FIFTY YEARS ON: THE COMPUTERISATION OF THE UNIVERSITY OF ZAMBIA AS AN ASPECT OF SOCIAL CHANGE: THE PAST, PRESENT, AND FUTURE

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Abstract

This paper discusses computerisation of the University of Zambia as an aspect of social change and the social impact that this technological change has had on academic and support staff, students and the organisation as a whole. The paper uses the Diffusion of Innovation Theory by Everett Rogers to discuss the computerisation of the University of Zambia. There is no doubt that the computerisation of the University of Zambia has created a major impact and change on organisational efficiency and effectiveness as well as enhancing people's work standards. However, the paper recognises challenges inherent in this process of change. These include underutilisation of computer applications by staff, and a highly centralised user support system. The paper ends by discussing the implications of this computer-based technological change for the authorities.

Keywords: Diffusion of Innovation Theory, Skills, Computerisation, Social Change

Introduction

Change is a phenomenon that characterises human nature. All societies have the potential to change; sometimes this requires that they give up old and tested methods of conducting business in favour of new ones. Indeed, the rapid change taking place in a given society often requires that new ways of doing things, backed by technology, be developed and incorporated in existing systems. Indeed, technological change impacts both the organisation as a whole and the individuals that comprise it and the ways in which they react to change. However, as Parsons *et al.,* (1991) have argued, the outcome of change in the workplace is dependent upon the behavioural choices employees make regarding the learning and use of technologies that are being introduced. As others have argued, there is no dispute over the fact that technology brings far-reaching and fundamental changes in our social set up. Today, there is no aspect of human life that has not been influenced by technology. Therefore, technology is a very important factor in social change.[1]

By technological change, the author is referring to the introduction of new equipment, hardware, software, and so on, which necessitates employees learning how to operate new equipment and how to integrate it into their ongoing work routine. The

[1] (Unknown-Science, Technology, and Change; 17).

concern of this article is with the process of change as it is reflected socially in actual work practices among employees. According to Crowley and Heyer (2011), cited in Barkan (2016), technology is a source of social change. Changes in technology can alter other aspects of society. Social change refers to the transformation of culture, behaviour, social institutions, and social structure over time (Barkan, 2016). Macionis (1987: 615) has defined social change as 'the transformation in the organisation of society and in patterns of thought and behaviour over time.' This social change comes about through processes and events that are either internal or external to society.

In view of the above proposition, this article examines the computerisation of the University of Zambia (UNZA) by the University Administration. This was done soon after the University was opened in 1966. In doing so, this article explores the interface between computers and the University of Zambia community and attempts to show how technological change as an aspect of social change can alter individuals' and institutional ways of doing things.

Brief History of the University of Zambia

The University of Zambia (UNZA) is the oldest university in Zambia and was established on 24 October, 1966, by the Government of the Republic of Zambia. The University of Zambia's main campus is situated along the Great East Road in the eastern part of Lusaka. Its subsidiary campus, which houses the School of Medicine, is located at Ridgeway within Lusaka. The University of Zambia was established in order to help meet the human resource needs of the country. The general purpose of the University was to direct courses and research particularly towards meeting national development, with special concentration initially on teacher-training, administration, social and legal studies, agriculture and technical education. It was to be an autonomous institution empowered to award its own degrees and other qualifications. Specifically, the purposes of establishing the University of Zambia were:

(a) To provide and recognise regular courses of instruction in the Humanities, Sciences and other branches of theoretical and practical learning of a standard required and expected of a university of highest learning,
(b) To secure the diffusion of knowledge throughout Zambia,
(c) To promote research and the advancement of science and learning, and
(d) To promote the social, cultural and economic development of Zambia.[2]

By 1998, the University of Zambia had a staff establishment of about 568 academics and about 1,523 non-academic staff. By 2016, this had increased to 725 academics and 3,000 non-academic staff respectively (UNZALARU, 2016) with a student population of about 28,000 registered for the 2016/17 academic year (CICT, 2016; Mwase, 2016; personal communication) from the initial 330 students at Independence in 1964.

[2] Ministry of Education. The Relevance of Higher Education Programmes. Accessed on 02/10/2010Fromhttp://www.moe.gov.zm/index.php?option=com_content&task=view&id=85&Itemid=145

The University of Zambia Computer Centre and Centre for Information and Communication Technologies (CICT)

At the centre of this discussion on the computerisation of UNZA as an aspect of social change, are the operations of the Centre for Information and Communication Technologies (CICT), formerly known as the Computer Centre. From its inception, the Computer Centre was mandated to keep student records, personnel and ledger files as well as the processing of Grade 12 examination articles in conjunction with the Cambridge University of the United Kingdom. Later, the University, through the Computer Centre, changed the model of computers from IBM computers to ICL computers. At this stage, all the files were shifted from the former to the latter. One more function, that of storing payroll information, was added to the previous functions. In 1995, the computer network was extended to include student finance and student records. The main computer framework was decentralised and all the departments of the University were computerised (CICT, 2016).

With the increase in student and staff numbers, it became inevitable to broaden the operations and mandate of the Computer Centre. Consequently, to accommodate the expanded mandate, the Computer Centre was transformed into the Centre for Information and Communication Technologies, in 2008. The CICT has a chain of connections within the University. These include the University Library, the Institute of Distance Education (IDE), the Institute of Economic and Social Research (INESOR), and all the nine Schools in the University.

Theory of Innovation Diffusion

In the early 1960s, Everett Rogers, a professor of communication studies argued that it was possible for an innovation, be it an idea or a technology, to be completely absorbed into society. From this observation, Rogers developed the diffusion of innovation theory and published it in his book titled *Diffusion of Innovations.*[3]

This theory has been used successfully in many fields including communication, agriculture, public health, criminal justice, social work, and marketing.

According to Kaminski (2011), the Diffusion of Innovation Theory was first discussed in 1903 by Gabriel Tarde and later by Ryan and Gross before Everett Rogers made the theory popular as it is today. Sahin (2006), citing Medlin (2001) and Parisot (1995), argues that Rogers' diffusion of innovations theory is the most appropriate for investigating the adoption of technology in higher education and educational environments. Rogers' diffusion of innovations theory is a combination of two concepts, namely; innovation and diffusion. An innovation is an idea, practice, or object that is perceived as new while diffusion is a process whereby innovation is communicated through certain channels over time, within social systems. According to the diffusion of innovation theory, innovations should be widely adopted in order

[3] Accessed 9th December, 2016- from http://study.com/academy/lesson/diffusion-of-innovation-theory-history-examples.html. This book was published in 1962

to attain development and sustainability. Aess *et al.,* (1988) define diffusion as 'the process by which new ideas, actions, technology, beliefs and other items of culture spread from person to person, group to group, and society to society.' Kaminski (2011: 1) states that 'in simple terms, the diffusion of innovation refers to the process that occurs as people adopt a new idea, product, practice, philosophy, and so on. In short, diffusion facilitates the transmission of an innovation.

There is speculation about the social impact when new ICT is to be planned and developed (Kling, 2000 cited in Lubbe, Bopape, and Klopper 2010). The 'impact' that the introduction and use of IT may have on an organisation, on work and on the users in an organisation can either be of a technological nature, that is often explicitly known; or of a social nature, which is usually not easily identifiable as stated by Kling (2000), cited in Lubbe, Bopape and Klopper (2010). This article examines the impact of both angles.

The next section discusses the social impact, or consequences, both positive and negative, intended or unintended, of the computerisation of the University of Zambia.

Impact of Computerisation (Intended Consequences of Computerisation of the University of Zambia)

Educational institutions are always searching for better ways to impart knowledge in their learners and serve them better. To improve service delivery, the effective and efficient dissemination of technological innovations is crucial. The impact or consequences of the computerisation of the University of Zambia is summarised in the acquisition, storage, organisation, retrieval, processing, manipulation, interpretation, dissemination and transmission of information within and outside the University.

Any discussion of the social consequences of innovation must labour to demonstrate the benefits of certain ways of doing things over the previous ways of doing them. This article does just that by looking at a number of areas and showing their relative effectiveness. These claims of relative effectiveness compared to old ways of doing things are accordingly supported by research citations from around the globe. Therefore, studies of social change and transformations require some kind of historical perspective (Kling,1991).

Training and Job Creation

The decentralisation of the main computer network, coupled with the computerisation of all the departments of the University after 1995, gave rise to the need to train personnel within the University in the use of computers. In order to equip both academic and non-academic staff with the knowledge of computers, the Computer Centre started running training sessions for both academic and non-academic staff.

Without doubt, computers offer various skills in various fields. Training individuals and groups of individuals and helping them to acquire skills such as the ability to use new computer systems represents the social effects of new technologies. The computerisation of the University of Zambia has responded to the need over

the years for personnel at different levels to be trained in different areas of computer application and usage. The CICT has made a significant contribution in this regard. The courses the CICT offers include International Computer Driving License (ICDL), an internationally recognised certification that equips one with skills in MS Word, Excel, PowerPoint, Access, IT Security, Computer Essentials, and Online Essentials. Others are AutoCAD 2D and 3D, Networking, Website Design and the Statistical Package for Social Sciences (SPSS). In so doing, the Computer Centre has contributed to computer literacy in the nation and beyond. These skills that learners acquire at various levels help to contribute significantly to organisational performance and national development.

The clientele has traditionally been UNZA staff but increasingly non-UNZA clientele is being trained through short courses by the staff of the CICT thereby contributing to computer literacy within and outside UNZA. As a matter of fact, when obtaining a job, the labour market prescribes minimum education levels in computer literacy as the labour market does away with the old typewriters.

Innovations vary in the extent to which they offer easily observed costs and benefits compared with existing ideas or practices. According to Kaminski (2011:3), 'one of the key characteristics of an innovation is its relative advantage which refers to the degree to which the innovation is perceived as better than the idea before it. In other words, how productive or efficient, or how does it improve on existing systems and practices.' In terms of training and job creation, previously, work such as academic work like typing of examination papers was done by secretaries using typewriters. This was time-consuming and potentially increased the risk of examination leakages as more than one individual was involved in processing the examination.

Andrews (2005) has stated that unintended consequences are not always negative, adding that computerisation has led to the creation of new, unexpected professions. This has been the case at UNZA where it is evident that this process of computerisation has generated jobs for staff not only to train others in the use of computers but others have had to be employed to manage the expanded computer network within the University. Ancillary jobs have sprung up that include computer programmers, and other types of computer scientists.

Efficiency and Increased Output

Kaminski (2011) states that one of the key characteristics of an innovation is its observability, which refers to the degree to which the results of an innovation are visible to potential users. With specific reference to UNZA, the benefits are many. In the example given above regarding examinations, efficiency is introduced as multiple lecturers can process their examinations at once. Previously, almost without exception, secretaries did all the typing and academic staff had to wait upon secretaries for their work to be typed. The computer has increased the speed of typing work, particularly long manuscripts, not to mention its other advantages such as spell checks compared to a manual typewriter. This has brought a noticeable difference to many aspects of our work lives.

Efficiency has brought about a great reduction in the number of simple, repetitive jobs, thereby saving time as jobs are now done at a much faster rate than previously. The new computer system affects the ways and the rate at which work is done. Indeed, computerisation has brought about massive gains in efficiency and productivity. As Liffick (1995; 2) states, 'computers are increasingly able to perform complicated tasks more cheaply and effectively than people.'

With the training offered to end users as indicated above, much benefit has been realised from the computerisation of UNZA. A major impact of computerisation on staff and students is that they are likely to develop an awareness of many ways for speeding up their work. Some other key outstanding positive impacts of the introduction of computers is attributable to their ability to assist in getting things done quickly and increasing their ability to experiment with new ways of doing things. In those areas where there is much demand for speed in processing work, the computer can be a potent instrument in promoting efficiency and increased output. This is highly desirable in a changing world which is increasingly placing great value on speed and accuracy. The amount of work done within a specific period of time by computer users has significantly improved due to easier and quicker ways of transmitting information and conducting transactions. For example, with the use of the computer, there has been the optimisation of service delivery in the preparation of accounts balance sheets, student records, and personnel files. Further, the computerisation of the University of Zambia has led to the impartation of skills and knowledge to secretaries which has enabled them to carry out duties and jobs required by the institution and the society. By acquiring the skills of using computers, secretaries are able to perform multiple functions easily and quickly. Clearly, the skills brought by computer literacy equip users with the capacity to contribute significantly to both individual and organisational performance.

With the introduction of computers, UNZA employees are able to process and retrieve information faster than before. As a technological innovation, the computer has easily diffused into UNZA with its easily noticeable advantage of enhancing efficiency. It has been generally easily diffused because it is relatively simple to determine that it is more efficient than the manual system of running an institution. This development has resulted in efficiency in the operations of the University. Efficiency has brought about a great reduction in the number of simple, repetitive jobs, thereby saving time as jobs are now done at a much faster rate than previously.

Accessibility of Information and Communication

The University of Zambia has benefited immensely, just like other institutions, from the availability of, and access to the vast quantities of information and communication. It is not farfetched to infer from experience and observation that before the computerisation took effect, clerks probably took longer to process financial reports because this had to be done manually, unlike computers which are increasingly able to perform with greater precision and efficiency such basic accounting as general ledger and accounts

payable than people.

Additionally, information is now available to an unprecedented number of people who easily and rapidly share it on a global scale. Since the ability to create and collect data is growing exponentially, so too is the generation of information that can be synthesised from this data, thereby making information available to an unlimited number of people (Liffick, 1995).

Academic staff have particularly benefitted through this possibility of networking with others around the globe via the internet. This benefit is also acknowledged by Levy (2005) who states that through computer use, more academicians are able to network. The increased networking often improves attitudes of people with common interests. As a result, their intentions tend to become more positive and their behaviours can easily be improved.

Through the internet, academics rely on the computer for accessing information pertinent to everyday tasks such as research and course development. If the computer is increasingly utilised in support of such activities as identifying and securing resources for clients, then it can be concluded that the use of the computer is shifting the relative utility of various information sources for daily tasks. Clearly, academics are more easily able to access sources of information than before. Similarly, students can also use internet-related services within certain parameters of the University grounds to conduct research.

Using the internet, people can now send and receive information from other countries at a very high speed. The computer, through the internet and particularly the e-mail, has enabled people to have instant communication across the globe and in the process reduced the world to a global village. This outburst in communication has proved particularly useful to academic staff. The internet has exposed them to contact with sources of information of an academic nature. Those who want to collaborate in research can also find each other more easily (Levy, 2005). It is possible to send and receive large amounts of data online via the internet.

Previously, as experience shows, it used to take ages to purchase a book from outside the country. But via the internet, the purchase of academic books, for instance, has been made easier and quicker. It has also brought about a desire and ability to experiment with new ways of doing things as well as increasing people's circles of acquaintances.

What one notes is that more people are able to understand where they can obtain specific types of information. Previously, to obtain information from UNZA, clients had to ring UNZA, write letters or physically visit UNZA in person. The computer has clearly improved access to client-related information. Information pertaining to UNZA is now readily available to any interested person from any part of the world. Of significance here are the Transaction Processing Systems (TPS). McNurlin *et al.,* (2008) define TPS as the type of information system that collects, stores, modifies and retrieves the transactions of the organisation while Kenneth and Jane (2010) have defined TPS as an event that generates or modifies data that is eventually stored in an information system.

Using TPS, UNZA is able to capture information and to update it quickly. Furthermore, computerisation has facilitated Management Information Systems (MIS). This is a system or process that provides information needed to manage an organisation effectively. This mechanism helps decision makers to optimise the organisation's resources to better achieve the organisation's goals. Rapid processing of transactions is vital to the success of any enterprise. In the face of advancing technology and customer demand for immediate action, TPS are designed to process transactions virtually or instantly, to ensure that customer data is available. The net effect is that clients no longer have to physically visit UNZA to obtain information about admission, for instance. Indeed, as Liffick (1995) posits, this computerisation entails that services and information are available on a 24-hour basis as they are stored on a computer. This allows people to request for a service or seek information when it fits their schedule, rather than when it fits the service provider's schedule.

Several kinds of information can be found on the UNZA homepage: information about the University, the programmes offered, and related links. Applicants for admission can enter the University homepage, click the relevant button, fill in a form, and submit it. It has also served as a quick means of disseminating information to members of the University community.

Similarly, checking for information on their own frees valuable time for staff to attend to other issues without undue pressure from the public. These social alterations constitute the impact or consequences of computerisation.

In addition, long-distance learning is a reality (Liffick, 1995). In this regard, Yusuf (2005) argued that the field of education has not been unaffected by the penetrating influence of ICT, adding that ICT has impacted on the quality and quantity of teaching, learning, and research in traditional and distance education institutions.

As competition and numbers increased, the Institute for Distance Education (IDE) at the University of Zambia, for example, has shifted over time from instruction based on hard copies to the Astria Learning system which has several advantages for both students and staff and is a huge cost-saving measure. This has resulted in changed work procedures. Before this, assignments were marked through the hard copy mode and assignments were sent by hard copy. Now all this is online, quicker and more efficient. Staff now send materials online and students equally access them online. This has taken major investments in new equipment and training staff and students.

Another benefit to an organisation comes through intranet services. Intranet enables staff to easily access information directly about other units of the University. An intranet is an access-restricted network used internally in an organisation. An intranet uses the same concepts and technologies as the World Wide Web and the internet. It is used in organisations to provide information to partners, clients, special customers, or anyone who needs access to information that would not be appropriate for the general public's consumption such as internal adverts for jobs or sale of institutional properties. While intranet at UNZA is used by some quarters for internal communication, its use appears to be rather limited.

Information Processing and Record Keeping

Liffick (1995) argues that 'the explosion of the availability of information is due, in large part, to the computer's ability to generate, collect, and store an ever-increasing amount of raw data. Since the ability to generate and collect data is growing exponentially, so too is the generation of information that can be synthesized from this data.'

Computerisation has thus resulted in the saving of space as people in some offices no longer need large rooms or space in which to keep their files. Furthermore, records of important information can now be stored without undue fear of loss or misplacement or even damage due to physical mishandling. This has resulted in savings of articles and time spent printing and circulating memos respectively.

Computerisation mediates the way information is stored and transmitted. This leads to changes in learning how to access and store this information. As Lifflick (1995; 3) states, 'another form of temporality in computer systems is that information can be retained over long periods of time, even when they appear to have been destroyed.' Both Liffick (1995) and the *Zambia Daily Mail* (1 November, 1993) state that computers are able to generate, collect, store and handle an ever-increasing amount of raw data with accuracy and efficiency with the potential to store information over long periods of time, beyond what folders can manage and thereby making it very unlikely that information should be entirely lost any more, even in case of an accident. This is true of UNZA where computerisation has helped to store a relatively large pool of data (with little additional cost by comparison) to volumes of documentation that would require storage.

Impact of Computerisation to UNZA Community (Unintended Consequences of Computerisation of the University of Zambia)

Rogers (2003) contends that technology brings inevitable, unanticipated, unintended and undesirable consequences. Similarly, Sapp (2011) says 'sometimes seemingly benign actions aimed at societal improvement undertaken with the best of intentions can create very negative consequences.' Andrews (2005) also states that success in innovation has led to unfortunate and unintended consequences or side effects although he also acknowledges that unintended consequences are not always negative. The technological solutions to some of the problems discussed above have created problems. These include health consequences, disruption of interpersonal relationships and pervasive use of computer and computer facilities.

Health Consequences

Health-related concerns have been reported in a number of studies (Stauffer, 1992). Andrews (2005) reports that the health consequences that stem from sitting in front of a computer screen for hours are an expected side effect or consequence of computerisation. McNurlin *et al.,* (2008) posit that continuous use of the computer can trigger a number of health problems, such as eye disease, bad posture, hurting

hand and computer stress injuries. Eye problems seem to be the number one complaint of those working on the computer for long hours. The user may have dry eyes or temporarily blurred vision, or be unable to focus on distant objects (McNurlin *et al.,* 2008). Prolonged computer use may be linked to glaucoma, especially among the users who are already short-sighted. One group of workers that had its work radically transformed in this regard is that of copy typists and secretaries (Musonda, 2015; Personal Communication).

Another health concern relates to back and neck pain, headaches, and shoulder or arm pain which can result when one has been on the computer for a long time (Kenneth and Jane, 2008). This is as a result of repetitive motion in the hands, wrists, and fingers combined with the lack of motion in the neck, back and shoulders. There is also the computer stress injuries whereby many users suffer from structural problems related to the physical stress of sitting incorrectly, or for too long in front of their computers.

Disruption of Interpersonal Relationships

Kling and Lacono (1991) argue that 'because the process of introducing computers changes many elements of social life in organisations concurrently, computerisation is not simply installing computer-based systems. In fact, most substantial computerisation projects require some changes in key social relationships, although some important authority relationships are usually untouched.' Andrews (2005) further reports that the reduction of social skills arising out of too much-mediated interaction is another expected consequence of computerisation.

Indeed computerisation can lead to transformations in interpersonal relationships within an organisation. Computerisation can be socially isolating. As Kling (1991: 350) has said, '…opportunities for social interaction within the workplace have decreased, because of less walking around.' An eventual outcome could be increased boredom and less social cohesiveness in the workgroup.

At the University of Zambia, life is becoming more and more complex and complicated and personal relationships are being replaced by impersonal relationships. Previously, notices of events, including funeral messages, were disseminated through hard copy notices; with computerisation, notices of various kinds are now disseminated to thousands virtually at once, at the press of a button. This saves on time and paper that would otherwise be lost passing on such information via the face-to-face model or the hard copy model. All this has a bearing on and impacts the social community within institutions. It is clear that computerisation not only has the potential to drastically alter workplace human interactions; at UNZA, this seems to be the case although a more empirical study is needed in this area to establish the extent.

Pervasive Use of Computers and Computer Facilities

Evidently, a computer may be used to increase efficiency to calculate statistical problems easily or send multiple messages at once, but it can also be used for sinister motives like watching pornography or playing cards. Even in the absence of empirical

evidence, it is an open secret that a lot of working hours are lost as workers are glued to playing cards and checking the internet, especially on social media at the expense of the organisation. In some cases, company employees' pervasive use of portable digital devices and work-related computers for personal use, email, instant messaging and computer games were often found to, or perceived to, reduce those companies' productivity (unknown).

Challenges of the Computerisation of the University of Zambia

A number of obstacles to the smooth computerisation of the University of Zambia have stood out. In spite of the success stories discussed above, the computerisation of the University of Zambia has been fraught with challenges at both the individual and institutional levels. The next section discusses the various challenges of computerisation as social change.

Inadequate Computer Literacy

Although the majority of staff, both academic and non-academic are computer literate, there are still huge challenges in coping with the requirements of the electronic age. Not everybody has bought into the computer age. While basic training in ICT is offered regularly as already discussed, the utilisation by the end user is extremely low. Most academics still do not appreciate the fact that ICT can actually make their teaching much easier. The applications for users are many but most end at Word and Powerpoint applications only (Walubita, 2016; personal communication). The reasons for this are many. As Rafaeli (1986) states:

> Because technological, especially computer change is so rapid in our society, it is widely assumed that older workers are less knowledgeable about, and less adapted to new technologies. Younger workers have grown up with computers in their homes and classrooms, and, therefore, are less likely to be intimidated by the introduction of computers on the job.

Rafaeli (1986) also reported gender differences regarding the use and attitudes towards computers with women reporting greater usage of computers as well as more positive attitudes.

Those in this category and others like them should be helped to adopt the new technology by helping them to change their attitudes and behaviour, among others (Rogers, 2003). If the workers are adequately trained in the pending computerisation changes, it is more likely that implementation will pose a few challenges. However, this author agrees with Gardaer (1964) that in a world that is rocking with the change, we need more than anything else a high capacity for adjustment to changed circumstances, a capacity of innovation. Otherwise, failure to comply with innovations frustrates organisation information dissemination strategies as some people declare ignorance of some electronically disseminated notices opting instead for hard copy versions. However, since the impact is largely positive until better technology is

introduced, computers are here to stay. In fact, even with the low usage, other than Word applications, internet provision is generally fine and widely used; users can download software and programmes or data using broadband that is provided. As a matter of fact, the change brought about by computerisation is highly unlikely to be universal; different contexts will experience different changes. The acceptance of specific social change depends on many factors, *inter alia*: the felt cost of adopting the new item or giving up old ways of thinking and behaving. Innovations must be seen as meeting a need or as conferring a benefit that far outweighs the cost of changing behaviour.

Poor Service Delivery

Service delivery has over the years proved to be a huge challenge due to a variety of factors which include the sheer size and complexity of the task to be performed, poor working attitudes, and so on. Major efforts at computerisation have stalled due to the lack of funds (Personal communication, 2017). This is in part caused by poor funding. However, rather than focus on the shortcomings of the CICT most of which are apparent, I have opted to instead discuss these matters in a futuristic and positive light under the section titled 'the future.'

Poor Funding of CICT

Inadequate funding to CICT is a major challenge to the attainment of computer literacy at UNZA. Centre for Information Communication Technologies (CICT) is largely funded by UNZA through Central Administration but poor financial outlay to the institution means CICT is not spared. Although short courses are held to raise funds, these are hardly sufficient to meet the budgetary needs of ICT programmes at UNZA (Personal Communication, 2017).

Policy Implications of Computerisation of the University of Zambia

As Hall (2006) cited in Lubbe, Bopape and Klopper (2010) argued, it is important that technological and social factors be managed. Doing this has huge cost implications due to the investment required in human and infrastructural developments. There is need to realise that the CICT does not exist in and of itself, but to serve the needs of other units within the University.

With regard to the provision of education via the long-distance mode, Siaciwena (2003; 2) reports, 'the slow postal system [at UNZA] means that many students, especially those in remote parts of the country, receive their materials late and often have little time to write their assignments. This creates problems for students who are paced in all their academic activities.' This need not be the case 50 years after the establishment of the University. Among other things, full computerisation and link of resident offices under IDE to the main offices in Lusaka to expedite service delivery must be prioritised. Information databases or video feeds of courses via satellite should no longer be an ideal only but a reality.

To handle the growth in computer use at UNZA, CICT must deal with any form of lack of expertise, inadequate personnel, and inadequate technical support. Specifically, there is need for regular and consistent maintenance through technical support and upgrade of computer facilities. All these shortcomings have the tendency to lead to computer phobia by partially trained end users. Going forward, therefore, CICT must rise to the occasion and ensure that it does not continue to attract negative publicity through constant complaints of inefficiency and ineffectiveness from the University community as has been the case in the past.

The CICT has a critical role to play in the life of the University. Central administration's commitment to this is demonstrated by the creation of CICT into a full directorate. However, to make computerisation meaningful for stakeholders, self-introspection by CICT accompanied by drastic positive action is imperative.

Going forward, there is need for a well-coordinated and systematically planned orientation and user-friendly instruction that will fully address the deficiencies in IT skills. One case in point is the recent migration from the EWAN to the Student Information Systems (SIS). Student Information Systems has more features than EWAN. However, good as it may be, SIS and its implementation have been fraught with challenges. Users have described the training offered as more of induction or orientation than actual training. Although this system has been used elsewhere and has been acknowledged to be a far much better system than the EWAN, stakeholders have contended that its introduction could have been better managed, indicating that the process was rushed. Centre for Information Communication Technologies would do well to learn from organisations like Zambia National Broadcasting Corporation (ZNBC) in the way it handled the migration from analog to digital. It was systematic and well phased out with end users given ample time to respond and soak in the changes. Training that tends to mirror the fire-fighting mode must be discarded for the good of the institution. In other words, training must not simply respond to emergencies to sort out urgent problems or implement new programmes.

More time needs to be accorded to training staff on appropriate applications. Those who have been trained gain only limited knowledge and is hardly evaluated. The training should not only provide limited knowledge; the acquisition of such knowledge needs an evaluation criteria to ensure learning has taken place and that the clients have acquired the skills as expected especially that computer training is practice-based. If the workers are adequately trained in the pending computerisation changes, it is more likely that implementation will pose a few challenges. Additionally, any new systems need to be piloted before being fully implemented. Considering that most academics, as already pointed out, are contented with basic computer operations, subjecting them to a hurriedly introduced, more sophisticated computer system or programme is bound to increase computer phobia instead of stimulating interest in computers.

Even if it sounds contradictory to the point raised above, overall, the rate of change

in terms of computerisation of the University needs to be speeded up to meet the expectations of key stakeholders. For examples, in my view, the University should ensure that students, who are at the centre of the University's operations, are fully incorporated into the computer training programme of the University so that they too can acquire computer skills for use in their academic work such as accessing data from different sources in different parts of the world. After all, the change brought about by computers has affected everyone and students have been affected by and have accepted the introduction of computers at UNZA, just like all the other members of the University community. As things stand, the majority of the student population is still computer illiterate although they are supposed to be beneficiaries of the computerisation of the University.

Another case in point is that of the UNZA Clinic. With the computerisation of UNZA, there is no reason why the Clinic is still using manual systems of keeping medical records of patients; computer systems must be explored for the benefit of both medical staff and patients.

The last example is that of UNZA Press. If UNZA Press is to compete favourably in the market place, it must computerise enough to enable it to sell books and other publications online as is the practice in the publishing industry in these modern times.

There is an absolute need for the CICT to be open to accommodate new ideas from other stakeholders from within UNZA. Collaboration with key stakeholders such as the Department of Computer Studies, ZAMREN and others should be explored and encouraged for the benefit of the wider UNZA community and the nation at large.

As much as possible, without overlooking the financial implications, UNZA should consider increasing the staff establishment in units so as to employ IT staff to handle some of the challenges and needs that CICT is unable to handle due to the lack of capacity or understaffing. There is need for University of Zambia administration to build the human resource and technology for CICT capacity to enable it to readily meet the needs of its client.

Conclusion

From the above discussion, it is evident that the advent of computers at UNZA has ushered in a new social arrangement as workers have availed themselves for socialisation to new patterns of behaviour. Computerisation of UNZA as social change has been accepted because it has been seen as meeting a need and confers benefits that far outweigh the cost of giving up old ways of thinking and behaving. Some of the changes are positive and constructive while others are negative and destructive. Whatever the challenges, it remains indisputable that registration of students, processing of examination data and related tasks have been performed at a much faster and more efficient pace; all thanks to the advent of the computer age. What remains to be seen is how CICT will respond to this great need for the full computerisation of different units within the University. If well done, the gains of computerisation are immeasurable.

Since change is on-going, we can expect more transformations in people's and organisational relationships and practices over time. The Institute of Distance Education's (IDE) Astria e-learning mode is one case in point. This article argues that computerisation has had some demonstrable value. The advent of computers at UNZA has not only excited staff with its operations; it has brought about changes in people's behavioural patterns. However, although the computerisation has brought positives, it is hard to calculate and quantify with any certainty savings in terms of time, space and money.

The technological change implied in the introduction of the computers at UNZA has definitely resulted in social change as it has brought about changes in people's behavioural patterns. Social change in terms of the alteration of the people's way of doing things is undeniable; it can be seen that social change brings with it a lot of consequences. It is clear that when social change occurs, old patterns are improved. It is important to realise that technology not only causes change, it is also a response to change.

The Diffusion of Innovation Theory is not without limitation. One of the outstanding limitations is that it works better with the adoption of behaviours rather than cessation or prevention of behaviours as is the case with the examples that have been cited in this article. Therefore, in spite of the overwhelming empirical evidence linking social change to the computerisation of the University of Zambia, it must be noted as Gusfield (1964:335-336) has argued that:

> the acceptance of a new product, a new religion, and a new mode of decision making does not necessarily lead to the disappearance of the older form. New forms may only increase the range of alternatives, for instance, both magic and medicine can exist side by side or used alternatively by the same people.

This has proven to be true at the University of Zambia where the old record card system has continued to be used. Indeed, the argument that hardcopy backups are needed seems to have merit.

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