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Success Factors and Challenges for
E-learning Technologies in the
Namibian Higher Education System:
A case study of the University of Namibia

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ABSTRACT

Education is one of the deciding factors for poverty alleviation and economic growth. Governments of developing countries is struggling to meet the demand for qualitative education and the nation of Namibia is no exception. Namibia is struggling with the lack of a skilled workforce and the lack of access to qualitative higher education has been identified as one of the prime causes. ICTs have been identified as a potential enabler for an increased access and quality of education in Namibia. This study employed a qualitative approach to examining the success factors and challenges that applies to e-learning at the University of Namibia (UNAM). The study identified a multitude of critical factors within 5 different areas: i) Access, ii) User motivation, -attitude and -awareness, iii) Systematic approach, iv) Evaluation and analytical challenges, and v) Transforming the education. This rapport will discuss the role of e-learning at UNAM, the factors that are critical for e-learning at the learning institution and how this correlate with previous findings made by the scientific community on similar issues.

Keywords: E-learning; success factors; challenges; developing countries; ICT; ICT4D; qualitative case study; Namibia; higher education; open and distance learning; access; user motivation, -attitude and -awareness; Systematic approach; evaluation and analytical challenges; transforming the education.

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CONTENTS

1. INTRODUCTION

Namibia and many developing countries with it suffer from a lack of a qualified workforce, holding back the country's progress in for example economic growth and in bringing all sectors of the population out of poverty (National Planning Commission, 2013; African Development Bank, 2014). Building a qualified workforce requires political incentives, actions and well-functioning educational platforms. The Namibian government has made many reforms and investments in the education sector over the past years, but the demand for qualitative education still outweighs the supply (National Planning Commission, 2013). Education is one of the deciding factors for poverty alleviation and economic growth in developing countries (WSIS, 2005; Motivans, Smith and Bruneforth, 2006; National Planning Commission, 2013; UN, 2015). It's clear that governments in these countries struggle to meet the demand for education, in part due to the increasing shortage of teachers; a proposed solution to this struggle comes in the form of E-learning technologies (UNESCO, 2005). E-learning technologies refers to the use of information communication technologies (ICTs) to enhance, support and deliver teaching and learning processes. E-learning is formally defined as: *"...electronically mediated asynchronous and synchronous communication for the purpose of constructing and confirming knowledge"* (Garrison *et al.*, 2003). The incorporation of information communication technologies (ICTs) in higher education institutions improve communication; asynchronous and synchronous learning; increased cooperation and collaboration; cost-effectiveness and pedagogical improvement (Sife, Lwoga and Sanga, 2007). Unfortunately, the governments are not the only ones that face challenges in the delivery of qualitative and affordable education to all eligible students. The E-learning technologies, the proposed solution, also face challenges in developing countries. Tim Unwin examined the situation for E-learning in Africa through a survey based on the data from a questionnaire that was distributed and answered during the year of 2007. Tim Unwin states that the respondents showed enthusiasm for E-learning in their countries, but that they also identified many constraints and challenges for the implementation of E-learning techniques, strategies and practices. Some factors that were mentioned was cost of implementation, lack of appropriate infrastructure (such as connectivity in rural areas), training and relevant digital content (Unwin, 2008).

However, the constraints and challenges presented by Unwin almost a decade ago might not apply today. In fact, the telecommunication market in Africa is one of the fastest-growing in the world. The International Telecommunication Union reported that there were 118.43 mobile cellular subscriptions per 100 people in Namibia the year of 2013 (International Telecommunication Union, 2015). However, telecommunication does not look the same as in developed countries, the lack of infrastructure for a fixed cable network in Africa and the slow growth of the same, has made the Africans user behaviour for communications adapt to this reality and developed their communication patterns to fit the Circumstances. The African computer user relies heavily on public access points or cyber cafes instead of using their own connection and devices, and they are using mobile cellular devices for everyday communication. The telecommunication companies have reacted to this change of behaviour and are focusing more on wireless access technologies (The International Telecommunication Union, 2007).

An educational practice that stands to gain from the shifted focus to wireless access technologies and where E-learning can make a difference is the practice of Open and

INTRODUCTION

Distance Learning (ODL). ODL is formally known as distance education and refers to educational approaches that eliminate the constraint of the physical presence of learners. Distance education allows home and independent study at a time and place of the learners choosing (Oladejo, 2014). The African student's limited access to brick and mortar institutions, coupled with the increasing demand for education has certainly paved the way for ODL. Unfortunately, it lacks capacity for now, in large part due to the techniques being practiced. These techniques are based on lectures and guidance over telephone, and course material and assignments that are posted as hard copies. Tony Bates states that information and communication technologies (ICT) such as E-learning information systems are being, and can be used to increase the success of ODL. He concludes that this has been the case in other countries around the world, but that the developing countries of Africa lacks the necessary ICT infrastructure (Bates, Aderinoye and Siaciwena, 2008).

The lacking ICT infrastructure that both Bates and Unwin identifies is just one of many challanges perceived by the scientific community, other challenges includes: lack of and access to training, information (Raab, Ellis and Abdon, 2001), support from institutions (Brinkerhoff, 2005), confidence in technology, connectivity (Hussein, Aditiawarman and Mohamed, 2007), culture and policy (Shraim and Khlaif, 2010). Further adding to these challenges are the inherent challenge of achieving a successful E-learning adoption and incorporation for higher education institutions in the context of a developing country. For example, Andersson identified seven major challenges for E-learning in her case study of eBit in Sri Lanka: 1) student support, 2) flexibility, 3) teaching and learning activities, 4) access, 5) students' academic confidence, 6) localization of content and 7) attitudes on e-learning (Andersson, 2008).

However, there is higher education institutions that recognizes the possibilities with, and the value of E-learning. The institutions invest both time and resources in E-learning and is therefore facing the stated factors that makes success factors and challenges. One of these intuitions is The University of Namibia. Giving credit to the possibility of incorporating E-learning into the educational institutions of developing countries is the increased access to mobile technology paired with the fact that most universities have access to the appropriate ICT infrastructure to facilitate E-learning technologies, such as a Local Area Network, internet and computers (Sife, Lwoga and Sanga, 2007). However, one has to recognize that the challenges and success factors for E-learning systems in developing countries are unique and are not to be compared or generalized to the challenges and success factors of developed countries. Jean-Yves Hamel expressed the importance of a holistic picture and an understanding of the context in which ICTs is to be adopted and incorporated; when he concluded that: *"...ICTs alone cannot improve peoples' lives; the use of ICTs needs to occur within broader strategies that are tailored to make the most use of these tools and techniques in order to reap their potential benefits for human development."* (J. Hamel, 2010). Richard Heeks has also recognized this lacking understanding of the context when ICT projects are designed and implemented; he also concludes that this design-reality gap as he calls it, often is the cause for the high failure rate of ICT projects and initiatives in developing countries. Heeks analysis of ICT projects resulted in 7 dimensions that are crucial and sufficient to understand the design-reality gap that exist for the ICT project in question. Heeks summarize the seven dimensions by the acronym ITPOSMO: Information, Technology, Process, Objectives and values; Staffing and skills; Management systems and structures and other resources (Heeks, 2002a, 2003, 2010).

INTRODUCTION

The unique context, success factors and challenges that applies for developing countries calls for tailor made ICT solutions that takes the milieu and context into consideration for its design, it is therefore necessary to examine the subject further and in a greater depth within the context of a developing country. This study's purpose is therefor to examine what success factors and challenges that exist for E-learning in the context of a developing country's higher educational system. The study is of importance due to the lacking understanding of the local milieu and context when ICT projects are designed to be implemented in a developing country, research on the specific success factors and challenges will therefore shrink the gap between the design and the reality of a developing country.

The following paragraph is explaining the following disposition of this reports chapters and what the different sections include:

The background chapter (2) will cover 4 subjects: 1) Information communication technologies (ICT), 2) E-learning and 3) developing countries 4) Related works. These subjects are central in the study and are therefore of importance for the reader who which to fully grasp the study, its results and its findings.

The Context of research chapter (3) will introduce the context of the field work study of this report. The chapter will cover Namibia, The University of Namibia and the Ministry of Education.

The problem statement chapter (4) will state the problem that motivated the study and give the answer to what the study will examine and why the study is of importance. The problem statement chapter's structure will be: 1) purpose, 2) aims and objectives, 3) contribution, and 4) scope.

The Method chapter (5) will cover this study's purposed and performed method.

2. BACKGROUND

This chapter will cover the major subjects and fields that are of importance for the study. Section 2.1 describes the umbrella term information communication technologies (ICT) and what its meaning is in the context of this research. Section 2.2 describes E-learning and its implication for modern education. The section also covers challenges and success factors for E-learning in a greater depth. Section 2.3 describes what a developing country is based on, the factors that define it as such, and what actions that are being taken to ensure sustained development and a global welfare for all. Section 2.4 discusses what Information and Communication Technologies for Development (ICT4D) means and how the application of ICTs can help developing countries strive towards economic, political and social development. Section 2.5 discusses works and previous research that are related to this study.

2.1. Information and Communication Technologies (ICTs)

The phrase Information and Communication Technologies have been in use since the 60s. The abbreviation ICT was first recognized in a report ordered by the UK government (Stevenson, 1997). ICT have since been commonly used within a wide variety of contexts, and the meaning of the term differs depending on the context. These contexts include: economic development, education, IT, business and personal usage (Zuppo, 2012). This study recognizes ICT as an umbrella term and is therefore relying on UNESCOs definition to describe what ICT is: *"The term "information and communication technologies" (ICT) refers to forms of technology that are used to transmit, process, store, create, display, share or exchange information by electronic means. This broad definition of ICT includes such technologies as radio, television, video, DVD, telephone (both fixed line and mobile phones), satellite systems, and computer and network hardware and software, as well as the equipment and services associated with these technologies, such as videoconferencing, e-mail and blogs."* (UNESCO, 2007).

UNESCO is recognizing that ICT are changing the way we live and work. They argue that ICT are making information-exchange faster, easier and more cost-effective and that ICTs can be implemented in a number of businesses and fields (Sife, Lwoga and Sanga, 2007; UNESCO, 2007).

Challenges and Success factors are common factors that are examined when knowledges regarding how ICTs can and should be implemented in order to achieve successful adoption of new ICT in an organization. Challenges are defined as factors that need to be addressed to ensure a good adoption of ICTs in ICT- implementation and change projects. Challenges also goes under other terms, such as: obstacles and barriers. Challenges, barriers and obstacles are all factors that can hinder successful implementation and adoption of ICTs in projects. This rapport will use the term "challenges" explicitly, this rather than use obstacles, barriers or a mix between the three. This due to the fact that challenges implies that it is factors that can hinder implementation projects or introduce difficulties in the adoption, but obstacles and barriers implies that the factor is fully hindering adoption or implementation of ICTs in the context in question.

The success factors on the other hand is enabling factors for the types of projects that were previously discussed. Success factors are important to take into consideration when designing and conducting ICT projects to ensure a successful adoption and change (Selim, 2007; Sife, Lwoga and Sanga, 2007; Andersson, 2008; Shraim and Khlaif, 2010; Bass and Heeks, 2011; Bhuasiri *et al.*, 2012).

2.2. E-learning

E-learning is the use of ICT to deliver education and training to learners (Sun et al., 2008). ICTs that is used effectively by instructors and learners have the potential to make education more accessible and improve the quality of the education (UNESCO, 2007).

The formal definition for educational technology (E-learning) have changed over the years; this have been in regards to the technological advancements, and changes in learner capability (Robinson and Molenda, 2008). This study defines E-learning as the study and ethical practice of more efficient and qualitative learning with a higher performance by the creation, usage and management of appropriate ICT processes and resources. E-learning is aimed to achieve electronically mediated asynchronous and synchronous communication with the goal to construct and confirm knowledge (Garrison et al., 2003; Robinson and Molenda, 2008).

The possibilities for ICT in education have made the E-learning market grow exponentially. Worldwide, it had a growth rate of 35.6% and is now seen as a new paradigm for modern education. The appliances for E-learning varies from lower-education to higher education institutions and businesses (Sun et al., 2008). The adoption and incorporation of E-learning in learning environments are facing both pedagogical, cultural and ICT related challenges (Andersson 2008; Bates et al. 2008; Brinkerhoff 2005; Hussein et al. 2007; Raab et al. 2001; Shraim & Khlaif 2010; Unwin 2008). One of the ICT related challenges for E-learning include long term commitment to the E-learning system in question. The fact is that a lot of online learners tend to stop using the E-learning system after their initial experiences and little is known to why this is. But it stands clear that user satisfaction is one of the most important success factors for information systems (Sun et al., 2008). Learners satisfaction is therefore a critical success factor in E-learning. Other factors that affect learners perceived satisfaction include: learner computer anxiety, instructor attitude toward e-Learning, e-Learning course flexibility, e-Learning course quality, perceived usefulness, perceived ease of use, and diversity in assessments (Sun et al., 2008). Other factors that have been examined by the scientific community include: E-learning acceptance, technology awareness and motivation (Selim, 2007; Bhuasiri et al., 2012). Bhuasiri et al. also concludes that the changing of the learners' behavior are prerequisites for successful e-learning implementations (Bhuasiri et al., 2012).

Advantages of E-learning includes the possibility to overcome the limitations of time and space with the use of technology (Sun et al., 2008). This trait makes E-learnings highly suitable to be incorporated into the field of Open and distance learning (ODL). E-learning based solutions for ODL, formerly known as distance education have made it possible for ODL to move beyond the print based materials that are reliant on postage correspondence, to ICT based solutions with instant correspondence over internet and telecommunication networks (Oladejo, 2014).

The introduction of mobile technologies such as: Notebook computers, Tablet PC, cellular phones and smart phones adds a new dimension to E-learning that allows the learner to be truly mobile while accessing their educational resources. The impact mobile technologies will have on E-learning have been recognized and have resulted into the introduction of a new term, M-learning. M-learning is of particular interest in contexts where distance and accessibility is an issue for a lot of learners and where mobile telecommunication technology is in majority (Georgiev, Georgieva and Smrikarov, 2004).

The Information age are changing our realities and are forcing educators to incorporating ICTs into the educational sector. Digital technologies are requiring

change in pedagogy and educators are therefore challenged with the introduction of technologies such as E-learning. E-learning have the potential to drastically change and improve on the way we educate and learn, but the success of E-learning and the potential benefits of the same depend greatly on our understanding of the context in which it will be introduced (Garrison *et al.,* 2003).

2.3. Developing countries

There are no globally agreed upon criteria for what defines a developing country as a such. The UN makes it clear that the differentiation between developed and developing countries are intended for statistical convenience only and no judgment about the countries in questions stage in the development process are passed based on this classification (United Nations Statistics Division, 2014).

The World Bank made a clear statement of withdrawal from the term in the 2016 edition of World Development Indicators, when the World Bank seized to distinguish between developed and developing countries in the presentation of its data. The World Bank is instead classifying countries based on their Gross National Income (GNI) per capita (World Bank Group, 2016):

- Low income countries had GNI per capita of US$1,025 or less.
- Lower middle income countries had GNI per capita between US$1,026 and US$4,035.
- Upper middle income countries had GNI per capita between US$4,036 and US$12,475.
- High income countries had GNI per capita above US$12,476.

The World Banks classification can be misleading due to inequality in the income of the population in the classified country, two countries with the same GNI per capita can end up having different human development outcomes. UN created the Human Development Index (HDI) to emphasize that people and their capabilities should act as the criteria for evaluating the development of a country. The UN also emphasizes that economic growth alone isn't enough to assess the development of a country. The HDI is the geometric mean of normalized indices for the 3 dimensions that are measured to establish the HDI for a specific country. The 3 dimensions is as follows: 1) long and healthy life, 2) knowledge and 3) A decent standard of living. The indices used to measure the dimensions are: 1) Life expectancy index, 2) Education Index and 3) GNI index (UNDP, 2015). This study defines a developing country as a country or a sovereign state with a low HDI relative to other countries.

On September 25, 2015, the UN formally adopted the 2030 agenda for sustainable development. The agenda presents a new set of global goals that applies to all member states of the UN, the goals are known as the Sustainable Development Goals (SDGs). The 17 SDGs and 160 goals build upon the Millennium Development Goals that were adopted in 2000, but have a far wider scope and are far more ambitious in comparison. The SDGs focus on 5 themes: 1) people, 2) planet, 3) prosperity, 4) peace and 5) partnership (World Bank Group, 2016). Sustainable development, is the will to improve everyone's quality of life, it means to have a different vision of the world. What it means to be improving on the quality of life differs from one country to another, but the SDGs is the realization that no single institution, region or individual will be able to attain this alone (UN, 2015).

2.4. Information and Communication Technologies for Development (ICT4D)

ICT4D is a term that summarize the field which focus on the understanding of how ICTs can be used to help the poor and marginalized people; communities and nations of the world to bring a difference to their life's (Heeks, 2008, 2009; Unwin, 2009). ICT4D research have shown that ICTs can contribute to poverty reduction and development. A common question regarding the scientific, monetary and development focus on ICT4D; is whether or not marginalized people who is living in poverty with risk for starvation will choose technology over bread, and if the resources that are spent on ICT4D would not be spent better elsewhere? Waldburger and Weigel, discussed this issue and concluded that: *"The issue is, whether we accept that the poor should, in addition to the existing deprivation of income, food and health services, also be further deprived of new opportunities to improve their livelihood. The strategic choice is whether to accept the rapidly growing gap caused by a very asymmetric architecture of opportunities or whether to use ICT in a creative manner to level the playing field in economic, social, cultural and political terms."* (Weigel and Waldburge, 2004). So, the question is not whether or not ICT should be provided to the poor and marginalized, but how we should achieve this in a way that make ICT affordable and available to the whole world, and that is the issue that the researcher within the ICT4D-field is attempting to address and solve.

ICT4D has, just as the web and other ICT technologies had distinct phases that all had different focus, technology, utility, function, issue and sophistication. Richard Heeks have examined the phase change further. He presented and summarized his conclusion of ICT4D 3 different phases as shown in Figure 1 (Heeks, 2008, 2009):

Issue/phase	ICT4D 0.0 (1960s – mid-1990s)	ICT4D 1.0 (mid-1990s – mid-/late-200s)	ICT4D 2.0 (mid-/late 200s onwards)
Iconic technology	PC database	Telecentre	Mobile phone
Key application	Data processing	Content	Services & production
The poor	Who?	Consumers	Innovators & production
Key goal	Organizational efficiency	MDGs (Millennium development goals)	Growth & development
Key issue	Technology's potential	Readiness & availability	Uptake & impact
Key actor	Government	Donors & NGOs	All sectors
Attitude	Ignore → isolate	Idolise → integrate	Integrate → innovate
Innovation model	Northern	Pre-poor → para-poor	Para-poor → per-poor
Dominant discipline	Information systems	Informatics / development studies	Tribrid of CS, IS and DS
Dominant paradigm	Modernization	Human development	Development 2.0

Figure 1: Adopted from the figure: "Summary of ICT4D phases" (Heeks, 2009).

2.5. Related works

Previous and related works have focused on challenges for e-learning in developing countries (Sife, Lwoga and Sanga, 2007; Andersson, 2008), general success factors for e-learning (Selim, 2007; Sun *et al.*, 2008) and success factors for e-learning in the context of developing countries (Hussein, Aditiawarman and Mohamed, 2007; Bhuasiri *et al.*, 2012).

More common is works that have focused on ICT in developing countries; a wider scope that is known as ICT4D, this scope includes: e-learning, e-governance, e-health, e-waste management etc. (Heeks, 2002a, 2002b, 2009, 2010, 2012; Slater and Tacchi, 2004; Weigel and Waldburge, 2004; Thompson, 2007; J.-Y. Hamel, 2010; Heeks, Subramanian and Jones, 2014).

All of the discussed work is acknowledging that ICTs is as an important driver that can play a key role in poverty reduction and continues development in developing countries. One more common conclusion is that more works need to be published within the subject of ICT4D.

To find qualitative research works on e-learning in developing countries that have included a field study in the context of research is rare (Hussein, Aditiawarman and Mohamed, 2007; Andersson, 2008); to find works who have done this while looking at both success factors and challenges is even more rare or up to this date non-excitant. This study aims to fill this gap while contributing with knowledge to the ICT4D field.

The difference from the previously discussed works, is that this study aims at performing an qualitative field research study, where the researcher looks at both challenges and success factors; the researcher is therefore not making any judgment regarding the success or failure of the case in question, but are instead examining the case from both perspectives in trying to identify critical success factors and challenges for E-learning in developing countries in a way that is not affected by the researchers bias or hypotheses regarding the subject of research.

3. CONTEXT OF RESEARCH

The data collection of this study was in major part performed through a field work conducted in Namibia.

Namibia is a country in Sub-Saharan Africa with a population of 2.3 million. Namibia's HDI for 2014 was 0.628, this value put the country in the medium human development category and position it at 126 out of 188 countries and territories. Namibia is enjoying a continues increase of the country's HDI value, between 1990 (The year of the Namibia's independence) and 2014 it have had an 8.6 percentage increase, from 0.578 to 0.628 (UNDP, 2015). The increased HDI value is part due to political stability and sound economic management, this has in turn helped alleviate poverty and increased economic growth. Namibia has enjoyed a strong and sustained period of growth since 2010. Job creation, however, has not accompanied the growth. This is part in due to the limited demand for unskilled labour. The limited demand lead to high concentration of labour in self-sustained agriculture that stands outside of the national economy. Policy initiatives for a more inclusive economy include improving the access to and quality of education beyond primary school (African Development Bank, 2014, 2017; The World Bank, 2016). The lack of qualified and adequately skilled labor force in Namibia have motivated big governmental investments in education. The educational sector has received the largest share of the national budget, averaging over 23 percent between 2010-2014. However, the education is despite the investment still plagued by poor quality education outcomes across all segments, and the investments have yet to resulted in the skilled workforce Namibia so desperately needs (African Development Bank, 2014). Namibia's development plan interim progress report no. 4 (NDP4) identifies education as the distinct enabler for improved quality of life and addressing the labor markets skill mismatch. However, NDP4 also stresses the challenges that persist for education in Namibia: poor school management, lack of motivation among many educators, poor physical learning environments, slow roll-out of early childhood development, poverty, malnutrition and high levels of domestic violence (National Planning Commission, 2013). The Ministry of Education are tasked with realizing the national vision for education in Namibia as stated in the NDP4 (Ministry of Education, 2017).

University of Namibia (UNAM) is the largest and leading higher education institution in the country. It's currently capable of supporting a student population of 19,000 (UNAM, 2017a). UNAM are consisting of eight faculties. One of these eight is the faculty of education. The faculty have a total student number of 5284, this number is including distance and post-graduate students. The faculty provide a media center with a well-equipped computer laboratory where education-students are trained in the integration of ICT in their teaching and learning. The media center also offers facilities where students can create innovating instructional resources to be used in their teaching (UNAM, 2017d). The center for open, distance and eLearning (CODeL) was established when the Center for External Studies and center for eLearning and Interactive Multimedia was merged in 2016. CODeL was established in order to contribute to UNAM's vision and mission: *"to ensure greater access to Higher Education and equity for students from various educational and social backgrounds"*(UNAM, 2017b). The E-Learning section of CODeL is responsible for development of E-learning content and solution to provide flexible and accessible learning, anywhere, anytime (UNAM, 2017c).

4. PROBLEM STATEMENT

Improving the quality of life implies a change in learning. UNESCO's Director-General Koïchiro Matsuura expressed this by stressing that: *"Education – in all its forms and at all levels – is not only an end in itself but is also one of the most powerful instruments we have for bringing about the changes required to achieve sustainable development."* (UNESCO, 2005).

Namibia and a lot of other developing countries with it; is facing a lack of teachers and lacking education. The lacking resources and quality in the educational system is resulting in a lack of qualified and skilled workforce. This lack of an educated and skilled labor force is creating a bottleneck for the developing countries continuous development, and strive towards independence and prosperity (National Planning Commission, 2013; African Development Bank, 2014). Education is therefore identified as one of the primary enablers for poverty alleviation, economic growth and continued development for developing countries (WSIS, 2005; Motivans, Smith and Bruneforth, 2006; National Planning Commission, 2013; UN, 2015).

ICT in education (E-learning) have been proven to result in a improved communication; asynchronous and synchronous learning; increased cooperation and collaboration; cost-effectiveness and pedagogical improvement, without being constraint by time and space (Sife, Lwoga and Sanga, 2007). E-learning is therefore a prime candidate for addressing problems that educational systems are plagued with, such as: low-quality, lack of teachers and students who have problem with educational accessibility. However, ICTs alone can't address all these problems, there is a need for a more holistic picture that cover adaption of the ICT project design to the specific context and strategies for adoption and incorporation of the ICTs if they are to have the intended effect on the domain of implementation (Heeks, 2002a, 2002b, 2003; J. Hamel, 2010; Heeks, Subramanian and Jones, 2014). It is therefore of importance to examine E-learning in developing countries further and this study's purpose is to examine the different success factors and challenges that have applied for the adoption and incorporation of e-learning technologies in the higher education of Namibia through a case study of the University of Namibia.

4.1. Purpose

The purpose of this study is to attempt to improve the understanding of the unique challenges in the implementation of E-learning information systems into the educational system of developing countries. Hopefully, this study will aid higher educational systems implementing E-learning by:

- Contributing with insights and awareness about success factors and challenges that applies for E-learning to governing stakeholder's and practitioners in higher education in developing countries.
- Contributing with knowledge that is of relevance for achieving the United Nations (UN) sustainable development goals (SDG).
- Contributing with knowledge to pre-existing scientific theories.
- Sharing the finished report and its findings with the existing E-learning community at the University of Namibia.

4.2. Aims and objectives

The central aim of this study is to examine, in depth, the success factors and challenges that E-learning information systems are facing in developing countries and to discuss E-learning with local stakeholder's in order to build an understanding for the attitude

towards and knowledge about E-learning in a developing country. The study aims to examine this from both a stakeholder's and a scientific perspective, and its ultimate goal is to enhance the understanding of the type of success factors and challenges that are unique for developing countries.

The objectives to achieve the stated aims are:
- In order to identify how E-learning should be implemented and what it could contribute with, as seen by the stakeholder in this context, the author is going to: discuss and define what role E-learning have and could have in the higher learning institutions of a developing country.
- In order to contribute with an understanding for the specific success factors and challenges that E-learning is facing in developing countries, the author is going to: identify, discuss and define success factors and challenges E-learning are facing in higher education institutions of Namibia.
- To compare the success factors and challenges identified by the different stakeholder groups that partook in the study, with the success factors and challenges that have been identified and published by the scientific community.

4.3.   Contribution
The subject of this study is of importance for 5 out of UNs 17 sustainable development goals. The goals and underlying targets that the findings of this study will be of importance to is: 1) *"Goal 1. End poverty in all its forms everywhere"*, 2) *"Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities"* 3) *"Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all"* 4) *"Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation"*, 5) *"Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development"* (UN, 2015).

The findings of this this study will be of practical importance for developing countries who are trying to achieve UNs sustainable development goals since an understanding of the unique challenges that E-learning systems are facing in the higher education systems of developing countries will aid the stakeholders in adopting and incorporating E-learning into the educational system. E-learning systems could then lead to a more developed, and accessible educational system resulting in higher education levels, which in turn will counter the current lack of qualitative and educated workforce in developing countries. The further development of developing countries is currently being hindered by the lack of a qualitative work force which subsequently hinders their way to self-sustainability and independency from other nations.

4.4.   Scope
The scope of this study is limited to examine success factors and challenges for E-learning systems in developing countries. The field work will be conducted in Namibia and will focus solely on E-learning in higher education. Informants are limited to practitioners and managing heads of the higher education institutions of Namibia. This study will be based upon qualitative data collected in Namibia, a developing country in Sub-Saharan Africa. We therefore recognize that the degree to which extent the

PROBLEM STATEMENT

findings of this study can be generalized to other developing countries should be limited and recognized.

5. METHOD

This study's methodology is planned to follow a qualitative research strategy. The chosen methodology means that a qualitative inquiry strategy is planned to be followed in the design and conduction of the study. A qualitative inquiry results in data containing words, stories, observation and documents which illustrate the issue and subject of study. Qualitative findings are based on data that have been collected using one or more of the three following methods: i) In-depth open-ended Interviews, Open ended questions probing for in-depth information rich answers that describes the interviewees and people's feelings, knowledge, perceptions, experiences and opinions. ii) Observations and fieldwork, descriptions of actions, conversations, behaviours, inter-personal interactions, organizational or community processes, everything of interest that includes observable human experiences are documented in fieldnotes and reflective journals. The captured data consist of rich, detailed descriptions that records the context in which the observation took place; and the interaction between the human participants that were observed. iii) Documents, includes social media postings; official publications and reports; photographs, personal diaries, letters; written responses to open-ended surveys; and other written materials and documentation from clinical, program and organizational records (Patton, 2001, p. 14). The study is planned to use a mix of all the types of all the qualitative data collections methods covered above. This decision was motivated by the possibility to compare and triangulate the findings between the used methods. The triangulation and comparison in-between the data gives both credibility and a deeper understanding for the implications of the findings. The studies data collection decisions will be covered in a greater depth in section 5.2.5.

The following sections of this chapter is structured as follows: 5.1. will discuss the research that was conducted, it aims and purpose. 5.2. Is going to discuss the inquiry traditions that was planned to be used to steer the inquiry in the study and how they might affect the study. 5.3. will cover the research frame which include methodological decisions that applied for all the data collection that was conducted in the study. Section 5.4. discusses the methodical decisions for the data collection methods that is planned to be used in the study. It will also cover the different methods purpose, how they are planned be performed and how the resulting data is to be recorded. Section 5.5. discusses the analytical methodical decisions and what factors that motivated the decisions. It will also discuss how the raw data is to be handled and processed to get the best result without compromising on the ethical aspects. Section 5.6. will go further in to the ethical considerations that will apply for the study in its whole, its data collection and the analysis. Section 5.7. discusses the practical implications that were considered in the method design. Section 5.8. discusses how the study were conducted. The aim of the session is to give the reader suffice information about how the study were conducted, the information should allow for replication of the research.

5.1. Basic research

The research that is to be conducted is basic research, also known as pure- or fundamental research. The purpose of basic research is to discover the truth by contributing to fundamental knowledge and theory. Basic research assumes that the world is patterned, and therefore seeks to identify and explain the patterns within the research field in order to understand the examined phenomena. The focus of research is often questions that are important to the researchers discipline or to others

intellectual interests and the research should aim to be generalizable over both time and space (Patton, 2001, pp. 248–251).

This study's primary overall purpose is to gather knowledge about the success factors and challenges that E-learning is facing in the higher education systems of Namibia. The study's purpose can be expressed as seeking knowledge as an end in itself and the desired result is to contribute to fundamental knowledge and theory. The study's purpose, focus and desired result, combined with the assumption that the issue that is being examined could be answered with the help of patterns in the resulting data, motivated the decision for the basic research purpose. The researcher is aware of the fact that basic research conducted within the field of information systems may have difficulties in being generalizable over time and space. This challenge will be addressed by comparing the findings of this study with that of previous research on the same topic: challenges and success factors for e-learning in developing countries.

5.2. Qualitative inquiry

The qualitative inquiries in this study will follow two traditions, the generic and the pragmatic. The generic qualitative inquiry method allows qualitative studies to be conducted without conforming to any single epistemological perspective. The main focus of the generic qualitative method is to skilfully ask open-ended questions, open-ended questions that is of interest for addressing the problem that is being studied, and to do this in a real-world setting (Patton, 2001, pp. 154–155).

Pragmatic tradition, on the other hand, allows for an open design and emphasizes the use of a mix of methods. This allows for triangulation, which helps to validate data through cross validation and to get different perspectives on the issues that are studied. The pragmatic tradition is also be planned to be used to achieve a emergent research through design and field work pragmatism. Emergent research allows for creative, practical and adaptive design through pragmatic decisions. Emergent research, in contrast to a fixed design, encourage an open design that allows for method decisions based on opportunities and situations that unfold during the fieldwork. Its openness also handles the constraints that can apply for these types of studies. The constraints include the researchers lack of knowledge and experience of the context of research; the limited time frame and access to the unit of analysis; governmental restrictions; and other practical considerations that will be covered in greater depth in section 5.6. The pragmatic inquiry tradition will not address the actual inquiry due to the fact that the questions of the tradition is action research aligned and focused, which rather seeks practical value and insight, instead of the general knowledge that the study aims to achieve in its inquiry. The study therefore plans on utilizing the pragmatic flexibility of the pragmatic inquiry tradition alongside the generic qualitive inquiry tradition (Patton, 2001, pp. 152–157).

5.3. Research frame

This chapter covers method decisions that applies for the study as its whole. The time frame within which the data collection was performed and the focus of the inquiry that applied for the study.

5.3.1. Time frame

The study is going to utilize one-point-in-time data collection. One-point-in-time means that each interviewee is only going to be interviewed once and that site visits will be limited to a narrower time frame. All data needs to be recorded at one point,

which means that the whole study can be conducted within a shorter time frame. The implication of one-point-in-time data collection is that changes must be captured retrospectively, this is compared to a longitudinal time frame where changes can be recorded over the time of the study (Patton, 2001, pp. 255–256). This weakness is going to be addressed by the use of a document analysis which will allow the study to capture previous states of the context of research.

5.3.2. Focus of inquiry

The focus of this study lies within a middle ground between depths and breadth. The focus is on examining what sort of challenges and success factors the practitioners at a higher education institution in Namibia have identified with the adoption and incorporation of e-learning technologies. It's a pretty narrow focus within a pretty tight inquiry boundary, that is planned to be examined though the use of a multiple set of methods. The inquiry is open to what emerges and the sampling is flexible to opportunities that show themselves (Patton, 2001, pp. 257–259). This is truly a mix between a deep focus and a breadth in focus, the design is highly influenced by the context of the case that is to be examined and the reality of the same, which results in this middle ground between depth and breadth.

5.4. Data collection

This chapter covers the unit of analysis, sampling strategies and data collection techniques that were used in order to collect the data that was needed to achieve the study's purpose and to achieve its aims.

5.4.1. Unit of analysis & Sampling strategies

The selected sampling strategies were chosen based on the sole criteria to accommodate a as purposeful sampling strategy as possible for each data collection method that is planned to be used in this study. The study will perform it sampling by using three different sampling strategies, the selected strategies is: 1) Critical case sampling, 2) key knowledgeables sampling and 3) qualitative research synthesis sampling (Patton, 2001, pp. 264–276).

The idea is to use the critical case sampling strategy to identify and select the higher education institution that would be highly accessible for the researcher to perform the planned fieldwork at (Observations and interviews) that also had implemented e-learning in its teachings in some way. The evidence from one single critical case is likely to be true for all similar cases, this will in turn permit logical generalization and maximum application of information to other, highly similar cases (Patton, 2001, pp. 266, 273–274).

Key informants- or knowledgeables sampling is planned to be used to sample interviewees for the in-depth semi-structured study that is planned to be included in the study. The sampling strategy's purpose is to identifying individuals with great knowledge of the inquiry issues that is to be examined; the idea is that their knowledge will be documented and later used to explain the inquiry issue (Patton, 2001, pp. 268, 283–285).

The qualitative research synthesis sampling strategy is planned to be used to sample research studies that is to be analysed in order to later compare the findings that this case study results in with the findings of other research studies that have a similar inquiry issue (Patton, 2001, pp. 271, 302–304).

5.4.2.   Data collection techniques

There is planned to be four different data collection techniques in this study: i) document and literature review, ii) a semi-structured interview study, iii) an active-participatory observational study, and iv) a fully-participatory observational study. The data collection is planned to be performed in two steps: first an introductory literature review based in Sweden, and second an interview- and two different observational studies that are to be performed during a field study based at the University of Namibia, Windhoek, Namibia. The individual purposes, extent and implementation of the four different data collection methods that are planned to be used will be discussed in the sections below.

5.4.2.1. Document and literature study

The literature and document study is to be conducted in order to achieve 3 different goals: i) to identify and gain knowledge on success factors and challenges for E-learning in developing countries from a scientific standpoint, ii) to be used as background research for the study in its whole, iii) to act as a foundation for the writing of the interview guide that are to be used in the semi-structured interviews, and iv) to give the researcher an understanding for the situation for ICTs and higher education in the context of research. The literature and document study is planned to be comprehensive and will be focused on research papers, reports and websites with the one or more of the following topics: educational technology, qualitative research methods, E-learning in developing countries, human development, ICT, and Namibia.

5.4.2.2. Semi-structured interview study

The semi-structured interview study is planned to be conducted in order to identify and examine the different success factors and challenges that applies for E-learning in Namibia. The interviews are all planned to be conducted with the support of an interview guide. The interview guide approach means that topics and issues that are to be covered is already specified in advance, but the order, wording and sequencing of the questions are determined by the interviewer during the course of the interview. There is a risk that the flexibility and adaption of the questioning will compromise the comparability of the answers in the interview study, but the interview guide approach was still planned to be used due to the support the outline gives and that the interviews gets somewhat systematic while they still remain conversational.   (Patton, 2001, pp. 438–439).

The interviews are all to be structured to cover the following four topics: i) Introduction and professional background of the interviewee, ii) E-learnings perceived role and use in the context and iii) Success factors and challenges (see figure 2 in section 5.8.4). The aim is to achieve in-depth interviews which will result in information rich data that are unaffected by the interviewer. The questions are formulated to be open in order to encourage the respondent to: …think and reflect; …express opinions and feelings; …have the control of the conversation (Patton, 2001, pp. 23–26, 50, 237). The fact that the interviewee will have control of the conversation results in answers that isn't affected by the researcher, and are thus guaranteeing that the answers is not affected by the researcher's opinions, feelings and biases.

The sampling of the interviewees that is planned to partake in the interview study are to be conducted with the key knowledgeables sampling strategy that were previously covered in 5.4.1.

The interviewer will, in order to guarantee an ethical practice, ask for the interviewees informed consent before the interview is conducted. The interviewer will make sure that the interviewee has all the information regarding the study, the interview and his or her rights before asking for the interviewees consent to partake in the interview study. A deeper explanatory discussion around what this entitles can be found in section 5.6.1.

5.4.2.3. Observational studies

There are two different types of observational studies that are planned to be conducted throughout the fieldwork of this study. The idea of an observational study is to see firsthand what is happening in the context of the research. So, rather than to assume what is going on the researcher go into the setting to observe and see for herself, the observations are then recorded and described (Patton, 2001, pp. 330–332). Observations differ from interviews in a number of ways and so is the strengths; Patton describes 10 strengths of high qualitative observations: 1) Rich description, 2) Contextual Sensitivity, 3) Being open to what emerges, 4) Seeing the unseen, 5) Testing old assumptions and generating new insights, 6) Opening up new areas of inquiry, 7) Delving into sensitive issues, 8) Getting beyond selective perceptions of others, 9) Getting beyond one's own selective perceptions, and 10) Experiencing empathy (Patton, 2001, p. 335).

Both of the two observational studies that is to be conducted is planned to have: i) an insider perspective; the researcher will participate in the life and activities of the setting that is under study, ii) be performed as an solo inquiry, iii) Be conducted on-site in the physical real world location of the case that is under study throughout the field work, and iv) will not be covering any controversial or sensitive topic (Patton, 2001, pp. 328–363). The study is planned to examine the educational system, but will not cover any of the sensitizing concepts within education that Patton describes for education. The sensitizing concepts are: i) special needs, ii) at risk, iii) gifted and talented, and iv) racial integration (Patton, 2001, p. 360). The difference in between the two observational studies is their purpose, the way the observer participates in the setting of study, the level of disclosure and the focus of observation for the individual studies.

The active participatory observation study is to be conducted to establish an understanding for the context of research. The researcher is planned to be actively participating in the setting that is under study, but will not be able to fully participate due to the fact that it is obvious that the researcher is a visitor in the setting under study and will therefore be treated differently by the population of the setting. The focus of the study will be holistic and will cover all of the social environment of the setting that is under study (Patton, 2001, pp. 328–357). This planned initial observation of the culture, milieu and setting before the execution of the interview study is key for ensuring that the researcher, who is a visitor in this context, has the knowledge and know-how of the milieu, culture and setting, to be able to collect as qualitative data as possible. The method will allow the researcher to become more involved in the setting and its population. This is a method that are practiced to get in-depth understanding of the milieu, culture and setting that is to be studied. Because the social environments varies in the same way that the physical does and it is therefore of great importance for the study to get an understanding for the social environment of the setting that is under study (Patton, 2001, p. 367). The active participatory observation will be performed without the knowledge of the setting that is to be observed. This is known as an covert

observation and it is conducted covertly in order to ensure that the effect of the observer on what is being observed is kept to a minimum (Patton, 2001, pp. 339–340).

The fully participatory observation study is to be conducted to establish an understanding for the different success factors and challenges that applies to e-learning in the higher educational system of a developing country. The researcher is planned to fully participate as an e-learning professional in a series of planned activities and formal interactions between e-learning professionals in the setting of study. This will focus on multiple subjects and the people that is under observation will know about the study and its purpose. The fact that they are under observation are therefore disclosed (Patton, 2001, pp. 328–357, 368).

The observations of the two observation studies are planned to be recorded in two ways: i) fieldnotes, which will try to capture the events of interest that are observed (Patton, 2001, p. 387), and ii) a reflective journal that the thoughts and emotions of the researcher during the observation.

5.5.   Data analysis

The analysis of this study's data will be inductive. To work inductive with the data in the qualitative analysis means that the analysis is aimed at generating new explanations, results and concepts based on the specific data of the qualitative study in question. The inductive analysis is focused on discovering categories and themes in the data (Patton, 2001, p. 541). The data is planned to be organized, reported and structured in an analytical framework. The framework will be structured around issues, for this study that means based on the aims of the study and the underlying categories that contain the identified success factors and challenges that are to be analysed further (Patton, 2001, p. 535). The organization of the data and the identification of categories and factors will be achieved through content analysis. Content analysis in this context refers to the data reduction of the volume of qualitative material that is the data. The reduction will affect the data that lies outside of core consistencies and meanings (Patton, 2001, p. 541). The analysis of the data is, as stated before, focused on finding patterns and deviations in the resulting data, as well as to triangulate the results from the different data collection techniques to identify possible correlation or lack of correlation in-between the different techniques. The aim of the analysis is to gain an understanding for the different success factors and challenges that applies for E-learning in developing countries.

The categories and patterns that have been established in the inductive content analysis, will move towards a final, confirmative stage where a deductive analysis will be conducted in order to test and confirm the resulting findings, patterns and categories with previous theories and findings made by the scientific community (Patton, 2001, p. 542). A deductive analysis, is in contrast to an inductive analysis focused on determining to what extent ones findings in a specific study translates and supports exiting general theories, results and findings (Patton, 2001, p. 541).

The different analyses are to be conducted in a way that ensures the confidentiality of the personal information for all individuals that will partake in the study. This means that the identity of the study's participant will purged or replaced with identifiers during the handling of the raw data that the observation and interview studies will result in. This guarantee maintained privacy, confidentiality and anonymity of the participants' identity in the presentation and analysis of the data.

5.6.   Ethical considerations

Ethical considerations in research have to be taken into account during the whole procedure of the study. This section will therefore discuss ethical consideration and specifically in relation to:

- Informed consent
- Guaranteed Confidentiality
- Maintained Privacy and anonymity
- Potential impact of the study

The study is to be conducted in a way that follows the following 4 ethical principles: i) The principle of autonomy – respect for individuals, ii) The Principle of beneficence – do good, iii) The principle of non-maleficence – no harm, and iv) the principle of justice – empowerment. The ethical principles are to be used as reflective points for the researcher in all decisions that are to be taken in the study that revolves around or could affect human subjects their milieu, setting and/or culture.

Some general ethical considerations were made regarding access to the collected data, its security and its storage. The raw data will only be accessed by the researcher and will be stored on devices and in Googles cloud storage solution, Google Drive. Both the physical storage and cloud storage solutions have enterprise classed security and can only be accessed by the input of a complex password that is only known to the researcher and/or biometric security measures which only the researcher has.

All data that are presented in this study will have the personal details of participants removed or altered in order to ensure the individuals privacy and anonymity and to guarantee confidentiality. The researcher will make sure that the data and practice of this study do not breach any of the 4 ethical principles listed above.

5.6.1.   Semi-structured interview study

All the interviewees that are to partake in the study will be asked to sign an informed consent. The interviewer will make sure that the interviewee has all the information regarding the study, the interview, and his or her rights before the interviewees will be asked to sign their consent to partake in the interview study. The following points is to be addressed, discussed or signed before the actual interview are conducted:

- Letter of introduction
- Interview guide
- Written informed consent, 2 copies.

The following is a consent form for the minor field study: *"Success Factors and Challenges for E-learning Information Systems in the Namibian Higher Education System".* The purpose of the study is to attempt to improve the understanding of the unique success factors and challenges in the implementation of E-learning information systems into the educational system of Namibia, carried out by the under-graduate student Christoffer Mässing from the University of Skövde, Sweden. The interviewer should have the interviewee read this form carefully and ask any questions the interviewee may have. Before the interview can start, the interviewer and the interviewee should sign two copies of this form. The interviewee will be given one copy of the signed form.

Consent for Participation in Interview Study
I volunteer to participate in a research project conducted by Christoffer Mässing from the University of Skövde. I understand that the project is designed to gather information about of the unique success factors and challenges in the implementation of E-learning information systems into the educational system of Namibia.

1. My participation in this project is voluntary. I understand that I will not be paid for my participation. I may withdraw and discontinue participation at any time without penalty.
2. I understand that most interviewees in the study will find the discussion interesting and thought-provoking. If, however, I feel uncomfortable in any way during the interview session, I have the right to decline to answer any question or to end the interview.
3. The interview will last approximately 45-60 minutes. Notes will be written during the interview. An audio tape of the interview and subsequent dialogue will be made. If I don't want to be taped, I will not be able to participate in the study.
4. I understand that the researcher will not identify me by name in any reports using information obtained from this interview, and that my confidentiality as a participant in this study will remain secure. Subsequent uses of records and data will be subject to standard data use policies which protect the anonymity of individuals and institutions.
5. Faculty and administrators from my campus will neither be present at the interview nor have access to raw notes or transcripts. This precaution will prevent my individual comments from having any negative repercussions.
6. I understand that this research study has been reviewed and approved by the Research Ethics Policy of University of Namibia (URPC, UNAM) and the supervisor of the study at UNAM: [Name of supervisor]. For research problems or questions regarding subjects, the supervisor may be contacted through email: [Email of supervisor].
7. I have read and understand the explanation provided to me. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study.
8. I have been given a copy of this consent form.

Figure 2: Content of the consent form shared with interviewees to sign.

The interviewer will ask for the interviewees consent to all of the points in figure 2. The interviewee will have time to read through the document thoroughly and later be asked to sign the document if they agree to all the points. The interviewer will clarify for the interviewee that the recording of the interview is to be used in order to assist the interviewer in the write-up of an interview transcript and will therefore not be shared with any third-party. The interview will not begin until a signed consent has been given by the interviewee.

This text combined with the other ethical considerations that have been previously covered, will ensure a fair and ethical handling of the participants that is to partake in the interview study and will guarantee their privacy and anonymity.

5.6.2. Fully-participatory observational study
The fully-participatory observational study is planned to be conducted during already planned and formal activities with e-learning professionals in the setting of study. The

researcher will introduce himself and the study's purpose in the beginning of each of the activities in which he is to attend. The activities are already planned to have both audio and video recorded and the researcher will ask if everyone consents to be observed throughout the activity. Activity participants who does not give their verbal consent will not be included in the study.

5.6.3.   Active participatory observational study

The active participatory observational study is planned to be conducted without the informed consent of the individuals of the setting that are to be observed. This decision is motivated by numerous factors:

- The fieldnotes will not record detail or personal information about the setting or individual that the observation regards.
- Subjects who are aware of the fact that they might be observed are likely to act in a different way than usual which will in turn lead to observations that is not accurate to the reality (Patton, 2001).
- The observant will not take notes of situations that might be harmful to, disclose the identity of, compromise the security for setting and its population, or in any other way breach the ethical principles.

The selective recording of observations will safeguard the privacy and anonymity and guarantee confidentiality. The data will be used to enhance the researchers understanding of the milieu, setting and culture of the research setting.

5.7.   Practical considerations

There were numerous practical factors that were considered, and that affected the design of the study in some way. This chapter will discuss the different practical factors that had an effect on the planning for the study's design, and in what way the individual factors affected the design. The 4 main subjects of practical consideration were: i) distance to the context of research, ii) time, iii) the foreign context, and iv) the institution of study.

The distance to the context of research from the base of the researcher made it challenging to set a fixed design prior to the commencing of the fieldwork that were planned to be conducted. This were in major part due to lacking access to-, and prior understanding of the context of research. Activities such as communication with individuals in the context of research and studying of digital content discussing the context were planned to be performed prior to the actual fieldwork in order to gather information that would allow for a design to be set before the commencing of the fieldwork. Issues with achieving asynchronous and fluent communication with individuals in the context, coupled with lacking digital content with information on the context and issue of research and the limited available time for the fieldwork (9 weeks), were cause enough to go with an emergent and pragmatic approach for the design for the data collection.

The emergent and pragmatic approach to the design were also motivated by the need to accommodate for constraints that might be introduced by the culture, laws, social environment policy's and rules of the foreign context and the institution of research. Examples for constraints that might apply for the study is: Immigration laws, research policies of the institution, lack of access to informants, rules and laws connected to the collection of data, need for documents issued by local governing agencies.

METHOD

The decision for an emergent and pragmatic approach to the design allows the researcher to change the design as the study progresses to address the main inquiry and purpose of the study in the best possible way, and to act upon opportunities that might show themselves throughout the conduction of the fieldwork. This reduces the negative impact and constraints that the practical factors can introduce for the study and allows the researcher to perform the fieldwork in the most efficient and accommodating way possible.

5.8. Procedure

The procedure of the study can be structured into two parts: i) the primary preparatory literature and document study conducted in Sweden prior to the fieldwork, ii) the interview-, observational- and document study that was conducted throughout field work in Namibia, Africa.

This section will aim to cover the "how", "why", "what/who", "when", "where" and "for how long" that applied to the realization of previously planned and covered design of the study. The section will be structured in a chronological order of the data collection techniques that were performed and structured into sections of the same techniques.

5.8.1. Literature and document study

The literature and document study that was conducted prior to the fieldwork aimed at examining the field, inquiry and context of research by studying literature and documents that were connected to the issue that motivated the study. The document and literature study aimed at achieving the 4 different goals that were previously mentioned in section 5.4.2.1. document and literature study: i) to identify and gain knowledge on success factors and challenges for E-learning in developing countries from a scientific standpoint, ii) to be used as background research for the study in its whole, iii) to act as a foundation for the writing of the interview guide that are to be used in the semi-structured interviews, and iv) to give the researcher an understanding for the situation for ICTs and higher education in the context of research.

The literature study focused on scientific literature, scholar papers and articles that examined ICTs in developing countries, and in particular in regards to challenges and success factors that applies for ICTs and e-learning. The literature study aimed at contributing to all of the 3 first of the 4 previously mentioned goals. The literature was sampled through the use of web based search engines, the search engines that were used was: WorldCat Local and Google scholar. The keywords that were primarily used in different combinations to sample appropriate for the literature study was: e-learning; success factors; challenges; information and communication technologies (ICT); developing countries; information and communication technologies for development (ICT4D); case study; Namibia; Africa; higher education; higher learning; open and distance learning (ODL).

The document study focused on non-scientific and non-scholar papers and articles. The documents that were included in the document study consisted of websites, rapports, resources and other documentation that focused on ICTs in developing countries and especially documentation that focused on Namibia. The document study aimed at contributing to the 4th of the previously mentioned goals. The documents were primarily sampled though the use of a web based search engine, but also through the support of staff members at the University of Namibia who contributed with internal documentation and websites that revolved around and focused on e-learning at the

university. The search engine that were used was Google. The keywords that were primarily used in different combinations to sample appropriate documents for the document study was: University of Namibia (UNAM); Namibia; Africa; UN; World bank; Country reports; ICT; Statistics; e-learning; higher education; higher learning; sustainable development goals; millennium development goals. The internal documentation and websites that were accessed through the support of staff at UNAM consisted of policies, strategic documentation, web portals, learning management systems, e-learning resources and blogs that would not have been possible to access without correct credentials. The access to the documentation was a result from fieldwork at UNAM.

The literature and document study started in Sweden prior to the fieldwork in Namibia and continued throughout the major part of the study. The study took place in a duration of 6 months and the sampling of literature was conducted on a need-to-know basis and in regards to the 4 goals previously mentioned.

5.8.2. Active-participatory observational study

The active-participatory observational study was conducted throughout the fieldwork in Namibia and aimed at collecting data on the milieu, culture and setting in order to give the researcher knowledge about the context of research. The understanding for the milieu, culture and setting proved to be key in the successful interaction with the local populous of Namibia and the participants in the study. The understanding also resulted in context and understanding for the data that was collected during the study and would prove to help with the analysis of the same. The active participatory observational study did not have prior stated aims or angle, but was rather a reflective process of what the researcher experienced to be unfamiliar, significant and deciding factors in defining the milieu, culture and setting of the context. The participants that were under observation was individuals who the researcher in one way or another interacted with during his stay in the context of research. The observations were made covertly; That is without the individuals consent to, or knowledge about the fact that the researcher was conducting observations. The data was collected from individuals who which actions and behavior taught the researcher something about the context of research. The data was recorded in the form of field notes and a reflective journal. The observations took place in Namibia and in particular at the University of Namibia and in the city of Windhoek. The observational study was conducted during 9 weeks, so during the researcher's full stay in Namibia.

5.8.3. Fully-participatory observational study

The Fully-participatory observational study took place at the University of Namibia during 10 days of workshops, presentations and discussions facilitated by e-learning professionals from the Cardiff University (CU), Wales, United Kingdoms. The planned activities was conducted within the collaboration project between CU and UNAM called *"The Phoenix Project"* (Cardiff University, 2017; Kevin Leonard and Simon Namesho, 2017). The activities were aimed to facilitate a knowledge exchange on the implementation and incorporation of e-learning in higher learning.

The researcher partook fully in all the sessions that were held. The aim was to observe and collect data on the discussions, workshops and lectures to better understand the challenges and success factors that applies to e-learning at UNAM, the specific factors that applies in the context got more transparent in the knowledge exchange between

the representatives from both UNAM and CU respectively. The discussions between the UNAM representatives and the CU representatives helped to identify the similarities and differences in their view of the role and the use for e-learning in higher education institution and higher learning. This was of particular interest for the study, because it will give a good picture of how well the use, view, challenges and success factors correlate between the use of e-learning in the higher education in the context of a developed- and a developing country.

The data was collected during the researcher's participation in the sessions. The data that was collected consisted of notes and quotes about the dialogues, actions, behavior that took place between and by the participating individuals. The data was recorded in the form of audio and video uptake of the sessions and by field notes that was written during and after the sessions.

5.8.4. Semi-structured interview study

The interview study's participant was sampled through a discussion with two local e-learning managers at UNAM that acted as supervisors during the fieldwork in Namibia and at UNAM. The discussion was aimed at identifying knowledgeable informants that would give a broad picture of the situation, success factors and challenges that applies to e-learning at UNAM. The discussion resulted in a list of 10 highly knowledgeable e-learning professionals at UNAM and all of the individuals in the list was approached with the question to partake in the study. The interview consisted of 3 different interviews, that were all around 60 minutes each. The participants all have key roles for the facilitation and implementation of e-learning and ICTs at UNAM, their roles ranged from e-learning heads, lecturers, technical administrators and facilitators. The interview study was conducted in the end of the field study. The aim of the interview study was to gain in-depth information on the issue that motivated the study. The interviews were structured with the help of an interview guide, see figure 3 for reference. The interview guide was primarily designed to structure the interviews in a way that ensured that all the subjects of interest was covered and that sufficient data was collected to fulfill the interview studies purpose and aim. The interview guide was also used to ensure well formulated, understandable and open questions, this was ensured by testing and discussing the questions and outline of the interview guide with the local supervisors in Namibia and the supervisor in Sweden.

METHOD

Introduction and professional background of interviewee
"I would like to start with asking some general questions to get a picture of your professional background and experience with E-learning."
- Can you please tell me about your current position at said institution/organization?
- Can you please, shortly, summarize your professional background?

E-learnings perceived role and use in the context
I am very interested in gaining insights on what role E-learning would be able to fulfil if it were to be incorporated in said educational system to an even larger extent. I would therefore like to discuss the role you can see it taking."
- What role can you see that E-learning would be able to have in said educational system?
- How would you see E-learning to be adopted and/or incorporated to fulfil that role?
- What implications could you see E-learning would have if it were to fulfill the previously stated role?

SWOT
A SWOT-analysis of E-learning in Namibia will be conducted in order to assess the role e-learning have and what role it could have, it is therefore of importance to discuss the Strengths (S), Weaknesses (W), Opportunities (O) and Threats (T) for E-learning in Namibia as the interviewee perceive it to be:
"I would like to ask you to please identify and discuss the strengths, opportunities, weaknesses and threats for E-learning in Namibia in order for me to a deeper understanding of the situation for E-learning in Namibia as it stands now."
- What Strengths do you see with the incorporation of E-learning? (Discuss to further motivate the answer).
- What Opportunities do you see with the incorporation of E-learning? (Discuss to further motivate the answer).
- What Weaknesses do you see with the adoption and incorporation of E-learning? (Discuss to further motivate the answer).
- What Threats do you see with for the incorporation of E-learning? (Discuss to further motivate the answer).

Challenges and success factors
"I would now like to go further into what you have identified to be challenges and success factors in your work with and/or studies of E-learning in Namibia."
- What Success factors have you identified in your work with and/or studies of E-learning?
  - How did you identify that success factor?
  - What was the implication of that success factor?
  - How do you purpose that that success factor should be utilized to further enhance the E-learning experience for practitioners?
- What Challenges have you identified in your work with and/or studies of E-learning?
  - How did that challenge come to be?
  - What was the implication of that challenge?
  - How do you purpose to overcome that challenge?

The users view of e-learning
"Your experiences and understanding of this context is invaluable for me, and I would therefore like to ask you about how you think that other users in this context think about E-learning."
- What do you think that the users (learners, instructors) in said educational system...?
  - ...think of the increased incorporation of ICT in education?
  - ...have for previous experience of E-learning?
  - ...will experience to be the most difficult factor in adapting to a more ICT based learning experience?
  - ...consider to be the usefulness of E-learning?

Figure 3: Interview guide that was used in the conduction of the interviews.

6. DATA ANALYSIS

The data analysis will focus on examining the key issue of this study and its three connected aims. This will be achieved in analyzing the data that the different data collection techniques resulted in from 3 different angles. First, we are going to analyze the current situation for e-learning at UNAM and what implication the e-learning technologies have seen from a pedagogical, technical and cost implication. We are also going to discuss the future of e-learning at UNAM and what role it could take.

Second, we are going to analyze the challenges and success factors that have been identified to apply for e-learning at UNAM. We are going to structure the data in categories based on the patterns and relationships between the findings and discuss the challenges that applies and success factors that have been proven to apply as of this point in time.

Third and last, we are going to discuss how the findings of this study compares to previous and related research conducted by the scientific community and evaluate to what degree these findings can be generalized to apply to other similar contexts.

The resulting data from the observational studies and the interview study has been granted non-disclosing identifiers in order to protect the integrity and privacy of the study's participants. The data connected to interviews has been labeled with an "I" followed by a unique numeric symbol, i.e. I1. The handling of the identity of the different participants in the observational study followed a similar principle. The real identity of the participants was exchanged with an "O" followed by a unique numeric symbol to differentiate between the participants, i.e. O1.

The findings which the analysis of the data resulted in is the product of triangulation between data from the different data collection techniques. The findings that are presented in the sections below has all been triangulated and does therefore apply to data from different data collection techniques. The riches data spanned from the observational studies, and the findings presented in this chapter were all confirmed by the data that the following interviews and/or document analysis resulted in.

6.1. E-learning in a higher learning institution of Namibia: University of Namibia.

The purpose of the intentional use of e-learning in Namibia is to increase equity, enhance efficiency and improve the quality of teaching and learning (University of Namibia, 2017). Measures that have been taken up to this point is to introduce a learning management system that collects all the digital learning resources on one platform that allows for discussions, assignments submission, grading etc. to take place online. The LMS system supports mobile devices by being both mobile browsing friendly and allowing for the downloading of an app where content can be downloaded and later accessed offline. Additionally With the successful implementation of the LMS UNAM have moved to an obligatory online submission of assignments and incorporated an automatic anti-plagiarism software to further enhance the quality of education and assessment of work submitted by learners that are enrolled at the institution., both lecture capture and video conferencing capabilities have been introduced these capabilities have made learning more accessible for both on-campus learners, but especially distance learners that primarily access their learning resources at satellite campuses that are spread-out all over Namibia in an effort to make learning

more accessible for everyone and to allow learners to balance their education with work.

The table below will cover the e-learning technologies that are currently used at UNAM and their individual pedagogical, technical and cost implications.

E-learning Technologies	Pedagogical implications	Technical implications	Cost implications
Web-based Learning Management System (LMS)	• Permanent accessibility. • Direct communication. • Electronic submission of assignments. • Online access to learning content such as: slides, video lectures, relevant references and links.	• Internet connection. • Devices that support web-browsing. • Staff who is trained and knowledgeable in supporting and creating digital and web-based resources. • Technical infrastructure: Server platform hardware, client hardware, digital based content etc.	• Hardware cost. • Maintenance. • Software licencing. • Operational costs.
Videoconferencing	• Enhanced distance learning. • Live streaming of lectures to multiple campuses. • Capture of lectures.	• Internet connection • Lecture theatres that allow video and audio recording. • Devices that allow for audio communication. • Technical infrastructure to support the hardware and software.	• Hardware cost. • Maintenance. • Software licencing. • Operational costs.
Lecture capture	• Allows lecturers to create and edit multimedia based learning content.	• Internet connection. • Devices that allow for video	• Hardware cost. • Maintenance. • Software licencing.

	• Remove constraints of time and place for learners. • Allows online based courses.	and audio capture. • Software that allows for lecture capture. • Technical infrastructure to support the hardware and software.	• Operational costs.

Inspired by the table titled "Pedagogical, technical and cost implications of e-learning technologies" first presented by A. Sife, E. Lwoga and C. Sagna (Sife, Lwoga and Sanga, 2007).

There are additional technologies besides the one previously covered in this section that is being used by UNAM staff to interact with their students outside of the conventional classroom. In the interview with Interviewee 2 (I2), we discussed the fact that teachers at UNAM is having a close and communicative communication with their students. When the interviewer asked how the relationship was achieved, I2 stated that: *"Now they use technology to achieve that bond. They use WhatsApp to connect to all students simultaneously. If John can't come to class one day, he writes to his teacher and his classmates; who will know of his absence and measures to limit the damage for Johns education can be taken such as sharing notes with John, the teacher might call him up and talk about the key points of the lecture etc."* - I2 (Interview 2, 2017). This is in particular useful for distance students who won't make it to the lecture that is held over the videoconferencing system.

The staff at UNAM can even see that education goes from blended learning; a mix of both in classroom education, e-learning and online learning. To a fully online-based curriculum that wouldn't require students or lecturers to be physically presence. Both I1, I2 and I3 identified this as a real possibility and the heads at UNAM already have a goal to make 80% of the curriculum ready to be accessed as an online course by the end of 2018. I2 talked about this possibility when he stated that: *"Now when I see where we are moving, I can see a future where students and lecturers can sit wherever they are and not even come here."*-I2 *(interview 2, 2017)*. But they also agree on the fact that e-learning would need to take a more obvious role in the educational system and that the required knowledge and infrastructure is missing to fully transaction into a fully online-based curriculum without diminishing the access to education that the learners enjoy today.

6.2. Success factors and challenges

The study has examined both success factors and challenges that applies for e-learning in higher learning institutions in the context of a developing country. There are some key factors that have been identified throughout the study when examining the incorporation and adoption of e-learning technologies in higher learning. This section will cover what those key factors are and what challenges and success factors that have been identified for each factor. The factors that have been identified is: i) access, ii) user motivation, -attitude and -awareness, iii) systematic approach, iv) evaluation and analytical challenges, and v) Transforming the education.

DATA ANALYSIS

6.2.1. Access

Access refers to the learner's access to the ICTs that is required to fully access the e-learning resources that is needed to enroll and partake in campus- and distance based courses and programs offered by UNAM. The access to ICTs is key to ensure that the desired flexibility that e-learning can enable is achieved. Flexibility is an e-learning mantra that look at the ability to access learning resources anywhere, anytime, anyone.

Challenges	Illustrative evidence	Comment
Bandwidth	*"We don't have the required bandwidth to work with video in the way we want."* – I1 (Interview 1, 2017) *"We don't have the bandwidth to support this sort of software. The fact that it takes 1h to upload a 10-min video is making the lecturers discourage to use the software and even if they do the students can't stream it so they are not watching it".* - O1 talking about the implications of the low bandwidth when it comes to utilizing Information Systems (IS) (Fully-participating observational study, 2017) *"Look, our wireless is really slow. We are using private 4G devices instead. Its 1200ND a month for our own mobile unlimited connection, but everyone can't afford that so it need to work with the wireless from the landline."* – O1 regarding the lacking wireless at the UNAM campuses (Fully-participating observational study, 2017)	The speed of the internet connection has been identified as a huge bottleneck for UNAMs attempt to implement a lecture capture software to make more of the current curriculum accessible online. This have proved to be a huge challenge and it is discussed frequently. The procured software at UNAM do not take the infrastructure of a developing country into consideration and is therefore, as the presented quotes illustrated, not usable to the extent that the software's functionality allows for.
Connectivity	*"We have a wonderful lecturing capturing software, that can solve a lot of problem off course,*	Connectivity in Namibia differs hugely in between the different regions, cities and towns. This is a distressing fact that need to be taken under

	but then few of our students have continues internet access, which it requires, basically." – I1 (Interview 1, 2017) *"This service requires connectivity and is not accessible to everyone and the quality of that connectivity is not of high quality everywhere."* – I1 (Interview 1, 2017)	consideration when UNAM attempt to move more and more of its learning content and curriculum online.
Devices	*"Students don't have access to devices at home, so we need to provide them with the devices at our centers, but some students still need to travel very far."* – I2 (Interview 2 2017)	The fact that not all students have access to the devices that are required have been a challenge in the rollout of the e-learning solutions that are currently employed at UNAM. Cellular mobile devices are by far the most commonly owned and used technical device, but it can't be used in the same way as a laptop, smart phone or tablet can.

Success factors	Illustrative evidence	Comment
Downloadable resources	*"This app, for our LMS, makes it possible to download content offline. Whole courses can be downloaded. So, when students are at a place with internet access they download everything on their phone to later access offline."* – I1 (Interview 1, 2017)	To allow users and in particular learners to download available content have proved to be a key enabler in increasing the accessibility of digital learning resources. A great number of learners don't have internet access in their homes and it is therefore a necessity to allow them to download content to later access it offline.
Mobile data connection	*"We have good telecommunication infrastructure. Our cellphone network is almost 100% really."* – I1 (Interview 1, 2017) *"We have some students that need to travel far to the nearest campus, say 200km, and they also need*	The development of internet in Namibia has, just as in other African countries, focused on expanding and investing into mobile data network. The mobile data network has close to 100% coverage and are therefore an enabling factor in ensuring access to e-learning resources for all learners at UNAM.

	to partake in the lectures. We offer them 3g connectivity so they can partake from home.” – I2 (Interview 2, 2017) *“Every student gets a 3g modem that they can use for their laptops.”* – I3 (Interview 3, 2017)*	
Satellite campuses	*“Students who don’t have access to devices or don’t have the skills to connect to the lecture on their own can come straight to one of our satellite campuses and a trained technician will connect them to the video conference so they can partake.”* – I2 (Interview 2, 2017) *“We have a distributed university if you like. It has campuses all over the country. So, students in other regions have the opportunity to access services closer to them.”* – I1 (Interview 1, 2017)	Due to the spread and scarcity of the population in the huge country that is Namibia a lot of students have long commutes to their nearest campus. UNAM have acknowledge this fact and take necessary actions to ensure a better accessibility to the resources that is required to enroll and pursue a higher degree of education at UNAM. The action that were taken was the development of satellite campuses all over the country. The campuses have all the necessary ICT infrastructure to allow learners to access the required learning resources.

There is a lot of challenges that applies enablement of access to education for learners in the context of a developing country and Namibia is not an exception. But UNAM has proven to find success factors that allows for access of education for learners in the context through enabling initiatives such as the ones covered above. The initiatives have paved way for an optimism that access to education for everyone is a possibility in Namibia. The flexibility that e-learning can offer has allowed adults to enroll in programs and courses to further educate themselves; while working and supporting their families.

6.2.2. User motivation, -attitude and -awareness

User motivation, -attitude and awareness is kind of self-explanatory, it refers to the user’s motivation for using-, attitude towards-, and awareness of e-learning in the higher learning institutions of research.

Challenges	**Illustrative evidence**	**Comment**

DATA ANALYSIS

Change the staff's behavior	*"The majority of the instructional designers are reluctant to create digital learning resources and it will therefor prove to be a challenge to get them to learning sessions that discusses the topic. It's actually only one that would see himself working with digital learning material the rest wants to stick to print… but snail mail takes time and gets lost. E-submissions is the way to go and digital learning material is a natural means to that end."* – O2 regarding the IDs refusal to move from print to digital content (Fully-participating observational study, 2017). *"Over 70 lecturers have undergone training, but when we review the usage and uploads from their account the result is 13 usable, structured and edited videos."* – O1, regarding the struggle to make lecturers record lectures (Fully-participating observational study, 2017).	The instructional designers (ID) that are in charge for creating content for the courses that are given as distance learning courses, is reluctant to learn how to transfer from making print-based materials to digital content. It is hard to say why this is, is hard to say, but one theory is the fact that they still need print based materials even if they were to create the learning materials as digital content is a key factor. The print is still needed because of the fact that a big part of UNAMs distance learning populous don't have access to the required infrastructure to consume ICT based distance education. This would imply that the IDs at UNAM would have double the current workload in order to cater all of the learners at UNAM with learning resources. This challenge to change staff's behavior is something that shows with the instructors as well. An example is the training in how to use the lecture capturing software, the majority of the lecturers have undergone training in how to use the software, but the usage of the software is next to null.
Motivation to participate in e-learning related activities	*"I am ashamed of the horrible turn-out, you guys have been traveling from the UK to facilitate e-learning training activities for us, free off charges – and we can't even manage to get people to show up."* – O1 regarding the no show staff at e-learning training sessions (Fully-participating observational study, 2017)	When Cardiff University were conducting the planned e-learning sessions, that were planned since months back. there was an average of 4 individuals from UNAM participating. They needed to make the sessions mandatory to have a better turnout. This showed a lack of will for the staff of UNAM to engage in the e-learning initiatives. UNAM should not need to force their staff, but rather take measures to ensure fundamental motivation for e-learning that comes

		from the staff themselves.
Success stories from similar contexts	*"We need evidence for this working in Africa, I don't believe that anyone in Africa is using this software that's why I am pressuring them on answers regarding that. We don't need testimonials from the west, the reality is different here. Because at this point in time it's just expensive and not adapted to our setting and infrastructure."* – O5, regarding the need of success stories from similar contexts (Fully-participating observational study, 2017)	Success stories is a powerful tool in raising user awareness and motivation, success stories make it easy to showcase the usefulness and viability of an information system. There is a significant lack of success stories from contexts similar to the one of UNAM. E-learning in Africa is still being implemented and a lot of projects fail, there is a need to identify and spread success stories that gives example about higher learning institutions successes that revolve around e-learning.
Awareness of Open distance learning (ODL)	*"People outside of the city isn't aware if the fact that this opportunity exists"* – I1 (Interview 1, 2017)	To spread the awareness to potential learners that can enroll in the programs and courses that UNAM give as ODL courses is key in ensuring continues support and money for the ODL initiatives at UNAM. ODL can be one of the key enablers to allowing more learners to earn a higher educational degree and thereby in creating a skilled workforce in Namibia.

Success factors	Illustrative evidence	Comment
E-learning champions	*"But you know I am not worried so much about the opposing parties and such, because I meet the people that is really excited to learn and they even teach themselves how to use ICTs in their learning. These individuals will pull everyone with them and show what ICTs can do."* – I1 (Interview 1, 2017)	When talking user motivation and awareness at UNAM, talk about early ICT/e-learning adaptors such as knowledgeable and enthusiastic staff often follow. The goal for CODeL staff is to identify these users, make them into *"e-learning champions"* and get them incorporated in the e-learning community of practice. The e-learning community of practice is a gathering of e-learning professionals and staff where they discuss, talk and share ideas related to e-learning at UNAM and in Namibia.

		The e-learning champions will act as walking Success stories and ambassadors in order to spread awareness and to motivate other users to follow their example.

An information system is worthless without users. To ensure and establish user motivation, -attitude and -awareness is key, without the engagement from the user's ICT projects are bound to fail. The importance of quick user adoption of newly introduced ICT at UNAM is even more critical than the norm, this is because; lack of proof of use and usefulness will result in pulled funding for the project/initiative in question. This is a huge stress factor for the e-learning professionals at UNAM that need to push ICT solutions to the userbase in order to ensure continues funding, there is no time or resources to establish training programs and evaluations which makes a proper introduction of a certain ICT based solution impossible.

6.2.3. Systematic approach

Incorporation, implementation and adoption of ICTs into learning at UNAM have been a long process that have been going on since 2005. ICT was at first embraced without clear plans and without a systematic approach, a lot have been learnt and changed since then, but some challenges related to persist while some have been transformed into success factors.

Challenges	Illustrative evidence	Comment
Established and accepted plan with goals and rollout strategy	*"Today we have managed to transform less than 15% of our full curriculum to a format that allows it to be given as an online course. I just received an email from my line manager that the board just decided that 80% of the curriculum should be able to be given as an online course before the end of this year. It is an impossible task!"* O6, staff member on new directives from the board revolving e-learning (Fully-participating observational study, 2017).	Issues like unrealistic expectations will continue to happened as long as there is no established and agreed upon plan for execution with deliverables, timetables, aim etc. for the rollout and incorporation of ICT in the teachings at UNAM. An agreed upon plan for execution that have been discussed with managing key stakeholders such as the board of the university is key in order to manage expectation and in implementing a viable strategy. There is of course a plan in motion today as well, but not an official and agreed upon one. To govern this sort of big change management projects will prove to be challenging if not impossible without a proper and realistic strategy.
Functional decision structure	*"I have issues regarding the older generation of staff. They are unable to take orders from the younger generation, they want to go their own way*	Younger managers at UNAM is facing a challenge when it comes to delegating tasks to their employees they manage. The culture of Namibia and the inherent hierarchy of age have been identified as a cause to this. The

	which is making my life as a manager real difficult. I can't delegate because of this, I can't trust My employees." – O1, Staff member on the fact that his staff won't listen to him because of the fact that he is younger (Fully-participating observational study, 2017)	importance to establish a functional decision structure is illustrated in the quote to the left. To govern ICT projects and related initiatives already comes with a great amount of challenges, but lack of a functional decision puts the manager in close to impossible position. The result of the fear of delegating tasks to their staff results in overworked managers that fail to deliver on deliverables.

Success factors	Illustrative evidence	Comment
E-learning policy	*"The e-learning policy was drafted around the idea to have one a unit, a body that coordinates e-learning approaches at the university. So, that's where its coming from. So now the e-learning department which was independent coordinate the implementation of e-learning across the University."* – I1 (Interview 1, 2017)	The situation before the writing and establishment of the e-learning policy was chaos. The staff all had their own ICT projects where they tried to introduce ICT in their teaching. This resulted in confused learners and failed incorporation projects. The e-learning policy made e-learning to a cause for the university in its whole and acted as an enabler for the highly successful initiative that is CODeL. CODeL now coordinate all the e-learning across the university in close collaboration with university heads and staff.
Center of Open, Distance and eLearning (CODeL)	*"Before CODeL basically all lecturers, including me, was sort of using their own innovation in how they can incorporate ICTs into their teaching, most lecturers would be using free online solutions like learning management system. So, there was a lack of coordination and lack of uniformity"* – I1 (Interview 1, 2017)	As previously mentioned above, the CODeL have been a huge enabler in adopting ICTs into the teaching practices of UNAM. The systematic approach practiced CODeL have made e-learning into a hearth issue for the university in its whole which have resulted in successful coordination of initiatives.

UNAM is a prime example of the issues that comes with the lack of a systematic approach in ICT adoption and incorporation. The systematic and agreed systematic approach now utilized to a certain degree by UNAM has been a huge enabler for ICTs in their learning practices and have made them leap into the digitalization of their education. However, there is a need to establish the systematic approach even further

in order to manage expectations and govern the rollout and implementation of ICT in UNAMs teachings.

6.2.4. Evaluation and analytical challenges

The evaluation of the e-learning initiatives at UNAM is crucial to ensure continues monetary support for the technologies and their licenses. Successful evaluation of the technologies would result in the much-needed proof of usefulness that is needed to ensure continues funding.

An illustrative evidence regarding the struggles that follow lacking evaluation is when one of the department heads gave an answer to the question regarding where they see themselves (UNAM) being with the lecture capture software in 1 year: *"Licenses are expensive. Licenses are expensive, and the university is struggling with the economy. So, we can't afford the license on our own - we need funding. To apply for funding, you need good reasons and evidence for the advantages and need for this sort of software and at this point the software isn't being used." – O3 (*Fully-participating observational study, 2017*)*. The evaluation of the initiatives and technologies are facing challenges in regards to available data and time. I1 gave an illustrative quote on this when he stated that: *"We don't have access to data to inform our decisions, and the small amount of data we have can't be used because we don't have the time or resources to analyze it." –* I1 (Interview 1, 2017). Need to prove usage and how e-learning improve education in order to get continues funding: *"...It's all about the money." –* I1 (Interview 1, 2017).

There is still some examples of evaluation being conducted of ICT initiatives at UNAM. We will now look at 2 interesting use-cases of when UNAM staff actually found the time to evaluate their e-learning.
The first is and evaluation of traffic on video lectures uploaded by instructors: *"The data showed that there was next to zero traffic on the uploaded videos, so we deemed the initiative to be a failure, but we saw that the lecturer continued to upload videos, when I told her about the statistics of her videos she told me that I had the wrong info because all of her students had watched the video. You can imagine my surprise. As it turns out the students take turns in downloading the videos from an WiFi at the city center due to the low speed of our WLAN, they are then sharing it by the use of USB with their classmates." –* O6 (Fully-participating observational study, 2017).
The second is an evaluation of online submission frequency after UNAM enforced mandatory online submissions: *"We saw an number close to 95% and deemed the mandatory online submissions to be a success, but when discussing this at an lunch with a lecturer that were complaining about the enforcement, he told me that the majority of the students didn't have the skills required, but instead payed other more tech-savvy students to help them with their transformation of documents from hand written assignments to digital content and their online-submissions." –* O6 (Fully-participating observational study, 2017), What can we learn from these two use cases? Well, quantified data in the context can't be trusted. This is an additional challenge for the evaluation and analysis of the e-learning initiatives and solutions introduced at UNAM.

An example of an issue that would need further evaluation is the fact that the lecture capture software is not being used by lecturers at UNAM: *"We know that they aren't*

using the software after training but are unable to give an answer to why." – I1 (Interview 1, 2017)

6.2.5. Transforming the education

Transforming the education refer to the factors need to be addressed in order to move from a traditional style of learning to success full blending learning style. This will cover interesting evidence and factors that applies as challenges for that transformation.

The inequality in Namibia is putting a lot of constraints and challenges in terms of digital transformation of the educational system in Namibia: *"Inequality from the apartheid era is still there, so the un-equality in education is high. Which is resulting in lacking exposure to ICT in education up to high school. 1-2 sessions with ICTs a week is the aim, but they are far from achieving it. You see, if access to ICTs exist there is still a shortage of teachers outside of the cities that feel confident enough with ICTs to demonstrate it and teach. [...] It's stressful in higher education studies, so they don't take the time to learn, they are physically submitting or relay on other students to do their downloads and submissions for them. [...] Lack of resources to coach and teach students to use the computer and IS."* – I3 (Interview 3, 2017). This give cause to argue the fact that e-learning will make education more accessible in the context: *"We also have another argument, are you now disadvantaging people that are already disadvantaged by focusing on the rollout in areas and region that already have access to good access of technology and internet?"* – I3 (Interview 3, 2017). This statement was motivated by the fact that you can't deliver ICTs to all of the potential learners in Namibia, this is in major part due to limited access to devices and required infrastructure. There are two distinct sides to this debate: *"We need to have a balanced and narrow focus, can't afford to be ambitious we have enough of challenges"* O4 (Fully-participating observational study, 2017) – *"I don't want balance and narrow focus, I want all the information. To explore the limitations are more interesting than imagining the possibilities."* – O1 (Fully-participating observational study, 2017).

There is also a disagreement regarding the ICT capabilities of the university and the learners that are enrolled in their courses and programs: *"In Namibia, we are able to do what all University are trying to do in the west due to: 1) easy access to management 2) a good IT infrastructure 3) Young University so no real culture to take in to consideration and 4) A small student population makes it easier to introduce major changes"* – I1 (Interview 1, 2017). This is a sensitive issue and give cause to much debate, some staff at UNAM refrain themselves from even talking to widely about the possibilities that ICT offer and where they are heading: *"Sometimes I need to restrain myself from talking too much about the future, not necessarily because it is a bad thing, but it seems to make people uncomfortable and we slip away into political grounds."* – I1 (Interview 1, 2017)

6.3. Comparative analysis: Findings of the study and the findings of the scientific community

This section will try to evaluate to what degree the findings of this study translates and compares to the findings made by the scientific community. The section will first present a table with the findings made within each of the previous categories and how many of these factors that have been identified by the scientific. The section will then

continue to discuss to what degree the findings within each of these 5 categories compares in a more general way.

Categories	Findings of the...	
	... study	**...scientific community**
Access	**Challenges:** *Bandwidth; Connectivity; Devices* **Success Factors:** *Downloadable resources; Mobile data connection; Satellite campuses;*	**Challenges:** *Lacking infrastructure* (Bates, Aderinoye and Siaciwena, 2008; Unwin, 2008, 2009)*; Connectivity* (Hussein, Aditiawarman and Mohamed, 2007)*; Access* (Andersson, 2008) **Success factors:** M-learning (Georgiev, Georgieva and Smrikarov, 2004)
User motivation, -attitude and -awareness	**Challenges:** *Change the staff's behavior; Motivation to participate in e-learning related activities; Success stories from similar contexts; Awareness of open and distance learning.* **Success factors:** *E-learning champions;*	**Challenges:** *Learning activities; attitudes on e-learning* (Andersson, 2008) **Success factors:** *User satisfaction; perceived ease of use.* (Sun *et al.*, 2008); *positive attitudes towards ICT; full involvement of all stakeholders*(Sife, Lwoga and Sanga, 2007)*;*
Systematic approach	**Challenges:** *Functional decision structure; Established and accepted plan with goals and rollout strategy* **Success factors:** *E-learning policy; Centre for Open, Distance and eLearning*	**Challenges:** Support from institutions (Brinkerhoff, 2005); Management and plans for the transformation (Sife, Lwoga and Sanga, 2007). **Success factors:** *Policy* (Sife, Lwoga and Sanga, 2007; Shraim and Khlaif, 2010)
Evaluation and analytical challenges	**Challenges:** *Lack of data; lack of time to analyze the data;*	**Challenges:** - **Success factors:** -

	unreliable quantified data **Success factors:** *Reliable qualified data*	
Transforming the education	**Challenges:** *Inequality; Low computer literacy; Conflicting views of the situation for ICTs in the context; Conflicting views of focus* **Success factors:** -	**Challenges:** *Confidence in technology* (Hussein, Aditiawarman and Mohamed, 2007)*; Support from institutions* (Brinkerhoff, 2005) **Success factors:** *Support functions* (Sife, Lwoga and Sanga, 2007);*

There is an evident direct correlation in the identification of the challenges and success factors revolving the access to the ICTs needed to establish an e-learning practice that applies to and that is accessible to the learning population of educational institutions of developing countries. There is also a strong correlation to the need of a systematic approach for e-learning implementation in the teachings of said learning institution.
There is a semi-direct correlation to the importance of user motivation, -attitude and -awareness, as well as for the transformation of education. Both the study and the scientific community identify these categories to be of great importance for the implementation of e-learning technologies in the educational system of a development country. However, the identified challenges and success factors identified by the study and the scientific community differs.
An interesting and surprising find is that the need and importance for evaluation and analysis of e-learning tools, projects and initiatives is not mentioned by any of the related research. This study showcases why it is of great importance for e-learning in developing countries to be able to show evidence for the usefulness of the tools and practices put into use, but the scientific community do not present any findings on the subject.

7. RESULT & CONCLUSION

UNAM are enjoying a support for its e-learning on a high managerial level and a lot have happened within a pretty short time span. E-learning is today considered to have a role of an enabler for the desired blended teaching that UNAM aim at. The long-term goal of the incorporation of e-learning at UNAM is to the flexibility that act as the main driver for the adoption of e-learning into their teachings. The key functionality that they wish to achieve with their e-learning is to be able to deliver education to learners: anywhere, to anyone, at any time anytime. The also identified a small motion and in official desire to later transition from blended learning into a fully distance and e-learning based curriculum.

The study identified 5 categories of factors that are critical to consider when ICT are to be introduced in the higher learning institutions of Namibia. The 5 categories are: i) Access, ii) User motivation, -attitude and -awareness, iii) Systematic approach, iv) Evaluation and analytical challenges, and v) Transforming the education. Both challenges and success factors were identified within each of the 5 categories and it are the conclusion of this study that both success factors and challenges is factors that need to be considered when introducing ICTs into the higher education of Namibia, and that all of the factors that applies as success factors today started off as challenges. Thus, a challenge is a challenge until the time it is successfully addressed and is at that time transformed to a success factor and enabler for e-learning in the context. The study conclude that we are better off in generalizing the resulting findings to factors that are critical to consider rather than to categorize them by what impact the factors have on the e-learning in the educational system of the context today. The identified factors that applies to the e-learning at UNAMs for each of the 5 categories are:

1. Access: Bandwidth; Connectivity; Devices; Downloadable resources; Mobile data connection; Satellite campuses.
2. User motivation, -attitude and -awareness: Change the staff's behavior; Motivation to participate in e-learning related activities; Success stories from similar contexts; Awareness of open and distance learning; E-learning champions.
3. Systematic approach: Functional decision structure; Established and accepted plan with goals and rollout strategy; e-learning policy; Centre for Open, Distance and eLearning.
4. Evaluation and analytical challenges: Lack of data; lack of time to analyze the data; unreliable quantified data, Reliable qualified data.
5. Transforming the education: Inequality; Low computer literacy; Conflicting views of the situation for ICTs in the context; Conflicting views of focus.

The findings of this study correlate well with the findings previously made by the scientific community, with the exceptions being the study's finding regarding the need of evaluation and analysis of the ICTs that had been introduced to be utilized in the teaching at the higher learning institutions.

8. DISCUSSION

This chapter purpose is to allow the researcher to discuss the study's methodology, implications, generalizability of findings and give recommendations for future works on the same or similar issues as this study.

8.1. Sociological-, ethical- and research implications of the study

This section will discuss the eventual implications of the study and its findings as seen from 3 different perspectives: Sociological, ethical, and research.

8.1.1. Social implications

The sociological implications of the study for the context and case of research will be primarily revolving around the educational system and an understanding for the specific factors that need to be considered when an ICT project is to be initiated in the context. The study highlights some critical factors for ICTs and ICT users in the context and the findings will hopefully have an impact on how ICT projects are structured and looked upon in the context of research. The stakeholders are quite aware of the challenges and are already working hard to overcome them, but they are in general to modest when it comes to the success factors their work with the challenges that applies to adopting ICTs in the higher educational system of Namibia. It is the researchers view that the findings of this study will empower the stakeholders at UNAM by highlighting the success factors and challenges to applies to e-learning in the context and in doing so might have sociological implications for the higher education system of Namibia. It is the belief of the researcher that the study might act as reference for coming ICT projects to establish roadmaps and designs that leverage the success factors identified and put forth a plan for facing and overcoming challenges.

8.1.2. Ethical implications

The researcher went great lengths in ensuring an ethical practice in order to reduce or eliminate all the ethical implications of the study. The researcher made sure to manipulate or eradicate all information that could lead to the disclosure of the identity of individuals. The Universities was asked to consent about the fact that their names would feature in the final report of the study and they had good knowledge about the purpose and aim of the study.

8.1.3. Research implications

Previous research on related subjects have called for more research and studies to be conducted on ICTs in developing countries, because just as the researcher noticed in his attempt to find reference literature for this study, the research on ICT4D and especially on e-learning is scarce and hard to find. The research implications of this study might be that previous scientific findings strengthens and awareness of the field of ICT4D and e-learning in higher learning in developing countries are increased. It is of continues importance to highlight developing countries and the specific challenges they are facing and success factors they identify in implementing and adopting ICTs. The increasing digital incorporation and transformation happening all around world have different factors that are unique for the context in question the researcher hope that the study along other studies similar to it will inspire more to follow in its footstep and continue to examining the factors that is unique for ICTs in the context.

8.2.   Generalizability of findings

The deductive analysis that compared the findings of the study with the findings and results of previous research acted as a tool to establish to what degree the findings of this study correlate with related research. A strong correlation would give cause to argue for a generalizability of the study's findings to other higher learning institutions within a similar context. The conclusion of the study argues for strong correlation between the findings of this study and findings made by the scientific community, which in turn means good generalizability of the findings. This is especially true for findings regarding access, systematic approaches and User motivation, -attitude and -awareness.

8.3.   Strengths and weaknesses of the study

The conducted study has a weakness in terms of width and generalizability of the findings and results. This in major part due to the fact that the data of the data all come from a single higher learning institution. If the study were to include more institutions and/or more developing countries it would give a width and proof of generalizability. Another way to ensure a greater width and more cause to claim the generalizability of the findings of the study is to increase the sampling size and/or have a greater variety in the sampling of stakeholders. An idea would have been to include learners, government officials and instructors in the study. A larger and more diverse sampling selection would give the study a width.

Another weakness of the study is the fact that the data collection techniques used had a wide variety in the time and resources that was allocated to them individually. This was largely due to the pragmatic approach to the design of the study. The pragmatic and emergent design resulted in fast and impulsive design decisions. The impulsiveness was required in order so size opportunities as they presented themselves. An illustrative example of this was when an opportunity to perform a Fully-participating observational study presented itself, the decision to act on the opportunity resulted in a lack of time to plan and book the interviews for the semi-structured interview study. The sampling of the same interview study was thereby compromised. The 6-8 planned interviews were reduced to 3.

The main strength of the study is the fact that the issue and its underlying aims and purpose was addressed in a satisfying way. The designed and perform methodology achieved a depth in the data, which was the purpose of the decision to go fully qualitative, the alternative was to go with a mixed methodology; the alternative methodology will be covered in a greater depth in the next section. The depth of the data was achieved through good rapport with staff and continues study of e-learning at UNAM. The rapport resulted in good access to highly skilled and knowlededables individuals. The mix of data collections techniques and the triangulation of the same when the data was analyzed coupled with the fact that the data collection was conducted in close collaborations with stakeholders in the context of research and the good correlation with the findings of related research gives good cause to argue for a high degree of reliability in the findings of the study.

8.4.   Alternative methodology

An alternative methodology that was considered in the design of this study and that still is considered be an viable alternative in conducting this sort of research is a mixed methodology, that is a study that utilize and examining both qualitative and

quantitative data. The mix were considered due to the uncertainty of what sort of access that could to be expected to the context of research. The mix of data would give the researcher a possibility to fill up gaps and verify findings made based on qualitative data with quantitative data.

An alternative to the selected data techniques was also considered. The researcher was considering putting focus groups together with different kind of stakeholders in the same room. However, the idea was shoot down when the suggestion was put forth to local supervisors and contacts, this was in major part due to cultural constraints that would result in data that failed to reflect the actual reality.

There was also an idea to interview learners and governmental officials as well as visiting other universities and campuses. The choice was between going wide or deep, but local regulations and laws would prove to take the decision away from the researcher.

8.5.   Implications of the pragmatistic inquiry

The implications of the pragmatistic approach in the design of the study meant that some changes in the course of the emergent design of the study. Changes was made in the selection of data collection techniques that was used. The full participatory observational study was conducted thanks to an opportunity to sit in on e-learning lectures, workshops and discussions facilitated by the Cardiff university. This impacted the interview study due to relocation of time, the interview study was planned to include 6-8 different interviews, this number was reduced to 3.

The idea was to include representatives from 2 additional stakeholder groups: learners and government officials. This was changed due to regulations, policies and laws that applies to the educational system of Namibia, the implication of the regulations, policies and laws was that no access to the stakeholders was possible.

8.6.   Future works

Future study is required on the factors that make success factors and challenges for e-learning in the context of higher learning in a developing country. This work identified some key categories and factors that are key in implementing e-learning in higher learning, but to examine how we can overcome the identified challenges and how success factors can be utilized at other higher education institutions lied outside of the scope for this study. The researcher suggests that the factors identified should be studied more closely in a greater collaboration with the higher learning institutions in order to examine the factors and the impact they have on higher education in this study more closely and therefor suggest a more action- or evaluative research based study that could utilize the design-reality gap analysis that were developed by Richard Heeks (Heeks, 2002a) or facilitate workshops where local stakeholders get to discuss the issues themselves suggestively in line with analysis frameworks such as SWOT.

The researcher identified 3 additional theories that might be interesting to look upon when examining this issue further: i) Technology acceptance model (TAM), can be of use gain understanding for the user's acceptance to the incorporation of e-learning in the educational system of the context of research. ii) Motivational theory, can be used to examine the user acceptance and perceived satisfaction. And iii) Social cognitive theory (SCT), the idea that people learn by observing others. To examine how this, take effect in a context where ICTs is a relatively new phenomenon and many user lack the ICT related skills required to navigate the e-learning systems of higher learning institutions would be of great interest.

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