



Towards a “Paperless” Higher Education System in Nigeria: Concept, Challenges and Prospects

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ABSTRACT

This study attempted to seek the possibility of a paperless Higher Education system in Nigeria. It x-rayed the current system of information processing, dissemination and final storage in our school system. With the outcry of poor management of records, ineffective storage, ever increasing school population. The study sought to unravel the concept, challenges and prospects of the paperless school system as a means to solving the current challenges of record keeping in our school system. Technology adoption of information system management in the system was seen as a means to an end of the ineffective management of records, poor storage and retrieval, slow rate of delivery and low consumption of the intended message as a challenge affecting the current record system in our Higher Education institutions. The study established that the paperless system is a 21st century trend and should be embraced by our higher system of knowledge, the adoption of technology in information processing will make information faster, cheaper, increased audience, better retrieval of stored messages. It will not make the workforce jobless, productive-less, effortless and initiative-less. The study identified areas to begin the paperless system to include; Senate proceedings, staff appraisals, student registration, examination, bulletin production and full automation of the Examination and Records division. The reality of a paperless school system can be achieved sooner than its application in the school system with committed efforts by management, decision

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makers/implementation personnel and the general school system. Information must be accessed efficiently (speed) and efficiently (better sourcing of information). As technology advances, higher education system which is the driver of knowledge should advance technologically.

Keywords: Paperless; higher education; Nigeria; education; management; paper; paper dependence.

1. INTRODUCTION

Higher education in Nigeria is the highest level of education. It is the education or training of individuals who have successfully completed their secondary education. It is an education in universities, colleges of education, polytechnics, monotechnics including corresponding courses [1]. Whatever the term accepted by a nation, Higher education, post-secondary education or tertiary education or third level education, it is the highest and final level of formal education. The government (state, local and federal) is charged with the responsibility of education in Nigeria. The Federal government, which is the government at the Centre is more directly involved with tertiary education than it is with school education, which is largely the responsibility of the state (secondary) and local (primary) governments [2]. It is a training ground for all who have successfully completed the prescribed years of secondary schools. Higher education is essential for a thriving society and for individuals intended to develop the higher learning potentials.

The commitment to excellence in teaching and learning is a long attributed to Higher education. However, critics often point out that the pace of change and improvement in colleges and universities is slow—and more episodic than Continuous [3]. [4] asserting the uniqueness of higher education "Colleges and universities have a long-standing tradition of quality in academics and scholarship. In this respect, higher education is the gold standard—the model to which other sectors look for Excellence. These institutions typically have limited funds to undertake processes. The specific need for higher education is increased funding to effectively run the day-to-day activities of the institution, manage/create new projects among others. Why struggle for more funds when the cost of the paper used in the institutions can be reduced and possibly diverted into other pressing and meaningful projects?

[4] believes higher education as the gold standard, other sectors including healthcare,

politics, business should look and attempt at emulating the excellence in paperless culture employed by the institutions. The wave of the future is the drive for paperless management of information, knowledge and resources properly directed at the higher education system. Attempts will be made to x-ray possible areas of going paperless in our school system. Does higher education in Nigeria possess the resources for paperless management system?

Higher education administrators in Nigeria should be empowered to face the realities of the 21st century. Nigeria as a nation wasn't left in the 20th century. The century is that of creativeness and innovation in clearly communicating effectively. Usage of limited funds accrued Higher education is on the increase as records are generated endlessly by the increasing school population. [2] asserts that "at the tertiary level alone, the number of students has grown from under 15,000 in 1970 to approximately 1.2 million today". Thus, information must be accessed efficiently (speed in accessing-time) and effectively (better sourcing of information). Technology should be applied effectively. The readiness of students for technology in communication in Nigeria is encouraging. Students are practically attached to technology and the internet. The use of the internet and technology in communication in the workplace like the school system will be better preached towards full adoption.

2. The CONCEPT OF A "PAPERLESS" HIGHER EDUCATION IN NIGERIA

The term "paperless" is coined from two words paper and less. Paperless in Higher Education refers to less use of paper in the administration of Higher Education system. A paperless system is a system environment in which the usage of paper is eliminated, removed or greatly reduced. A paperless office is a work environment in which the use of paper is reduced, eliminated or removed completely. It is the conversion of documents and other papers into digital forms. It's the restriction of information in electronic form. A paperless office is one of the simplest

ways a company can minimize clutter and mess, and also help contribute to making business operations greener and environmentally friendly [5].

A paperless office essentially means drastically decreasing the use and consumption of paper in the office. The paper will always be needed for personal records, physical proof of payment and ownership). It's about reducing the volume of paper consumed by an institution. Paper-based communication is most used on our campuses in Nigeria. The reduction of possible elements of extra sheets of paper is what paperless is concerned about.

Harvard's president describes the 3 forces changing higher education as the influence of technology; the changing shape of knowledge and the attempt to define the value of education [6]. Technology is the application of scientific knowledge, innovations and tools innovated to make our lives less stress, faster means of doing things in most profiting ways. The over-dependence on paper with processing information has brought the dire need for storage [7]. [8] Files are haphazardly arranged within the limited available spaces in our campuses [9,10,8] have pointed out that "records kept by Nigerian higher education institutions are faulty. The least effort to be applied in resolving a faulty situation as record keeping is going through the global trend of "paperless" with the adoption of technology tools. Information sourcing in this century should be automated, accessed virtually everywhere by all. The current generation of students in our institutions is tech-compliance (generation z). Staff curriculum vitae should be approached with the paperless. Staff appraisal should attempt at appreciating technology tools to reduce paper usage. The traditional system currently is 50 copies (amount to about 8 papers) for those qualified for promotion and 15 copies for those staff that are not qualified in the appraisal year.

The idea of going paperless is not new but has existed since the first word processors appeared in the 80's. It has progressed since then as new technology has developed, presenting new opportunities for society. The 21st century is one that's technologically driven. Higher education in Nigeria lives in the century of creative innovation as "Propelled by the global educational challenge in the 21st Century", National Universities Commission, NUC, has stated that the Nigerian university system will now go Paperless" [11].

Matthew Arnold "Wandering between two worlds (paper-based and paperless-based operation), one dead (paper-based) the other (paperless) powerless to be born".

[12] "solutions to paperless reality can only be found through research and probing. We probe into new areas continuously to get results". He also asserts, "Access to university education is not just the physical entrance, but the quality of education the university provides" the education of today is technologically driven. From smart classroom to e-examination, technology drives the success of any school system that needs to be reckoned with and "fit into the global concept of university" [12].

[7] the rising cost of education has brought management devising ways of minimizing costs. What are the cost implications of producing senate proceedings for members of the senate? Cost implication in producing (weekly or twice weekly) bulletins? There is a reality in place. It's the reality of adapting technology to make things better, faster, efficient and more reliable. The preparedness of any system to adapt any technology has a myriad of factors, including but not limited to, organizational culture (values and beliefs shared by personnel in an organization- [13], external agents; resources available (approval from relevant bodies on project execution [7]; prior experience with similar innovations, risk of failure of the innovation, management perception on the innovation (positive or negative-fear factors).

3. TECHNOLOGY IN COMMUNICATION PROCESS

Computer and Technology have rapidly changed the way we communicate. With the advent of the GSM (Global System of Mobile telecommunication) in Nigeria (August, 2001), all was set for the technological civilization in Nigeria. The change in lifestyle travels, faster means of communication and better retrieval of processed information between two or more individuals. Our civilization is in a transition from an industrial economy to what we might call information age, and this paradigm shift is having an impact on the way we live and work [14]. Continuing, they assert that, as we rush into the information age, our future depends on and our ability to understand and use them in productive, positive ways. The future that was historically a decade ago is not the present. Technology adoption in the communication process will help,

among other things, faster rate of information delivery in institutions of Higher learning in Nigeria.

The over-dependence on paper in information processing in higher education in Nigeria has generated a lot of records which are haphazardly arranged within the limited available spaces in the institutions [7]. Institutions operating multi-campus systems are characterized with a slow rate of delivery of information within the campuses. The consequences of full adoption of IT (technology) in Higher education system, including management, governance, information delivery will be faster rate of information delivery, reliability of information delivered, better processing, improved feedback, reduction in overall cost of managing information and reduction in the usage of paper in our institutions of higher education.

At our Higher Education campuses, data management in terms of the high generation of information (records, bulletin, memos, students result, question papers, Senate Proceedings, Projects) is ever increasing. With the limited available spaces to store these processed records as a challenge, the need for an alternative, better improved. At the 2nd National Outsourcing Conference [15] the communiqué included, Government expenditure of paperwork for the last 4 years has risen to 20billion Naira. If this financial demand is anything to go by, the process of digitization of documents from tertiary institutions in Nigeria is long overdue. Tertiary institutions are the producers of technology. They processed knowledge into developed individuals who have innovators of high technology.

Technologies are developed to solve problems. The accelerated use of ICT (technology) in tertiary institutions has resulted in the globalization of information and knowledge resources [16]. The problem of information processing, dissemination and storage are the goal of technology. What technology tools are necessary to improve communication process? What is the readiness of our school system to adapt to these changes in communication processing? No wonder as the technology may be an identification of the needed technology is important.

Traditional paper processing in information processing is not equipped to deal with today's technology threat. It is time for a new approach

to information management. [7] "effective communication is the desired state of a productive institution administration and technology is the key to achieving that state".

Advances in technology tools have brought about information and communication revolution leading to fundamental changes in the way information is collated, communicated and stored [7]. The technology advances that will help in effectively transforming the "paperless" school system include: email; telephony, iPad (tablets), websites, e-radio, social media (Facebook, Twitter), e-conferencing. In overcoming current communication barriers as posed by traditional information processes, [17] identified the selection of the proper channel to convey messages with appropriate feedback. Technology channels are the most appropriate channels. Supporting Technology in improving information and speed of decisions in organizations, including Higher education, [18] contributed,

"Every organization has to use communication technologies to improve on how information flows within that organization. The rate at which information flows within an organization will determine the speed at which decisions are made. If the flow of information is slow in an organization, also the rate at which decisions are made will be slow. Organizations are known for having multiple departments, so it is good to use communication technology tools to accelerate the flow of information from one level to another without affecting daily organizational activities"

4. THE CHALLENGES OF GOING "PAPERLESS" IN NIGERIAN HIGHER INSTITUTIONS

"Paperless?" it seems like Higher Education is taking a bit longer to make the transition. But "the sun rises when you open your eyes", is the sun over delayed in its shining on the Nigeria higher education system? What is the uniqueness of the Nigeria education system towards the paperless reality? [19] "efficient paperless processing makes life easier for your staff and at the same time, dramatically improves the student/stakeholder experience". From the student service end, applications and queries are handled quickly and efficiently, because staff has immediate access to information.

Since going paperless saves money boosts productivity, save space, make documentation and information sharing easier, keep personal information more secure and help the environment become greener. What are the challenges affecting the possibility of a paperless higher institution in Nigeria?

[8,17,20,7,21,22,23] identified current challenges to include;

- The possibility of a paperless Higher Education in Nigeria in this generation of make believe is overly possible through the full adoption of technology.
- Technology tools are too expensive.
- Organizational culture change
- Power supply. Increased spending on the provision of an alternative power supply.
- Inappropriate training of personnel on the need for transition to developing technologies
- Insecurity and fear of data transfer on the internet(internet security concerns)
- Manpower
- Security concerns
- Setting unrealistic deadlines. Slippery deadlines for ICT projects
- Problem of superiority in organization. Procuring ICT equipment and facilities for superiors who have little or no intent of its usage. (Doing the right thing wrong)
- Over dependence on consultants. Wastage of fund.
- Over belief and acceptance of traditional methods of doing things. (Innovativeness and organizational culture)
- Data storage with computers appearing to be a huge project
- Poor classification system
- Challenges of effective, available and reliable wired and wireless network

5. ANALYSIS OF PAPER USAGE IN EDUCATIONAL PROCESSES

The Educational system as a social system is that of recurring processes. Students gain admission, are processed into becoming graduates, graduate and finally sent as great input for the workforce of the nation. These processes for full processes use a great deal of paper. The Higher Education system is not left behind. In the preparation of students into graduates who in turn become input for the

workforce which is the primary goal of the institution, the paper is highly employed.

Over the last decade, Higher Education around the world is facing a number of challenges and potential threats to effective learning and teaching support, an analysis showing the over-dependence in paper in educational processes which has raised the need for improved funding through internal and external sourcing of funds, is paramount in giving this study a full thrust. The adoption of emerging technology will minimize the increasing usage of paper.

6. THE STEPS TOWARDS PAPERLESS

The steps towards paperless begin from the intention of management to transit from traditional means of information and management process that have depended solely on paper. "We are going to be the first university in the country to go paperless. We are switching over to online work for most of the administrative and academic purposes," [24]. The drive is making things work. The 21st century is that of going green. The outcry of improved finance is not a challenge as Sobti said "we have started work from our own resources. Finance is not a problem once you are determined," Investments have been previously made in Information Technology. From payment of school fees which have gone automated and provision of internet facilities, use of mobile technology and the availability of a functional website, the start to paperless is well grounded. The setting of the realistic percentage of reducing paper usage to a workable degree is the first step. The paperless system in Higher education is an endeavor worth undertaking. Technology in the 21st century abounds that will take any institution of higher learning go paperless stress-less. The adoption of technology in its right place will make paperless achievable in the maximum duration of 18 months if management buy-in is higher than the high standard. The first point is thinking about the reduction of the paper ream (500 sheets of paper) in our higher institutions. Paper ream cost an average of N700.00 (seven hundred Naira). The goal of paperless is to save money "The good news is that in FY 2012, paper consumption decreased 2.4 percent to 203,236 reams. However, there is still plenty of work to be done to reach the overall goal of a 25 percent reduction" [20].

The full adoption of the digital revolution in Nigeria higher Education institutions is the end of

solving and answering the question, is a paperless campus a possibility, or will it forever remain a dream? [20].

7. THE INSTITUTION STUDIED

The Delta State, University, Abraka-Nigeria were studied to see the possibility and reality of a "Paperless Higher Institution in Nigeria. The University with its Mission statement as "Promotion of quality education, character and meeting the challenges of our time through exemplary scholarship and professionalism" are envisioned to "become a centre of excellence through teaching, scholarship, research, innovation, community service and Dissemination of Knowledge" [25]. The University development is transitional. It transitioned from an affiliate campus and became a full fresh University in April, 1992. It is located in Abraka town, Delta State, Nigeria. [12] "the University has come of age, it cannot be regarded as being among the new generation Universities". Since the institutions' missions meet the challenges of our time, it is appropriate to use the institution in such study, which is the paperless possibility in Nigeria Higher Institutions.

8. REDUCING THE REAMS OF PAPERS IN OUR INSTITUTIONS

Going paperless will not close down the pulp and paper industry in Nigeria or an increase in the unemployment rate. The industry is with the global philosophy of "going green" as [20] in "Yale Going Paperless to Save Money, Time, and Trees". He continued, "Clearly, using less paper is just as much about saving green as being green". [19] "regardless of their size or status (Higher Education), there seems to be a common refrain among higher education institutions looking for ways to cut costs, improving turnarounds and better serve students and constituents. We know that we need to do something. We just don't know what steps to take. In cutting the outstanding on paper and its production in our campuses, technology available should be channeled towards the reality of a paperless school system.

In reducing the reams of papers in our institutions, the savings will be outstandingly suppressing to management. The use of paper has other hidden expenditures. Spending on a printing which includes ink (toners), printing accessories, repairs and services; the delivery of printed materials; storage of printed materials [8]

the processing of the prints (wastage in correcting, editing, re-correcting and final printing); recycling and eventual disposal. The questions to be answered in redirecting the urgency for a paperless culture in our system include; how much is spent annually on paper purchases? What's the current habit of staff in wasting papers? Who accounts for wasted papers? How effective is the storage of processed papers? What's the amount to be saved from going paperless? An understanding of why we use paper in our institutions will avail us the benefits of thinking why do I need to print this document? Is it so important to be printed? What's the cost of printing this material? What are the printing habits of personnel in Nigeria higher institutions?

In adopting the model of "*papercut*" used by Yale University, [20] suggested ways to monitor the habits of personnel wasting papers. To this end, he suggested the following:

- Circulate documents for editing or approvals electronically. Use the track-changes feature in Microsoft Word. Print on both sides of each sheet of paper (duplex printing).
- Print two or more pages per side of a sheet.
- Print to order: Ask if recipients prefer to receive electronic copies of documents before printing.
- Always pick up what you print. This will help you keep track of how much paper you use.
- Bring your computer to a meeting instead of printing documents.
- Share information by projecting it.
- Distribute meeting handouts and slide decks electronically
- Reuse sheets of paper printed on only one side.
- Route a single copy of a document instead of printing multiple copies

With consideration of a paperless system, it would be discovered that some prints printed are unnecessary. It's impossible to totally eliminate paper in our daily operations in higher institutions. The drive towards a paperless system in businesses, governance, education, social life is a global trend.

Annually, November 6th is set as the "world paper free day". **World Paper Free Day** is an annual campaign that aims to reduce the amount of

paper generated by people in their everyday work and personal life. It was launched by the Association for Information and Image Management (AIIM). "In an increasingly digital world, it may surprise many that paper still dominates the office environment. Almost four billion trees are cut down each year to supply 300 million tonnes of paper". In giving up the usage of paper for a day AIIM remarked, "We've calculated (using the paper industry's own data) that if the whole world gave up paper for just one day, we could save around 821,918 tons of paper - and 11 million beautiful trees. So, we want it to. We want the world to go paper free for 24 hours" [26].

9. EVALUATING STEPS ALREADY TAKEN TOWARDS A PAPERLESS SCHOOL SYSTEM IN NIGERIA

Ten years ago it was not uncommon for higher education institutions to be completely paper driven. Now, a more common scenario is to have a heterogeneous environment of both paper and electronic media [19]. Today on our campuses, the adoption of technology on aspects of school records, school fees payment, information dissemination, admission listings and examinations will be evaluated.

State-owned institutions in Delta State have witnessed increased students population [7] Higher Education can become more responsive and offer better information services to students, staff and members of the institutions community with the provision of real, un-denied information to end users. The current system whereby graduates apply for the transcript (graduates of few sessions ago) and are told their records are not found and if seen, are incomplete is worrisome. With the huge expenditure on record keeping in our school system, little has been achieved in this areas. Technology if applied at the right time is an end to the challenges of record keeping and retrieval in our school system.

Online payments in Nigeria Higher Institutions campuses have yielded great success. Early in the 21st century, payment of students' school fees and other fees witnessed the traditional manual payment. With advances in technology and strict regulations in the banking system in Nigeria, the portal-based system for payment of schools fees. Faced with the early challenges, the process has succeeded. This attempted at bringing transparency and accountability in

school finance. Good as the process has turned out; it has increased the generation of "paper". Apart from printed physical evidence of fees payment for personal documentation, students are requested to attached copies of printed fees report in submitting anything (course form, identity cards profoma, examination), the question to be asked, why automate a process (school fees) and still increase paper generation by students? Is it possible to be full automation of school fees payment in our school system without a request for paper evidence(s) of payment?

Senate proceedings, one feature of the higher school system are the senate. Senate is statutorily responsible for taking academic decisions an institution of higher learning. The senate consists of professors, academic heads of departments, and directors of academic programme amongst others. Regular and emergency meetings of senate are held to take decisions. Such decisions range from approval of programmes, approval of results, and consideration of Executive approvals. The increasing number of senate members arising from promotion of academic staff to the professorial grade, increasing academic heads of departments and programme has made the membership strength to be increased. The step towards a paperless Senate in Nigeria is a possibility as University State of Maryland writes "The materials for Senate meetings are made available to the public via the Senate website one week prior to each scheduled meeting" [27]. The Delta State University has attempted the paperless attendance system with the introduction of Biometric attendance. The question to be asked is, with adoption of Biometrics in attendance in Senate, why still sign attendance on paper?

The school system in Nigeria has witnessed the full adoption of post-UTME (Unified Tertiary Matriculation Examination) in its admission process. [7] "prospective students travel across borders to seek for information regarding the conduct of the examination. The dependence of paper in publishing information is made students travel these distances. In cases where the application is conducted online (website or portal), candidates are still asked to make copies of these application to be submitted. The case of the Delta State University, postgraduate applications are done on the university portal. On successful completion of the online processes, the prospective candidates' are request to submit

two copies of application papers. Thus, the ever increase in generation of unnecessary records through paper. One can be asked, why the online process if the processes are still tradition paper procedure? As [19] concluded, "paper is easily lost, misfiled or damaged, making it less-than-ideal medium for efficiency. The possibility of a candidate's admission application to be sent to the wrong department or lost in the process is not out of place. The way forward towards efficiency is full adoption of the paperless system in admission process from start to finish.

Management of information in tertiary institutions has been an issue of concern. Departmental board meetings and project defences are done regularly. Notices of meetings are printed (computer usage) and dropped in the staffs information boxes in the department. The increased generation of information (notices, projects, conferences, call for papers, invitation) is worrisome. An application of a technology (SMS) will bring about efficient and effective transfer of same information with adequate feedback. The traditional methods of paper in the distribution of printed messages have been challenged. Some recipients of such notices complain of not receiving such notices of meetings, thus miss out from attending [7]. Is there a way out from this challenge? Is there an appropriate feedback pattern to show such notices are received? What of the proposed recipient is out of town and have not visited the departments to check for such information? Effective adoption of technological innovations in information management is the solution in sight.

Graduates in search of academic transcripts daily crowd the institutions examination and records departments in search of academic records. Such records may be filled few academic sessions and become difficult for such records to be processed as it is poorly or misfiled within the available spaces [8] with little or no labeling. Technologies have been adopted in the Exams and Records unit of institutions. Transcripts are typed with computers. Several copies are printed (increased waste of papers) before the final correct copies is printed. The increased time of generation of the records before processing notwithstanding, these printed copies are still difficult for collection. This has made students miss their admission offers for inability to get their academic transcript within the stated time and deadline. The reduction of paper in transcript generation is possible in this 21st century Nigeria is a thing that's achievable.

Examination in Nigeria institutions has over time witnessed the adoption of technology. School-based examination is gradually reducing the usage of papers. Traditionally, internal examinations are done with booklets which are serially numbered. Each booklet has an average of 10 leaves or pages. The students are expected to write on such sheets. Institutions now have introduced the system of electronic marking and grading of scripts for first-year students. On this trail, the Delta state University, Abraka-Nigeria has successfully carried out 5 years uninterrupted electronic marking of students scripts. This amongst its benefits has reduced paper. Students are now issued one sheet (A4 sized paper) to answer 100 questions. The success encountered maybe a thing to be happy with but, critics have pointed that, this system adopted affects students writing skills as in future years, graduates will be unable to compose full sentences as they are faced with examination based on MCQ (Multi Choice Questions) where one response is sufficient. Others have blamed the system for producing students with high grades as they may copy (exam malpractices increased) by just shading other candidates shaded answer options. While this study is not aimed at justify the system, the system of paperless in this regards have achieved little or no degree of success. Results of students are still printed on paper ranging from 5-100 pages and duplicated in fours. Full paperless can be achieved if technology is fully adopted in result generation.

10. Current CHALLENGES TO ACHIEVING PAPERLESS TERTIARY INSTITUTIONS IN NIGERIA

The journey towards a paperless system starts with taking steps. Digitalization is the drive towards paperless. A shift from the traditional (paper centered) approach to information generation should tend towards technology driven. Digitalization of students records, electronic examination, e-bulletins, e-appraisal system.

The research findings conducted by [7] on communication procedures in tertiary institutions in state owned tertiary institutions in Delta State, Nigeria revealed that; memorandum; admission listings, bulletins; result verification. Senate proceedings; notices, alumni relations, school community, budgeting and staff appraisal processes are mostly traditional means (paper). The assessment of technology tools in

processing these outcomes is rated low. Where available, the institutions websites have bulletins that are outdated (last updated months back), general school information on such websites is not current. The conclusion therefore is, paper process still remains the platform for processing, distribution and storage of information in tertiary institutions in Nigeria.

In going paperless, the benefits are enormous. [11,20,19,7] identified the benefits of technology (paperless) in information delivery in our campuses outlined the following:

- Faster rate of information delivery
- Instant access to information retrieval
- More compact and efficient
- Better processing of information
- Reduction in the overall cost of managing information
- Reduction in paper usage
- Compliance with the 21st century global practice (going green)
- Improved global presence (web rating and ranking of institutions)
- Wider range of information dissemination (web presence)
- Easy and faster feedbacks
- Privacy and security of information (application of technology security-encryption, data classification and data access)
- Savings in the hidden cost associated with paper prints(copier and printer supplies)
- Streamlining efficiency and improving processes
- Easy retrieval

11. AREAS TO GO PAPERLESS

11.1 Establishment Division

[25] the establishment division caters for all personnel matters of the university. Its responsibilities both on the appointment, promotion, (retirement/withdrawal of service) and discipline of staff (junior and senior). As important as the functions performed by this all embracing division of any institution include; receiving and dispatching of emails and papers before and after meetings, photocopying and collation of documents, preparation of notices, agenda papers for meetings and communicating decisions arising from meetings (Delsu,2013). This aspect of increased generation of paper can be considered among the urgent areas to go

"paperless". This will save cost, manpower hour wasted on collation of documents and easy dissemination of decisions.

11.2 Staff and Students' Attendance

Attendance to lectures in any named Higher Institution is a pre-requisite for writing examinations. The Delta State University, Abraka-Nigeria, placed it mandatory for students to attend 75 percent before qualified admittance for examination. The method of attendance is paper-based. This has generated increased paper attendances which may not be found useful during examination as, some attendance pages may be incomplete or improperly filed. What then is the students' fate if denied examination admittance?

Staffs are required by University management to sign attendance at their resumption on the day's duty. This is usually not legally backing as a true state of resumption. Staff resumption times are usually queried as the time stated is not in agreement with the actual time resumed. This challenge on staff lateness or inaccurate entry on resumption time, how effective can it be down?

Technology advances have made answers to troubling questions easily answered. The Biometric attendance among others will help solve the issues of attendance in our school system. This will gear towards the reality of a paperless Higher Education system in Nigeria.

11.3 Examination and Records Department

The examination and records departments in any Nigeria institution of higher learning is charged with the responsibility for processing and issuance of final degree results, academic transcripts and letters of proficiency usually requested by foreign institutions of higher learning [25]. With the increased generation of paper and "existence of acute record keeping problems in universities" [8]. "paperless" should be urgently implemented in its processes. The "plans for better performance" is full computerization (paperless approach) of processes.

11.4 Bulletin Production

[20] "every 2.5 minutes, a ream of paper is ordered at Yale". This may be normal as a

market boosters or increased sales (profit) for the Paper market and sellers of the realm of papers in Nigeria. Bulletin productions in our institutions of Higher learning are official means of disseminating special and regular information to staff, students and the university community. The production of Official bulletins is paper dependent. The rise in information processes has made bulletin produced thrice (3 times) on the average weekly.

If the assertion of [20] on the ream consumption every 2.5 minutes at Yale, it thus can be deduced that, the monetary demand on paper in bulletin production is on the increase. A ream of paper in the Nigeria market is sold at one thousand five hundred Naira (700) (\$3.52 at N: US\$ =198:1) (July 2015 market price). Thus, if Yale University is an institution in Nigeria going by Ngim's assertion, (a working day has 480 minutes), the ream consumption would be, 192 reams of paper a day. Thus, the financial value will be N134, 400 (one hundred and thirty four thousand, four hundred naira equivalent of US\$ 678.79). Why waste money on bulletin production? How accessible is the bulletin to the desired recipients? How adequate are the produced bulletin for the population needing such information?

The Bulletin production should be done solely on the University website. This is a major area to reduce the reams of papers used in information delivery, improved upon the delivery of information, increased the dissemination of information to a wider range of information seekers within and outside the university community and global reach and enable faster means of information dissemination in our school system.

For the institution under study, the Bulletins are issued by the Information and Public Relations Division of the Vice-Chancellor's Office. They are Special (SE) and Regular (RE) volumes produced at an average of 3 Editions weekly. Each volume has an average of one 2(two) pages and 550(five hundred and fifty) copies are produced for dissemination in the three campuses, for staff, students and the University Community. To improve on the wide range of availability of information, the paper-based bulletin should be discontinued while enforcing, the web-based (website-technology adoption) as the means of information dissemination. This will lead to the fast reality of the paperless school system in Nigeria.

11.5 Examination

Examinations in Nigeria Institutions of Higher Education are paper-based. The use of paper in examination can be reduced with better efficiency and effectiveness of the examinations with technology adoption. The Joint Admissions and Matriculation Board (JAMB) have gone a step ahead in adopting 21st century education in Nigeria. JAMB has introduced a new examination writing method. It is called Computer-Base Test (CBT) – [27].

The dream of a paperless examination system is achievable in Nigerian Higher Education system. The success of the JAMB dream was realized in 2015 as JAMB registrar confirms, "we have gone digital in JAMB (paperless). What we are going to do now is to make use of computers and within a week; the results will be on the internet" [28]. Adoption of paperless examination system among other things will save cost in running examinations in Nigeria.

With the fear of the readiness and ability of students in Nigeria tertiary institutions to embrace computers (technology) in examination, the use of the mobile telephony (GSM) introduced in Nigeria over a decade ago has been accepted fully by individual students. Thus, the use of computers in education will pose little or no challenge to students.

11.6 Result Generation

The fate of a student seeing his/her session performance is received with mixed feelings. For some, it's a thing of joy knowing all courses are passed. For others, seeing they have been withdrawn, probating or having to write so many courses again. Student academic records should not be on the notice boards only. The use of the portal result generation system should be effectively adopted. Thus, on logging into the portal, an individual student can see their performance in the subjects registered for the session.

11.7 Staff Appraisal

Staff appraisal in Nigerian universities is eagerly anticipated. It's a season of wishes for promotion to the next stage in the career of the staff. The announcement of the Exercise open is accepted with mixed feelings. Will I be promoted? What went wrong with my last appraisal? This appraisal exercise is mandatory for both

academic and non-academic staff of the institutions of Higher learning in Nigeria. It's an annual exercise. For the non-teaching staff, it is machinery put in place to assess the work and conduct of the staff in the services of the institution. Every staff of the institution whether due for promotion or not must be appraised in a given year. If we must think positive in the light of the paperless possibility, this aspect must be addressed in its present and high demand and usage of paper.

The Delta state university guidelines for the appraisal exercise states "staff that are due for promotion should complete 50 copies of the review and appraisal form (an average of 5 pages) and those who are not due in the year under review are to complete only 15 copies. Who pays for paper wastage? Why demand such high amount of paper from staff annually? What happened to the last year's appraisal papers? Were they stored appropriately or filed in a room?

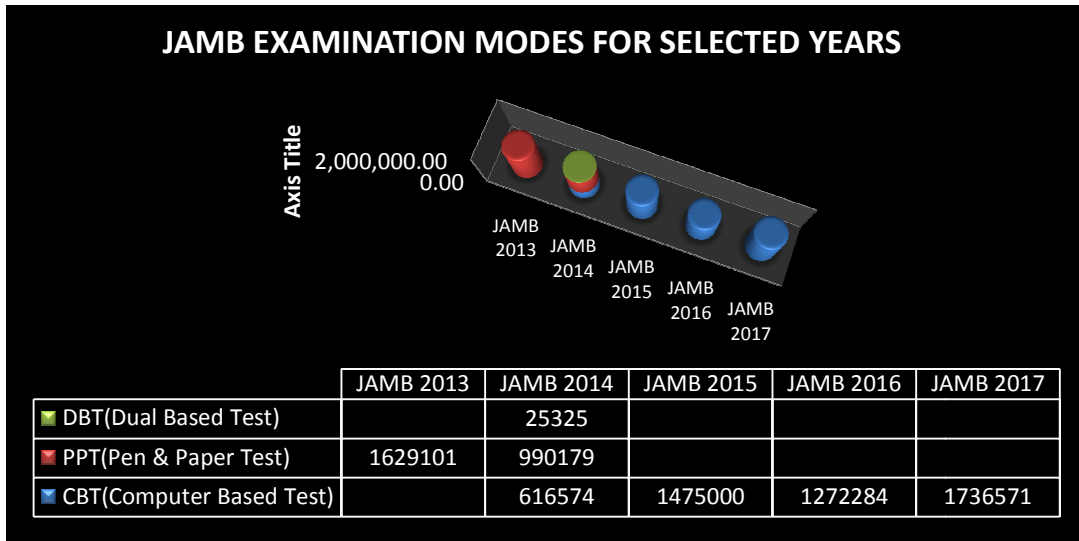


Fig. 1. Examination modes for selected years (Source: JAMB)

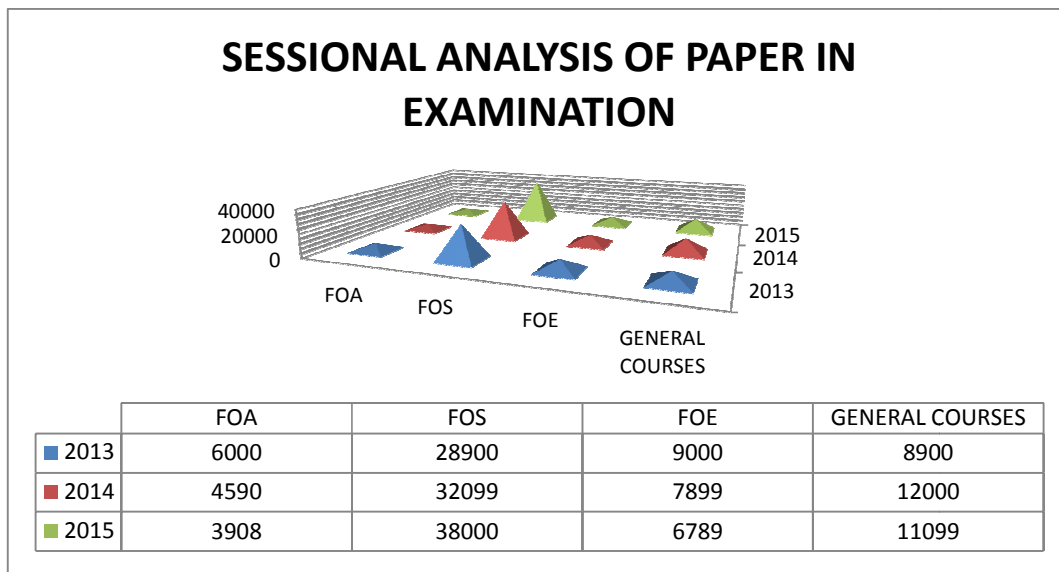


Fig. 2. Sessional analysis of paper in examination (DELSU)

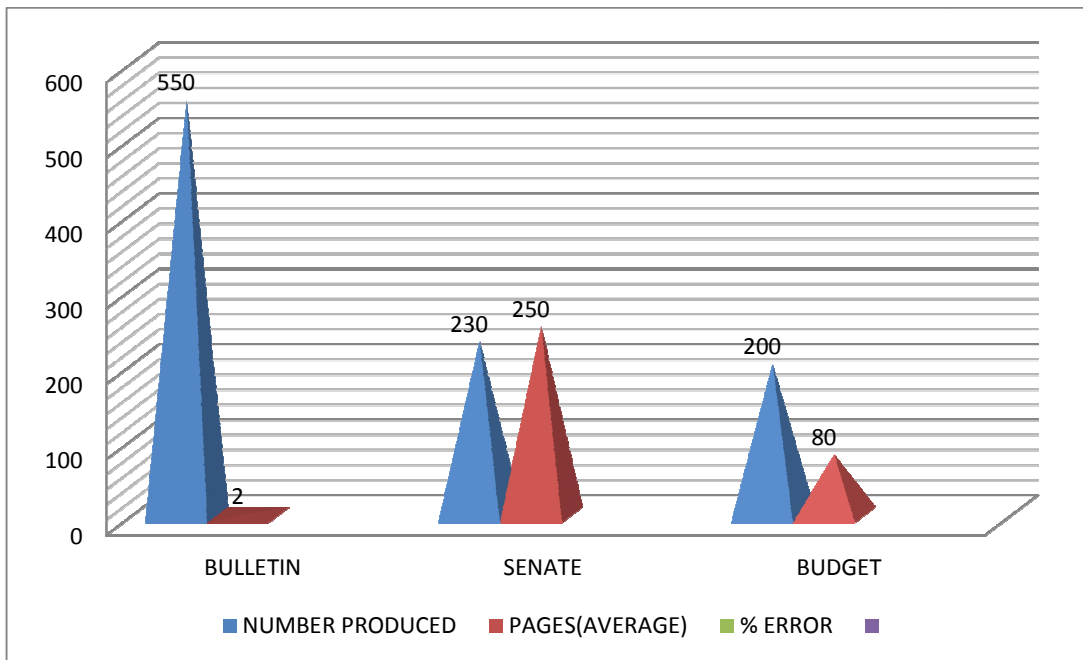


Fig. 3. Paper usage in selected processes

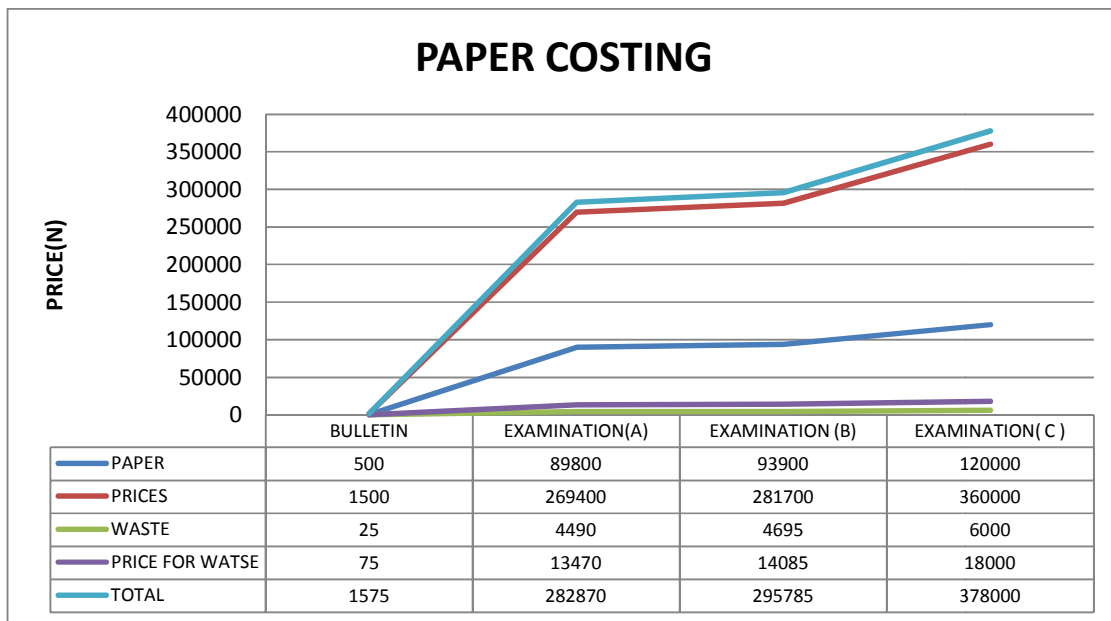


Fig. 4. Financial analysis of paper in selected processes

The paperless staff appraisal system would involve staff filling assessment form on the internet or designed electronic software (e-appraisal) and appraisal process will becoming more coordinated, faster, economical and more confidential in the decision process while reducing paper in its processing.

11.8 Senate Proceedings

The reality of the paperless school system can be enforced in production of Senate proceedings. At the Delta State University, Abraka-Nigeria, a member of Senate is elected automatically on two conditions. The first is been a Professor and

secondly, a member of an academic department or unit (Head of Departments, Directors of Academic programmes, Deans of Faculties, Coordinators of academic programmes). The increasing membership of this all important organ of the school system has also increased generation of senate proceedings.

The proceeding of Senate is documents in paper form of presentation and approved results, considerations of Senate, applications from students (reinstatements, appeal or deferment of admissions), submission of reports of academic committees instituted by Senate, Vice-Chancellors approvals, school calendar and minutes of Senate decisions.

The Study institution at its Senate meeting in May, 2015 has membership strength of 213 (two hundred and thirteen). The proceedings of each Senate meeting have an average of 200 paper communication. This has made it bulky for Senate members to check. From [20] assertion on the ream consumption at Yale University, it can be calculated that, for 213 Senate members using an estimate of 200 pages of paper, at seven hundred Naira (\$3.52 at N: US\$ =198:1), for each meeting, the average of 40 percent of a ream of paper is used by each member for proceedings. Adoption of Technology (slide presentation, electronic proceeding, laptops, and tablets) in senate communications and decisions will make it faster, save time, save funds used in paper processes, go green and conform to 21st century adoption of Technology in communication systems.

12. CONCLUSION

The possibility of a paperless run Higher Education in Nigeria is a reality. The realities of this concept can be achievable within 3(three) months of full implementation with an ever increasing desire to make it possible. The start is now and the shift from paperless is imminent with its potentials. The paperless Higher Education will among its running benefits include; reduction in the cost of processing information, faster and reliable dissemination of information, better results, an acceptance of the reality of 21st century education and following the global going green trend. Full acceptance, adoption and implementation of strategies, plans and procedures to a paperless system will not make people Job-less, productive-less, effort-less, use-less, less-important, less-human in running

information processes within and outside the school system.

The shift from the paper-based information management (generation, dissemination, storage) with its ever-increasing challenges of poor-storage, poor feedback, ineffective dissemination, slow rate of response/delivery, inappropriate means of storage of processed papers and the increase in waste generation should start from the print habit where, one should ask questions before making that print weighting its usefulness and possibility of doing without that print. The time to start now and the means to start is within us.

Paperless is working digitally. It's thus, the application of technological tools in information management (generation, dissemination and storage) with the reduction in paper processes. Unlocking the over-dependence on paper in information processes in our school system can only be achieved with determined efforts by all towards the possibility of a paperless school system with effective utilization of developed technological tools readily available.

Digital application in information process is a shift from traditional processes to more robust systems with technology as the backbone for success. This will enable stress-less and seamless transition for better information management. The use of technology in the management of information is full of positive expectations.

The 21st century citizens are technology bound. Technology in this era is as important as food, water and air. The availability of technology has made things that seemed impossible possible.

They must be a balance between the risk and rewards of changing from traditional methods of information processing to the digital (technology adoption) which is the possibility of a paperless system.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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