

Career Choices of University Students in Tanzania and Their Implications for Vision 2025

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Abstract

This paper analyzed trends in career choices among university students in Tanzania and compared the same with national priorities as stipulated in the national development vision 2025. Documentary review was used for data collection and analysis. Results show that although there is the marked increase in higher education enrollments, majority of the students opt for career in arts and humanities. Ironically, the Tanzania Development Vision 2025 identifies science and technology as pillars of innovation and competitiveness. The paper argues that skills mismatch with the vision may prevent the country from attaining a competitive knowledge economy. It recommends that incentives offered to science students at tertiary education should be extended to secondary education where students make critical career decisions.

Key words: career, science, technology, national development vision 2025

1.0 Introduction

Since independence in 1961, education in Tanzania has been organized to fit official development plans and national priorities (Yambesi, 2012). Until mid-1990s, the Education for Self Reliance Policy was adopted. The policy, emanated from the resolve to follow African socialism (ujamaa) in 1967. It stressed the need for education to be relevant to the national needs. While primary education was tailored to produce practical oriented peasants to address rural productivity, secondary and higher education was designed to produce skilled manpower to lead in innovation and policy making. The establishment of various programs of study in higher learning that existed up until early 1990s fitted perfectly with the national development plans.

Following policy reform in the 1990s, higher education was liberalized and private sector was allowed to play a part. At the same time government abandoned planned economy in favor of the free market. The move increased the number of universities and higher learning institutions in Tanzania from only two in the early 1990s, to over 61 in 2013¹. The newly established private higher learning institutions, and the expanded capacity of the public ones, have managed to increase university enrollment from 49,967 in 2006 to 135,367 in 2011 (TCU, 2012).

Despite the reduced role of state in planning for manpower development, government in partnership with various stakeholders developed a national vision in 2000 popularly known as vision 2025. The vision identifies science and technology as the main driving force for competitive economy that will see the country leap to semi-industrialized and middle income status by year 2025. The realization of the vision will depend on among other things, the existence of highly trained human resource base in sciences and technology to steer innovation and competitive economy. However, skilled manpower in science is a sum of individual decisions to pursue own career in the field. Career is an occupation or a profession involving special training within a single industry or sector (Cole, 1995). Choice of specialized training for the purpose of pursuing career is often done by the students as they enter university. This means, that career choices among university students will, in the long run, affect the composition of the workforce, and have bearing on the realization of the vision 2025.

This paper analyzed trends of career choices among university students from 2006 to 2011 in order to determine whether they are in line with the envisaged goals as stipulated in the national development vision 2015.

¹ <http://www.tcu.go.tz/index.php/register-of-universities>

Specifically, the paper sought to answer three research questions:

1. What are the trends in career choices among university students in Tanzania for the last five years, i.e., 2006 to 2011?
2. What are the most attractive career among students opting for sciences and arts/humanities?
3. What are the implications of career choices among university on the realization of the national development vision 2025?

2.0 Methodology

The paper used documentary review in collecting relevant data. Mogalakwe (2006) describes the documentary method as the techniques used to categorize, investigate, and interpret written documents whether in the private or public domain. The main categories of documents reviewed are databases from the Tanzanian Commission for Universities (TCU), International Labor Organization (ILO), and African Economic Outlook².

3.0 Results and discussions

3.1 Trends of career choices among university students in Tanzania

Analysis of career choices among university students from 2006 to 2011 shows that the enrollment in sciences (agriculture, engineering, medicines, and natural sciences) has decreased while that of arts and humanities (business and management, education, law and social sciences) has increased. The share of the students who choose sciences has dropped from 26.5% in 2006/7 to 17.6% in 2010/11 academic year. However, when analyzed separately, there is annual increase of about 3.4% of students who choose sciences (Table 1). This means that, when compared with the total enrollment, there is marked decrease of students who opt for career in sciences.

Table 1: Trends of career choices among university students in Tanzania, from 2006/2007 to 2010/2011

Field of study	Academic year				
	2006/7	2007/8	2008/9	2009/10	2010/11
Enrollment in Sciences (Agriculture engineering sciences, medical sciences, natural sciences, and IT)	13,279	19,919	25,597	21,813	23,922
% of the total enrollment	26.5%	24.1%	25.2%	17.6%	17.6%
Enrollment in Arts (Business and management studies, education, law and social sciences)	36,684	62,362	75,626	101,621	111,445
% of the total enrollment	73%	75%	74%	82%	82%
Total (sciences + arts/humanities)	49,967	82,529	101,222	123,434	135,367

Source: TCU, 2013

With regard to students who choose arts and humanities (business and management studies, education, law and social sciences), the numbers increased from 73% to 82% of the total enrollment (Table 1). The trend that attracts majority of students to opt career in arts and humanities is partially informed by the historical factors where public sector (government) was the major employer, and preferred candidates with general degree in arts than specific skills as in science (AEO, 2012). This however, has changed following policy reform in the 1990s which led to downsizing of the public sector. ILO (1999) estimates that on average, public employment in developing countries form only 23% of the total employment while the private sector (formal and informal) takes lion's share of 73%. In Tanzania, public sector accounts for 36.9% of the total employment while private sector accounts for 64.2% (NBS, 2012). This means that more and more of the graduating students will have to look for employment in private sector.

AEO (2012) further noted that most general education in Africa has long followed the ideal of providing the prerequisites either for an academic education or for a white collar (office) job in the formal (and urban) sector. Yet, only small minorities of young people have access to either of these options. Moreover, the skill set which many formal employers look for is a more practical and applied one than that provided in most schools. This indicates a mismatch between required skills in the industry and what students' opt to study at the university.

² AfricanEconomicOutlook.org is a forum that combines the expertise of the African Development Bank, the OECD Development Centre, the United Nations Economic Commission for Africa, the United Nations Development Program and a network of African think tanks and research centers to present analyses on economic, social and political developments of African countries.

Indeed, in a survey among experts on 36 African countries about the major challenges youth face in labor markets, 54% found a mismatch of skills between what job seekers have to offer and what employers require to be a major obstacle (AEO, 2012).

The situation where majority of students choose arts and humanities in Tanzanian is not different from many developing and developed countries. Munro and Elson (2000) indicated that only 30% of students studied physics and 32% studied chemistry and mathematics at their higher learning in 1994 in the developing countries. However, these percentages decreased to 25% and 26% respectively in 2005 (Lyons, 2005). The similar trend can be seen in developed countries such as France, Norway, Denmark and Netherlands. For instance, Norway experienced decrease at the rate of 40% from 1994 to 2003; Denmark 20% from 1994 to 2002; Germany 20% between 1994 and 2001 while the Netherlands recorded 6% decrease from 1994 to 2001 (OECD, 2007). In Africa, particularly South Africa, out of the total enrolled students in universities in 2007, 42% were in humanities, 30% in business and commerce, and 28% in sciences³

It appears that majority of students makes decision on whether to pursue career in sciences or arts and humanities in lower levels of secondary education. Mabula (2012) has shown that just before the National Certificate of Secondary Education Examinations, students are required to register courses that they will sit for national examinations. They are required to register seven compulsory courses, namely Mathematics, Biology, Kiswahili, Civics, History, Geography and English language. Those wishing to pursue career in sciences will have to add Physics and Chemistry, while those wishing to pursue business will have to add Commerce and Bookkeeping. For students wishing to pursue arts and humanities the seven compulsory courses are enough. Since most students were not taught properly in sciences, due to lack of teachers, books, and laboratories, often they do not choose sciences at this stage. Table 2 shows that in 2010, about 60.4% of the students dropped chemistry and 73.4% dropped physics (URT, 2010). These statistics show that only 40% and 28% of the total students sat for Chemistry and Physics respectively. Considering that out of those who seated for Certificate of Secondary Education Examination there are some who will end up with failure, and they will be subjected to further screening when they sit for the Advanced Certificate of Secondary Education Examinations. Obviously, the number of students qualified to join university in science programs will be less.

Table 2: Students dropped sciences in the Certificate of Secondary Education Examination in 2010

Subject	Registered students	Students dropped the course	Percentage of the total
Chemistry	350,904	212,104	60.4%
Physics	350,904	257,785	73.4%

Source: URT (2010)

Mabula (2012) argued that the reasons for the decrease in the number of students taking science subjects are complex and differs from developed and developing countries. However, they all indicate a connection between attitudes towards science subjects and the way in which science subjects are taught. Similarly, Lyon (2005) acknowledged that the decline of interest among young learners in science subjects in Tanzania is a result of how science is taught and learnt. This means, that improving teaching and learning environment may increase number of students opting sciences as career.

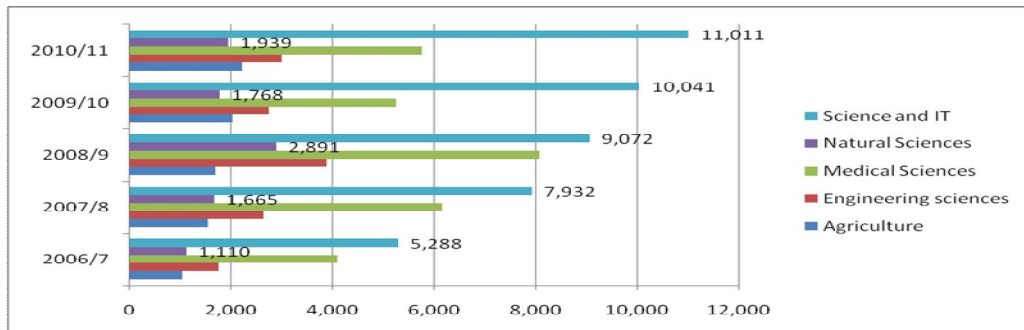
3.2 Most attractive career among students choosing sciences

Analysis was done among students who choose broader 'sciences' to determine the most attractive career path in the field. Figure 1 shows that majority of students opted for information and technology courses while natural science was the least favored. Preferences on Information Technology and related sciences have grown by about 7% since 2006 (TCU, 2012). This is incredible growth given that the general trends in the same period indicate students who opt to study career in sciences, has declined by 8.9% when compared with the total number of enrolled students. Increase in number of students in IT could be explained by the rapid growth of the sector in the world and Tanzania in particular. Local growth of IT could be attributed to government incentives in the sector such as tax relief on the imported IT hard and software ware, and assumption among students that the sector is growing hence it will have many job openings. This assumption is corroborated by the African Economic Outlook surveys which indicated that graduates in IT have fewer problems in finding employment in Africa (AEO, 2012).

³ See <http://www.southafricaweb.co.za/page/higher-education-south-africa>

However, employment and earning survey conducted by the Ministry of Labor in Tanzania in 2012 indicates that there were only 136 vacancies in IT in the entire country, which is 0.1% of all vacancies in the country (NBS, 2012). Despite the discrepancy, snap survey among graduates of IT indicate that it is relatively easy to employ oneself in the sector than in others. IT specialists employ themselves to provide technical support, repairs, and sales in the growing sector. This means that students are attracted to the sector not because of formal employment, but due to the possibilities of self employment.

Figure 1: Most preferable career path among university students opting ‘sciences’ from 2006/7 to 2010/11



Source: TCU (2012)

With regard to agricultural sciences, overall statistics indicate that students choosing it as career to study at the university has doubled in the last five years from 1,024 in 2006/7 to 2,222 in the 2010/11 academic year (Table 3). However, given the strategic position of the sector in addressing poverty, and the actual needs of the professionals, the recorded growth is insignificant. For example, the employment and earning survey indicated that the sector had one of the highest job openings, 2,597 vacancies out of 126,073 in 2012 (NBS, 2012). This indicates that the sector is in high demand for skilled personnel. Yet, the experiences show that the share of agricultural contribution to employment decreases as the country moves to middle income bracket, but productivity increases (Moyo, et al., 2012). Since productivity is a function of skilled labor, skilled personnel in the sector is crucial. In any case, agriculture still holds the key to rural development in Tanzania. Having few students choosing agriculture and related sciences as career, could be a result of poor funding and disincentive which has hit the sector for many years. However, if the trend is left unchecked, it could affect overall growth and poverty reduction especially in rural areas.

Table 3: University enrollment by field of study in Tanzania 2006/2007 to 2010/2011

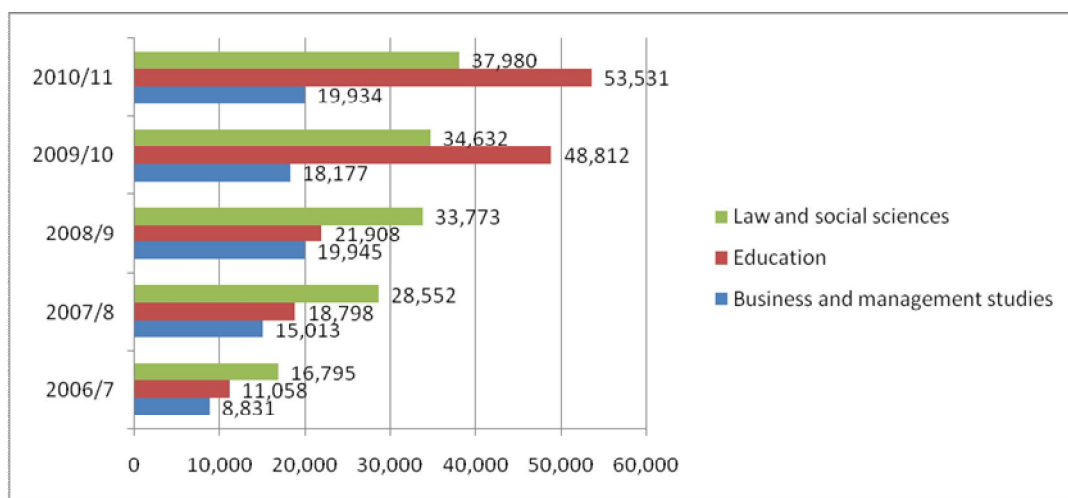
	Field of study	Academic year				
		2006/7	2007/8	2008/9	2009/10	2010/11
Science	Agriculture	1,024	1,536	1,677	2,026	2,222
	Engineering sciences	1,757	2,635	3,889	2,737	3,001
	Medical Sciences	4,101	6,151	8,067	5,242	5,749
	Natural Sciences	1,110	1,665	2,891	1,768	1,939
	Science and IT	5,288	7,932	9,072	10,041	11,011
	Subtotal ‘Science’	13,279	19,919	25,597	21,813	23,922
	Percentage of the total	26.5%	24.1%	25.2%	17.6%	17.6%
Arts and Humanities	Business and management studies	8,831	15,013	19,945	18,177	19,934
	Education	11,058	18,798	21,908	48,812	53,531
	Law and social sciences	16,795	28,552	33,773	34,632	37,980
	Subtotal ‘Arts’	36,684	62,362	75,626	101,621	111,445
	Percentage of the total	73%	75%	74%	82%	82%
	Grand Total (Science and Arts)	49,967	82,529	101,222	123,434	135,367

Source: TCU (2013)

3.3 Most attractive career among students choosing arts and humanities

Analysis was done to determine specific branch of art and humanity that attracts most students. Figure 2 shows that majority of the students were attracted to education followed by law and social sciences. The number of students choosing education as career has grown four folds in the period of five years from 2006 to 2011. This indicates that government incentives of loans/bursary, and direct employment to graduates of education is paying off. However, although the numbers look impressive, other studies such as Makulilo (2012) indicates that not all graduates plan to work as teachers. Substantial number of graduants do not report for duty in rural and remote locations, or look for other careers in the first three years of their employment. Majority of students, therefore do not choose education because it is attractive, rather because they can use it as a bridge into other lucrative careers. This has created employment gap in the education sector; for example, despite the government and private sector employing teachers every year, there is still a large gap to bridge given the large number of graduates who opt out of the career. In 2012 there were 54,828 teachers' job vacancies out of the total 126,073 vacancies which is 43% of all the vacancies in Tanzania (Employment and Earning Survey, 2012).

Figure 2: Career path choices among Tanzanian university students in the 'arts and humanities' from 2006 to 2011



Source: TCU (2012)

3.4 Implication of the career choices on the realization of national development vision 2025

The skills level of the labor force is considered a major economic growth driver (Krueger & Lindahl, 2001). Although the transformation of Tanzania into a middle income economy will involve unprecedented migration out of the rural-agricultural sector towards manufacturing and service sectors, the labor force needs to be equipped with the necessary skills required to meet the demands of the evolving economy. The Tanzania Development Vision 2025 puts special emphasis on science and technology as the driving forces of competitive economy. It emphasizes on promotion of science and technology with special interest in micro-electronics, information, and communication technology aimed at enhancing innovation and competitiveness in sectors of the economy (URT, 2000). As of 2013 the vision has been in operation for about 13 years and the target is only 12 years away.

We analyzed trends in choices of sciences as career in relation to the set targets and compared the same with other countries that have migrated to middle income states. Results show that there is increase of 3,642 students who opt to study 'science' career (agriculture, engineering sciences, medical sciences, and natural sciences) at university levels in each academic year since 2006/7, which is equivalent to 3.4%. Given the current (2010/11) enrollment status of 23,922 students, in 12 years when the vision 2025 is due, the number will be estimated at 67,626. From this figure; we can now calculate ratio of personnel who will be working in fields requiring sciences against the working population. The Integrated Labor Force Survey for 2009 (NBS, 2009), estimates that Tanzania had 18.3 million working population in 2006. The number of working population, according to NBS (2009), increases at a pace similar to population namely 2.7% per annum. This means that by 2025, the estimated working population in Tanzania will be 26.2 million. This means, again percentage of personnel who will be enrolled in fields categorized as 'sciences' will be 0.25% of the total working population.

We compared these figures with other countries⁴ that are in middle income bracket. Table 4 show that on average, at the time they entered middle income status, other countries had 3.4% of their working population in sciences while estimates for Tanzania stands at 0.25% only.

Table 4: Comparison between percentage of population working in ‘sciences’ and estimates for Tanzania by 2025

Career in fields categorized as sciences	Average of the working population in fields categorized as science in middle income countries	Estimated average for Tanzanian who will be enrolled in fields categorized as sciences by 2025
Physical scientists and related technicians	3.4%	0.25%
Architects, engineers and related technicians		
Life scientists and related technicians		
Medical, dental, veterinary and related workers		
Health assistants/workers		

Source: Moyo, et al., (2010) and authors’ calculations

Although Table 4 indicates estimates of the personnel that will be enrolled in fields categorized as sciences, and based on university enrollment alone, they show a very low personnel base in sciences in the 2025. It is thus fair to conclude that despite improved enrollment rates in sciences in Tanzanian universities; this will not enhance the country’s skill base needed to propel the county’s middle income status by 2025.

4.0 Conclusion and Recommendations

This paper concludes that although there is marked increase in enrollments in Tanzanian universities; the increase may not be sufficient to propel the country into middle income status propelled by science and technology by the year 2025. Incentives provided to attract students in sciences such as loans and bursaries, seems insufficient to increase the number of students enrolling in sciences. Furthermore, this paper has indicated that substantial number of students drop sciences in secondary education due to challenges such as shortage of teachers, facilities and poor learning environment. Therefore, there is a need to improve availability of facilities, teachers and learning environment, and extend incentives in sciences to secondary education, especially ordinary level, where majority of the students make critical career decisions.

⁴ Moyo et al., (2012) listed the comparator countries and the benchmark years in bracket as China (2000), Cote d’Ivoire (1975), Egypt (1983), India (2007), Indonesia (2004), Jordan (1976), Korea (1968), Malaysia (1968), Morocco (1991), Philippines (1976), Sri Lanka (1997), Syria (1975), Thailand (1987), Tunisia (1974), and Vietnam

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