many emerging trades—agriculture, food processing, tourism, hospitality, technology to mention but a few. What remedial measures are being taken to minimise complaints and ensure excellence and perfection in the products? What support is being provided to graduates so that they can embark on self-employment immediately upon graduation? Are these institutions producing artisans in desirable quantities and qualities to serve in diverse industries outlined in subsequent sections of this paper?

At the technical colleges/institutes level, there is big mismatch between supply and demand of technicians in the various industries. As we think of technicians to organise and run school laboratories, serve in hospitals, build and maintain dams, roads, railroad and airport in addition to constructing industries, mining, processing, manufacturing and service industries, how does supply of top-notch technicians compared to demand? What is the relevance and quality of products?

Tanzania’s major focus today is ‘uchumi wa viwanda/uchumi wa bluu’. As we embark on major projects—Julius Nyerere Hydro-electric power project as well as construction of the ultra-modern fast speed railway line, several flyovers and bridges—to what extent are we using these mega projects as major practical training grounds for our technicians and engineers from our technical institutions so that they can gain requisite knowledge and skills for preventive maintenance and future construction of the same? Has the wide scope of needs for technicians to cascade and saturate the wide spectrum of demand and meet demand been mapped out and strategies for developing them delineated, with sufficient funds set aside to realise a desirable ratio?

Matters are even more serious at the university level, given the key roles of universities worth the name—teaching, research and consultancy. Universities are supposed to offer relevant and up-to-date programme; that produce top class manpower to run all the public and private sectors, institutions and industries. The human capital so produced must have the highest levels of knowledge and must not be ‘madodoki’ (sponges that just absorb or accept everything); or pelican ducks (that only swallow and regurgitate what is fed to them). Instead, they need to be brainy critical thinkers, innovators and problem-solvers. How many of Tanzania’s universities claim to eschew these qualities today? And if they are not assuming this noble role, what has gone amiss? What has befallen the Sunday ideological classes say at the University of Dar es Salaam, which were the fountain of free and objective dialogue on any matter of national concern—democracy? Or have we reduced them to glorified high schools?

On the research front, artificial distinction has emerged between pure research and applied research. The former advances knowledge and leads to discovery and innovation, implying that it is pure scientific research that leads to discovery and prediction. Applied research, on the other hand, focuses on problem-solving using data as a basis for decision-making. In the real world, this distinction is artificial, except where research findings—as grey literature—just remain on the shelves to gather dust. The Tanzania context of research in universities today paints a grim picture in terms of volume, and quality produced by our dons.

In founding Tanzania's universities—the UDSM—there existed a dogma of 'publish or perish' or look for alternative job, for all those who failed to meet this expectation. The minimum and maximum number of years to remain in one rank was 3-6 years. What has led to the change of this dogma, which might have led some universities to be regarded as 'glorified high schools'? What is the proof of scholarship ('uanazuoni') in the context of dons who are not doing research and publishing for many years of their professional careers at universities? Are there genuine reasons for not doing so? How can the challenges be overcome? Similarly, there serious problems of climate change and over-dependence on the importation of foodstuffs and merchandise that otherwise could have produced locally if our universities could have assumed their dutiful roles fully. We will dwell on this issue in detail in sections that deal with educations' institution role with the external environment

External community services comprise the entire spectrum of industries to which educational institutions supply human capital and services. In the context of this paper, external community service is a process of building internal and external relations with community and industry. In its broadest conceptualisation, it is a process of internalisation, externalisation and internationalisation of linkages and engagements with communities, institutions, consumers of products, industries and stakeholders. Community service in the Tanzania context is best explained by Nyerere (1960) who opined: *"Those who receive this privilege, therefore, have a duty to repay the sacrifice which others have made. They are like the man who has been given all the food available in a starving village in order that he might have strength to bring supplies back from a distant place"*. JKN on higher education, 1960. Hence community service is an obligation for **all** education institutions and may take many forms, including the following.

Outreach Lynton (2016) ^[3] maintains that outreach is an explicit part of the collective responsibility and expectations of appropriate institution—pre-primary, basic, to university—departments, and units within an institution. Institutional outreach programmes can range from instructional, practical and professional activities by students, faculty and staff with individual organisations and industries, who are not enrolled in the institution.

The goals of outreach programmes are to create *partnership* among communities, industry and the educational institutions. Outreach activities are meant to engage a large audience and to bring knowledge and expertise on a particular topic to the public and industry. Outreach activities can take several forms, such as institutional presentations, workshops, public talks, critical but constructive dialogue, field attachment, internship, R&D activities and lab visits, contract consultancies to full-fledged incubation and innovation linkages.

Education institutions need, therefore, to provide community services correspond with unemployment and poverty levels. For instance, adults with higher education levels are less likely to depend on social safety-net programmes, thus reducing demand on public budgets. Therefore, education needs to play a critical role in poverty reduction, reduction of diseases, and providing decent and affordable shelter to overcome the three Tanzania declared main enemies. Similarly, education institutions community extension services need to boost economic growth and

development—increases the GDP of a country in addition to reducing infant mortality rate while increasing human life expectancy. For education to be the single and most crucial factor in the development of a country, bondage with internal and external community is inevitable.

Similarly, at higher levels, the university-industry linkage is intended to advance, foster the growth of industries and development of national economies. Education at this level must advance frontiers of knowledge and skills, R&D, application of innovative technologies, innovation, development and replication of incubation centres, as well as advisory services, which are supposed to leverage, social, economic, political, cultural, scientific and technological development.

Yet, the association between university/educational institutions and industry is yet to be germinated in many developing countries Tanzania being one of them to the desirable levels. There are many fascinating reasons for the industries to develop linkages with educational institutions, especially the universities. The topmost among these include:

- Access to well-groomed graduates, ranging from artisans, technical and professional levels.
- Access to qualified researchers, consultants, professionals, experts and knowledgeable faculty, capable of advising on basic strategies of addressing pertinent problems that abound in various sectors.
- Access to the latest techniques, innovative ICT technologies and bio-technologies—and new methodologies arising to basic and applied researches in various industries and sectors.
- Access to technical institutions/universities' state-of-the-art labs, tools and facilities for research, innovation and development of prototypes development and incubation.
- Access to the latest scientific knowledge, skills and latest research-based data for scientific decision-making.
- Fostering good community relations for enhancement of their prestige.
- Use of basic information and data from research to resolve the most pressing real business/political, social/economic problems/challenges.
- Stimulate the development, use and commercialisation of edge cutting technologies.

The most fundamental question, therefore, is what needs to be done to ensure education institutions fulfil the mandated/dutiful roles in community services extension and provision by ensuring viable relations between education institutions and industry germinate in the Tanzania society? Answers to some of these key questions will be provided in subsequent sections of this paper.

If this is not realised, the most powerful stimulus for educational institutions to join forces with the industry are likely to be doomed. Moreover, where mutual relationship between educational institutions and industrial firms are well-entrenched, universities and other higher technical institutions can benefit in the following ways:

1. Obtaining basic research funding support.
2. Places for practice, capacity-building and internship opportunities.
3. Employment/self-employment opportunities for their graduates.

4. Access to industrial expertise and knowledge gained from the industry.
5. Exposure of the faculty and students to the practical real-national/world problems facing industries that they should jointly strive to resolve.
6. Sharing collaborative work on intellectually challenging issues from applied scientific research through advancement of knowledge and problem-solving skills in all sectors.
7. Transfer of applied research findings from the varying industries and tailoring it to improve teaching and learning processes aimed to address the community basic enemies of poverty, hunger and diseases.
8. Enrichment of teaching experience of faculty by attuning it with modern industrial practices/techniques, so that training empower graduates to acquire knowledge and skills to address challenges. This will in turn demand revision and development of new and relevant and up-to-date curriculum.

Consequently, classroom engagements should be a partial requirement for the completion of a degree, diploma certificate programme whereas the industrial firms or business concerns must train students to complete the rest of the requirements for conferment of a certificate, diploma and degree. Therefore, sweeping reforms are required in the entire education sector.

The “*disconnect*” between the Tanzanian “youth bulge cohort” and democratic processes, for instance, also ought to be addressed by encouraging Tanzanian educational institutions/universities’ educators and students to contribute to debates and hard talk discussions on how to transform the socio-economic and political development, considering “new threats to democracy” such as corruption, impunity, limited transparency and media freedom. Tanzanian educational institutions/universities should take the lead given the vast freedom of speech accorded to them. “African universities must, therefore, take the lead of spearheading such discussions given their wealth of knowledge, skills gained through research, consultancies and experience gained over long professional practice” (Mosha, 1986)^[6].

Tanzania is slowly realising that in the global world, information and knowledge have become a new source of welfare for nations. The entire system of human values is changing, hence placing a major emphasis on knowledge, skills, values, attitudes, and inclinations, hard-work, patriotism and determination ‘uthubutu’, as one of the key factors of social, political and economic empowerment of individuals and nations. Individuals and society are participating in the globalisation processes, where knowledge, especially in science and technology is one of the key conditions of self-realisation and success in an ever changing and competitive world, and one of the key guarantees of social wellbeing. The paradigm of the new economy encompasses not only a learning individual, but also a learning community and a learning society (institutions, companies) (Psychoropolus, 1999). Selene (1998) argues that the learning process is more important than what is learned. The global economy has replaced the Soviet-era slogan ‘*Learn, learn, learn*’ with a new one ‘*Learn to learn*’, a requirement set by demands of the information society.

Service educational institutions, therefore, are organisational form and work methods marked by momentous change. For change is the only constant variable in society today. Contemporary educational institutions need to serve and turn into mediators between the researchers/consultants, who create a certain product, and the dynamic external community/industry which needs to consume it. To define the service educational institution, as a certain phenomenon— ‘*academic capital*’, ‘*entrepreneurial educational institution*’ and ‘*corporate educational institution*’. ‘Enterprise’ covers both economic and academic dimensions. ‘Enterprise’ means that such educational institutions are mostly concerned with their prestige to generate income. In essence, they ought to develop channels of communication with possible stakeholders outside the educational institutions likely to demand their academic capital. Yet, developing countries such as Tanzania this remains at embryonic stage of development. Despite this shortcoming, with the song of industrialisation being sung all over, how can this be realised without a solid grounding base?

Educational institutions’ managements, therefore, are compelled to develop a human resource policy and programmes aimed to motivate the best researchers to get involved in service providing activities. The mission of contemporary educational institutions and their recognition in society suggest that in addition to offering formal certificates, diplomas and degrees, and conducting research, educational institutions need perform the roles of community educator, initiator and researcher into real problems facing it.

Community extension programme is, therefore, an institutional sponsored programme in which the human and material resources of the institution and its linkages extend to the client communities/ industry through planned and coordinated group activities, maintained over a period aimed to produce specific types of services. These *extension* services act as a guide and educate communities working in different industries on how to apply new knowledge, skills, values and attitudes in solving problems of the community or industry. In the context of Tanzania, which is aspiring to realise the highest level of a middle level income developed economy through industrialisation, the services ought to be extended to primary, secondary, tertiary and quaternary industries. Industry in the context of this article refers to mean an economy that produces a closely-related set of raw materials, goods, or services.

Economic theories classify industries into primary (extraction and agriculture). Secondary sector industries include manufacturing industries that produce finished, usable products or are involved in construction. This sector generally takes the output of the primary sector (i.e. raw materials) and creates finished goods suitable for sale to domestic businesses or consumers and for export. Tertiary sector industries consume large quantities of energy, require factories and use machinery; they are often classified as Light or heavy Examples of tertiary industries in Tanzania include textile production, macro dams at Stigler’s Gorge, and railroad construction—the standard gauge railway line. The third is the tertiary sector of the economy, generally known as the service sector. Services (also known as “intangible goods”) include attention, advice, access to knowledge and skills, values and attitudes as well as experience, and inclinations of effective labour. The

production of information has for long existed as a service, but some economists now call it the quaternary sector, responsible for knowledge creation as well as its management, storage and effective use for rapid social, economic and political transformation and advancement of developed countries.

Industries can also be classified according to scale—from small to large. Small-scale industries have less capital and technology invested in them. There is often manual labour of noticeable level here. Examples include small-scale food processing, tailoring, basket weaving, pottery, and handicrafts, masonry, furniture making and fabrication and all forms of cottage industries that process and add value to raw materials. Large-scale industries, on the other hand, have large capital invested and use more large and advanced technology—manufacturing and textile. In Tanzania, the dominant industries that create significant employment opportunities include the following.

Education industry Education is the dispenser of knowledge, skills, values and aptitudes in various fields through schools, colleges, universities, institutes, and through a variety of media. It is the primary producer of all human capital needed in all other sectors. Indeed, national affluence today is determined by the percentage of its population that has the critical level of desirable human capital that is available and actively used to leverage development. In fact, this constitutes the crux of promoting educational institutions' bondage with industry. Educational institutions, therefore, can broadly be divided into two categories: Public and private. Online courses, especially for working/unemployed people or people aged above 30 years, and regular students enrolled can play immense role in extending the institutional and community bondage.

Of critical consideration, however, are as one discusses the role of education in the industrialisation process, issues of quality, balance, relevance and up-to-dateness become critical. Issues of quality have been discussed in relation to pass levels/excellence at all levels, not only in science subjects but also in all subjects needing emphasizing. Balance is about the bonding formula to ensure that education at all levels produces individuals with appropriate mix between knowledge, skills, and values—for work and employment—in varying industries. Relevance concerns the realisation that the shelf-level of knowledge and skills is short as the contemporary world is ever-changing. To cope with a world in continual flux, there is need for regularly developing teachers and institutional managers to cope with changes.

There is also evidence that the implementation of curriculum change—from content-to competence-based—has not been effectively implemented and examined due to the mistaken assumption that teachers and examiners have mastered and assimilated the skills, although they may not necessarily have been exposed to them through mentoring and INSET programmes (Mosha and Lyamtane, 2022) ^[7]. Regarding up-to-dateness, the world has rapidly changed from analogue to digitalization, hence creating a digital divide. The digital divide is linked with R&D, innovation, advanced use of science and technology in whatever we do, Tanzania inclusive. As we crave for an education system capable of retooling our graduates at all levels, with adequate knowledge, skills, values and attitudes for employment, the issue of up-to-date education at all levels needs emphasis.

Transport industry

The transport industry is one of the largest types of business industries. This industry deals with the movement of humans, goods and animals using various modes of transportation. The main modes of transportation are land (Road and Rail), air and water. The transportation industry makes the largest part of any country's economy.

Although the road network has expanded 86,472 km of roads, of which 12,786 km are trunk roads, 21,105 km are regional roads and the remaining 52,581 km are district, urban and feeder roads (World Bank 2022), most of the countryside lacks all-weather roads and bridges to transport crops and foodstuff, as well as people in addition to facilitating service provision. Most of the vehicles and spare-parts are imported. Hence, the road transport industry has abundant employment opportunities in both the public and private sectors during construction and maintenance.

Similarly, Tanzania has been operating an archaic Central and Northern railway system since independence, with passengers and goods not having a guarantee of reaching destinations on time, especially during the rainy season. TAZARA (Tanzania Zambia Railway), which has been operating trains from Dar es Salaam in Tanzania to Kapiri Mposhi in Zambia since 1974, has also been limping. Its operational problems are essentially linked to lack/limited number of competent engineers and economists and modern technology to run it efficiently and effectively. Sufficient network of railroad is also lacking, thus limiting the conveyance of hundreds of tonnes of goods and crops from the hinterland to the ports ready for export. The current initiative of building an electrical standard gauge railroad for Dar es Salaam to Mwanza and, subsequently, to Kigoma also requires training of a desirable mix of engineers, technicians and artisans not only to participate in construction works but also its sustainable maintenance.

The aerospace industry belongs to the transport industries. It is one of the highest technology industries. The aviation industry deals with manufacturing aircraft and robots, which take flights within and beyond the earth's atmospheric area in addition to dealing with manufacturing military aircraft and various parts. The industry also deals with producing, testing, selling and maintaining the existing aircraft.

The big question, however, is: To what extent have our schools of engineering, technical colleges, vocational training centres, and business schools started to train the required human capital to assume the emerging manpower roles in this field? The same applies to air and marine industries. Many initiatives in the past aimed to own and successfully run the aviation industry in Tanzania failed because care was not made to train our own people for sustainable maintenance, effective management, and marketing as well as manufacture of spare-parts locally.

Water transport or ocean transport deals with the transport of people (passengers) or goods (cargo) via waterways. Freight transport by sea has been widely used throughout recorded history think of the old times of fishermen and explorers of Africa. The advent of aviation, however, has diminished the importance of sea travel for passengers, though it is still popular in Tanzania for short trips—ferries and envisaged pleasure cruises. Maritime transport accounted for roughly 80 percent of international trade, according to UNCTAD in 2020. In Tanzania, maritime transport can be realised over any distance by boat, ship, sailboat, over oceans and lakes, or along rivers. Shipping

may be for commerce, recreation, or for military purposes. Even though extensive inland shipping is less critical today, the major waterways of the world including many canals are still important and are an integral part of worldwide economies, particularly because any material can be conveyed via the waterway. However, water transport may become unattractive when material delivery is time-critical such as various types of perishable produce. Still, water transportation is highly cost-effective with regular schedulable cargoes, such as trans-oceanic shipping of consumer products—and especially for heavy loads or bulky cargo such as coal, ore, or grains, oil, motor-vehicles. Arguably, shipping by all types of watercrafts on natural waterways has supported cost-effective bulk transportation. Tanzania, which is endowed with such long coastline and big lakes, is, therefore, bound to invest in educating sufficient human capital that will harness immense benefits accruing from modern water transport industries. Similarly, there is also electronics industry that produces electronic devices for commercial as well as domestic use—smartphones, switches, circuit-boards, televisions, computers, and artificial intelligence-based goods. This industry produces all technically-advanced electronic equipment for the future. At present, the goal of the electronics industry is to mobilise ad-hoc networks, smart cars, and wireless charging.

Telecommunication industry

The telecommunication industry consists of companies, which make communication possible worldwide through mobile phones, the internet, cabled or wirelessly. People are running various websites such as education (edu), entertainment, travel, business and food related. The World Wide Web (WWW) has provided various opportunities for people to run their business online with few technical skills. Other than that people can interact with other people virtually using the WWW. In fact, the spread of the World Wide Web has no signs of stopping any time soon. It allows people to communicate using words, audio or video from any part of the world to any part of the world. Smartphones can send information from a peasant farmer to managers of philanthropic institutions and companies thousands of miles away within seconds. The leading companies in the telecommunication industry are satellite companies, internet service providers, and wireless operators. Wireless internet has helped several industries to generate substantial revenue. In this regard, a critical question is: What is Tanzania's standing in the development of this industry? This industry, therefore, requires more aggressive development.

The service sectors

The service sector has gone online in almost every sector such as health, education, retailing, banking, travel and tourism. There are hundreds of websites and apps for every single service. For example, Air Travel is a leading online service company, which helps travellers to find places to stay while travelling and helping people to earn extra money by putting their extra space on rent.

Agriculture industry

It embraces arable land for cultivating, plants and breeding animals to produce food and other survival essentials. It also encompasses the production and selling of food and cash

crops. In Tanzania, agriculture is an industry, which employs 65 percent of the entire population. Tanzania is also endowed with over 13,500,000 hectares of arable land, according to the World Bank development indicators (2022).

Moreover, the country has abundant sources of water—in rivers and lakes—for irrigation. Many of the farmer's hard-work except some youth, who lack self-drive. This industry can, therefore, provide gainful employment to graduates from all levels of education—primary to university. Tertiary and higher education institutions also produce researchers, consultants, scientists, bio-technicians, veterinarians, technical farm labourers and agriculture development technicians who, if well-utilised, can spearhead the agricultural revolution. However, such a positive development needs to be coupled with the modernisation of agriculture; enhanced research and use of knowledge and skills generated, advanced and refined; and use of modern cultivation tools, instead of continuing to use the primitive hand-hoe; use of new seeding techniques, and fertilizers/manure, irrigation; harvesting, processing and packaging for consumption; and marketing—sale in the local and internal markets. Such initiatives can result in enhanced employment and improved earnings for households.

It is saddening, however, for one to hear that (in 2021) just there was rising water levels in our Great Lakes, and big rivers during the rainy seasons, a precious resource for domestic use and irrigation that could otherwise have been tapped and used throughout the year to support extensive and intensive farming and irrigation schemes to enhance employment opportunities and multiplying incomes. Even more worrisome, (in 2022) there have been outcries of rivers and dams drying, which threatened the supply of drinking water and generation of hydroelectric power. Nevertheless, many stop-gap measures of rationing water can be ended by taking proactive measures of reforestation, scientific animal husbandry and construction of dams, big and small.

Thus, in many parts of the country, agriculture practice is yet to change. Yield per acre is still miniscule. Tanzania is spending trillions of shillings annually to import sugar, barley and wheat, crops which can all sustainably be produced locally with surplus for export. To what extent has the education provided in our schools, colleges and universities, contributed or can be used to transform the agriculture industry for enhanced Tanzania's economic growth and development? Have our agricultural and engineering experts, especially from SUA and schools/colleges of engineering in other institutions gone on leave? One just wonders. What needs to be done to ensure they immediately and effectively embark on their dutiful roles of mobilising staff and students, during training and, subsequently, to use their human capital to modernise the agriculture sector in Tanzania?

As in developed countries, the primary sector industry—agriculture—in developing countries such as Tanzania needs transformation to become more technologically-advanced to engender, for example, the mechanisation and digitalisation of farming to forego hand-picking and planting, which are currently manual-based activities. Such mechanisation and digitalisation need to cover the production and harvesting of rice, corn, wheat and barley using combine-harvesters and robots. Similarly, large

sprayers should be used large amounts of insecticides, herbicides and fungicides, leading to a higher yield than when less capital-intensive techniques are applied as is currently the practice in Tanzania. Of equal importance is the need to consider the agro-related industries to better understand the value chain addition.

Agro-based industrie

These use plants and animal-based products as their raw materials. Examples of these industries include food processing, plant oil, cotton textile, dairy products, and leather industries. Latest agronomy, genetically-modified plants, improved seeds, chemical-like pesticides, and fertilisers have sped-up and increased production. It seems a boom from a farmer's point-of-view. Moreover, some pesticides are causing deadly diseases such as cancer to the people who inhale them, hence the need to develop and enhance the use of organic manure such as compost, food leftovers, cow-dung, rabbit urine, and the use of other herbicides. Unfortunately, these useful skills that were being developed in Middle schools during colonial education were abolished. Attempts to reinstate them during Musoma Resolution and diversification have been unsuccessful as they were not facilitated by a supportive environment and technology. This scenario raises concern on whether current initiatives of providing relevant skills for life and future employment can be successful where/when conducive support environment is not being provided.

Food industry

Food industry comprises processing—conversion, and preservation of eatable items. The raw materials for the food industry are obtained from the agriculture industry. Therefore, the food industry is dependent on the agriculture industry. After processing food, the value chain can be enhanced by adding various chemicals and colour to food items to preserve them for a long time, while maintaining their taste. The food industry has grown exponentially in the past decade because in the fast-paced life, people need “ready-to-go food”—takeaways. Even though Mama Lishe (small scale eateries mainly run by women) enterprises are booming all over the country, they are largely in appalling and some in unhealthy environments. These operational problems need to be overcome through education to boost prospects in this food industry

Tanzania today is also highly dependent on imports of sugar, wheat, barley, and edible oil from plants, nuts, coconuts, and other oil seeds, which drain the country's trillions of shillings from our national reserves. This in turn deprives our youth of many employment opportunities. Moreover, the production of more rice, maize, and an assortment of beans needed to meet our local food demands and for export and enhance employment and earnings has yet to be realised. There is also high demand for processed and packed foods such as tea-leaves, coffee, juice, and almost every kind of food from instant noodles to crisps and the like, yet our supermarket shelves are full of imported varieties.

Other than that, food service, known as catering or food technology though an integral part of this enormous food industry, has yet to be developed to appreciable levels. Food technology requires research and development to make more ready-made food. Education institutions are, therefore, duty-bound to tailor their teaching and outreach

programmes towards developing graduates with relevant knowledge and skills and technologies that could enhance in abundance employment opportunities in all these areas instead of just talking about their enormous potential.

Textile industry

Textile is a fabric that is woven from fibres. It uses raw materials such as cotton, or wool, through a process called spinning to turn them into yarn for producing fabrics. Fibres can be natural or man-made. Natural fibres include cotton, jute, linen, wool, and silk. Man-made fibres, on the hand, include nylon, rayon, and polyester. Man has been wearing and using fabric since time immemorial; as such, the textile industry is one of the oldest industries in the world. Yet in Tanzania, despite its immense potential to grow cotton, there are rare use of sheep and waste plastic to make nylon, as even the few cotton industries built since the First Term Government are limping or have died altogether, the high employment opportunities/potential in this area notwithstanding. It is absurd that we are still exporting our raw cotton elsewhere and importing used clothes—mitumba from abroad. In this regard, local universities and other tertiary institutions have yet to provide the much-needed knowledge, skills and innovations to capitalise on the opportunities available in the sector and create jobs for our youth.

Closely related to the textile industry are the sisal processing and sisal and mats production industries. In the 1960s, Tanzania was the second largest producer of sisal, after Mexico, in the world. Yet, today most of the estates have deteriorated and some are fallow. Substitute importation of jute bags from elsewhere have proven over the years that they are not environmentally friendly. Sisal bags are also the best suited for storing crops such as cashew nuts, coffee, cotton, cloves and the like. Who else can address the problem of a dying macro-industry, if not our technical and school/colleges and universities linking with the textile and sisal industries?

Livestock industries

They deal with rearing of domestic animals—cows, goats, sheep, donkeys and rabbits as well as an array of wild animals, some of which can be systematically harvested for food; while others are reserved for tourism. Opportunities for keeping birds such as chicken, turkey, and ducks also abound and can lead to generating employment and boosting revenue to many, if they are well informed by relevant knowledge and skills to reap maximum benefits. Tanzania is the second largest producer of cows in Africa.

Despite its vast virgin land, there is no good reason for not becoming the largest producer in Africa, in future. Notably, in Tanzania today serious conflict exist between farmers and livestock-keepers in the hunt for pastoral and agriculture land. Herders count their wealth in numbers of herds of cows and can be counted while discounting the fact that a well-bred cow or goat can fetch five times more revenue by sale of milk and meat compered to one scrambling for food on the dusty land for food. To some, it is okay to see cows and goats parading the streets of our towns and cities, chewing harmful substances but eventually landing on our dinner tables. Yet we dare complain about rising incidents of cancer and other related diseases. Similarly, it is a contradiction in terms to hear or see campaigns of planting trees in various areas which, within a matter of no time,

cows and goats are allowed to encroach areas and shambas devour everything with impunity. Where have our brains gone wrong? With better dispensation of knowledge and skills through the Tanzania education institutions, the country can transit from migrant herding, importation of milk and chicken from elsewhere to become a self-sufficient and net exporter of high-quality livestock products nation, with only a third of the cows we have in the country, thus eliminating the burgeoning conflicts between livestock keepers, farmers and environmentalists.

Leather industry

Leather is a by-product of slaughtered animals—domestic and wild—which when processed leads to the production of various leather goods ranging from clothes, shoes, bags, belts, furniture covers and huts. Despite Tanzania being the second country with the largest number of cows, only a tiny fraction of the hides and skins reach leather industries for processing and sell in the local and foreign markets to enhance employment, revenue to individuals and taxes to the Government. Who else will reinvigorate the industry if not our vocational, technical, and higher education in partnership with the government and the private sector?

Marine-based industries

Marine-based industries use raw materials from the sea or ocean, lakes and dams - *Uchumi wa Bluu (Magufuli 2020, Mwinyi, 2020)* ^[8, 4]. Fish needs to be seeded to multiply their numbers. They also need to be fed and harvested sustainably upon reaching maturity. Some countries of the world today—Denmark and Norway—have embarked on commercial fish farming in seas and oceans and are reaping greater dividends than those engaged in deep sea fishing. Fish processing industries, for fish fillet and fish oil, can also be expanded exponentially in Tanzania considering its elongated coastline, the several lakes, dams, and rivers; thus, enhancing employment opportunities to many, especially the youth. Mwani growth can also contribute a lot to production of boutique, a unique cloth making industry. Hence, the right knowledge and skills need to be dispensed by our institutions.

Forest-based industries

These industries use raw materials from the forest such as wood and timber. The industries connected with forest are environmental conservation, paper, pharmaceutical, fuel wood, fruits and furniture. Beekeeping and the honey industry can rarely materialise in the absence of trees. In Tanzania, and the world over forests are at the heart and lungs that support our life, particularly in cleaning of the air, providing shed and shelter and the major supplier of fuel wood. The rate of rapid deforestation in the country is not only alarming but is the major cause concern to many in communities and government as it leads to global warming and its varying negative effects on climate change. Fruit trees—mangos and the golden avocado—when extensively grown are also a major source of income. Unfortunately, for many years, we have been paying lip service to problems of climate change without asking the fundamental question—what role must educational institutions, from pre-school to university—play to minimise if not eliminate these problems? Similarly, how many employment opportunities abound in this sector through closer institutional and

industry linkages/partnership? Is it now opportune time to exploit them maximally?

Construction industry

It is a sector that is involved in designing, building, constructing and maintaining the infrastructure. The construction industry can be sub-divided into three categories: Heavy construction, general construction, and specialised construction. Heavy construction in Tanzania today includes the Mwalimu J.K. Nyerere hydro-power station, the Standard Gauge railway, bridges and roads, airports and stadia. General construction includes the building of residential places to allay one of the key national enemies of lack of decent shelter for most Tanzanians. It also includes commercial real estate. Specialised construction includes making electric, hardware and wood things required to construct a building. This era has witnessed the modernization in the way of constructing buildings and houses. Construction and related types of business industries have/and will continue benefitting from the advancement of technology. Employment opportunities in this sector therefore abound, if the education system is reviewed and revamped to ensure issues of relevant knowledge and skills are emphasized, so that more Tanzanian experts can be produced and participate in this sector. The macro projects should also contain opportunities for training and development of our engineers, technicians and artisans to develop self-reliance capacity for future construction projects and sustainability of existing projects.

Health care industry

Healthcare industry provides remedial, diagnostic, curative, preventive, rehabilitative, therapeutic services to patients and to people in their old age. The main goal of this industry is to revive and maintain the health of peoples. It is one of the fastest growing industries. This type of business industry has enormous potential for investors and entrepreneurs. Every country's government spends a handsome amount of money in this sector. There are both private and public providers of services. Non-communicable diseases such as hypertension, cancer and diabetes are also on the increase. Hence, as an adage states: Prevention is better than cure. Proficient level of relevant education, therefore, being necessary for prevention. As Mollel (2021) succinctly stated, the health industry services all other sector industries and reduces costs and enhances effectiveness, where the human capital is healthy. Hence, all the industries must provide tax revenues to ensure the health sector is vibrant. Moreover, a move should be made to exempt this sector from all kinds of taxes for it to be able to give the quality services expected of it.

Pharmaceutical industry

A pharmaceutical company is closely related to health and education industries. It is a licensed firm aimed to research, discover, develop, market and sell the drugs. It is an important industry worldwide, particularly in the context of Covid-19 and many other non-inherited diseases. It is an anticipated research and development (R&D) based industry. Constant research is an important aspect of the pharmaceutical industry. These companies research to produce drugs to cure diseases of humans and animals. There are some drugs that also treat symptoms. Medical device industry is another aspect of the pharmaceutical

industry, which deals with surgical equipment's, medical devices and implants.

The writers' major concern, however, is on why traditional medicines such as 'wombo, tolo, ngetsi, kilao, mkinyi, cloves, ginger, garlic and mwarobaini were not being researched upon, patented and branded to cure a myriad of diseases. The question then that arises is: To what extent are our medical doctors and pharmacists engaged in fundamental research leading to discoveries that can address problems in the drug and health industries and disseminating their discoveries through publications? A soul-searching analysis and requisite support are needed for more affirmative action to be possible.

Hospitality industry

The talk in Government today is that of promoting tourism and improving the services industry due to the reality that Tanzania has abundant opportunities for employment and heightened revenue. The Royal Tour by Her Excellency President Samia Suluhu Hassan is a commitment by the Government to make the world know of our richness in this area. The vast coastline, the animals' rich national parks and the hotel industry are all sources of employment opportunities if well-developed and exploited. *Customer satisfaction*, however, is the main objective of this industry. This industry is exceptional because it deals solely and survives on "the want" of people. There are three main broad categories of this type of industry such as accommodation, food and beverage, and travel and tourism. The restaurants need to be famous for its ambiance and view; and must also embrace the luxurious treatment of its guests, who must always be treated as queens and kings.

Entertainment industry

The entertainment industry is a huge business industry. It includes innumerable sub-sectors of entertainment. This industry runs on both entertainers and viewers of art and theatre, sport, games and dance. Entertainment and leisure has been an integral part of human society since time immemorial, but recently it has become commercialised in many developing countries—Tanzania inclusive. This industry has grown significantly in the past century. These types of business industries such as entertainment and hospitality industries can make a great part of the Gross Domestic Product (GDP) of Tanzania if systematically developed. For example, football and athletic teams for both males and females. Encroachment of open spaces in our towns and cities is restricting development of recreational parks where the youth, the elderly as well as other adults could visit and gasp fresh air. Hypertension and diabetes are on the rise because of lack of space to exercise. At times, it is beyond our comprehension how physical education and sport can be taught in our education institution in the absence of playgrounds. May be using cyber space. Entertainment industry, therefore, can provide plenty employment opportunities to a substantial number of people if it is systematically developed.

Music industry

The music industry is one of the many types of business industries that run on the passion of people who work in it. This industry comprises musicians, composers, lyrics writers, singers, instrument makers, players and dancers. This industry is highly affected by technology. Gone are the

days when people used to buy gramophones and musical albums, CDs and DVDs. The internet, to some extent, has to a great extent taken over the other media. People can listen to music online anywhere and any part of the world. Music is available on various online platforms. The new term that has been given to this industry is 'Digital Music Industry'. Copyright is to a considerable extent being endangered.

One should, however, not lose sight of our rich local and national and very entertaining music and dance, which promote our national identity and pride. Educational institutions need to assume a bigger role in promoting them, thus enhancing employment opportunities and tax revenue.

News media industry

The target of this industry is to provide news to the people. It makes people aware of what is happening in the world. There are various media platforms; for example, newspaper; some famous social media platforms such as What Sapp, Facebook, Twitter, Instagram, YouTube etc. Getting information has become handy for the people of the 21st century. People can also read news online by installing the apps of various NEWS channels. As information is power, it ought to be well managed, shared and effectively used to realise the national development agenda.

Energy industry

These types of business industries are important because of their wide use in various sectors. The energy industry can be sub-divided into two categories renewable energy industry and non-renewable business industry. Renewable energy replenishes itself at the rate it is used (e.g. solar, hydro, wind, geothermal, biomass etc) while non-renewable energy has a limited supply that is they run out upon consumption (e.g. coal, oil, gas, uranium etc). The utilization of the energy for our daily needs presupposes some different operations to take places such as extraction, refining, manufacturing, and sales. Similarly, coal and nuclear energy industry, nuclear power industry—electric/water/gas/nuclear and geothermal sources—have yet to be exploited maximally and human and technical expertise developed. Once this is done can create several opportunities for employment. These energy sources are limited and they are diminishing fast. As a result, countries spend a huge amount of money to maximise the use of alternative energy sources. Therefore, a lot of research, funded primarily by government, need to be devoted to discovering alternative energy sources. This being one of the critical roles vocational, technical and institutions need to assume; to enhance employment opportunities and tax revenues.

Iron and steel industry

Iron and steel industries are famously known as the feeders of all the other industries. The processing involve converting the raw iron using yet another abundant resource – coal - to produce the final product for selling in the market place, for public consumption. Iron ore is also converted into steel by various processes such as smelting and refining. Iron ore is used to make machinery.

Steel and iron are subsequently the basic materials needed in every other industry. No doubt, they are the backbone of the modern industry. If this industry is well developed will save the country billions of dollars used to purchase basic inputs for her macro and micro projects like construction of Mwalimu Nyerere's hydro-electricity dam, the fast railway

line, construction of bridges and industries, just to mention a few.

The human power to exploit them has only been partially developed. Hence, universities with schools of engineering and technical colleges need to expand enrolments exponentially, direct resources for training staff at the PhD level in these strategic prime areas in world class universities and technical institutes to produce world class faculty, to train locally many quality graduates. Such staff can also be responsible for doing basic research leading to innovation and developing of prototypes as well as designing, processing and manufacturing real industrial goods. Steel industry can take the advantage of the cheap labour, raw materials, and the ready market.

Summary and the way forward

It needs to be underscored that in a globalised and ever globalising world, a nation's ability to participate effectively in the competitive world markets mainly depends on its ability to educate and train a critical mass of its population so that it acquires the desirable levels of relevant and high-quality knowledge, especially in science and technology, desirable skills, values especially hard-work, high ethical standards and patriotism in a holistic way. This core will constitute the critical human capital needed to create employment in the array of industries discussed. Hence, *our first thesis is that Tanzania has more employment opportunities than people to do them all. What the country needs to realise is that we have plenty of opportunities that have rarely been exploited.* So, the first issue is on which areas we have a competitive advantage. Is it in agriculture, mining, tourism, iron ore, gas, uranium exploration and use, ICT or elsewhere? Then we can proceed to revamp our education system and tailor it to produce knowledgeable and skilled individuals to capitalize on employment opportunities in those sectors. The idea floated by our President Samia Suluhu Hassan of rebranding Tanzania is excellent and must, therefore, be benchmarked in areas where Tanzania has the highest comparative advantage instead of just joining the bandwagon of traditional industries.

Second, the priorities identified need to be engaged in a vigorous exercise to revamp the existing education and training policies, ensure there is healthy match with other macro-economic policies and plans and attune them to the expectations contained in the nation's long term development plan – 2065, The Development Vision – 2025,. The policy guides so designed will thereafter form the basis for determining the curricula content for various levels, depending on the current and anticipated market signals.

Thirdly, curriculum changes need to be based on the current needs identified that are clearly spelt out in the national macro-economic and education and training policy, as the Mo EST has been mandated to educate and train human capital for all other sectors. The process of education, from pre-primary school to university and beyond is closely interconnected and interdependent. Hence piecemeal approach to the curriculum is counterproductive. Instead, there is need for a comprehensive approach. As one needs to improve pre-primary to appreciate how teachers and administrators for this sub-level are products of other levels. Similarly, if one wishes to have better students for admission to higher levels, needs to understand that they are products of lower levels.

Our second thesis is that relevant and up-to-date knowledge and skills, in their broadest sense must be melded into right proportions desirable values, especially hard-work, high ethical standards and patriotism to attain balanced curriculum that prepares its graduates from varying levels for gainful work/employment.

Fourthly, education and training in Tanzania have yet to be well co-ordinated and managed through a system of a unitary education and training Act. After the 1978 Education Act, only minor cosmetic changes have been made to the main Act. Instead, a plethora of Acts have been enunciated—Universities Act, TCU Act, Technical Education Act, Vocational and Training Act—resulting in a scramble for authority and power on who is responsible accountable for what, when and why, in the education industry. Three years ago, Mo STHE appointed a task team that prepared a draft umbrella Education and Training Act which has since remained shelved.

Fifth is the issue of mind-set transformation, which will lead many in the academic world to adopt a new paradigm shift, which will be a departure from doing things as usual to becoming torch bearers in assuming new roles of change agents, actively participating in forging the desirable new partnerships with industries. The key roles of any university worth its name are teaching, research and community service. Thus, they need to be reminded from now onwards to play their dutiful roles, or otherwise in Nyerere's words they will become traitors, especially during this era of 'rising wave of unemployment'.

Sixth there is a need to bring on board both public and private organisations and individuals to join hands in the development agenda. The two parts are supposed to mutually complement each other. The ideas of the two competing should be put off and allow an atmosphere where the two can collaborate in various socio-economic projects and investments. It should be noted here that, though it is the primary responsibility of the Government to lead and bring to fulfilment the country's development agenda, the private sectors contributions cannot be ignored.

Finally, although the Sixth Term Government has realised the critical role education and training can play in employment creation and economic development it needs to raise awareness among the population on the need of investing adequately from the coming budget period—2022/23 to produce excellent quality and quantity of desirable human capital to meet demand in all sectors of national priority. Not less than three trillion shillings need to be added to the education budget, to improve and expand infrastructure, improve teaching and learning facilities and equipment, staff development; do more basic research, leading to innovation and development of prototypes and real products for our industries, to create desirable capacity to drive the entire development process efficiently and effectively. The bottom line is the discussion on what ought to be done and how it ought to be reignited. Overall, we cannot continue procrastinating in taking necessary action. We need a timeframe for completing the debates and immediately embark on start-up activities that could lead to full-fledged implementation by July 1, 2022. In the late President Kenneth Kaunda's words, 'It can be done; lets' play our part' by capitalising on all local internal expertise to lead the way.

References

1. Bruner J. The culture of education. Cambridge, MA: Harvard University Press.
- Dewey, J. (1915/1902). The school and society and the child and the curriculum. Chicago: University of Chicago Press, 1996.
2. Dewey J. Experience and education. New York: Collier Books, Macmillan Publishing Co., 1938.
3. Lynton. The Tyranny of Research; Journal of Higher Education Outreach and Engagement,2016:20(1):45.
4. Magufuli J. The President of Tanzania, address to the Parliament on Friday (November 14, 2020) in Dodoma, 2020.
5. Mollel. ITV Special Programme, KUMEKUCHA part II, 2021.
6. Mosha HJ. "The Role of African Universities in National Development". Journal of Higher Education, Vol. 99, Higher Education. 15 (1986): 113 - 134 and Comparative Education,1986:22(2):93-111.
7. Mosha, Lyamtane. Towards a Comprehensive Model for Professional Development of Teachers (Forthcoming article), 2022.
8. Mwinyi. President Hussein Mwinyi's inaugural speech to the 10th House of Representatives, 2020.
9. Nyerere JK. On higher education, 1960.
10. Psychoropulus. George Vocationalization of Higher Education: Issues and Challenges. Washington DC, The World Bank, 2010.