

The extent to which universities have embraced technology in service delivery: a comparative study of NUST (Zimbabwe) and University of Venda (RSA)

Njabulo Bruce Khumalo*, National University of Science and Technology, Bulawayo, Zimbabwe.

Charity Baloyi, University of Venda, Venda, South Africa.

Suggested Citation:

Khumalo, N. B. & Baloyi, C. (2018). The extent to which universities have embraced technology in service delivery: a comparative study of NUST (Zimbabwe) and University of Venda (RSA). *World Journal on Educational Technology: Current Issues*. 10(4), 16–24.

Received July 18; revised August 22; accepted September 25.

Selection and peer review under responsibility of Prof. Dr. Servet Bayram, Yeditepe University, Turkey.

©2018 SciencePark Research, Organization & Counseling. All rights reserved.

Abstract

Information communication technologies (ICTs) have greatly impacted the education sector over the years leading to electronic service delivery. Universities all over the world are embracing ICTs, especially the Internet, creating websites, making use of Web 2.0 applications, that is, social networks and moving their services from a manual based to electronic platforms. The study was comparative, looking extent to which the National University of Science and Technology (Zimbabwe) and the University of Venda (RSA) have embraced ICTs in the conduct of business and how this has impacted on their service delivery. Universities have embraced ICTs in different levels, according to their capacity in terms of finances, human resources, institutional capacity and other variables. A combination of web content analysis and a comparative study of the web presence of the two universities was done which revealed that the universities are present on some Web 2.0 applications though not fully exploiting all the functions.

Keywords: Information communication technology, information society, global village, universities, e-learning.

* ADDRESS FOR CORRESPONDENCE: **Njabulo Bruce Khumalo***, National University of Science and Technology, Bulawayo, Zimbabwe. E-mail address: njabulobass@gmail.com / Tel.: + +92 331 3422480.

1. Introduction

The advent of computers, leading to the initiation and growth of information communication technologies (ICTs), especially the Internet, has had an impact on all aspects of life, universities included. This has seen transactions and business shifting from traditional manual basis to electronic transactions, and in the process, this has led to what is now known as the global village. Communication has been made easier and people located in different continents or locations can communicate, do business and even complete studies online without physically going to a university campus. Furthermore, university life has been made easier instead of spending their time queuing to apply for admission, register, get their results and even get books from the library, students can do all these transactions online in minutes. ICTs can be considered as all the technology that facilitates the processing, transfer and exchange of information and communication services (Zinyeka, 2004). In this paper, ICTs specifically refer to networked computers, that is, the Internet and or World Wide Web. The use of the Internet has enhanced service provision by academic institutions. University admission application, registration, campus residence booking, display of examination results and timetables, library services like electronic resources, catalogues and online bookings for books are some services that are now provided online.

The Internet is a mechanism for information dissemination and a medium for collaborative interaction between individuals and their computers without regard for geographic limitation of space (Leiner, 2000; Singh, 2002). According to Evans (1996), content created on the Internet ranges from simple e-mail messages to sophisticated 'documents' (sites) incorporating sounds, images and words. Higher institutions of learning have succumbed to the winds of change and adopted ICTs and this has brought about virtual realities, ease of communication between these institutions and the students and or other stakeholders. Unlike back in the days when students and even prospective students had to make their way to the university's physical location, in the technology-centred world, they can interact with the universities from remote locations through the Internet. Furthermore, Obeng (2004) postulates that a lot of services in universities are now provided online and the use of ICT can to a greater extent reduce the pressure on university admission process and thereby make it more accessible to many.

Obeng (2004) also notes that universities are becoming more and more innovative and creative in the use of the Internet to provide services and reach out to a larger community base than they did before the Internet came into being. Another application of ICT is that ideas could be shared online and lecturers could enhance their skills remarkably through the creation of online communities. However, it must be emphasised that the presence of ICT in the education sector is not sufficient, there is also a great need for the development of good and relevant quality content (Devi, Rizwaan & Chander, 2001). The impetus is on different departments, units and sections within each and every university to strategically exploit the Internet in order for services to be flexible, convenient and efficient.

Kumar and Kaur (2005) highlight that the current information revolution and increasing impact of information and communication technologies has modernised the process, learning and research in most universities. Many universities have adopted ICTs and dedicated resources to the application of ICTs yet few have really looked at the extent to which ICT has augmented or diminished service delivery. To Tsokota and von Holmes (2013), the power of ICT lies in the unprecedented growth of its worldwide network and the ability to connect computers and several individuals without any of the barriers of geographic space. This paper studies the web presence and use of the Internet in service provision, in general, by two universities, one in Bulawayo, Zimbabwe and the other in Thohoyandou, South Africa.

2. Methodology

The research was comparative in nature and also applying qualitative web content analysis, assessing the use of ICTs and or the web by the National University of Science and Technology (NUST) and University of Venda (UNIVEN). Qualitative content analysis is similar to textual analysis in that it is primarily interpretive in nature and often does not utilise statistics for data analysis. The researchers visited the websites of both universities, analysed the information or content, looked at inferences and similarities. The aim was to identify the extent to which these universities make use of the web to provide services and to reach out to the community and in the process, enhance service delivery.

3. Background of UNIVEN and NUST

UNIVEN, as stated on the university's website, situated in Thohoyandou in Vhembe District of Limpopo Province, opened in 1982 to cater for the then Homeland of Venda. UNIVEN is the only university in the Vhembe District, which covers an area of 21,000 km and is home to approximately two million people. The National University of Science and Technology is located in the second capital of Zimbabwe, Bulawayo. On the 8 April 1991, NUST opened for the very first time with 270 students.

The study was comparative in nature, looking at the extent to which each university exploited different Internet applications in providing services to its different clients and generally leading communities in adopting such technologies. These universities have websites and are making use of Web 2.0 applications and other Internet applications which the researchers visited, reviewed and analysed to make a comparison.

4. Applications used by NUST and UNIVEN

Web 2.0 or 'social media' includes blogs, social network sites (Facebook), Online Video sharing/posting (YouTube), Online Photo sharing/posting (Flickr) and Microblogging sites (Twitter) inter alia (Gibson, 2002). Staff and students are embracing Web 2.0 technologies because they are so easy to download, install, experiment with and use in order to quickly engage with colleagues and share the latest information (Kelly, 2010). Trending social media platforms include Facebook, Twitter, Instagram, YouTube, Pinterest, LinkedIn, Tumblr, GooglePlus, FourSquare and Flickr. NUST and UNIVEN are active on Facebook, Twitter, Flickr, YouTube and Flickr. A visit to these applications revealed a presence of these universities in some of these web application technologies and a summary of the findings is presented below.

5. YouTube

Universities are becoming more and more innovative in exploiting the Internet and reaching to a lot of students and people. YouTube is one such platform that these universities are making use of. YouTube is a video sharing website that has gained popularity in recent years and there is a growing trend for making educational videos available as well. Many leading universities are creating 'channels' (organised video collections) for their exclusive use (Cooperative Extension Technology Services, 2002). Universities create channels on YouTube and upload lectures, tutorials, workshops, seminars, graduation ceremonies and other special events that visitors can view or download. A search conducted on YouTube revealed that NUST and UNIVEN have some of their graduation ceremonies, performances by university choirs, grand openings and other events like the launch of the NUST institutional repository. However, lectures and/or presentations and other presentations related to research, academic content for both universities were not present on YouTube at the time of conducting this study. Furthermore, a look at websites of the universities under study led to useful social media links. NUST has a YouTube channel that it created and it had 33 subscribers and 1,200 followers at the time of conducting the study. UNIVEN's YouTube channel, however, was generated automatically by YouTube's video discovery system and this, therefore, means it was not generated by

the university for purposes of marketing, outreach or advertising its products and services. Both these universities, therefore, need to exploit YouTube in uploading audio-visual material that students and other researchers can make use of. UNIVEN also needs to create a YouTube channel of its own.

6. Facebook

Facebook is a social network platform that provides for interaction usually on an informal basis. UNIVEN and NUST are making use of Facebook in communicating with their students and stakeholders. NUST had 7,361 'likes' and 208 people 'talking about this', whereas UNIVEN had 3,244 'likes' at the time of conducting this study. A look at the 'About' section of both universities reflected that UNIVEN has more information as compared to the NUST 'About' section. UNIVEN sheds light on products on offer, that is, degree programmes, whereas NUST does not provide such information. The UNIVEN 'about' section also includes a description of the university, awards and some informative detail about the university and its history. These Facebook pages are valuable and used by these universities to make announcements, celebrate achievements they make and other important information that includes links to download application forms inter alia. Also, included are deadlines for application and registration.

7. Presence on LinkedIn

LinkedIn standardises information entered by users into predefined 'Profile Headline', 'Summary', 'Education', 'Company', among other things categories. Schaffer (2009) notes that in addition to this huge database of information, the platform also provides an awesome search tool to allow one to pinpoint the person they are looking for depending on a number of very specific factors. UNIVEN has a link to its LinkedIn profile, which at the time of conducting this research had five members. NUST had neither link to LinkedIn, on its website nor did it have a LinkedIn profile that it created on its own, at the time of conducting this study, the only LinkedIn profile for NUST was created by LinkedIn and is not endorsed by or affiliated with the university. NUST, therefore, needed to create a LinkedIn profile and UNIVEN needs to grow the number of its members. LinkedIn goes a long way in connecting professionals and thus, will go a long way in connecting the professionals in these universities and other professionals based elsewhere.

8. Twitter

Most universities have recognised the importance of Twitter and one study concluded that 84% of universities were on Twitter, and some schools like Harvard have amassed thousands of tweets and hundreds of thousands of followers (Genius Recruiter, 2012). UNIVEN and NUST are making use of Twitter as evidenced by their presence on this platform. At the time of conducting this study, statistics of tweets, following and followers for the two universities were as follows:

Table 1. Use of Twitter by NUST and UNIVEN

	UNIVEN	NUST
Tweets	44	96
Following	0	12
Followers	268	570

Compared to UNIVEN, NUST seemed to be trending in the number of tweets, following and followers. Therefore, it can be concluded that NUST was more active on twitter than UNIVEN.

9. Flickr

Flickr is a popular photo-sharing and hosting service which supports an active and engaged community where people share and explore each other's photos and you can share and host hundreds

of your own pictures on Flickr without paying a dime (Lowensohn, 2007). NUST and UNIVEN both have links to their Flickr accounts which are flooded with photographs related to activities taking place in these universities.

There are a number of ways, apart from Web 2.0 applications, in which universities can make use of the Internet to reach out to more people and even educate and empower remote communities, one such means is by providing online learning.

10. Distance online learning (online degrees)

In a bid to expand their clientele base and influence, universities have embraced the notion of online learning. With online learning, students can apply, register, conduct lectures, submit assignments, write examinations, get examination results and graduate without physically going to the university. Watson and Kalmon (2005) state that online learning implies education in which instruction and content are delivered primarily over the Internet. The term does not include printed-based correspondence education, broadcast television or radio, videocassettes and stand-alone educational software programs that do not have a significant Internet-based instructional component (U.S. Department of Education Office of Planning, Evaluation and Policy Development Policy and Program Studies Service, 2010). The Colorado State University (n.d.) highlights that classes designated as online are delivered to students worldwide via the Internet and require that student have access to an adequately equipped desktop computer or laptop. A number of universities are currently offering online degrees and in the process reaching out and influencing a lot of geographically dispersed people. Online learning can be especially useful to universities that want to increase their intake but lack the infrastructure to house a lot of students. Such a facility also acts as an aid in providing education to prospective students who are based far from the campus and especially those who are working and do not have the time to attend lectures on campus. NUST and UNIVEN do not offer any online degree programmes. At the time of conducting this study, NUST and UNIVEN had no online learning facility for international students. This, therefore, means that prospective students have to find their way to their campuses; otherwise, they cannot get qualifications from these universities.

The NUST website has a link to its online facility for its students who, however, are not on distance learning or online degree programmes, but for those who are either conventional, parallel or on block release. UNIVEN's Director of the Centre for Higher Education Teaching and Learning highlighted in December 2013 that the university was introducing e-learning. The e-learning facility is functional at NUST and at UNIVEN it is being rolled out. At the time this study was conducted, NUST was at an advanced stage as compared with UNIVEN, in line with e-learning.

11. A study of website content of UNIVEN and NUST

Websites are very important in the twenty-first century, especially in the global village as they contribute to the visibility of organisations. The researchers also visited and surveyed websites of NUST and UNIVEN to see the content and view some of the services offered by the universities as reflected on their websites. Areas of focus included information for international students, e-recruitment, online registration and application, library services, display of examination results online. These and other services will be discussed below.

12. International students' application

The homepages for both universities do not have a lot of information with regards to international students' application. UNIVEN has a page dedicated to international relations which also highlights on attending to foreign students but both websites are not informative when it comes to international students' application, admissions, information on visas and other requirements. NUST envisions being a world-class centre of excellence in teaching, research, innovation and entrepreneurship for

sustainable development. Therefore, there must be a reflection of that in their website, where international student enrolment must be reflected on the website. With some universities, a homepage is usually dedicated to providing information on international students' registration, fees and testimonials from other international students studying in the particular university. However, with the two universities under study, that is not the case. One has to search to find links that reflect international students' fees. The public's satisfaction in finding the application form, filling it out, submitting it online and receiving a response, confirmation or feedback + is fundamental to the success of the university's e-recruitment (Chiung, Lee & Humphrey, 2010). Both universities have to improve, especially with regards to information provision for international students. Liu (2008) highlights one of the problems that most academic institutions has is that their websites layout provides information mainly for domestic students.

13. E-recruitment

Chiung et al. (2010) highlight that providing general information about the institution is fundamental in e-recruitment and today universities act much like corporations while marketing such products as academic programmes, majors and services. As stated earlier on, universities all over the world have provisions for e-recruitment where prospective students can apply online using electronic forms, guided by automatic responses. Prospective employees can also be recruited electronically, where there are electronic forms and automatic responses to guide the whole application process. This service is of great importance as it eases and smoothens the application process. At the time of conducting this research, UNIVEN and NUST did not have such facilities and that would mean that all persons wishing to apply would have to download forms, complete them and post them back to these universities. Prospective employees could only submit their application forms in paper form. NUST and UNIVEN both needed to improve on e-recruitment as they move towards efficient and standard service delivery in the information society. Students and other visitors to the university's website might be in need of external supervisors, especially in line with Doctorates (Ph.D.) studies and Master of Philosophy (MPhil) studies. A look at the Moi university website showed that in the downloads section, it has downloadable curriculum vitae (CV) for academic staff. Prospective students wishing to find supervisors can make use of such CVs in making their choices. Even upon getting supervisors and or external examiners, they can download their CVs rather than always consulting the supervisor requesting for their CV. Such a facility was not provided for by both UNIVEN and NUST.

14. Promotion of research output

Both NUST and UNIVEN reflect on research, however, during the time of conducting this research, the UNIVEN website had links to different faculties' research output by different academics in each and every faculty. This is of importance as it makes research output at the university visible and visitors of the website will get to credit lecturers and other academics even before interacting with them. Research is of importance and a core function of universities and thus, such information is of importance to the university first, stakeholders and other concerned parties. A look at the NUST Faculty or departmental links did not produce lists of publications. NUST, however, has NuSpace, an institutional repository that is managed by the library and makes research papers, journal articles, conference papers, accessible free of charge. However, a list of research output by departments as in the case of UNIVEN can go a long way in guiding users who have no time logging onto the NUST library page, then to the Nuspace. In most instances, visitors will not even bother to find out what Nuspace is all about.

Most academics at NUST do not submit their works to NuSpace and thus, a faculty or department list will go a long way in making research output visible.

15. Accommodation and residence

NUST and UNIVEN enrol students from different parts of their respective countries, and therefore, one would expect information in line with accommodation on and off campus. The UNIVEN website highlights the availability of residence application forms online, whereas this facility is not available on the NUST website. In the technology world, prospective students and other parties concerned must not be kept in the dark about some of these key necessities like accommodation. Some students would be coming far from places that are remote, without relatives close and they must be made aware of accommodation arrangements, bookings and availability even prior to their arrival at the physical location of the university campus.

16. Notice on living expenses in and around campus

A look at a number of developed universities' websites revealed that they include details of living expenses in their respective cities. This goes a long way towards assisting students budget and gauge if they can afford to survive for the period of their study. Such estimates and information were not made available on websites of both these universities under study. Students usually register and upon arriving at the universities, discover that living expenses are very high and this contributes to dropouts or even students failing to cope and dropping out or even underperforming. Such relevant information is not made available in websites of both universities.

17. Services for staff members

The Internet has brought about convenience to the workplace in remarkable ways. The download section of the Moi university website has important downloads for staff members. These downloads include all leave forms, claim forms, medical forms and accounts related ones. Instead of members of staff going all the way to Human Resources or departmental offices to get these forms, they can download them online. ICTs must make life easier and avoid monotonous and unnecessary procedures. A look at UNIVEN and NUST website revealed that both universities do not have such downloadable forms that members of staff can utilise. The Human Resources departments of these universities can learn from the Moi University Human Resources department which has taken advantage of ICTs to automate some of its services.

18. Library services

Libraries are using modern ICT to automate their core functions, implement efficient and effective library cooperation and resource sharing through networks (Tiwari & Sahoo, 2013). Back in the days, students had to be physically present in a library to interact with finding aids, make bookings for books that were usually scarce. ICTs have brought about changes to that as students can consult the library and interact with resources therein from remote locations. This has seen the rise in subscriptions by university libraries and usage of online journals and e-resources. University libraries for NUST and UNIVEN have library catalogues online and link to journals they subscribe to. With this development, students, academics and researchers can access a lot of journal articles and study material. Libraries for both universities are present online and are developing services to meet different clients and stakeholders. The libraries are not as virtual as other developed countries' libraries are but they provide sources through e-resources and e-journals online. The libraries have catalogues which users can interact with online before. Furthermore, NUST has the Nuspace institutional repository, which accommodates publications or research done by the NUST family, and its digital library which has links to dissertations and theses, NUST publications inter alia.

19. Conclusion

The research sought to find out web presence of NUST, a university in Bulawayo, Zimbabwe and UNIVEN, another university in Venda South Africa. The websites of these universities were visited and searches on the Internet were done to find out their presence on different Internet platforms and their presence in social networks in. The results showed that these universities were adopting electronic service provision such as e-learning, provision of downloadable application forms, online registration inter alia. UNIVEN and NUST are also participating in social networks, though not fully exploiting these platforms to further their mandates of educating and imparting knowledge on their communities. The study concluded that more and more departments within these departments, for example, the Human Resources department must also exploit such technologies in a bid to make life easier for prospective employees and its employees. Information for international students, including online application, was lacking in both universities; and therefore, they needed to improve on that note. A look at the websites of both universities also showed that recreational activities like sports were not represented enough and had neither homepages nor images dedicated to them.

References

- Chiung, W., Lee, T. D. & Humphrey, V. F. (2010). *Academic Institutions' electronic recruitment efforts on academic diversity: a comparative analysis of websites of US, UK, and South Korean Universities*. Prism. Retrieved from http://www.prismjournal.org/fileadmin/Praxis/Files/Journal_Files/Chung_Lee_Humphrey.pdf
- Colorado State University. (n.d.). *Online distance learning*. Retrieved from <http://www.online.colostate.edu/onlinedistance/online-learning.dot>
- Cooperative Extension Technology Services. (2002). *YouTube and cooperative extension*. Retrieved from <http://www.uwex.edu/ces/techservices/helpdesk/CooperativeExtensionYouTubeChannel.pdf>
- Devi, S., Rizwaan, M. & Chander, S. (2001). ICT for quality education in India. *International Journal of Physical and Social Sciences*, 2(6), 542–554.
- Evans. R. (1996). Brave new world. *BBC Focus on Africa (January–March)*, 56.
- Genius Recruiter. (2012). *How universities are using twitter to recruit students*. Retrieved from <http://geniusrecruiter.com/2012/04/19/how-universities-are-using-twitter-to-recruit-students>
- Gibson, R. (2002). *Workshop in advanced techniques for political communication research: Web content analysis session*. Retrieved from http://www.elecDEM.eu/media/universityofexeter/elecDEM/pdfs/amsterdamwksp/Web_Content_Analysis_Rachel_Gibson.pdf
- Kelly, B. (2010). *Use of web 2.0 in Australian universities*. Retrieved from <http://ukwebfocus.wordpress.com/2010/01/26/use-of-web-2-0-in-australian-universities>
- Kumar, R. & Kaur, A. (2005). Internet and its use in the Engineering Colleges of Punjab, India: a case study. *Webology*, 2(4), 1–22.
- Leiner, B. M., Cerf, V. G., Clark, D. D., Kahn, R. E., Kleinrock, L., Lynch, D. C., ... Wolff, S. (2000). *A brief history of the Internet*. Retrieved from <http://www.isoc.org/internet/history/brief.shtml>
- Liu, M. (2008). *Content and design for international students: a content analysis of US university websites*. In Proceedings of the International Communication Association Annual Conference, San Francisco, CA. Retrieved from http://www.allacademic.com/meta/p173264_index.html
- Lowensohn, J. (2007). Newbie's guide to Flickr. Retrieved from http://news.cnet.com/8301-17939_109-9703620-2.html
- Makerere University News Portal. (2013). University of Venda courts Makerere University. Retrieved from <http://news.mak.ac.ug/2013/12/university-venda-courts-makerere-university>
- Obeng, T. K. (2004). Practical application of ICT TO ENHANCE University education in Ghana. Retrieved from <http://www.modernghana.com/news/114137/1/practical-application-of-ict-to-enhance-university.html>
- Schaffer, N. (2009). *What is LinkedIn and why should you join*. Retrieved from <http://maximizessocialbusiness.com/what-is-linkedin-and-why-should-you-join-841>

Khumalo, N. B. & Baloyi, C. (2018). The extent to which universities have embraced technology in service delivery: a comparative study of NUST (Zimbabwe) and University of Venda (RSA). *World Journal on Educational Technology: Current Issues*, 10(4), 16-24.

Singh, A. M. (2002). The Internet: strategy for optimum utilization in South Africa. *South African Journal of Information Management*, 4(1).

Tiwari, B. K. & Sahoo, K. C. (2013). Infrastructure and use of ICT in University Libraries of Rajasthan (India). *Library Philosophy and Practice*, 2013(paper 883), 1–16.

Tsokota, T. & von Holmes, R. (2013). ICT and the turning around of the Zimbabwean economy. Proceedings of International Conference on ICT for Africa 2013, February 20–23, 2003, Harare, Zimbabwe.

U.S. Department of Education Office of Planning, Evaluation, and Policy Development Policy and Program Studies Service. (2010). *Evaluation of evidence-based practices in online learning: a meta-analysis and review of online learning studies*. Washington. (Online). Retrieved February 15, 2017, from <http://www2.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf>

Watson, J. F. & Kalmon, S. (2005). *Keeping pace with K–12 online learning: a review of state-level policy and practice*. Naperville, IL: Learning Point Associates. Retrieved from http://www.learningpt.org/pdfs/tech/Keeping_Pace2.pdf

Zinyeka, G. (2004). The applications of information and communication technologies in higher education, in less developed countries. *Zimbabwe Journal of Science and Technology*, 4(1), 11–18.