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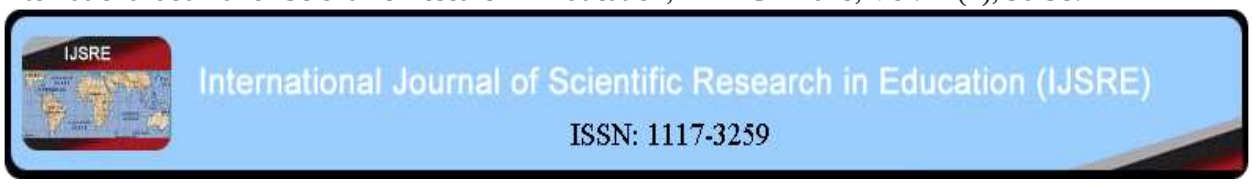

Estimating the Socio-Economic Implications of Wastage Rate in the Nigerian University Education System

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Abstract

This study investigated the extent of internal system efficiency among universities in Nigeria by determining the wastage rate. A modified Cohort of the promotion rate i.e. the corresponding enrollment and graduation rates of the period (2007–2015) under analysis were used in the survey. It discovered a 32% female wastage rate, 52% male wastage rate and a 56% cumulative wastage rate for the case under investigation. Inferentially, situation could be worse in most, if not all, Nigerian 1st, 2nd and 3rd generation universities since a 4th generation (state-owned) university yields this extent of wastage rate. These findings hold a potential 'crippling effect' on university internal efficiency. Consequently, this study recommends regular and continuous improvement steps (as indicated below) should be taken for effective trend reversal thus reposition the universities, and indeed, the higher education system for better establishment in the decades ahead.

Keywords: Wastage Rate, Internal Efficiency, Input-Output Ratio, Cohort Analysis, System Leakages, Crippling Effect, Socio-Economic Implications.

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INTRODUCTION

Recently, the wisdom of the federal government of Nigeria decided to revise, not only the goals of tertiary education (universities and inter-university centers) to include; among others, (a) reduce skill shortages through the production of skilled manpower relevant to the needs of the labour market, but also the pursuit of these goals. It specified that the pursuit should be through: (i) quality student intake; (b) quality teaching and learning; … (c) a variety of flexible learning modes including full-time, part-time, block release, day-release, and sandwich programmes; … (d) an all-inclusive credible admission policy for national unity; (e) supporting affordable, equitable access to tertiary education through scholarships and students' loans (FRN, 2014, p. 40-41).

In order to comply with this production possibility frontier, universities now organize rigorous screening test and accompanying qualifying examinations aimed to select only duly 'qualified' students (i.e. those with the capability of enrolling and completing) to undertake a chosen programme. It is expected that only students certified fit or qualified to commence and complete the programme are offered admission.

Usually, universities organize, mobilize and utilize both human and material resources in huge proportions to transform raw students into graduate-products (engineers, doctors, lawyers, teachers, etc.) and cannot afford to risk resource wastage or throw-away in the course of training. That means, it would be difficult to understand why only 260 students (45%) would complete a programme within the mandatory student-years from a total of 580 certified and qualified students that commenced the programme. This scenario does not portray an acceptable input-output relationship and do possess attendant socio-economic cum academic consequences which cannot be ignored.

The federal government of Nigeria abhors systemic wastages directing that success in higher education administration should be hinged on efficient administration of resources (FRN, 2014). It expects parameters governing and regulating the conduct of resource administration be made optimum within limits of scarcity, first time and every time, in order to ensure 'wastage-free' systems that requires internal efficiency analysis.

What then is Efficiency?

Economically, efficiency is the relationship between the inputs into a system and the outputs from that system. It is the quality or property of producing satisfactory results with an economy of effort, time and/or money (Lipsey; 1982; Psycharopolous & Woodhall, 1985; Begg, Fischer, & Dornbusch, 2003, Fabunmi, 2004). It also means the ratio of the effective or useful output to the total input in any identified system (political, economic, educational, etc).

In the university system, efficiency would mean the relationship between students, teachers, resources, etc., imputed into the system and the graduates output from that system. It is therefore the university's ability to effectively churn scarce resources (as listed above, including man-hours and material inputs) into large quantities and quality graduates with economy of time and wastages (i.e. without simultaneously producing huge products irrelevant to customer needs). By determining the level to which system is able to churn out required and desired (with capability to satisfy customer expectations) graduate-output, the internal efficiency level of the university under review would be ascertained. This aspect will be treated in a later part of this

work but for now, it is necessary to understand the different trajectories of system efficiency (Uwazuruike, 1991).

Efficiency Typologies

Irrespective of polarized typologies, Ajayi (2008) categorized efficiency into two for analytical convenience: namely; internal and external efficiency**.** For immediate relevance, attention focuses on the former trajectory though the latter is also treated. Internal efficiency of education could be derived by determining the relationship between inputs and outputs when students flow through the grade structure of an educational system (Ebong, 2006). In other words, it fathoms learning achievement (graduate-output) from the corresponding inputs - taken here as raw students only (Hanushek, 2010).

Measurement of the Internal Efficiency

Since internal efficiency is the ratio of the output to the input options, its measurement would require and, necessarily begin by identifying such output and input parameters in the educational system.

The term 'educational output' refers to the students who are able to complete (graduate) from the educational system, while educational inputs comprise of the school buildings, teachers, students, textbooks, instructional materials, laboratories, libraries, workshops, etc. consumed per student in the production process over the accounting period. Nevertheless, the basic unit of measurement of educational input is the student's year (www.uis.unesco.org/ipages/indspec/efficiency.htm).

Hence, internal efficiency in education could be measured using Cohort analysis method which express students' flow pattern through the educational cycle because it adequately capture the wastages (i.e. system leakages) e.g. promotion rate, failure rate and drop-out rate. For instance, it takes 4 years to successfully complete a B.Ed (Educational management) programme in Nigerian universities hence, under maximum efficiency, a successful completer requires 4-student years to complete. Therefore, real output/input ratio is as follows:

Input/output = 4/1 = 4

Nevertheless, no educational system realizes perfect efficiency due to the system leakages (i.e. wastages) such as carry-overs (repeaters) and waffed (drop-out) students, etc. Hence, using the Cohort analysis method, actual input-output ratio is determined by the actual quantity of student years spent and the quantity of successful completers:

$$\text{Input/output} = \frac{\text{Actual Student year}}{\text{Successful Completers}}$$

Similarly, the inefficiency rate could be determined by dividing the actual input-output ratio by the perfect or ideal input-output ratio to obtain the wastage ratio:

$$\text{Wastage ratio} = \frac{\text{Actual Input-output}}{\text{Ideal Input-Output ratio}}$$

For instance, since the ideal input-output ratio is 4, if the actual input-output ratio is 2.50, then the wastage ratio would be:

2.50/4 = 0.625

This result indicates educational system inefficiency. If the result obtained is 1. Then, it becomes a perfect efficiency. However, there are limitations to the principle of internal efficiency of education. According to www.uis.unesco.org/ipages/indspec/efficiency.htm, these constraints include the following:

On the input side: (1) the student-year index is a non-monetary measure of input and fails to account for the concepts and findings of educational cost analysis. Accounting educational costs involves many determinants and it is not a simple linear function of the number of students.

On the output side: (1) Equating output with number of graduates only presents a narrow perspective of education process and its contribution to the economy and society; (2) Regarding grade repeaters or drop-outs as wasteful (and logically automatic promoters as increasing efficiency) is not entirely justified, considering the positive and negative effects of repetition; (3) Failure to accord output value to the years spent by drop-out students in senior secondary education would ignore research on literary retention, hence it is unrealistic.

On the process: The concept of internal efficiency in education can only apply to those educational processes that follow the grade-pattern of conventional school system. On efficiency: (1) internal efficiency in educational system does not necessarily measure external efficiency because in most cases, they antagonize each other; (2) Reduction of educational wastage (e.g. repeaters) through higher internal efficiency may not necessarily reduce unit cost of education. If this action is backed by decree it reduces learning achievement; and may increase costs if it is backed by remedial studies. Accommodating drop-out students would further create problems of increasing school capacity and hence, educational budgets.

The Concept of External Efficiency in Education means different things to different scholars. Akpangbou (1987) sees external efficiency as the extent to which education sufficiently addresses the gamut of social, economic and political goals in the operating community. It could also be seen as the ability of the educational system's output to meet the needs and aspirations of a particular society (Okeke, 2004; Ebong, 2006). According to Oluchukwu (2000), external efficiency "fits" between education and the societal needs, especially the labour market needs. However, external efficiency is usually not an easy concept to quantify and measure.

The foregoing analysis infers that an educational system is adjudged externally efficient if its output meets the expected needs of the society. This requires a qualitative analysis of an educational system with a view of making it more responsive vis-à-vis the yearnings and aspirations of society. Measures to adopt may include curriculum review, improved funding, staff motivation, staff development, programme and institution approval, quality control and quality assurance, among others. For example, the current NUC accreditation effort in Nigerian universities is a quality control measure aimed at correcting perceived system failure and meets the higher manpower requirements of the country. However, it must be emphasized that the task of achieving external efficiency is a joint effort involving all stakeholders in education rather than relying on government alone.

Wastage rate is one of the two measures of efficiency. Efficiency itself, measures the extent of prudence in the utilization of resources (both human and materials) available to the

school system. It measures the strength and weakness of the school system in the management of resources to achieve pre-stated objectives and goals. For instance, a school system is efficient when it can make use of the available resources to train the students in the shortest possible time period i.e. with minimum economy of wastage rate (failures, repeaters, drop-outs, etc.).

Table 1: Computation of wastage rate in a faculty of a Nigerian university

S/n	Cohort	Enrolment	Graduate rate	% Graduate rate	% Wastage rate
1.	2007/2011	210	142	68	32
2.	2008/2012	270	125	46	54
3.	2009/2013	285	144	51	49
4.	2010/2014	195	94	48	52
5.	2011/2015	240	162	68	32
Total wastage rate over the period					56

Source: Exams and records unit of the case study university (2010–2015).

The above table indicates a cohort input-output wastage rate of 32% in 2007/11; 54% in 2008/2012; 49% in 2009/2013 cohort; 52% in 2010/2014 and 32% in the 2011/2015 cohort period. This shows a cumulative 56% wastage rate over the accounting period.

Table 2: Wastage computation by Sex (Male and Female)

Cohort	**Enrolment**			**Graduation**			**Graduation rate**			**Wastage rate**		
2007/2011	M	F	Total	M	F	Total	M	F	Total	M	F	Total
	100	110	210	55	87	142	55	41	96	45	59	104
2008/2012	M	F	Total	M	F	Total	M	F	Total	M	F	Total
	110	160	270	45	80	125	41	50	91	59	50	109
2009/2013	M	F	Total	M	F	Total	M	F	Total	M	F	Total
	115	170	285	44	100	144	38	59	97	62	41	103
2010/2014	M	F	Total	M	F	Total	M	F	Total	M	F	Total
	80	115	195	34	60	94	43	52	95	57	48	105
2011/2015	100	140	240	60	102	162	60	73	133	40	27	67
Total										52.1	32.4	

Source: As above–Unclassified (2010 – 2015).

The sex information portrays an interesting picture about the issue under discourse. The cohort analysis again indicates a relative higher wastage rate for males, reflecting the pattern of admissions which is skewed towards the females. In other words, male students waste educational opportunities much more than their female counterparts, as portrayed by the picture under review. The final analysis could be a 'crippling effect' on systemic development with attendant implications too grievous to ignore.

IMPLICATIONS OF WASTAGE RATE

Generally, educational wastage could mean frustration and may promote a life of crime and criminality, particularly where males are involved as observed in this analysis. There are other grievous effects. It is more obvious now than before that these occurrences are not accidental, incidental or even coincidental and require deliberate actions that can cause systemic

improvement. More so, continuous existence of this phenomenon is more than inimical because it represents a potential recipe for administrative and academic inertia.

Institutional Implications

A clear and present danger is institutional decadence. Institutions operate on efficiency by minimizing resource wastages, including students. Academic capacity is developed to ensure that graduates are produced within specified or scheduled time and resources. It is expected that the process so well designed with little or no lapses or loops for non-completing students undergoing its 4 student-year programme and upon X quantum resources (Okeke, 2004; Leigha & Benwari, 2011).

Hence, it becomes difficult or impossible to understand why student declared capable after several qualifying examination would commence its curricula and still fail to complete programme within stipulated time and resource. Obviously, the validity and reliability of designs and machinations the institution operates is questionable. Continuous existence of the institution is threatened, no less.

Administrative Implications

Administration relates to economics because both demands for 'adroitness' or 'skillfulness' while translating resources into practical account and require prowess. Efficient administration is characterized by minimizing ensuing wastages while maximizing its productivity. In other words, it is administratively impossible to admit X number of student and produce Y number of graduates, wastage as much as Z number of would-be graduates with serious implications on the system and beyond. This is a clear indication that the administration rather than students require massive improvement (Okeke, 2004).

Psycho-social Implications

Being a student in an institution of learning extends to psychology because students are, first of all, human beings. The status inevitably wields feelings, excitements, and such other sensibilities that hardly just evaporate once abruptly ejected from the system. Such students share life with the institutions and can only effectively elapse at the terminus of the system. Any premature termination would produce psychological and social maladjustment that may linger beyond the point of incidence (Fafunwa, 2004). Sometimes, it may stain or even paralyze the physical and mental balance of the individual for life and require 'the old man's eye' justice in court to avoid social complications and/or psychedelic and traumatic citizenry.

Economic Implications

A student that confronts drop-out also represents loss of valuable and, often, inestimable opportunities in business, politics, commerce, insurance, industry and other such valuable ventures. Gains are possible if the student had been informed of this assumed incapacity and had re-directed resources into other venture (Eze, 1983; Ayeni, 2003). This also represents 'double-loss' or even 'triple-loss' to the student that is no fault of theirs and may attract possible protracted litigations to redress.

On the other hand, the same number of attrition students represents loss of valuable revenue in the form of school fess to the institution. The number reflects the revenue loss in corresponding extents and may rise exponentially if the trend is not checked. This could further endanger its continuous existence as well as request for further funding from authorities (Blaug, 1970; Hoy & Miskel, 2009).

Political Implications

This has many policy implications and would adequately inform and shape the character of future policy decisions. Specific and perhaps general existence and rationale for the existence of institutions would be affected by the character and dimension of institutional assumed capacity. This is because it would be difficult if not impossible to sustain institutions that are not viable (Abraham & Leigha, 2007).

Social Implications

Schools cannot continue to operate with high level of wastage and contribute significant to national or social development. Development is affected by the education (i.e. the number of graduates in relevant areas). This capacity is halved or outright reduced with the number of wastage in the system. Obviously, the level of development achievable within specified periods would continue to crumble under the tutelage of wastage occasioned by institutional inefficiency (Longe, 2003).

The lag of many societies, especially in the third world countries is a direct precipitate of educational wastages. Potential product and contribution of wasted students represents a major minus to the GDP composition. As a matter of fact, the quantum of roads, cars, duplexes, electricity, food-stuffs, surgeries, drugs, adjutants, teachers, and so on that would have contributed to the quality of Nigerian life is continuously aborted by the rising 'still-births' in educational productivity. This hardly represents social development capable of placing Nigeria remarkably among the comity of advancing nations in the global arena.

CONCLUSION

In the course of educational development, wastages or drop-outs are inevitable due to various imperfections and requires redress for effective systemic improvement. Metric estimates indicate, a high wastage rate holding the possibility of both a crippling effect and inertia on systemic internal efficiency development. Religious and effective redress is inevitable since growth and development of the universities, and indeed, the higher education system is predicated on efficiency. Most especially, there are academic, economic, political and social implications in these wastages which can longer be ignored.

Recommendations

- Authorities should ensure that academic policies governing institutions of higher learning are reviewed regularly and continuously to redress areas inconsistent with modern practices;

- There should be a developed mechanism to reintroduce drop-outs to other skills so as not to waste the resources spent on their education and training;
- Administrator should endeavour to isolate causes of drop-out, particularly internal efficiency, with a view to redressing their roots;
- Student-teacher relationships should be strengthened to ensure mutual or harmonious co-existence in the system;
- Student participation in decision making should be encouraged to promote cooperation, understanding, and learning;
- Well-equipped vocation centers should be established and maintained in higher education studies to mop-up and compensate students weak in cognitive activities.

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