An exploration of the factors affecting learner satisfaction with e-learning at the Zimbabwe Open University

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Abstract: *Worldwide, e-learning is emerging as the new paradigm of modern education due to rapid developments in information and technology. Despite its successful implementation, little is known about why a significant number of e-learning projects fail to achieve their goals and why learners and lecturers stop online learning after their initial experience. The current study sought to explore the critical factors affecting learners' satisfaction in e-learning at the Zimbabwe Open University using customer satisfaction theory. The study used qualitative approach. Using Harare Regional Campus as a case study, data were gathered through focus group discussions, one-on-one interviews, document reviews and simple observations. The findings revealed that learner computer anxiety, instructor attitude towards e-learning, e-learning course flexibility, e-learning course quality, internet connectivity (and reliability), interface, perceived usefulness, perceived ease of use and diversity in assessments, ICT and physical infrastructure, management awareness and support, fiscal and human resources, digital divide and institutional structure were critical factors affecting learners' perceived satisfaction with e-learning. The findings showed how Zimbabwe Open University could improve learner satisfaction and further strengthen its e-learning implementation. ZOU should develop a robust and seamless and well-integrated ICT management system that links student fees accounts, student database, library and My Vista. The University should provide e-learning course audience feedback in order to gain a deeper understanding of learners' expectations. Further research should focus on the development of a customised e-learning model for the Zimbabwe Open University.*

Keywords: Satisfaction; Customer Satisfaction Theory; e-learning; exploration; information and communication technology; learner;
Research Area: Education
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1. INTRODUCTION

E-learning is emerging as the new paradigm of modern education. E-learning has grown rapidly ever since its inception in the 1990s. Worldwide, the e-learning market has grown by more than 35.6 percent (Levy, 2007 cited in Taha, 2014), but failures do exist of course. The shift towards e-learning was driven by the various benefits it offers. Despite this significant growth in e-learning, little is known about why many users stop their online learning after their initial experience. Previous research done under different task environments has suggested a variety of factors affecting user satisfaction with e-learning. What is customer satisfaction? How can models of customer satisfaction be applied in the use of e-learning in higher education? These are the overarching questions interrogated in this section in order to provide a conceptual and theoretical framework underpinning the current study.

1.1   Conceptual Framework of Customer Satisfaction

Generally, people use a product or service in order to derive satisfaction or utility. The word satisfaction first appeared in English during the 13th century. It is derived from Latin

word, *satis* (meaning enough) and Latin ending, *facere* (meaning to do/make). In the literature on satisfaction, researchers are unable to select an appropriate definition for a given context, develop valid measures of satisfaction and/or compare and interpret empirical results (Giese and Cote, 2002). Peterson and Wilson (1992) observed, "Studies of customer satisfaction are perhaps characterised by their lack of definitional and methodological standadrdisation". Likewise, there is no consensus on whether satisfaction is a process or an outcome (Yin, 1990 cited in Giese and Cote, 2002). Consumer satisfaction definitions have either emphasised an evaluation process (Fornell, 1992; Hunt, 1977; Oliver 1981 cited in Giese and Cote, 2002) or a response to an evaluation process (Halstead, Hartman and Schmidt, 1994; Howard and Sheth, 1969; Oliver, 1997, 1981; Tse and Wilton, 1988; Westbrook and Reily, 1983 cited in Giese and Cote, 2002). As a result, it was not easy to select an appropriate definition for the current study. Satisfaction is an overall psychological state that reflects the evaluation of a relationship between the customer/consumer/end-user and a co-environment product-service. The conceptual framework of satisfaction is made up of three psychological elements, namely, cognitive (thinking), affective (emotional/feeling) and behavioural. Customer satisfaction refers to a measure of how products or services supplied by an organisation/company meet or surpass customer expectation. Customer satisfaction is influenced by pre-conceived expectations about the product or service. Expectations are beliefs (likelihood or probability) that a product or service (containing certain attributes, features or characteristics) will produce certain outcomes (benefits-values) given certain expected levels of performance based on previous affective, cognitive and behavioural experiences. There are four ways of measuring expectations:

- Importance (value of product/service fulfilling the expectation).
- Overall affect-satisfaction expectation: like/dislike of product/service.
- Fulfilment of expectation: the level of performance vs. the desired expectations.
- Expected value from use.

But why would pre-purchase expectations or post-purchase satisfaction not fulfilled? Literature has identified a number of reasons:

- Expectations may not reflect unanticipated product/service attributes.
- Expectations may have been vague creating wide latitudes of acceptability in performance and expected satisfaction.
- Expectation and product performance evaluations may be sensory and not cognitive as in taste, style or image.
- Product use may attract so little as to produce no attention and conscious affect or cognition.
- There may have been unanticipated benefits/consequences of purchasing or using the product.
- Original expectations may have been unrealistically high or low.
- Product purchaser, influencer and user may have been different individuals, each having different expectations.

Customer satisfaction survey is an important policy area of every profitable business. Customer satisfaction surveys help organisations to measure and understand exactly how happy or unhappy an organisation's customers are and help find potential advocates. There are two methods of measuring customer satisfaction, namely, direct and indirect methods. Direct methods involve directly contacting customers and getting their feedback on the business organisation's product(s) or service(s). These methods include getting customer feedback through face to face meeting, feedback through complaint or appreciation letter and

direct customer feedback through surveys and questionnaires. Indirect methods of measuring customer satisfaction are customer loyalty index and customer complaints. Figure 1.1 shows that a business should continually seek feedback in order to improve customer satisfaction. Likewise, institutions of higher education like ZOU should have a feedback platform where users of e-learning can share their product/service experience. Taylor (1996) cited in Hom (2000) is one of the advocates of student satisfaction as a policy tool in education.

Figure 1.1: Customer Feedback Cycle

1.2 Models of Customer Satisfaction

In the literature on customer satisfaction, two groups of models are identified, namely, macro-models and micro-models. Macro-models of satisfaction integrate the concept of customer satisfaction in a network of related concepts such as value, quality, complaining behaviour and loyalty (Hom, 2000). The macro-models give the researcher the strategic context of the design and of the results for a study of customer satisfaction. On the other hand, micro-models explain the composition of the concept (construct) of customer satisfaction. The elements that make up the concept of customer satisfaction include disconfirmation of expectations, equity, attribution, affect and regret (Hom, 2000). Micro-models enable the researcher to properly operationalise measurements of customer satisfaction thus helping her/him to achieve construct validity in the satisfaction survey. In this study, both models would be used. Besides clarifying customer satisfaction, these models make research and analysis on students' satisfaction with e-learning more focused and less wasteful of research resources.

1.3 Concept of E-Learning

E-learning is a hybrid term made up of two parts: e+learning. The e- of e-learning has a long history including long term efforts to capture voice and images and to store and then transmit those recordings, for example, records to CDs, film to DVD etc. E-learning is an amalgamation of technology and education. It is a learning and teaching/instruction approach. There are several terminologies all aimed at describing learning that is being practised online. These include, distance learning, virtual learning, e-learning and internet learning. Likewise, the concept of e-learning has many different descriptions, terms and definitions. E-learning is an instruction delivered via all electronic media including the internet, intranet/extranets, satellite broadcasts, audio/video tape, interactive TV and CD-ROM not only for content delivery but also for interaction among participants (Wagner, Hassanein and Head, 2008).According to Laurillard (2004), e-learning describes the interaction in which students use different types of ICTs in their learning process. Khan (2005) defined e-learning as "an innovative approach for delivering a well-designed learner-centered, interactive and facilitated learning environment to anyone, any place, anytime by utilizing the attributes and

resources of digital technologies along with other forms of learning materials suited for open and distributed learning environment". Taha (2014) viewed e-learning as a concept that enhances educational reform by creating a paradigm shift from teacher-centered and retention-based education to a student-centered education where students work collaboratively, construct their own knowledge and enhance problem solving and higher-order thinking skills. According to Clark and Mayer (2011), e-learning refers to "…instruction delivered on a digital device such as a computer or mobile device that is intended to support learning". Although the concept of e-learning has many forms what unites them is that they all depend on ICT. Anderson (2008) observed four commonalities, namely, learner is at a distance from the tutor or instructor, learner uses some form of technology (usually a computer) to access the learning materials, learner uses technology to interact with the tutor and with other learners and some form of support is provided to learners.

1.4   Efficacy of E-learning

The advances in information and communication technology have stimulated progress in all sectors of the society and economy including business, non-governmental organisations, communication, health, banking and finance, medicine, transport, training and education. In education, e-learning has transformed traditional learning environments and in the process created more efficient, cost-effective, flexible and attractive learning experiences. However, there are concerns that e-learning is pedagogically unproven. Rajasingham (2009), cited in Taha (2014) observed that the fields of learning and education had benefitted from electronic delivery to overcome obstacles of time, space and geography providing learning opportunities for anyone, anytime, anywhere and in any mode. According to United Nations Educational, Scientific and Cultural Organisation (UNESCO) (2005), e-learning created a platform to create knowledge-based communities as a source of education as well as to redesign the future of the nation and achieve educational security. The use of ICTs and e-learning creates more flexible solutions for students (Anderson, 2008) that have the opportunity to study online regardless of the students' geographical location. From an economic perspective, Anderson (2008) noted that ICT and e-learning brought increased flexibility which made universities to enroll an increased number of students from all over the world. However the shift between traditional teaching and e-learning based teaching is relatively expensive (World Bank, 2000) although in the long run e-learning is more cost effective compared to the traditional way of teaching (Sanderson, 2002; World, 2000). Mouzakitis (2009) cited in Alkharang and Ghinea (2013) concurred and noted that the benefits of e-learning included the reduction of overall cost (instructors'' salaries, travel costs and meeting room rentals) as well as access to quality education, the provision of convenience and flexibility, a reduced environmental impact through lower paper use and energy consumption and higher retention. On the other hand, the traditional teaching mode involves more staff expenses.

The implementation of e-learning in higher education has led to a shift in the roles of both lecturers and students. Instead of being passive recipients of knowledge transmitted by the instructor, students are expected to be active participants with the main task of acquiring and processing knowledge gathered from various online platforms and sources for which the lecturer is responsible to provide to students (Cohen and Nycz, 2006). According to Anderson (2005), ICT had changed teachers' roles from being 'sages on stage' to 'guides on the side'. Table 1.1 shows a comparison of teachers' traditional and new roles under e-learning.

Table 1.1: Teachers' Traditional and New Roles under E-learning

Traditional Roles	New Roles
• Teacher transmission to passive learners who obey and receive. • Teacher-oriented. • Teacher as task setter for individual learning. • Dictating the learning. • An organiser of learning activities. • Technology as tutor. • Didactic teaching. • Low order retention and recall. • Teacher as provider of information and expert in knowledge. • Teacher as supplier of knowledge. • Teacher as distant authority. • Teacher control of learning-its timing, pacing and contents. • Prescriptions of what, when and how students will be taught. • Teacher in narrow and unchanging range of roles.	• Process-based curriculum with learners who question and analyse. • Learner-oriented. • Teacher as manager of collaborative learning. • Creating enabling structures of learning. • An enabler of quality learning experiences. • Technology to support creativity. • Active learning. • High order thinking. • Teacher as advisor, manager and facilitator of learning. • Teacher as developer of skills. • Developed student-teacher relationship. • Teacher standing back to let learning happen and children to solve problems. • Responsiveness to students' cognitive needs and development. • Teacher in many roles as required: designer, director, actor, facilitator, manager

Source: Cohen, Manion and Morrison, 2004

Table 1.1 confirms that there is more interaction between the instructor and the learner when using e-learning than under the traditional teacher strategy of teaching.

Research has shown that ICT can lead to improved student learning and better teaching methods. In Japan, a research by the National Institute of Multimedia Education proved that an increase in student exposure to educational ICT through curriculum integration had a significant and positive impact on student achievement in four areas of knowledge, comprehension, practical skills and presentation skills in subject areas of mathematics, science and social study. Dalsgaard (2008) cited in Penny (2011) observed that e-learning technology offered a wide range of opportunities for development of education and that the major advantages of the use of e-learning were independence of time and space and individuality for example, courses can be adapted to the individual student and materials can be reused or rearranged. Hrastinski (2009) in Penny (2011) claimed that participation and learning were intricately interrelated and that in order for learners to take full advantage, the participation experience needed to be satisfactory.

Finland, Switzerland, Sweden, Israel, Singapore, the Netherlands and USA are leading the world when it comes to generating economic impact from investments in information and communications technologies (World Economic Forum, 2016). The seven countries have demonstrated that the adoption of ICTs-coupled with a supportive enabling

environment characterised by sound regulation, quality infrastructure and ready skills supply among other factors can pave way to wider benefits. In a majority of developed countries such as the United Kingdom, United States of America, Australia, Japan, Germany and France, e-learning is a central aspect of government policy. Institutions of higher education in developed countries of Europe and North America have fully embraced e-learning. In this regard, the Nordic countries who have emerged as world leaders in e-learning have invested immensely in various IT tools in education. The implementation of e-learning as a tool in higher education in developing countries often encounters various obstacles such as poor infrastructure and information access, lack of support from institutions, necessary resources or internet access and poor technological skills (Sife, et al., 2007). Denis (2010) observed that the implementation of e-learning relied on the fact that the university was forced to train or hire staff to work with the technological aspects as well as changing teaching strategies.

Notwithstanding the above benefits, a number of studies have observed several challenges to e-learning projects (Khan 2005). Some of the major challenges included institutional (administrative, academic affairs and student services); management (maintenance of e-learning environments and distribution of information); technology (infrastructure planning and hardware and software); pedagogy (teaching and learning); ethics (learner diversity, social, cultural, political and geographical diversity, legal issues and protocols); interface (the overall look and feel of e-learning programmes) and evaluation (judgments about the progress of learners and the effectiveness of the e-learning environment). Alkharang and Ghinea (2013) grouped e-learning barriers and challenges into three categories: management (management awareness and support), technical (bandwidth, internet speed technology infrastructure, computer and network security, privacy and data confidentiality) and language issues. Using a quantitative approach, Taha (2014) found four sets of factors that influenced the success of e-learning in secondary schools in Bahrain. These included students' characteristics (computer skills, motivation and attitudes); teachers' characteristics (attitudes, control of technology and pedagogy and teaching style); technology (quality of technology and effectiveness of infrastructure) and design and content (perceived ease of use and quality of content). Taha's (2014) study also revealed that there were some differences in perceptions among teachers according to gender, specialisation, teaching experience and e-learning experience. Likewise Taha's findings showed that there were differences in perceptions among students according to gender, specialisation and level of study (years in schools).Mayes (2004) tacitly acknowledged that learner differences influenced learner satisfaction with e-learning. Although e-learning helped to overcome geographical obstacles and increase efficiency of higher education and maintain its quality and relevance, the financial investments in virtual campuses was very costly (UNESCO, 2005). The World Bank (2000) observed that a large number of institutions in developing countries experienced inadequacy in three most important areas for success: access to high quality faculty, committed and well-prepared students and sufficient resources. According to World Economic Forum (2015), highly promoted projects such as Massive Open Online Course, One Laptop per Child and Hole in the Wall Project failed because of a lack of focus on the person at the centre of education- the teacher (World Economic Forum, 2015). Research over the past decades has shown that the most important contributor to raising educational outcomes in schools are better educators. In higher education Creanor, Gowan, Howells and Trinder (2006) observed that a small proportion of the studies put the learners' voice centre stage. This was acknowledged and supported by DfES (2005) which stated that, "We need to listen to people's views and ensure that technology meets their needs."Such an

integrated and cross-sector approach will inform e-learning developments and help to ensure a real benefit to the learner (Creanor et al., 2006).

The major contribution of the current study was that it explored and/or measured the efficacy of e-learning at the Zimbabwe Open University, a research area that lacks both theoretical and empirical studies. The customer satisfaction theory formed the overall theoretical framework of the study. For didactic purposes, we hypothesised how ZOU, a public sector organisation could apply customer satisfaction models which originally were designed for the private sector.

1.5   Research Questions

- What is the status of e-learning at the Zimbabwe Open University?
- How can e-learning activities be classified at the Zimbabwe Open University?
- What are the lecturers' perceptions/beliefs towards e-learning at Zimbabwe Open University?
- What are the students' perceptions towards e-learning at the Zimbabwe Open University?
- What are the factors that affect learner satisfaction with e-learning at the Zimbabwe Open University?

2. STUDY METHODOLOGY AND DESIGN

The current study used qualitative approach (Bryman, 2012; Saunders, Lewis and Thornhill, 2015) because the aim was to explore, describe and understand the beliefs and experiences of users of ICT and e-learning at the Zimbabwe Open University. We found qualitative approach most appropriate for the study because qualitative methods enabled a rich amount of detailed and valuable information about users' conceptions, thoughts/beliefs and experiences regarding e-learning. In other words, our intention in using qualitative methods was not to quantify objective data but instead to interpret meaningful relationships. The population of the study included all students at the Zimbabwe Open University, lecturers, E-Learning Coordinators and Regional Campus ICT technicians. Data were gathered during nine months (January- September 2017) of research at the Harare Regional Campus. The Harare Regional Campus was purposively selected for the study because of its high student concentration ratio and relative close proximity to the researchers. The researchers triangulated a wide range of data drawn from archives, interviews and simple observations of participants in their natural setting. More specifically, open-ended and semi-structured interviews with 11 lecturers at the ZOU and 41 students from different degree programmes. Closed-ended questions enabled the researchers to ask standardised questions and to collect uniform data from the selected participants while open-ended questions were used to explore the current situation of e-learning at ZOU. Open-ended questions were posed to both students and lecturers to which participants were required to respond in writing. In these processes, useful data closely linked to the participants' lived experiences with MyVista emerged and were analysed, compared and categorised with other information from observations and archives. All these data were subsequently triangulated and interpreted in order to draw conclusions. E-learning coordinators and ICT Technicians were regarded as information-rich and hence were treated as the key informants of the study. In addition to the interviews, we used simple observations in order to gain better insight/understanding how the users interacted with technology (in their natural environment) and how they responded to the changes brought about by the introduction of e-learning.

3. DISCUSSION OF RESEARCH FINDINGS

This section presents findings to the study as well as answers to the research questions concerning factors influencing users' satisfaction of e-learning at the Zimbabwe Open University. The section is divided into four subsections including this introduction. Sub-section 3.1 provides a historical background of information and communication technology (ICT) and e-learning at ZOU. In sub-section 3.2 we describe the demographic profiles of participants while users' understanding of e-learning is discussed in sub-section 3.3.Lastly, factors influencing e-learning satisfaction at ZOU are presented in sub-section 3.4.

3.1   Historical Background of ICT and E-learning at ZOU

The status of e-learning at Zimbabwe Open University can only be understood within the historical context of the phenomenon over the past decades. ZOU embraced information and communication technology in teaching and learning in the late 1990s, the same time the University obtained its charter to offer degrees. ICT is one of the new trends in education in Zimbabwe.

3.1.1 National ICT Policy

Zimbabwe has a dedicated national ICT policy that was adopted in 2005 (and revised in 2015). The policy makes significant references to the promotion of ICTs in education including pedagogical use in educational institutions. The overall objectives of the Zimbabwe National Policy for Information and Communication Technology are:

- Transformation: Facilitate delivery of Zimbabwe Agenda for Sustainable Socio-Economic Transformation and other National Development Goals.
- Growth: Enable and foster access to the increased use of telecommunications/ICTs in all spheres of life (such as e-Government, e-Commerce, e-Employment, ICT in education, ICT in health, ICT in science and ICT in agriculture).
- Inclusiveness: Bridge the digital divide and provide broadband for all.
- Sustainability: Manage challenges resulting from the telecommunication/ICT development.
- Innovation and partnership: Lead, improve and adapt to the changing telecommunication/ICT environment (Government of Zimbabwe, 2015).

Although the national policy on ICT makes reference to the promotion of ICTs in education, Zimbabwe did not have a specific policy on the development of ICT in education. The introduction of ICT in education has been haphazard, fragmented and consequently lethargic. Efforts to introduce a government policy on e-learning can be traced to the launch of the School Computerisation Programme and the Presidential E-learning Programme in 2012. The adoption of e-learning can be categorised into four phases. The first phase involved internet connectivity and computers to mostly disadvantaged schools in the rural areas. The schools that benefitted had a 40-computer laboratory modelled along either N-computing or HP's multi-sector programme. The second phase would involve provision of digital content by converting all current content in paper format into digital content. The third phase would involve the development of ICT skills in teachers, students, administrators and support staff. The fourth phase would emphasise e-examination management including e-registration of students and candidates, e-marking, e-results and e-feedback.

3.1.2 Evolution of ICT-Enabled Teaching at Zimbabwe Open University

The introduction of computers, ICTs and e-learning at ZOU was implemented in phases. The first phase was the broadcasting of live and pre-recorded lectures on the Zimbabwe Broadcasting Corporation, Radio 4during the period 1995-2000. The radio

lectures were later converted into audio tapes which were given to students. During that period the University had one faculty, the Faculty of Arts and Education.

The second phase, 2000-2005 saw the introduction of computers as a compulsory four-credit hour course unit for all the degree programmes offered at ZOU. The computer course was aimed at the development of the individual student by providing them with the essential competencies and skills. This phase can be marked as the first stage of implementing ICT at ZOU. During the period 2006-2010, the University provided Regional Campuses with computer laboratories that were equipped with internet and the necessary ICT infrastructure. All the lecturers were supplied with computers connected with internet. Unfortunately, the computers were not installed with the requisite academic software such as SPSS, EVIEWS and STATA and some Regional Campuses had poor internet connectivity.

The third phase saw ZOU moving towards a virtual learning environment by establishing a Virtual Regional Campus. The Virtual Regional Campus catered for ZOU students beyond Zimbabwe's borders where the students received assignments and modules via email and courier services respectively. That is, upon receipt of student assignments, the Virtual Regional Campus downloaded and printed the assignments and then forwarded them to Faculties for marking and grading. The Virtual Regional Campus then scanned the marked and graded assignments and returned them to the students. This process was cumbersome and laborious such that some students wrote their semester examinations before they received feedback on their assignments.

The last phase, 2014 to date saw ZOU establishing an e-learning management system called MyVista. This entailed the provision of an electronic system and its software installation and implementation at all the ten Regional Campuses. This was in line with the ZOU E-Learning Policy which stated that the University should use e-learning where appropriate to support the achievements of its goals in providing learner-centered learning experiences that are flexible, responsive and effective and meet the needs of all its learners and stakeholders. According to the policy, the e-learning management system should provide online access to learner information by students for example, modules, assignments, semester examination results and fees account statement. Student information was further synchronised and linked to the University student database called Academic Registry Information System (ARIS). ZOU did not have an e-library when the study was conducted.

All lecturers were provided with computers connected to the internet for teaching and learning purposes. Further, the lecturers were trained on how to use MyVista Toolkit; interacting with students, creating question features, uploading assignment questions, modules and supplementary student notes, downloading assignment answers for marking and grading and giving feedback to students. Prior to the launch of MyVista, all modules were in hard copy form or CDs. Thus, all modules were converted to digital format and made available on MyVista.

Realising that without material infrastructure, e-learning was but a mirage, all Regional Campuses were provided with computer laboratories and ICT infrastructure where computers were networked. However, computers and connections were not adequate to enjoy functional virtual campus. Instead, powerful computers, high speed web connections and competent engineers and net administrators were the necessary ingredients for easy access to the internet and to download teaching/learning material. The major challenge in some Regional Campuses was slow internet connectivity due to a small bandwidth. Each Regional Campus had a dedicated ICT technician in order to assist both students and lecturers with

basic computer skills. Table 3.1 shows computer distribution in the ten Regional Campuses at ZOU as at the end of March 2017.

Table 3.1: Computer Distribution at Regional Campuses at ZOU

Regional Campus	Number of computers	Number of students	Student-Computer Ratio
Bulawayo	61	1193	20:1
Harare-Chitungwiza	94	3162	34:1
Manicaland	31	952	31:1
Mashonaland Central	19	624	33:1
Mashonaland East	24	368	15:1
Mashonaland West	34	778	23:1
Masvingo	35	712	20:1
Matabeleland North	27	193	7:1
Matabeleland South	12	281	23:1
Midlands	27	738	27:1
Total	364	9001	24:1

Source: Authors, 2017

The ratio of students per computer was calculated by dividing the total number of computers in each Regional Campus by the total number of students enrolled. In the USA, four to five students per computer is the ratio that many experts consider to be optimum level for the effective use of instructional computers within schools. According to Table 3.1 the number of computers at each Regional Campus was not proportional to the number of students. The student-to-computer ratio did not say anything about student diversity. A ratio of 24 students to one computer was three times higher than the international benchmark. Data on student-computer ratios for other universities in Zimbabwe was not available. In its Strategic Plan, 2015-2020, Zimbabwe Open University planned to reduce the ratio to 20 students to one computer by 2020. The major challenge was inadequate public sector funding to buy ICT tools in order to reduce the high student-to-computer ratio. Probably, there was need for ZOU to design a composite funding model in order to optimise the financial input of the private sector, philanthropic persons, institutions and students. In addition, the chronic funding challenge required ZOU to look for a cost-effective and high performance ICT-enabled learning tool.

Generally, broadband coverage in rural and remote areas remains low in Zimbabwe with coverage mainly concentrated in affluent urban areas which inadvertently widens the urban-rural digital divide against the basic principle of equitable access as enunciated in the Zimbabwe National ICT Policy. According to Postal and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ) (2016), the digital divide between the urban and rural areas was shown in that there were fewer deployments of 3G and LTE (Long-Term Evolution/4G) in the rural areas, hence the broadband coverage in these areas was sparse. For example, of the 758 LTE base stations in the country, only four were in the rural areas. In many developed countries broadband internet connectivity is viewed as a basic utility on a par with energy or water (World Economic Forum, 2015). In Zimbabwe, the mobile phone network revolution over the past five years provided access to communications technology

for the greater majority of the population including those in the most remote parts of the country. Active mobile penetration rate increased to 94.8 percent in December 2016 (POTRAZ, 2016) while active mobile subscriptions stood at 12.977 million during the first quarter of 2017 (POTRAZ, 2017). However, in some areas, the mobile networks only supported voice calls, messages, WhatsApp and Facebook although mobile internet and data usage has been on the rise from 2012.The cost of data in Zimbabwe was the highest in Southern Africa Development Community region. In order for e-learning to succeed at ZOU, lecturers and students alike should have access to high speed network connectivity however remote their locations may be.

3.1.3   *Embracing Collaboration in E-Learning through Social Media*

In preparing for creative and complex roles, peer dialogue and peer experience is very often the most important and productive type of learning (World Economic Forum, 2015). In this regard, ZOU established a social group called MyVista Lecturing Staff on WhatsApp (and administered by E-Learning Coordinators) where all lecturers were able to meet and interact in order to share experiences, approaches and best practices and receive professional advice from e-learning coordinators and peers. The development of such peer learning networks was crucial in improving online training and continuing professional development. That is, lecturers who previously had to cope with difficult and unsettling issues concerning online teaching on their own, they now had the option of seeking professional support from peers on the WhatsApp group. A similar networked social media collaboration platform was cascaded to all students in their respective Regional Campuses. At the national level, the Student Management Services created a ZOU Call Centre where students received instant feedback on their queries since Department Chairpersons, accounts clerks from Regional Campuses and E-Learning Coordinators were also part of this group. However, Academic Registry and ICT were not part of this group. The various social media groups on WhatsApp enabled students to instantly, constantly and continuously share experiences, challenges and benefits of using the MyVista platform. For example, one student, after his/her query was resolved via WhatsApp platform posted the following message on the ZOU Call Centre, "Ha-a, you are the best Mr. G, I love you. Keep the spirit up. I am very much assisted by this group".

3.2   *Categories of E-Learning Activities at ZOU*

The study identified two broad classes of e-learning activities at the Zimbabwe Open University, namely, information and communication use and general education use. On information and communication use, general news and important announcements on upcoming events were posted on the e-learning platform under the 'News forum'icon. The major use of MyVista was for educational purposes. Every course on offer in the University was on MyVista and a dedicated course leader (or lecturer) allocated to it. Chairpersons of Departments as coordinators and overseers had access to all courses in their departments in order to supervise the teaching activities of course leaders. The Chairpersons had additional roles of enrolling and assigning roles to lecturers but could not unenroll students. All course material including modules, tutorial letters, assignments, lecture notes, exercises and assignment solutions (where possible) and reference material were made available to students online. Over a thousand courses were already available on MyVista by the end of the first quarter in 2017 with an additional 200 expected in the following two years. Through MyVista, knowledge of high standard was made accessible to thousands of students all over the world. Unfortunately, ZOU modules and other learning material such as assignments were not accessible to non-registered students and hence could not be shared on the World

Wide Web. The introduction of MyVista transformed ZOU's lecture rooms or tutorial venues from typical weekend face-to-face set-up to a platform where lecturers could interact with students both in lecture rooms and away from the Regional Campus. With MyVista's robust and accessible architecture, teaching was no longer limited to the seating capacity of lecture rooms and distance from the Regional Campus as students could enjoy their learning anywhere and anytime. Unfortunately, the interaction between lecturers and students via MyVista was asynchronous. In this regard, ZOU should consider introducing a real time distance learning platform for real time interaction for online teaching, online presentations, online courses and online training. This would allow all ZOU lectures and tutorials to go real time on the internet so that the University could teach students located anywhere in the world.

The study however, noted the absence of specialised application software that was specifically designed for everyday use by both the lecturers and students. For instance, all computers in the computer laboratories did not have basic programs such as EVIEWS, STATA, SPSS, accounting packages or spreadsheets, graphics software (e.g. CorelDraw) and GPari, LaTeX and Macaulay for computations in Algebraic Geometry.

3.3   *Demographic Characteristics of Participants*

This section presents a description of the demographic characteristics of the 52 participants who took part in the study. Table 3.2 shows that of the 52 participants, 21 percent were lecturers, while 79 percent were students.

Table 3.2: Profiles of Participants

Participant Category	Frequency	Percentage
Lecturers	11	21
Students	41	79
Total	52	100

Source: Authors, 2017

Table 3.3 shows profiles of lecturers at ZOU in terms of gender, area of specialisation, teaching experience and e-learning experience. In terms of gender composition in the study, there were seven (63.6 percent) male lecturers and four (36.4 percent) female lecturers. In terms of areas of specialisation, 18.2 percent of the participants were arts and education lecturers, 63.6 percent were commercials lecturers, zero percent were natural sciences lecturers and 9.1 percent were lecturers in ICT and 9.1 percent were lecturers in social sciences. With regard to teaching experience, 9.1 percent had 0-5 years; 9.1 percent had 6-10 years; 27.3 percent had 11-15 years and 54.5 percent had more than 15 years university teaching experience. In addition, with regard to e-learning experience, 18.2 percent had used e-learning platform before joining ZOU while the majority, 81.8 percent did not have e-learning experience.

Table 3.3 shows that there were some differences in perceptions among lecturers according to gender, specialisation, age, teaching experience and e-learning experience. Likewise, in Table 3.4 students exhibited differences in perceptions in relation to gender, level of university education (undergraduate and postgraduate) and area of study. These findings confirmed that there was need for a conceptual framework that integrated the critical factors and demographic variables. The proposed conceptual framework would serve as a planning tool for new e-learning project and an assessment/evaluation framework for the current e-learning model at ZOU. All the lecturers in the study indicated that they were using e-learning as a teaching strategy with 90.9 percent confirming that they used it quite often

while a mere 9.1 percent indicated that they seldom used e-learning. Otherwise if lecturers were not making good use of MyVista, the money and time invested on the e-learning platform and training them would have been a waste. The lecturers depicted varying levels of knowledge about technology, pedagogy and content. In fact all the lecturers had sufficient knowledge about the course (s) they taught. All the lecturers in the study believed that e-learning was beneficial to them and students as it was flexible and facilitated consistent lecturer-student interaction anywhere and anytime. According to the lecturers, e-learning improved interactive feedback to students through electronic submission and marking (assessment) of assignments and research projects.

Table 3.3: Profiles of Lecturers at ZOU

Parameter	Frequency	Percentage
Gender		
Male	7	63.6
Female	4	36.4
Total	11	100
Area of Specialisation		
Arts and Education	2	18.2
Commercials	7	63.6
Natural Sciences	0	0.0
Social Sciences	1	9.1
ICT	1	9.1
Total	11	100
Years of University Teaching		
0-5	1	9.1
6-10	1	9.1
11-15	3	27.3
15^+	6	54.5
Total	11	100
E-Learning Experience before joining ZOU		
Yes	2	18.2
No	9	81.8
Total	11	100

Source: Authors, 2017

Table 3.4 shows that 29 percent of the students were single; 66 percent were married and 5 percent were divorced. The same table shows that most students 43.9 percent were aged between 31 and 40 years and 31.7 percent were aged between 41 years and 50 years. The distribution showed that most students needed extra support as they were likely burdened with other commitments and responsibilities outside academic work; and a long time may have elapsed since they attended school or college. This could help to explain why some of

the students wanted an extension of computer laboratory opening hours and could not afford to purchase laptops or felt data bundles were very expensive.

Table 3.4: Profiles of Students

Parameter	Frequency	Percentage
Gender		
Male	16	39
Female	25	61
Total	41	100
Level of study		
Undergraduate	34	82.9
Postgraduate	07	17.1
Total	41	100
Marital Status		
Single	12	29
Married	27	66
Divorced	00	0.0
Widowed	02	5.0
Other	00	0.0
Total	41	100
Age		
Below 20 years	02	4.9
21-30 years	08	19.5
31-40 years	18	43.9
41-50 years	13	31.7
51-60 years	00	0.00
Above 60 years	00	0.00
Total	41	100

Source: Authors, 2017

Tables 3.5 and 3.6 show participants' perceptions and understanding of e-learning. Parameters of e-learning effectiveness in achieving learning and teaching objectives, ease of use of e-learning platform, how engaging and attractiveness of the e-learning platform were used to measure users' satisfaction.

3.4 Participants' Understanding of E-Learning

Table 3.5: Students' Understanding of E-Learning

Parameter	Not at all	Not very	Mediocre	Quite	Very
How effective is the e-learning in achieving learning objectives?	3	4	8	14	12
How easy is the e-learning to navigate?	4	9	8	11	9
How engaging are you finding e-learning?	7	4	10	15	5
How visually attractive are you finding e-learning	7	9	1	17	7

Source: Authors, 2017

Table 3.6: Lecturers' Understanding of E-learning

Parameter	Not at all	Not very	Mediocre	Quite	Very
How effective is the e-learning in achieving learning objectives?		1	1	4	5
How easy is the e-learning to navigate?		1	2	4	4
How engaging are you finding e-learning?		1	1	5	4
How visually attractive are you finding e-learning		2	3	4	2

Source: Authors, 2017

Based on interviews, there seemed growing interest and optimism among lecturers and students in using MyVista as a teaching and learning strategy. However, lecturers with little or no previous computer experience were less willing and more hesitant towards the use of e-learning. This group of lecturers tended to talk about what they understood as the major challenges that came with e-learning for example, prolonged hours spent on the computers by lecturers while marking, loss of contact between lecturers and students and compromised computer privacy and security. Likewise, the majority of students felt that MyVista was an effective e-learning tool that was easy to navigate and generally engaging. The MyVista platform was quite visually attractive and very visually attractive to ten and six students respectively out of 41 students. Most students (65.9 percent) indicated that the platform contained opportunities for interactive learning and an equal percentage of students stated that the platform had indeed changed the way they behaved especially in terms of improved interaction with tutors and colleagues studying similar courses. The students were excited by the support they got from the computer laboratory technicians and increased interaction with lecturers/tutors and sharing of ideas with other students. However, most students lamented poor network, difficulties faced in accessing the platform and the online registration process that they deemed too long and confusing, lack of access to computers and internet at home, lack of resources especially financial resources and lack of time to visit Regional Campus, high cost of accessing e-learning platforms in internet cafes. However, students with smart phones or computers and internet either at home or workplaces lauded the University for rolling out e-learning as it had a number of advantages including absence of transport costs to Regional Campus to submit assignments for marking and collect marked assignments and printing costs. In addition, MyVista provided them with convenience and unlimited

opportunities to interact with their lecturers anywhere and anytime. Some of the students indicated that they did not find adequate time to navigate the MyVista platform and other e-learning facilities due to family commitments.

One problem identified by both lecturers and students was the lack of knowledge and skills of how to use the technological tools. What is puzzling is that all the lecturers at ZOU were trained in the use of MyVista. The use of e-learning at ZOU did not require lecturers to master ICT skills themselves but was meant to make lecturers create a more effective learning environment through ICT. More specifically, all lecturers at ZOU were trained on how to use MyVista to facilitate online delivery of tutorials, to manage learners' experiences, to provide academic and technical support, to facilitate learners' online interactions with their peers and to mark learners' work (assignments, practicum, dissertations and research projects) online. Some researchers (Bates, 2001; Mapuva and Muyengwa, 2009) noted that training through computer courses was fundamental and had to be provided if e-learning was going to be fully advantageous in higher education to both the students and lecturers/instructors. Bates further noted that changing to such new work patterns and learning to use technology was both time and cost consuming. At ZOU there was mixed reaction to training on the use of MyVista in teaching by the lecturers. Some lecturers stated that the training on the use of MyVista was inadequate and ineffective. For example, they highlighted that there was a considerable time lag between training and actual use of e-learning platform. In spite of the training, a majority of the lecturers who participated in the current study could not complete questionnaires sent to them online and preferred hard copy questionnaires. This demonstrated that most of the lecturers at ZOU were not computer savvy or merely indifferent to embracing ICTs in their work patterns.

Although all the students at ZOU took a compulsory computer course, a majority of them were not trained on the use of e-learning platform which invariably contributed to minimal student-lecturer interaction on MyVista. Instead, the University conducted a Train the Trainer Workshop which was then cascaded to the Regional Campuses by the Student Management Services in conjunction with the ten Regional Campus Chapters of the Student Representative Council. While peer teaching is an important tool for increased comprehension and retention, it required to be closely monitored as indicated by some students who revealed that they did not receive training on e-learning. Consequently, some students failed to properly navigate on MyVista platform leading to some students registering wrong courses or failing to upload their assignments on MyVista or submitting wrong assignments. In order to use and understand online sources of information, students needed both basic ICT and web-browsing skills. For example, some students had problems to select links to follow in order to upload assignments or download modules and other related learning materials including lecture notes.

Whereas students could register courses online, they could only deregister a wrong course within 24 hours. Thereafter initially the process to deregister a wrong course was painstakingly slow and cumbersome as it could no longer be done online. That is, the students had to complete Course Deregistration Forms at their Regional Campuses which were then submitted to Academic Registry which ultimately processed them in conjunction with the ICT and Finance Department (student fees accounts). One student posted the following message on ZOU Call Centre.

> I registered for a wrong course and I applied for deregistration two weeks ago.
> *Kukunzi togadzirisa but hapana chagadziriswa* (I was advised that the issue
> would be resolved but nothing has been done yet.)

Realising the tedious process of deregistering a wrong course, the University enabled students to do so online without the intervention of the Academic Registry.

On a related issue, students bemoaned the lack of seamless and smooth integration between student fees account and the e-learning platform which prevented and delayed some of them from accessing educational services via MyVista. Box 3.1 shows some students' exasperation with the lack of integration between fees account and MyVista.

Student 1: I paid in full then registered online but cannot upload assignments since Monday. I have been to the office and was told all will be OK but managed to submit one subject online. What shall I do?"

Student 2: I paid fees through RTGS (Real Time Gross Settlement) but my fees account has not been updated. Please help, I cannot submit my coursework. How long does it take for an RTGS to reflect in ZOU accounts? I am stuck, please help!

Student 3: I paid $350 and the balance ($300) would be paid through three equal instalments but

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Box 3.1: Students' comments on lack of synchronisation between MyVista and fees account

Source: Authors, 2017

3.4   Factors influencing users' e-learning satisfaction at ZOU

Zimbabwe Open University, like any other business organisation should appreciate the strategic importance of customer experience which has grown to be the major differentiator and an advantage that has become very difficult to imitate in university education. Generally, building an exceptional on-line learning customer experience is not a short-term process. Accordingly, through interviews with lecturers and students and repeat and prolonged simple observations, the study identified 11categories of the factors affecting users' e-learning satisfaction at the Zimbabwe Open University. These were ICT and physical infrastructure, institutional structure, management awareness and support, fiscal resources, internet access and interface, availability of human resources, learning content, attitude of lecturers and students' attitude toward online learning. Table 3.7 shows the enabling factors and constraints of each of the 11 classes of the factors influencing users' e-learning satisfaction at ZOU.

Table 3.7: Matrix of Factors Influencing E-Learning at ZOU

Factor	Enabling Aspects/Factors	Constraints
Physical Infrastructure	• Buildings • Computer laboratories in Regional Campuses. • Libraries in Regional Campuses • Energy/power	• Lack of own physical infrastructure (e.g. buildings) in some Regional Campuses.
ICT Infrastructure	• Availability of computers and internet in offices and computer laboratories. • Fixed line and wireless (WIFI) • LAN and WAN. • Computer server and related applications	• Some lecture rooms do not have ICT infrastructure e.g. projectors and e-learning interactive touch screens and accessories. • Inadequate computers at some Regional

	• ICT equipment increasingly becoming affordable and accessible.	Campuses. • Some computers are now old and hence very slow. • Lack of audio facilities for chats and conferences at Regional Campuses to enable synchronous communication between lecturers and students. • No chat rooms • No instant sms facility to notify students of new uploads on MyVista by lecturers.
Internet Access	• Communication: e-mail (asynchronous) and chat/messaging (synchronous) • Search tools (engines) • Connections (modems, wireless LAN& WAN, Internet Service Providers) • ICT equipment increasingly becoming affordable and accessible	• Narrow bandwidth (100 MBs). • Slow and intermittent internet connectivity at some Regional Campuses. • Some lecturers and students do not have internet at home or internet connectivity is poor in the areas they live/stay. • Privacy and data confidentiality • Computer and network security. • No online conferences with voice over internet protocol (VOIP) to allow real time communication.
Institutional Structure	• Academic Affairs (including Faculty Offices and Departments) • Finance Department • Administrative (Regional Campus & Academic Registry) • E-learning Coordinating Unit • ICT Department • Student Management Services • Student Representative Council	• Capacity constraints of the ICT Department.

Human Resources	• High quality faculty. • Dedicated staff (lecturers, ICT technicians and administrators). • ICT technicians and administrators at all Regional Campuses.	• Inadequate in-house expertise in some faculties. • Poor ICT skills among some lecturers. • Resistance to change by some lecturers.
Fiscal Resources	• Dedicated ministry of higher and tertiary education. • Government programme on STEM/STEAM. • ZIMDEF support to higher and tertiary education.	• Lack of adequate public sector funding. • Heavy initial capital outlay required to purchase ICT tools and set up e-learning platform.
Learning Content	• Content design • Content analysis • Learning strategies • Abundant digital education content (modules, e-books and institutional repository publications).	• Poor e-learning course quality. • Lack of training especially the design of lecture material. • Lack of specialised application software.
Interface	• Site design (attractive) • Accessibility • Ease of use and navigation. • Visually attractive e-learning. • Computer Screen Readers for students with disabilities (at Harare-Chitungwiza Regional Campus only).	• MyVista is text-based and hence excludes students living with disabilities. • No Braille Note Apex • No Computer Screen Readers at nine Regional Campuses. • Lack of seamless integration between student fees account and ARIS/MyVista.
Attitude of Management	• Management awareness and support. • ZOU management demonstrated enthusiasm and positive attitude in promoting e-learning by setting up an E-Learning Coordinating Unit.	• Constrained fiscal space.
Attitude of Lecturers	• Growing interest and optimism among lecturers in using MyVista. • Training of lecturers on	• Time lag between training and actual use of e-learning platform. • Lecturers' readiness to

	the use of MyVista Toolkit. • Networked collaboration brings lecturers together to pool expertise and share content.	integrate technology into instruction. • Resistance to change by some lecturers. • Lack of knowledge and skills of how to use the ICT tools. • Perceived ease of use. • Not sure on perceived usefulness of e-learning. • Digital skills curriculum.
Characteristics of Students	• Motivation and attitudes. • Committed and well-prepared students. • Majority of ZOU students are aged between 31 and 50 years. • Growing interest and optimism among students in using MyVista.	• Learner diversity (gender, age, bias and cultural diversity) • Students' exposure to computers and internet at home. • Students lack personal contact and require demonstrations. • Knowledge and skills gap of how to use the technological tools. • Perceived ease of use. • Not sure on perceived usefulness of e-learning. • E-learning course quality. • Data security and reliability.

Source: Authors, 2017

The pertinent issues within the 11 categories in Table 3.7 would help to analyse every aspect of designing, implementing and monitoring the e-learning system. That is, ZOU could improve the effectiveness of its e-learning system by addressing questions arising from the 11 categories. Outside the University, other socio-economic factors particularly income level and environment influenced the students' satisfaction with e-learning at the Zimbabwe Open University. Students' computer experiences heavily depended on the conditions in the home and environment in which they lived. Cultural diversity, legal and political issues and digital divide also affected students' satisfaction with e-learning. POTRAZ (2017) proved that the cost of data was very high in Zimbabwe and that coupled with high cost of electricity obviously placed a heavy financial burden on the student. A significant number of students at ZOU were in the rural areas where internet connectivity was unreliable or not available. Students in the rural areas did not spend much time on computers inside and outside of the University due to long distances involved and they did not feel very skilled in their computer use. The lack of computer use put these students behind on technology knowledge and proficiency scale. ZOU should facilitate availability of affordable iPads to students and lecturers.

4. CONCLUSION AND RECOMMENDATIONS

Based on interviews and observations at the Harare Regional Campus, there was growing interest and optimism among lecturers and students in using MyVista as a teaching and learning strategy. The lecturers depicted varying levels of knowledge about technology, pedagogy and content. All the lecturers in the study believed that e-learning was beneficial to them and students as it was flexible and facilitated consistent lecturer-student interaction anywhere and anytime. Likewise, students displayed varying ICT knowledge and web-browsing skills. Two broad classes of e-learning activities, namely, information and communication use and general education use were identified at the Zimbabwe Open University. However, the study noted the absence of specialised application software that was/were specifically designed for everyday use by both the lecturers and students. The study proposed a conceptual framework that integrated critical success factors and variables that influenced user satisfaction of e-learning at the Zimbabwe Open University. More specifically, the study's findings revealed that ICT and physical infrastructure, management awareness and support, fiscal and human resources, institutional structure, learner computer anxiety, instructor attitude towards e-learning, e-learning course flexibility, e-learning course quality, perceived usefulness, perceived ease of use and diversity in assessments were critical factors influencing learners' perceived satisfaction with e-learning at the Zimbabwe Open University. Outside the University, other socio-economic factors particularly income level, cultural diversity and family support, digital divide and environment influenced the students' satisfaction with e-learning. The high cost of data and energy placed a heavy financial burden on the students which coupled with low broadband internet coverage and connectivity in some areas affected the learners' interaction with fellow students and lecturers. The study examined demographic variables of both lecturers (sex, age, marital status, area of specialisation, teaching experience and e-learning experience) and students (sex, age, marital status and years at University) in terms of their perceptions of factors influencing e-learning at the Zimbabwe Open University. The conceptual framework developed in this study demonstrated how Zimbabwe Open University could improve learner satisfaction and further strengthen its e-learning design and implementation by focusing on the lecturers and learners especially on resource allocation and training. Future research should focus on developing an integrated e-learning model for the Zimbabwe Open University that would help to enhance effectiveness and efficiency in teaching. The following recommendations and solutions to resolve the research questions in section 1.5 emanated from the study:

- ZOU should expand the internet bandwidth level to the available optimum of 173 MB per second.
- ZOU should develop a robust and seamless and well-integrated ICT management system that links student fees accounts, ARIS, library and MyVista.
- ZOU should acquire additional ICT infrastructure such as projectors and e-learning interactive touch screens and related accessories and facilities in order to enhance teaching.
- The distribution of computers at Regional Campuses should be proportional to the number of students.
- All ZOU lecturers should embrace collaboration which must take advantage of networked collaboration tools (such as social media) and social networking in order to develop mechanisms that bring educators together to pool expertise and share content.
- ZOU should facilitate availability of affordable iPads to students and lecturers.
- ZOU should train lecturers on online instructional technologies so that they can design attractive e-learning content.

- ZOU should expand e-learning training to all students and the training should be continuous.
- The University should provide students with e-learning course audience feedback in order to gain a deeper understanding of the learners' expectations and hence make improvements and changes to the courses.
- ZOU should reduce red tape by allowing students to deregister wrong courses online.
- ZOU's e-learning management system should not exclude students living with disabilities. For example, the University should acquire Braille Note Apex and Computer Screen Readers.
- ZOU should extend opening hours of computer laboratories at Regional Campuses.
- ZOU should introduce a real time distance learning platform for real time interactions for online meeting, online courses and online teaching.
- Given a constrained fiscal space, ZOU should design a composite funding model in order to optimise the financial input of the private sector, philanthropic persons, institutions and students.

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