# An Analysis of the Predictive Relationship of ICT Challenges and Work Motivation of Lecturers to Overall ICT Integration in Universities in Harare, Zimbabwe

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Abstract: This study was to see whether ICT challenges and work motivation of lecturers in Harare, Zimbabwe can predict ICT integration in universities. There exists varying rates of ICT integration in universities and this has a negative impact on the teaching and learning processes. The major aim of the study was to assess the predictive relationship between ICT integration, ICT Challenges and work motivation of lecturers. The findings of the study showed how universities could isolate challenges and tailor-make strategies of overcoming them whilst at the same time getting deeper insight into human behaviour in an organisation and its contribution towards ICT integration. The diffusion theory of ICT integration by Rodgers guided and informed this research. The research approach adopted was quantitative coupled with the descriptive survey as the research design. The sample included 200 lecturers drawn from a population of 600 lecturers consisting of two private and four state universities. Harare was conveniently chosen as it is the capital city of Zimbabwe and has the greatest number of state and private universities. Two questionnaires one on ICT integration and another one on ICT challenges were designed by the researcher and the third one on Work Motivation Questionnaire was adopted from Agrawal (1988) and standardized for the Zimbabwean context. The major challenges associated with slow uptake were analysed and assessed in terms of their impact on the teaching and learning processes and the motivation of lecturers was also evaluated together with demographic features to find predictors of successful ICT integration in universities. There is positive correlation between successful ICT integration and ICT challenges as well as the work motivation of lecturers. Literature reviews, the guiding philosophy and research design showed gaps which the thesis wanted to address especially the imbalance in the overall uptake of ICTs in universities. In order to assess the relationship between ICT integration and work motivation of lecturers in universities in Harare, Zimbabwe the study showed that a number of variables were at play which could positively influence ICT integration. The more lecturers were motivated through participation in ICT activities the greater the chances of ICT integration. This has been observed as being influenced by job situation, organization orientation and even intrinsic motivation. In view of the research findings, a range of practical solutions in overcoming the universal problems of staff and student access to computers, professional development for educators, and internet access was revealed. University authorities and those in leadership or supervisory positions should provide more room to explore and appreciate that there is a direct correlation between lecturer motivation and the type of tasks undertaken coupled with a conducive work environment and that they depend on others so as to boost self-confidence. The researcher therefore recommended that the universities should have well detailed organizational structure to accommodate ICTs infrastructure, staff develop through training and motivating its employees so that they revolutionalise the educational system.

Keywords: ICT challenges, ICT integration, work motivation, predictive, demographic variables

#### 1. Main Objectives

- To investigate whether ICT Challenges and work motivation of lecturers in universities in Harare, Zimbabwe would be significant predictors of ICT integration with respect to demographic variables gender, age and type of university.
- 2) To find out whether differences across demographic variables gender, age, type of university, mode of delivery, experience and educational qualification with respect to ICT integration in universities, ICT challenges and work motivation of lecturers.

#### 2. Introduction

The backbone of all educational innovations in many countries today rests on the level of how much technology has been integrated to enhance all teaching and learning processes. Failure by governments and their educational institutions to harness the technology bandwagon has in

most cases affected their competitive advantages regionally and this also includes higher education institutions here in Zimbabwe. An analysis of the predictive relationship of ICT challenges and work motivation of lecturers to overall ICT integration in universities in Harare, Zimbabwe constitutes some of the major challenges facing higher education not only in Zimbabwe but the world over. Harare is the capital city of Zimbabwe and it has the highest number of universities operating from it hence it was conveniently chosen for this research. An interesting scenario in Zimbabwe indicates that through its aggressive education policy since 1980, has managed to have universities in almost 80% of the ten provinces and these are complemented by Teachers' Colleges, Polytechnics and Vocational and Technical Colleges to ensure high quality manpower is generated for the nation's socio-economic development (Kujeke, Kennedy and Nyaruwata, 2014). The phenomenal growth in the demand for education in Zimbabwe after independence in 1980 due to colonial policies of segregation meant that the country was not ready for the influx of students in educational institutions. The

dual system had superior European and inferior African Education which meant that the educational budget favoured Europeans and equipped then with relevant technical skills so that Africans would not compete at the job market. After independence in 1980, capacity of most teachers and lecturers was also not compatible with the new socioeconomic order of inclusivity on the part of the previously marginalised students. It also meant that new pedagogical strategies had to be adopted to accommodate the new educational dispensation. Come years 2000 to 2008 Zimbabwe witnessed the highest human capital flight due to the deteriorating socio-economic and political environment obtaining in the country with hyperinflation ranging over several 1000%. The gap left by most trained personnel who responded to the serious push and pull factors as they went to the Diaspora created more challenges assuming the country's educational system had gradually adopted the use ICTs in the form of web based teaching and learning processes. The capacity to fully integrate and use ICTs by those who remained behind was questionable and this became an ingredient in the challenges associated with implementation of ICT successful based learning programmes.

## 3. Literature Review

## 3.1Resume of literature related to ICT Challenges

The importance of the results of this study is viewed from a variety of strategic benefits to a number of educational management as there is greater need to assess the process of ICT integration in university on one side and then making a critical analysis of how ICT challenges influence successful integration of technology. Also of greater importance is the need to highlight the relationship between work motivation of lecturers and the overall utilisation of ICTs. There is therefore need to highlight all those factors that contribute to the successful integration of technology in universities. There is great need to look at ICT challenges as those barriers or constraints which make it difficult for ICTs to be institutionalised in universities. From studies conducted in recent years, it is evident that information and communication technologies (ICTs) can help to broaden access to education and improve learning outcomes. Research and observations by Kujeke, Kennedy and Nyaruwata, (2014) have also shown, however, that success in the use of ICTs in education depends largely on teachers and their level of skills in integrating it during the delivery process which at times may involve the evaluation of learning programmes.

The present research has been influenced by a number of issues associated with ICT integration in Higher Educational institutions. There is need to increase awareness on the role of ICTs and their usefulness in modern learning systems as well as general understanding of fundamental concepts of access to ICT provision of educational opportunities. Opportunities to look critically at concepts which deal with different types of delivery and learning transforming from the traditional chalk and talk method to the learner-driven mode is essential to assess the gap between technology driven curriculum and the traditional mode. An exploration of the creative learning modes and valuing any quality accruing from the use of ICTs will also raise the intellectual quality of students by addressing the inquiry potential for further analysis of phenomena and their contribution in terms of perceptions, attitudes and behaviours towards ICT in institutions. To all researchers and university administrators and managers they have a role to play in influencing diverse pedagogical strategies and viewing computer as a teaching and learning tool rather than an extension of a typewriter. There is room for total appreciation of educational technology and its contribution in efficient delivery of learning materials and resources, (Kujeke, Kennedy and Nyaruwata, 2014).

# **3.2** Challenges associated with ICT integration in universities

Literature gives a clear indicator of the various gaps which have been created by the digital divide in ensuring that full integration of ICT is realized. Research studies have shown that ICT are not the panacea of all teaching and learning strategies but could be used to enhance good grasp as well as sustaining interest whilst keeping both lecturers and students highly motivated. Quite a number of factors emerged as areas which may affect the overall integration of ICT especially those to do with organizational structure and administration. The researcher needs to ensure that the relationship between ICT integration as the dependent variable and ICT challenges and work motivation of lecturers in Zimbabwe is established through interrogation ofIdata.

### 3.3 Challenges associated with ICT financing

There are some common denominators of challenges associated with overall ICT integration in universities. Many research findings have highlighted the infrastructure itself to house new technology as most universities were upgraded from college levels like in most developing economies like Zimbabwe. Financing ICT integration featured as a barrier for successful integration hence governments and universities should find alternative financing sources if the benefits associated with ICT integration have to be realized. Most studies carried out in universities indicated that the capacity of lecturers influence the overall uptake of ICT. It's true that if one is not competent enough to perform a task, there are high chances of showing levels of resistance to change which in turn affect the overall organisational goal of enhancing curriculum delivery through technology based approaches. Access to technology has also been highlighted though this affects both the lecturer and the learner with the later being handicapped in future technology life related experiences. The various sources gave insight in the widening digital divide gap which is evident especially in developing countries. This is more significant in Africa and some parts of Asia where resources are scarce as most of these countries are battling to address more challenging demands related to bad governance, poverty, diseases, famine, floods, wars and environmental disasters like droughts. In order to finance ICT programmes universities are dependent on government grants if available, whilst others depend on donor communities which would like to develop the human resources capital. On the other hand a number of universities rely greatly on fees from students

which would be used in the purchase, installation and maintenance of ICT infrastructure. Whilst there is greater need to integrate new technological trends in the teaching and learning processes, funding of ICT initiatives still poses a serious challenge especially when looking at the different economic strata most students come from as well as the universities they attend.

#### 3.4 Challenges associated with Policy in universities

According to Siyachiwena (2010) it was observed that consistency of ICT in the region was at variance with SADC initiatives to have national ICT policies because these have been going on for some time and a regional policy seems to be elusive. Since much of the policy formulation work in developing countries is authored and sponsored by external agencies, there is an additional pressure to be accountable and produce a document quickly. The successful integration of technology can be influenced greatly by the participation level of the government in guiding procurement procedures, freeing the airwaves and subsdising infrastructure purchase through tax rebates. It gives guidelines of operation and creates an environment which makes it easy to procure infrastructure in the form of building materials, hardware and software as well as freeing of airwaves electricity supply. The findings of the study suggested that the use of models to help formulate policy documents in developed economies may not be compatible with environments in developing nations. The study analysed the policies for financing higher education in six Arab countries: Egypt, Jordan, Lebanon, Morocco, Svria, and Tunisia. It assessed the adequacy of spending on higher education, the efficiency with which resources were utilized, and the equity implications of resource allocations. Based on six detailed case studies, this comparative study was intended to highlight the common features and similarities, as well as the differences among countries in the region, in addition to best practices and success stories. Recommendations from the study tried to address the future challenges that were likely to exert pressure on higher education finance whilst at the same time assessing the reform efforts undertaken by the governments in the region from a policy point of view. Alternative strategies for dealing with problems of finance in the Arab region were analysed in light of international experiences and the region's unique characteristics.

# **3.5** Challenges associated with accessibility of ICTs in universities

This research has established that overall ICT integration in any organization is influenced by the level of accessibility users have on ICT related infrastructure. The literature below will highlight the relationships they have with the dependent variable, which is ICT integration. Normann (1984) in Rumble (1992:78) maintains that ICTs in general and e-learning in particular have reduced the barriers to entry to the higher education business. ICTs play a pivotal role in developmental issues such that no knowledge economy can function without it hence it is imperative that higher education institutions afford their graduates the competencies that their future literacy and work environments are likely to demand of them. Even though access to ICTs is critical, it is not certain to say that ICTs has assumed a teaching function in higher education by transforming the way knowledge and skills are disseminated to the learner. The prevailing scenario in most developing countries is that computer student ratio is still very high thereby limiting interaction with technology to either lecturers or learners.

#### 3.6 Challenges associated with infrastructure planning

As discussed above, providing access to ICTs was not enough, the supporting infrastructure like radios, TVs, data projectors is even more relevant. University authorities and policymakers should assess significance in the ubiquity of different types of ICTs in the country especially the educational system (at all levels) in particular. Computerbased or online learning as well as affordable internet service can bring about basic competencies in computer use giving rise to access to computers in schools, communities, and households. ICT use in use in society should precede that in education so that benefits will flow across the socioeconomic borders. Access to ICTs reflects policy dimensions of a country as the policies become enabling frameworks through which infrastructure is secure and poor integrated.. According to UNESCO (2006)infrastructure, few computers (a low ratio of computer to staff and research students) and the high cost of connectivity which makes high speed internet services unavailable. Furthermore the staff is unable to access journals online in order to update the knowledge on recent developments in their field of research. The challenge of ICT facilities requires strong institutional policy as well as regional approach for joint negotiations on the cost of bandwidth. With respect to the access to journals online, the challenge is twofold, the Internet connectivity and the cost of journals. Universities with Internet facilities should look for freely available journals (Open Source journals) like EBSCO, DOAJ Proquest, and others. (jarora@inflibent.ac.in/directors)

# 3.7 Challenges associated with ICTs and curriculum delivery

The curriculum encompasses on student learning- How the new technology supports and enhances learning and the need for ICT integration, generally from a wide section of studies undertaken at secondary schools, colleges and universities (ODL and Dual mode) there is need to integrate ICT in the curriculum in all universities' delivery process. Observations have shown that policy availability and implementation process coupled with the availability of ICT standards and measurement criteria tend to inhibit smooth integration of ICTs in universities. The emergence of web-based together with blended learning has made great impact in the delivery of curriculum by increasing learner independence and participation. Several research studies on teaching and learning have observed that the barrier associated with language seriously affects ICT integration because the technical jargon associated with technology based learning is beyond the cognition of many learners. Whilst every effort is made to make ICTs a vehicle of pedagogical activities, connectivity and network have frustrated all efforts to successfully deliver intended curriculum.

Research studies on studying patterns show variances of specific learning behaviour and motivation levels which in turn affect the relationship of students to pre-requisite attitudes, skills and knowledge of computer use. ICT integrated learning calls for planning of teaching and assessment of learning after developing various intellectual skills especially in reasoning. According to Dwyer, Ringstaff and Sandholtz, 1991; OTA, 1988, 1995; Sheingold,and Hardley, (1990) computer based technology can change the way teaching occurs. Observations made show that specific content that is learned (the what?) using new technologies yield spontaneity interest in learning activity and brings broader co-operation among individuals within and beyond the university.

#### 3.8 Challenges associated with Capacity building

It has been observed from various studies by Kujeke, Kennedy and Nyaruwata (2014) that ICT can help to broaden access to education and improve learning outcomes. Other research studies have also shown, however, that success in the use of ICT in education depends largely on teachers/lecturers and their level of skills in integrating ICT into the teaching process and in utilizing ICT to provide learner-centred and highly interactive learning processes. Therefore, training teachers/lecturers to be able to use ICT and to integrate it into teaching is crucial for achieving improved educational outcomes with ICT. Loveless and Ellis (2001) are of the view that management should focus on training programmes so as to develop various competencies throughout the university system for ICT integration to be successful. Content developers who are responsible for the development of ICT integrated study materials need competencies and positive attitudes in the designing and development and use ofl CDs, DVDs, online modules, communication networks as well as curricular change and innovations related to the use of IT (including changes in instructional design).

Research on the use of ICTs in different educational settings over the years invariably identify as a barrier to success the inability of teachers to understand why they should use ICTs and how exactly they can use ICTs to help them teach better. Unfortunately, most teacher professional development pedagogies in ICTs is heavy on "teaching the tools" and light on "using the tools to teach." Lecturers anxiety especially fear over being replaced by technology or losing their authority in the classroom as the learning process becomes more learner-centered-an acknowledged barrier to ICT adoption-can be alleviated only if lecturers have a keen understanding and appreciation of their changing role. For ICT integration programs to be effective and sustainable, administrators themselves must be competent in the use of the technology, and they must have a broad understanding of the technical, curricular, administrative, financial, and social dimensions of ICT use in education. Technical support specialists are critical resources. Ronnkvist, Dexter, and Anderson (2000); Rogers (2000); and Sandholtz (2004) contend that research studies indicate a correlation between technical support and strong collaboration, it could be in the form of timely training and arranged peer review of targeted activities. Without on-site technical support, a lot of resources may be lost due to

technical breakdowns. In most universities, one of the major obstacles to optimizing computer use has been the lack of timely technical support where in some extreme cases, disabled computers take months to be repaired since no technician is available in the immediate vicinity and so the computers have to be sent to the nearest city hundreds of kilometers away.

# 3.9 Challenges associated with materials production in universities

According to the Commonwealth of Learning (COL) content development is a critical area that is too often overlooked. The bulk of existing ICT-based educational material is likely to be in English or of little relevance to education in developing countries when you look at the primary and secondary levels. An estimated 80% of online educational materials and software is English thereby depriving those who use their indigenous languages. A quick look at most Asian countries will show that they have resorted to their indigenous languages for instruction and you will find that labels and procedures can be followed in the teaching and learning processes. The current trends of learning English by citizens of these Asian countries are to increase their competitive advantage in countries they trade in so that their marketing prowess goes unchallenged. The implication of these studies is that countries need to create environments of multicultural space to accommodate indigenous people especially where ICT is used for functional literacy. The studies are clear in indicating that teaching and learning modes have clearly shifted and the role of the lecturer has also changed to embrace the new technological and pedagogical strategies characterized by focus on web- based learning and other teaching and learning strategies. Universities have even gone further to prepare both lecturers and students through units of study and IT support systems which enhances Management Information Systems (MIS) and Learning Management Systems (LMS) in all facets of organizational structures to ensure communication and flow of decision making processes which would avail information at the click of a button. From the above literature contribution, it is clear that students moving independently between learning areas is necessary and flexible room layout and furnishing are all essential ingredients of a conventional and distance education learner which face most educational institutions. Whilst effort needs to be put in place, limiting budgets and relevant skills still haunt effective and efficient utilization of technology which should translate the learning landscape of the own campus and distance learner.

## 4. Work Motivation of Lecturers

Lecturers' work motivation may be thought of as an integrated force produced by some extrinsic and intrinsic or both motives driving teachers to involve in their expected roles in the schools. Porter and Miles (1974) identified three such variables: The characteristics of individuals, the behavioural implications of the job and the organizational environment that act as powerful associate of work motivation of lecturer. In a study on "The use of Attention, Relevance, Confidence and Satisfaction (ARCS) model of motivation in teacher training" Keller (1984) observed that learning of any nature must be rewarding or satisfying in

some way, whether it is from a sense of achievement, praise from a higher level or mere entertainment. Keller (1984) further contended that it should make the teacher/lecturer feel as though the skill is useful or beneficial by providing opportunities to use newly acquired knowledge in a real setting. The university systems should provide a mechanism for feedback and reinforcement. When lecturers appreciate the results, they will be motivated to learn leading to mastery of prerequisite skills bringing about commitment to work tasks thereby providing some levels of satisfaction. Satisfaction is based upon motivation, which can be intrinsic or extrinsic. In summary, John Keller's ARCS Model of Motivational Design, has four steps for promoting and sustaining motivation in the learning process as alluded to above. What is important is the significance of this study to lecturers in universities. Lecturers with high motivation feel that their commitment and satisfaction is compatible with that of the university and to a large extent are less likely to quit their jobs. In fact, motivated and committed lecturers value their existing work relationships so highly that they may even overlook better job opportunities. Thus the happier the lecturers are with their jobs will they promote a general goodwill and positive work climate in the university.

#### 4.1 General Overview and Summary

From the discussions and findings above there seems to be evidence and a relationship between ICT integration in universities and ICT challenges and Work motivation. The motivation theories outlined above gave some scientific explanations on how workers are motivated in their organizations. The contribution made by these classical and human resources theorists give impetus to the way management should selectively apply group and individual decisions and tasks. The literature also pointed to the view that ICT integration in universities is dependent on ICT challenges and Work motivation. This has come out through existing literature and what is left now is to ensure that the research processes acknowledge the role played by various theories and models. There has not been much literature related to lecturer work motivation and it is interesting the study is going to make a critical analysis off the phenomena.

The review of literature by the researcher has shown that there are disparities in the availability of ICTs and the motivation levels are affected by quite a lot of factors ranging from psychological to the organizational influences. The literature showed that ICT diffused rapidly in developed industrialized countries, but slowly in developing countries, which led to the ICT gap, or digital divide between developed and developing countries and most Arab countries still have a long way to go before being able to fully realize the benefits of ICT tools. From the above discussion, the investigator arrived at the following interferences from the review of related literature presented in the preceding pages that some important issues have been discussed that were related to the ICT diffusion in developing countries but it is still not enough because the ICT issues seem to be still new areas in these countries. The studies carried out in Zimbabwe on lecturers on an analysis of ICT integration, ICT challenges and Work Motivation of Lecturers in relation to ICT Integration in universities are few and an in-depth research was required to be undertaken

in this area. This information was evident enough to help the researcher investigate the assumed gap in the relationship between the dependent variable (DV) which is ICT Integration and the two independent variables (IV) namely ICT challenges and Work Motivation of lecturers.

## 5. Research Methodology

#### 5.1 The Quantitative Methodology Approach

The philosophy guiding the research was the quantitative methodology though the mixed methodology comprising of both the quantitative and qualitative paradigms also complemented each other. These methodologies helped in determining the research design and type of data collecting tools which were administered to solicit data from the respondents. The quantitative paradigm gave the researcher opportunities to measure variable relationships and made predictions of how ICT integration and ICT challenges and work motivation influenced overall use of ICTs in universities

## 5.2 Research Design

The design of the research study was a case study incorporating the descriptive survey. Its attributes of soliciting measurable data leads to the generation of research questions and hypothesis. The researcher views a research design as a plan on structure of an investigation. It is a set of plans on procedures that reduce error and simultaneously help the researcher obtain empirical evidence (or data) on isolated variables of interest (Harpner, Kivlighan and Wampold, 1992). Descriptive research is largely concerned with what, when, where and who questions. Descriptive research is thus essentially informational in character. Descriptive research can involve the collection of original data for analysis but its main purpose is to establish a factual picture of the object of study. (Riley et al., 2001)

From the above analysis, a research design is a plan, which contains all steps of the research process. The method presents a profile of a group or describes process, mechanism on relationship or simply presents basic background information or a context. It is used mostly in Applied Research for example general household survey describes demographic characteristics, economic factors and social trends or gain insight into the changing social and economic circumstances of population groups. There are a number of advantages attached to the descriptive survey design. According to Leedy (1980) descriptive survey research has the advantage of collecting original data and is probably the best method available for the purpose of describing a population large enough to observe directly. In this regard, Leedy (1980) and Tuckman (1984) concur with Babbie (1979:59) that the quality of a sample is at most determined by similar parameters found in the population from which it is extracted. The researcher therefore took measures to safeguard the limitations of the research design employed to ensure high validity and reliability of the instruments as well as the data to be collected.

#### 5.3 Population of the study

All lecturers of Universities belonging to state and, Private categories of Harare constituted the population of the study. The researcher chose the population of lecturers from the six universities instead of seven (University of Zimbabwe (UZ) declined access to this researcher). The overall population size was 600.

 Table 4.1: Population. Distribution of respondents in

 Universities in Harare =600

| Universities in Harare 000 |       |         |       |  |  |
|----------------------------|-------|---------|-------|--|--|
|                            | Males | Females | Total |  |  |
| TOTAL                      | 425   | 175     | 600   |  |  |

 Table 4.2: Number of lecturers by sex in State and Private universities in Harare , Zimbabwe

| Type of Universities |        |      |        |       |  |  |
|----------------------|--------|------|--------|-------|--|--|
| S                    | tate   | Pr   | ivate  | Total |  |  |
| Male                 | Female | Male | Female |       |  |  |
| 242                  | 70     | 183  | 105    | 600   |  |  |

#### 5.4 Sample of the Study

Probability sampling involving stratification was done at university level and simple random sampling was administered so as to choose the final research sample of 201. This sampling technique ensured that each item in the entire population had an equal chance of being included in the sample (Wegner, 1993). The lottery method adopted involved transferring each person's name from the list and putting it on a piece of paper. The pieces of paper were placed in a container and thoroughly mixed. The required number of lecturers was selected by someone without looking. This procedure is easy to carry out especially because both population and sample is small, but can be tedious and time consuming for large populations on large samples which may require use of computers on tables. Apart from the selection procedure highlighted above, the researcher also used Green's formular 50 + 8K and the sample adequacy was realized.

#### 5.5 Sampling Procedure

The overall population off the six universities in Harare made available to the researcher was 600 comprising off males and females. Using the formula, the sample size required was 201. In the data collection process, 350 questionnaires were distributed to lecturers and the final response received was from 200 respondents which is very close to the original calculated sample size. The composition in terms of gender was 148 Males and 52 Females giving a total of 200

 Table 4.3: Distribution of sample according to type of

 management and gender

| management and genaer |         |         |       |  |  |  |
|-----------------------|---------|---------|-------|--|--|--|
| Gender                | Type of | Total   |       |  |  |  |
|                       | State   | Private | Total |  |  |  |
| Male                  | 100     | 48      | 148   |  |  |  |
| Female                | 40      | 12      | 52    |  |  |  |
| Total                 | 140     | 60      | 200   |  |  |  |

#### 5.6 Description of the tools

The researcher used 4 tools to collect data namely ICT integration and ICT challenges was designed by the researcher. The Work Motivation Questionnaire (WMQ) a standardized tool by Agarwal K.G. (1988) was adapted and standardized by Tara Sabapathy, (1999) and adapted and standarised in the Zimbabwean university context and a self developed proforma to collect data on biographical variables. For standardization and validation, the researcher used experts in Higher Education and ICT.

#### 5.6.1 Construction of ICT integration Questionnaire

The literature reviewed and the expert assistance acquired helped the researcher to design the tool used to collect data on ICT Integration. The initial numbers of items in the questionnaire were 120 items as mentioned then 112 items as were selected based on ICT experts' validation and comments. For standardization, the items were used for a pilot in some colleges on a sample of 60 respondents which were not part of the final sample. After the pilot based on item analysis and 73 items were selected. Thus, the 73items selected were further subjected to factor analysis which came out with 29 items grouped into 4 factors. Factor 1 had (12) items) on Delivery and Communication Processes, Factor 2 (7 Items) Access of ICT facilities ICT, Factor 3 (6 Items) Support for ICT integration Factor 4 (4) Lecturer competencies. The instrument reliability was 0.7481 and the validity was 0.9581.

### 5.6.2 Construction of ICT Challenges Questionnaire

The literature reviewed and the expert assistance acquired helped the researcher to design the tool used to collect data on ICT challenges. The initial numbers of items in the questionnaire were 128 items and 120 were selected based experts' on ICT validation and comments. For standardization, the items were used for a pilot in some colleges on a sample of 60 respondents which were not part off the final sample. After the pilot, using ICT experts and 43 were subjected to factor analysis which came out with 24 items grouped into 4 factors. Factor 1 had (11) items) on Infrastructure, Factor 2 (7 Items) Utilisation of ICT, Factor 3 (4 Items) Needs of ICT users Factor 4 (2) Capacity of users. The instrument reliability was 0.833 and the validity was 0.8942.

#### 5.7 Standardisation of Work Motivation Questionnaire

This was a standardized tool by Agarwal K.G. (1988) was adapted and standardized by Tara Sabapathy, (1999) and applied in the Zimbabwean university context. The questionnaire was circulated for expert validation among five experts and it was decided to drop one of the items namely "How often does your Head of Department talk to you in a harassing way?" from the original scale and further based experts suggestions the items of Material incentives were included along with Job satisfaction thus finally the items were grouped into dependence, organizational orientation, work group relations, intrinsic motivation and job situation to suit the Zimbabwean context. The present tool measures the Work Motivation of lecturers. The Work Motivation consolidated Questionnaire was standardized to the Zimbabwean context. The questionnaire

was used for a pilot and administered to 60 respondents in some colleges which were not part of the research population. After the pilot based on item analysis 25 items were finally selected with factors like dependence, organizational orientation, work group relations, intrinsic motivation and job situation and the instrument reliability was 0.7850and the validity was 0.9653.

## 6. Experimentations/Field Work Details

The researcher carried out the research in six (6)universities, thus two (2) state and four (4) private in Harare the capital of Zimbabwe and they offered single, dual or ODL modes of delivery. Two questionnaires were used and administered to a sample of 200 lecturers in proportional levels because staff complements of these universities varied. The first one was a combination which focused on respondents' demography as well as ICT integration and then ICT challenges in universities. The instruments went through a rigorous validation and reliability check through the whole process of development by the researcher and were piloted, validated and checked for their reliability. The other one, a Work Motivation Questionnaire by Agarawal WMQ (1988) blended with Minnesota Satisfaction Questionnaire (MSQ) was administered to the same 200 lecturers in their universities. Because of the number of instruments being administered to same respondents, there was a mechanism of brevity and inspiring built into the tools so as not to be affected by a high non - response rate. The researcher came up with university statistics and then developed instruments according to the target sample which depended on the faculties on departments in each of the six universities. The researcher delivered the instruments but also engaged competent research assistants for follow-ups and morale building of the respondents Pilot study of universities under study, was organised through Internet search, observation and discussion in the six universities so as to test the instruments. The major reasons for the pre-test were inter-alia: to provide extensive background information on delivery and administrative functions in these institutions.

# 7. Tools for Analysis/Statistical Techniques

The investigator collected and coded data and then used an analysis of statistical values that were required. Excel and SPSS programmes were used and interpretations were made. Pearson Product Moment Correlation coefficient was used to see the degree of relationship, regression analysis to predict outcomes or relationships, t-testing, One way ANOVA to measure differences in the independent dependent variables ICT challenges scores of lecturers of universities and work motivation of lecturers and its factors (i.e. dependence, organizational orientation, work group relations, intrinsic motivation, and job situation), type of university, mode of delivery in institutions offering, sex, age, experience in years and highest educational qualifications and ICT integration in universities and its dimensions (i.e. delivery and communication processes, access to ICT facilities, support for ICT integration and lecturer competencies).

## 7.1 Validation Procedures

### 7.1.1 Expert Validation

The Drafts of the ICT Integration Questionnaire and ICT Challenges Questionnaire which had been designed by the researcher were sent to experts in the fields Education, Educational technology and ICT. The suggestions by experts for modification were considered to enhance the construct and content validity of the instruments. Thus the instruments went through a rigorous validation and reliability check through the whole process of development by the investigator and they were piloted, validated and checked for their reliability. The Work Motivation Questionnaire by Agarawal WMQ (1988) adapted by the investigator was also piloted, validated and checked for their reliability.

# 8. Implications of the Research Findings

The results of this study have a number of important practical implications for the Higher Educational sector in Zimbabwe. The research findings can bring some insights and awareness to senior educational management and policy makers to revisit relationships between ICTs and the teaching and learning processes in universities. The researcher's hypothesis both null and alternate assisted in analysing the implication off the study. The researcher was happy to indicate that the study made some significant contributions to the literature in a number of ways by linking the relationship in both independent variables, ICT challenges and work motivation to the dependent variable, ICT integration.

Further regression analysis showed work motivation and ICT ofl lecturers ofl universities are the predictors of ICT integration in universities. Similarly work motivation and ICT ofl lecturers ofl both state and private universities are predictors ofl ICT integration in universities. Regression analysis also showed work motivation and ICT challenges of lecturers ofluniversities are the predictors of ICT integration ofl male and female lecturers of universities. Hence irrespective off the composition of male and female lecturers in both private and state universities has influence on the integration ofl technology. University authorities should ensure equal access to technology infrastructure so as to enhance general interest and build on the capacity of lecturers in general and those with deficiencies in particular.

The work motivation and ICT challenges was a predictor ICT integration in universities in general of lecturers 25-35, 35-45, 45-55, years of age. In universities, there are exciting scenarios where ages play pivotal roles in determining the work environment and this contributes greatly to the realization of the shared goals and perceptions and in this case ICT integration. The university authorities should ensure that the infrastructure, job structure, communication channels, compensation, career development, health and safety issues are taken care of in line with the varying lecturer age groups. The main reason is to appreciate the role played by workers and thereby empowering them so as to develop positive attitudes towards group or team outcomes. the need to examine the relationship between human resources and the associated practices with organizational performance. The lecturers'

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age ranges are a clear indication that universities can strategise by empowering the different age groups depending on their varied needs so that ICT integration can be realised. Universities can enjoy competitive advantage if proper technology is harnessed and used for curricula delivery because it brings about issues highlighted by Professor Porter that need analysis and feasibility studies to ensure proper matrix are used as strategic tools through low cost leadership, focus, and market segmentation and differentiation.

The ICT challenges of the oldest group lecturers 45- 55 was a predictor of ICT integration indicating efforts are to be made to strengthen those with older age. In order to ensure continuity, there is need to allow trial and error with technology coupled with skills oriented programmes on this age group. Some studies have indicated that as people grow, chances of losing memory gets higher therefore universities should offer continuous refresher courses for this age group so that ICT integration will not be a pipe dream but a complete realization of universities. Delivery methods preferred by those who were not born in the computer age are still dominated by the "chalk and talk" method at the expense of web based methods so there is need to continuously orient this age group so that they become role models and overcome ICT challenges.

The ICT challenges and work motivation of lecturers of universities are the predictors of ICT integration of 1-5 years experienced lecturers of universities. The ICT challenges and work motivation of lecturers of universities are the predictors of ICT integration of 6-10 years experienced lecturers of universities. Lecturers experience contributes significantly to acquisition of technology skills and general knowledge on its use leading to increased ICT integration. University authorities should continuously upgrade the competencies of lecturers through refresher courses so that those new in the system would have role models who could assist junior lecturers to be conversant with technology related curriculum delivery methods. University management should also engage private sector on providing expert training to lecturers so that they boost their competencies leading to commitment to work and overall integration of technology. From a human resources perspective, universities are encouraged to retain staff through good working conditions so that there is limited staff turnover which will affect skills flight acquired by migrating lecturers.

The study showed that lecturers' with experience from 1-15 years also show differences on ICT integration dimensions like access to ICT facilities and support for ICT integration. The results from this study indicate that lecturers' experiences are a critical ingredient in ICT integration. If lecturers are provided with stimulating and useful technological ideas and infrastructure then there will be full support of ICT integration.

It found that lecturers between 25-35 years and 35-45 years age group differed significantly with each other. Similarly lecturers between 35-45 years and 45-55 years age too differed significantly. Hence t he age group 25-35 and 45-55 is to be encouraged in several ways like attending refresher courses on computers, participating in chats, collaborative work and various local and international conferences so as to enhance ICT integration. Similarly the work motivation levels of the age groups and 45-55 are to be enhanced through training and capacity building prgrammes, exchange programmes with other universities, subsdised costs of technology related hardware and software. Universities should subscribe to internationally accredited journals for easy access by lecturers to equip them with the necessary skills of interacting with other international scholars.

The significant difference between male and female lecturers of universities with respect to ICT integration in universities and its dimensions of ICT Integration' and 'Delivery and communication processes, of access to ICT facilities, support for ICT integration and lecturer competencies, ICT challenges and Work motivation' has given a lot of insights in what strategies should be adopted in universities so as to ensure that lecturers are satisfied and ICT is fully integrated. The implication of the above results as focused on the universities under study had different modes of delivery, from single, dual and ODL and differences bring about excitement in curriculum delivery. Lecturers should harness technology based delivery modes which have transformed the educational learning landscape and the technological revolution which has benefitted most African states that have used technology to leapfrog their socio -economic development. Because the rate of technology uptake is at disproportionate levels in universities, lecturers' work motivation need to be harmonized with organizational expectations by equipping lecturers with required skills, appropriate technology and access to infrastructure to enhance ICT integration. Sex disparities as well have significant influence on ICT integration especially when one looks at models of their impact on learning outcomes. ICT challenges dimensions like access to ICT facilities, support for ICT integration and lecturer competencies have a greater bearing on learning outcomes so universities should mobilise a lot of resources for sustainability of running programmes and projects so as to boost ICT diffusion and overall utilization.

# 9. Conclusions

The results off this study provide considerable insight into how School Technology Culture and Educational Leader Competencies of university managers are crucial correlates for better ICT Integration in education among teachers in Harare universities in order to enhance the teaching and learning performance of lecturers. The study has highlighted that there is a positive correlation between ICT Integration in education and ICT challenges among lecturers in Harare. Similarly, there is a positive correlation between ICT Integration in education and work motivation among lecturers in Harare. ICT challenges and Work motivation were predictors of ICT integration irrespective of the Type of universities, gender and age.

The study with regard to differences in ICT integration and demographic variables indicated that the Lecturers with regard to Type of university differed with respect to access to ICT facilities. Universities offering education through different modes of delivery differed in their work motivation levels and ICT integration. It was also found that there was

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Gender differences with regard ICT integration. Further Age differences existed with regard to access to ICT facilities and support for ICT integration indicating less experienced lecturers with regard to teaching strongly integrated technology in education. Lecturers with lower age differed significantly with lecturers who were in the middle age group. Similarly the lecturers belonging to middle age group differed with those who were in the older age groups.

Thus the research findings had exciting conclusions and recommendations for university authorities. It is concluded that Heads of management, deans and human resources management should provide new and existing academicians with adequate training, workshop, seminar and conference that are related to the job scope. Apart from this, they are encouraged to conduct socialization programs for new academicians. By doing this, universities and faculties will be able to further enhance the academicians intrinsic motivation within an institution. Subsequently, this will strengthen the academics organizational commitment which in turn influences performance. Hopeful to this, the universities will be able to strive for better status, reputation and performance especially in the integration off technology and minimize ICT challenges.

The researcher concluded that there was great need for capacity building of lecturers ICT skills and their motivation levels, and that there be awareness and professional growth through exposure and exchange programmes as well as organised training and staff development programmes. The researcher concluded that there was need to create synergies at university levels to mobilise resources for ICTs and enlisting the services off international organisations in providing ICTs for various functions so as to fully utilise eresources for the benefit offlearners.

- The respondents who were mostly university lecturers were not very willing to complete questionnaires due to work commitments and the researcher had to include a photo so other researchers are encouraged to make the questionnaire instrument attractive to the respondents
- The researcher concluded that there was minimum state participation at policy level and this could be achieved through directives of reducing duty on ICT infrastructure so as to harness the most state off the art technology for curriculum delivery especially E-learning and M-learning platforms.
- The researcher concluded that there was need to create synergies at university levels to mobilise resources for ICTs and enlisting the services of international organisations in providing ICTs for various functions so as to fully utilise e-resources for the benefit of learners.
- Universities have not been doing much on worker morale in order to continuously improve the performance of lecturers by offering non-monetary incentives so as to maintain high morale and eagerness to work for the best of the universities.
- Most universities have similar problems when it comes to integration of technology and human resource components which need to be developed especially the +45 year age groups since most young lecturers went away during the economic meltdown from 2000.

• Universities have not invested much in web based curriculum to minimise costs associated with face to face interactions.

## 10. Recommendations for further research

- The researcher recommends a research which seeks to assess the relationship between technology based learning and its effect on student performance at tertiary level. The researcher is of the opinion that the current study may be enhanced by in-depth case studies examining individual universities in terms of ICT integration in relation to ICT Challenges and Work Motivation of Lecturers. Assuming the results from the case studies support the findings of this study, then the results will be more reflect a more robust piece of inquiry.
- A comparative study and analysis can be undertaken on ICT integration in relation to ICT challenges and Work Motivation of Lecturers in the universities of any two SADC region countries in Africa.

# 11. Limitations of the Study

The thesis set to find out the integration of ICTs in Harare's universities in relation to ICT challenges and work motivation off lecturers and six off them were picked two sate and four private with the one denying access to the researcher on the grounds that they were preoccupied with other activities and a research would disturb the smooth flow off their activities. As a researcher, all attempts were made to minimize the research's limitations but like all studies chances off nil limitations are rare. Certain limitations on findings and interpretations off the findings may need to be highlighted as indicated below.

This study used lecturers but no attempt was made to validate the data collected with that from students and university management in view of time, practical feasibility of the administration of the questionnaire and resource available with the researcher.

This study examined only universities in Harare, the capital city of Zimbabwe. The issue of results obtained from a sample is applicable to the wider population (Zimbabwe Universities) from which the sample is drawn needs to be assessed.

The researcher had challenges in ensuring 100% response rate from questionnaires as respondents who were lecturers, were indifferent by showing that they had tight work schedules like assignment marking and examination setting. There were also scenarios where other researchers were using the same institutions to solicit data for their research in institutions of Higher Learning and respondents had to make choices based on the interest generated in the questionnaires.

The research's sample size which had almost 80% males and about 20% females denied the researcher a balanced view based on demographic relationships with the variables in ICT integration in relation to ICT challenges and Work Motivation of Lecturers in Zimbabwe. The researcher had limited resources because sponsors are hard to come by in Zimbabwe and this researcher had to do with a limited budget in a strained economy suffering from liquidity crunch only covering 6 universities out of a possible 18 state and private inclusive.

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