

Technological Inputs in Higher Education and Graduate Destinations in Cameroon. The Case of The University of Yaoundé I

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Abstract— This century has fondly been called the android generation because of the explosion of technology in unprecedented dimensions. Knowledge of and ability to use technological gadgets and information communication and technology (ICT) is almost indispensable in all areas of human life. Education and especially higher education, is one of those arenas where such technologies are rife. Graduates' destinations could be variously affected or determined by the possession or not of ICT competences which have become some of the determiners of smooth transitions from higher education to the world of work. Using the University of Yaoundé I, this paper finds out the extent to which the use of digital technology in the teaching/ learning process in Higher education in Cameroon, can affect graduate destinations in terms of finding a good paying job. The methodology consisted in using questionnaires constructed in the format of the Likert scale, to collect data. The data was analyzed using the Spearman correlation. The significance level was defined $p \geq 0.05$. Results revealed that students from the University of Yaoundé I are likely to swell the ranks of unemployment in the country, if they are not recruited by the government. The paper proposes a rigorous implementation of the use of digital technologies and ICTs in state universities to professionalize students before graduation.

Index Terms— android, technology, gadgets, graduate destinations, skills, higher education paying job, world of work.

I. INTRODUCTION

Generally speaking, a great variety of factors have influenced and affected the development of educational systems throughout the world from one period to another. For example, there is the knowledge explosion of the 21st century, especially in the domain of ICTs which has and is still bringing pressure to bear on educational systems in a number of ways. This mass of information available and its rate of increase have forced educators to consider the problem of the selection and delivery of content in a new light and even to rethink the function of knowledge content in the educational process. (Smith, 2000), in (Teneng 2011).

There is a general expectation that universities should catalyze and facilitate the shift to the new knowledge-based economies and high-technologies through commensurate and effective linkages between research and the labour market to ensure that their countries have a competitive edge in the

global market, (UNESCO, 2009). According to UNESCO (2005), a knowledge based society is a society that has developed a great corpus of diversity and capacities. The stock of knowledge accumulated in each society is highly considered as an indicator of development. In relation to this in Cameroon, higher education has recently been viewed as a primary economic instrument which can be useful in catalyzing the growth of the economy. For example, it has been increasingly purported that the overall economic performance of western countries has direct bearings to their knowledge and learning capabilities (Doh, 2012). This could mean that the quality of higher education in a country has a bearing on the quality and amount of the stock of its human capital. The Boundaryless employability theory, through the lens of Arthur (1998), was therefore the framework theory that guided this discourse. According to Delong (2003:20), in Teneng (2017), in "the twentieth century there are wide-ranging changes in business, industry, and technology that increased the demand for particular skills." We think that ICT skills are such boundaryless skills which cut across all discipline, and are needed in almost every business, industry or company, in spite of discipline specialization. The focus of this paper is on the challenges of establishing professional higher education in terms of digital and ICT skills and capabilities, and the extent to which they can influence graduate destinations in terms of employability. One of the major outcomes of higher education on the part of the students is to find good paying graduate jobs. But this can hardly be possible without ICT skills. In this light, the World Bank (2000; 2002; 2009) in Doh, (2012) has acknowledged the potential and capacity of higher education in developing countries to help their countries grow in their development efforts. In Cameroon, higher education has now been highlighted as a catalyst of development in most policy documents, such as the Growth and Employment Strategy paper (GESp) (2009). According to (SUP INFOS 2010C: 7), it was therefore important for higher education to increase its socio-economic, socio-professional and market-friendliness in the domain of curriculum.

In the Growth and Employment strategy paper (GESp) of Cameroon, unemployment is 88.8% with underemployment at 75.8% and unemployment at 13%. Youth and graduate employment is now a foremost policy concern in Cameroon with government's gigantic effort to employ 25,000 youths. Yet employment hardly reflected level of education and training, leading to underemployment. According to African Economic Outlook, (2012), this government action is expected to produce results in the short

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and medium term, but is this enough to sustainably solve the problem of graduate employability? Therefore, graduates are uncertain as to where they will go after university education. Could technological inputs in terms of the use of ICTs at the level of curriculum and teaching methods influence graduate destinations in terms of finding jobs with private sector or becoming self-employed?

The research question that guided this research was: how does the use of technology and ICTs in higher education influence graduate destinations in terms of finding first graduate job?

II. LITERATURE REVIEW

Technological inputs in this paper are viewed in relation to the increasing development of information and communication technologies. The concept of Information and Communication Technologies (ICT or ICTs) is multifaceted and is used within multiple contexts to mean different things. According to Teneng (2017), ICT or ICTs in education could mean, being digitally literate, or having the infrastructure, devices and manpower to facilitate the teaching learning process, with digital gadgets. According to the Organization of Economic Co-operation and Development (OECD) and 1998, 2002, ICTS in the economic domain, connoted office equipment and supplies, electronic displays, instruments of navigation and other types of electronic and wireless devices. In the words of Angeleski, Mitrevski and Janeska (2009:266), ICTs could extend to, *“the capacity of a nation to participate in the digital economy or the ability of a nation to make connection with the rest of the world”, and that the level of ICT possession and use is indicative of their “socio-economic functioning”*. ICTs nowadays are widely used in education and especially higher education. This calls for governments and private owners of higher education institutes to invest in ICTS, for delivery of courses, workshops and seminars, networks for student research and more. In this way students graduate with information and communication skills, problem solving skills, which are boundaryless and are highly appreciated in the world of work. The Cameroon government in its own way has been doing all to digitalize higher education in a bid to make graduates face the labour market with more confidence or even becoming creators of employment themselves. This was exemplified by the head of state, within the framework of the “Special Youth Plan” which he announced on 10 February 2016, the President of the Republic put more vigour into the digital economy at the level of universities in favour of the youth. This futuristic initiative involved the giving of 500 000 computers to university students of the public and private sectors. This was a response to a plea made by the Association of Cameroon University Students, at the Yaoundé Conference Centre through the personal representative of the Head of State (The Minister, Secretary General at the Presidency of the Republic), on 13 February 2013, relating to the necessity to improve the digital environment in the universities. According to President Biya, the gift was his contribution to “e-national higher education”, to improve on the digital economy and make it a reality.

According to Tchombe (2006), ICTs comprise a complex set of goods, applications, and services used to produce, process, distribute, and transform information (Munyua, 2005; United Nations, 2005), in (Tchombe, 2006). The information and communication technology sector consists of segments as diverse as telecommunications, television and radio broadcasting, computer hardware, software and services, and print media and electronic media including the internet and electronic mail. The term ICT is often used to mean technological innovations in information and communication which has built up to what is nowadays known as the information and knowledge societies, bringing variations in economic and business practices, education, health, leisure and entertainment among other things (United Nations, 2005). According to Mbangwana, (2008), private universities had already introduced ICTs in their curricula since 1990, 1998 and 1998. So this recent government action even though we can say it is appreciable, was coming in a little late. The fact however remains that as early as the years mentioned above, private higher education institutes were generally equipped with computer rooms. But nowadays, according to the experience of the researcher as a part time lecturer in some private higher education institutes in the country, most private higher education institutions are equipped with a local area network (LAN), servers, word processing software, and additional gadgets such as printers and scanners. They also use video projectors, videotapes and internet connectivity in the teaching learning process. From time to time, students and teachers are trained to use computers for word processing, accessing the internet, consulting e-mails, and participating in e-forums. In the ICT-U for example most teaching and learning is done through online platforms like Moodle. Teachers and students are trained each time there is a change in the technology in use. Through the teaching and learning platform, students and teachers have access to pedagogic learning resources. The Information, Communication and Technology University (ICT-U), where the researcher teaches also engage in virtual and online education where students register from other parts of the world and take their lectures online, because the university is equipped with distance training facilities.

Haddad and Draxler (2002), in Teneng (2017) are of the opinion that more modern education systems where digital technologies are in use are more advantageous to learners because of the rapidly changing skills in demand in a globalizing labour market. To them, education no longer is limited to one geographical location or to the limited classroom space. This supports the view that online technologies such as the platforms like Moodle, Schoology can be used in this digital world so that those working can continue to study to improve their employability skills and increase graduate opportunities. These authors think that rightly used, ICTs could have great impact on learning opportunities for many and that *“technologies can improve the teaching/learning process by reforming conventional delivery systems, enhancing the quality of learning achievements, facilitating state-of-the-art skills formation, sustaining lifelong learning and improving institutional*

management”, they argued. To Fonkoua (2006), pedagogical integration of technologies should be introduced in programmes used to train teachers, otherwise, teachers who are not willing or not able to be trained in the use of technologies could soon be come obsolete. Information and communication technologies (ICT) are becoming increasingly accepted and heavily relied upon in Cameroon and the whole of Africa, as a crucial means towards social and economic development. Huyer (2003) in Tchombe (2008) also postulates that the availability and access to and use of ICTs in the educational process can open the door of opportunities for many to develop the technological skills so much in demand in the 21st century labour market and knowledge economy.

III. RESEARCH METHODOLOGY

Research Design: This study was a survey and used quantitative analysis.

Population Samples: The population constituted of unemployed graduates of up to 5 years from the university of Yaoundé 1. A sample of 532 graduates were presented with questionnaire at the National Employment Fund as they came in looking for jobs. The University of Yaoundé I was purposively chosen because as the mother university, they graduate the majority of students every year. We went to the National Employment Fund because they run a graduate employment programme which helps to link graduate job seekers with companies looking for graduate employees.

Research Instruments

The questionnaire consisted of 18 questions constructed along the pattern of the Likert scale: Strongly agree (SA), Agree (A), Uncertain (UN), Strongly disagree (SDA), Disagree (DA), for the graduate jobseekers, based on the two research variables of the study: technological inputs and graduate destinations.

Techniques for Data Analysis

Data collected was analyzed using both descriptive and inferential statistics. The Spearman Correlation was the tool used in testing the association between two variables.

Spearman Correlation is expressed as:

$$r_s = 1 - \frac{6\sum D^2}{n(n^2-1)}$$

Where:

D is the difference between the ranks of X and the corresponding ranks of Y

n= the number of paired ranks.

The table below is the presentation of data according to the research question:

Question 1: How does the use of technology and ICTs in higher education influence graduate destinations in terms of finding first graduate job?

IV. PRESENTATION OF DATA AND ANALYSES OF RESULT

Table 1: Information on the use of digital technologies and ICTs in the teaching learning process

Item	Statement	SA	A	Un	DA	SDA	Mean	
1	My university was well equipped with digital technological gadgets	<i>f_i</i>	93	230	145	21	43	2,45
		%	17,4	43,2	27,2	3,9	8,0	
2	My university compelled teachers to use ICTs in teaching and evaluating	<i>f_i</i>	95	208	165	---	64	2,53
		%	17,9	39,0	31,0	---	12,0	
3	There were good internet connectivity in my university	<i>f_i</i>	62	113	232	61	64	2,93
		%	11,7	21,2	43,6	11,4	12,0	
4	Students had free access to the internet for research	<i>f_i</i>	96	143	211	61	21	2,60
		%	18,0	26,9	39,7	11,4	3,9	
5	Most teaching and learning was done using online tools	<i>f_i</i>	103	262	85	61	21	2,32
		%	19,3	49,2	16,0	11,4	3,9	
6	Our university library is digital	<i>f_i</i>	209	178	42	61	42	2,16
		%	39,2	33,4	7,9	11,4	7,9	
7	My university had connections with industry, and did student placements for internships	<i>f_i</i>	21	33	122	229	127	2,19
		%	3,9	6,2	22,9	43,0	23,9	
8	Cameroon Universities work in collaboration with other universities for student mobility	<i>f_i</i>	37	---	330	64	101	3,12
		%	7,0	---	62,0	12,0	19,0	
9	Awareness of partnership between universities and enterprises digitally	<i>f_i</i>	55	19	148	188	122	2,83
		%	12,2	3,6	27,8	35,3	22,9	
10	Students presented assignments using digital technologies	<i>f_i</i>	42	56	64	188	182	3,83
		%	7,9	10,5	12,0	35,3	34,6	
11	Students' technological and ICT skills reflect on labour market needs	<i>f_i</i>	33	64	146	127	162	3,66
		%	6,2	12,0	27,4	23,9	30,4	
12	Universities send students on internship to enterprises	<i>f_i</i>	95	42	105	103	187	3,52
		%	17,9	7,9	19,7	19,3	35,1	
13	Labour and market	<i>f_i</i>	26	69	149	56	232	2,61
		%	4,9	13,0	28,0	10,5	43,6	

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	skills(ICT) are fostered t in the curriculum							
14	My transition from school to work eased by my technological skills acquired at school	f_i	69	24	143	215	81	2,66
		%	13,0	4,5	26,9	40,4	15,2	
15	Teachers are also trained and retrained on the use of latest innovations	f_i	59	131	227	39	76	2,91
		%	11,0	24,6	42,7	7,3	14,2	
16	Quality control on teachers teaching methods	f_i	89	55	242	109	37	2,74
		%	16,7	10,3	45,4	20,4	7,0	
17	The use of technology and ICT in my university is effectively leading smooth transitions to the world of work	f_i	36	55	154	80	207	2,49
		%	6,8	10,3	29,0	15,0	38,9	
18	Availability of infrastructure to facilitate the use of new technologies and ICTs	f_i	53	58	74	184	162	2,30
		%	10,0	10,9	13,9	34,6	30,4	

Source : Field statistics

A. *Inferential Statistics:*

B. *Hypothesis*

H_{a1} : The use of digital technologies and ICT in higher education, determines graduate destinations in terms of first graduate job.

H_{o1} : The use of digital technologies and ICT does not determine graduate destinations in terms of first graduate job

Correlations				
			Use of technology and ICT	Graduate destinations (finding first graduate job)
Spearman's rho	Use of technology and ICT	Correlation Coefficient	1,000	,721**
		Sig. (2-tailed)	.	,000
		N	532	532
	Graduate destinations (finding first graduate job)	Correlation Coefficient	,721**	1,000
		Sig. (2-tailed)	,000	.
		N	532	532

***. Correlation is significant at the 0.01 level (2-tailed).*

V. FINDINGS

There is a significant and positive relationship between the use of digital technologies and ICTs, and graduate destinations in terms of finding first graduate job in Cameroon (P-value < 0.05)

Most of the graduates from the University of Yaoundé 1 said that their exposure to the use of digital technologies and ICTs in general was not enough. That lecturers are not even trained on the use of these technologies as well as on ICTs. In fact, most of the respondents were even unaware of the technologies and the use of ICTs. This implies that graduates are either technologically less prepared for the world of work. They therefore face the labour market with a lot of uncertainties confusion as to what their futures in terms of work would be. These graduates might only end up swelling the ranks of unemployment or underemployment which is daily on the rise in Cameroon. Their hope is that they will get some professional training at the National Employment Fund, in order to be able to get their first graduate employments. Philips in Teneng (2016: 238) thinks that “for youths to acquire skills (technological and ICT), [emphasis mine] required for future employment, there must be an on-going partnership between universities and the world of work...and the inclusion of work related skills in higher education curricula”. We believe that using digital technologies such astelecommunications, television and radio broadcasting, computer hardware, software and services, and print media and electronic media including the internet and electronic mail, as listed by Tchombe (2008) in our literature review, in addition to other teaching and learning platforms like Moodle, mentioned earlier, graduates will graduate with confidence to face the labour market, either to get flexible jobs or to create employments for themselves and become employers of labour. Universities must therefore embed digital technologies in their teaching and learning, train

teachers in the evolving technologies so as to produce and keep producing technologically ready graduates to the technological advancing 21st century labour market. Otherwise, both teachers and students risk becoming obsolete as Fonkua (2006) warned.

VI. CONCLUSION

It was our aim from the outset of this paper to find out how the possession or not of technological and ICT skills could influence graduate destinations in terms of finding first graduate jobs in Cameroon. Digital technology and ICTS in higher education were seen variously as the possession of digital and electronic infrastructure, devices such as office equipment and supplies, electronic displays, instruments of navigation and other types of electronic and wireless devices and a trained man power to facilitate the teaching learning process, either online or onsite, in a bid to professionalize content delivery and empower graduates for the knowledge economy. Graduate destinations have been considered as an important outcome of education which must be considered before content selection and delivery. Therefore, an important conclusion in this research paper is that equipping universities with digital technological gadgets and ICT facilitating tools, as well as having good connectivity to the internet and other online learning platforms will enable a university to professionalize learners and turn out graduates who are sure of finding good graduate jobs in a constantly evolving labourmarket. Therefore, if Cameroonian higher education must become the economic growth catalyst in heralding the emergence agenda as envisioned in its policy documents, it must digitalize its infrastructure and train its manpower on the use of digital technologies and ICTs. In this way, they can be sure of producing graduates with pre-determined graduate destinations in terms of finding wage paying jobs and being flexible in the world of work. This is because one of the greatest obstacles face by graduate youths in finding jobs commensurate to their levels of education has been the lack of ICT skills greatly demanded by employers.

VII. RECOMMENDATIONS

Universities should be equipped with digital technological equipment, with the right infrastructure to house them. They should assure a constant internet connectivity made available to students and lecturers. University administration should ensure that both the teaching and non-teaching staff are trained in the use of digital technologies and ICTs. There should be quality control measures put in place to see to it that lecturers teach using ICTs, and engage students in the use of the same, through formative assessments. Finally, through collaboration with industry, each university should have a placement system to allow students do internships and facilitate their transitions to the world of work.

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