

**THE PREDICTORS OF STUDENT PERFORMANCE IN  
A BLENDED LEARNING ENVIRONMENT AT HIGHER  
EDUCATION INSTITUTIONS (HEIs) IN TANZANIA: A  
CASE STUDY CONDUCTED AT THE UNIVERSITY OF  
DAR-ES-SALAAM.**

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by

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## **ABSTRACT**

Blended Learning is an important technological platform which has the potential to enhance the efficiency and efficacy of educational provision, especially in Tanzania universities. Despite a high level of investment into Blended learning, students face various challenges that have impeded them performing well in Blended learning courses. The purpose of this research is to examine and explore how student's performance in a Blended learning environment is influenced by motivation and learning strategies; using the University of Dar es Salaam as a case study.

This is a pragmatic research that utilises a mixed research design. The research design includes both qualitative design (in-depth single case study) and quantitative design (survey). The target population for this study is students participating in Blended learning modules. Primary data will be collected by means of Motivational Strategies for Learning Questionnaire and observation.

It was found that motivation and learning strategies are significant predictors of student performance in a Blended learning environment. In terms of the motivation categories, Intrinsic Goal Orientation and Self-efficacy have statistically significant effect on student performance. With learning strategies sub factors, it was found out that Rehearsal, Effort Regulation and Peer Learning have significance effect on student performance. Moreover, age and gender significantly influence performance. The findings obtained are significant in building a better understanding of the influence that the mentioned predictors have on predicting the performance of students in Blended learning courses in Tanzania.

**KEYWORDS:** Predictors; Blended learning; Student performance; Higher Education Institution; Tanzania

## ***Declaration***

I declare that the Thesis entitled “The predictors of student performance in a Blended learning environment at Higher Education Institutions (HEIs) in Tanzania: The case study of University of Dar-es-Salaam”, which I hereby submit for the degree, MSc in Information Systems at Rhodes University, is my own work. I also declare that this thesis has not previously been submitted by me for a degree at this or any other tertiary institution and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

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Name Surname (*signed*)

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# 1 INTRODUCTION AND PROJECT REVIEW

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## 1.1 Introduction and background

Recently, the availability and adoption of new technologies in support of education has precipitated change in higher education institutions. This has impacted the teaching and learning environment for both lecturers and students (Kuo, Walker, Belland and Schroder, 2013). Blended learning is described as a learning setting or environment which merges various delivery methods and techniques, aiming to provide the most efficient experience to both lecturers and students (Giannousi et al., 2009). For the purpose of this research, Blended learning is defined as an appropriate combination of traditional face-to face instruction combined with several learning technologies, complemented with a Learning Management System (LMS) such as the open source system, Moodle. As Blended learning gains traction, the necessity to determine factors that affect and predict students learning performance is becoming a critical issue (Wu, Tennyson and Hsia, 2010).

In past decades, the utilization and implementation of new technological tools has prompted radical change in the education offered by certain higher education institutions. This has changed the teaching and learning environment for both lecturers and students (Pollock and Cornford, 2004; Kuo, Walker, Belland and Schroder, 2013; Bentley, Selassie and Shegunshi, 2012). Blended learning in higher education institutions can improve pedagogy, cost effectiveness, increase knowledge access, improve ease of revision, promote social interaction and promote a high level of lecturer presence (Osguthorpe and Graham, 2003; Lim and Morris, 2009; Bhuasiri et al., 2012; Phiri et al., 2014).

Most universities throughout the world, and especially in Africa, are gradually adopting Blended learning to support teaching and learning as well as research (Bentley, Selassie and Shegunshi, 2012; Aguti, Walters and Wills, 2013). A research study in 27 African nations reported that 47% of the respondents in 54 higher education institutions have set up Blended learning applications including Learning Management Systems (LMS) (Unwin et al., 2010; Lwoga, 2012). Some higher educational institutions in Tanzania have integrated Information and Communication Technologies (ICT) into education. One such university is the University of Dar-es-Salaam (UDSM). The University of Dar-es-Salaam has established various learning centres that offer courses outside the campus including the Centre for Virtual Learning (CVL) (Mtebe and Raphael, 2013; Nihuka, 2014). The CVL is an Open Distance

and E-learning (ODeL) Centre at the university that coordinates the delivery of E-learning and distance academic programmes (Nihuka, 2014). These programmes include a Postgraduate Diploma in Education (PGDE), a Postgraduate Diploma in Engineering Management (PGDEM) and a Master's degree in Engineering Management (MEM) (Mtebe and Raphael, 2013). Moreover, the CVL assists in developing and delivering Blended learning programmes (Mtebe and Raphael, 2013). In fact, the CVL provides pedagogical support for lecturers to effectively facilitate Blended learning programmes (Mtebe and Raphael, 2013) and also administers a Moodle based LMS system and other software for Blended learning courses (Mtebe and Raphael, 2013). Despite the successful launch of these programmes, the number of students completing their courses is low. According to Mtebe and Raphael (2013), 38% have graduated on the PDGEM while 56% have graduated on the PGDE. The students that didn't graduate either postponed their studies or didn't turn up after registration. With regard to undergraduate students, the number of undergraduate students using Blended learning tools is quite low compared to the number of the registered students (Mtebe and Raisamo, 2014; Joel, 2015). For example, in 2008 only 9% of registered students using the LMS at the University of Dar-es-Salaam and 9% of the students at the University of Dodoma. Thus it is important to understand what can be done in order for students to perform well in Blended learning environment

A student is a key role player within a Blended learning environment; thus it is important to understand the predictors that may contribute to a successful learning experience (Beaudoin, Kurtz and Eden, 2009). Although some researchers don't think there are remarkable differences between traditional so called face-to-face instruction and Blended learning instruction in terms of learning end results, student satisfaction in Blended learning remains a vital matter (Allen, Bourhis, Burrell and Mabry, 2002; Giannousi; Vernadakis, Derri, 2009; Kirmizi, 2014). This is particularly important given that underlying e-learning tools technologies impact the way students interact with lecturers and fellow students (Kaminski, Switzer and Gloeckner, 2009). Research conducted by Inan et al. (2012) and Stark, Lassiter, and Kuemper (2013) focused on exploring individual unique characteristics that elaborated differences in student academic performance. This fore-mentioned research has raised various issues believed to impact student success within a Blended learning environment. These include: motivation, learning strategies, self-regulated learning elements, personality preferences, locus of control, age, educational level, self-discipline and experience with technology (Schrum and Hong, 2002; Deryakulu et al., 2009; Kirmizi, 2014). In fact, there is

paucity of research on the influence of learning strategies and motivation in Blended learning in Tanzania Higher Education Institution (HEI). From existing empirical studies, it is evident that little is known on the impact of the fore-mentioned factors on student performance in a Blended learning environment within a Tanzanian context. The need to investigate the predictors of student success in terms of academic performance was articulated more than a decade ago (Dille and Mezack, 1991; Stone, 1992; Biner et al; 1996; Kirmizi, 2014). As a result, Wu, Tennyson and Hsia, (2010) suggest that it is critical to determine factors that affect and predict students learning performance. It is against this backdrop that the present research aims to investigate the effects of motivation and learning strategies on student performance within a Blended learning environment in HEI within Tanzanian context.

For the purpose of this research, two characteristics have been selected: Learning strategies and Motivation. Learning strategies and Motivation were chosen based on the fact that they are the common and critical factors that have time and again been raised in distance education and in online and Blended learning environments (Allen et al., 2002; Yukselturk and Bulut, 2007; Artino and Stephens, 2009; Çakıroğlu, 2014; Harandi, 2015)

Learning style is believed by many researchers to be a significant factor in predicting student performance in a Blended learning environment (Shih and Gamon, 2002; Kim, 2011; Artino and Stephens, 2009; Çakıroğlu, 2014; Lee, 2014; Harandi, 2015). Learning style is “a set of personal characteristics imposed biologically and developmentally that makes the effectiveness of a course vary among students” (Dunn et al., 1995; Kim, 2011). It is crucial to understand the learning strategies of learners as it may help in predicting their ability to learn within a particular environment. While there are many learning style theories, Pintrich and de Groot’s theory of self-regulated learning, has been selected as the preferred theory for this research study. The theory deals with behaviours and activities of students rather than the rationale behind the model (Dinsmore, Alexander and Loughlin, 2008; Lee, 2014). Also, self-regulated learning theory concentrates more on the interaction between the learning environment (in our case, Blended learning environment) and the person (in our case, students). General components of learning strategies comprise elaboration, rehearsal, organization, resource management, metacognition and comprehension (Weinstein and Meyer, 1991; Cross and Steadman, 1996; Shih and Gamon, 2002).

Motivation is considered an equally important factor in explaining student academic performance in a technology mediated environment (Keller, 1999; Waschull 2005;

Yukselturk and Bulut, 2007; Lim and Morris, 2009; Kirmizi, 2014). Motivation is defined as the generated energy that gives the desire, direction and enthusiasm to achieve a particular learning goal (Lim and Morris, 2009; Kim, 2011). When students see that they have met their course goals and tasks are completed throughout, they will show a high rate of academic performance (Lynch and Dembo, 2004a). According to Pintrich's goal orientation and Bandura's self-efficacy theories, motivation has two main components/variables. These are self-efficacy and goal orientation (Pintrich and Garcia, 1991; Bandura, 1997; Yukselturk and Bulut, 2007). Self-efficacy is described as the confidence and judgment that students have to complete a certain task (Bandura, 1997; Lynch and Dembo, 2004). Goal orientation includes the general goals that students have towards a course; which can be either intrinsic or extrinsic. These two variables can be measured by self-report questionnaires based on Bandura and Pintrich's theories, Achievement Goal Orientation Inventory, Self-Efficacy Scale and Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich and Garcia, 1991; Lynch and Dembo, 2004).

## **1.2 Problem statement and research questions**

Despite a high level of investment into Blended learning, students face various challenges that have impeded them performing well in Blended learning courses (Mtebe and Raphael, 2013). Moreover, there is paucity of research on the influence that learning strategies and motivation has on student success in Blended learning courses in a Tanzania HEI. The purpose of this research is to examine and explore how student's performance in a Blended learning environment is influenced by motivation and learning strategies; using the University of Dar es Salaam as a case study.

*Main Research Question:*

This research will be guided by the following main question:

*What influence do learning strategies, motivation and demographic factors such as age and gender have on student performance in a Blended learning environment?*

The main research question is supported by the following four sub-questions:

- i. What is the correlation between learning strategies and motivation to student performance in a Blended learning environment?
- ii. To what extent are Learning strategies and Motivation significant predictors of student performance in a Blended learning environment?

- iii. What is the influence of student demographic variables (age and gender) on learning strategies, motivation and student performance in a Blended learning environment?
- iv. What are the perceptions of students about the factors that affect their academic performance in a Blended learning environment?

### **1.3 Overview of the methodological approach**

The research approach in terms of orientation to knowledge is Pragmatism. Pioneers in pragmatism did not believe on the concept of “scientific notion that social inquiry was able to access the truth about the real world solely by virtue of a single scientific method” (Mertens, 2014). The pragmatic paradigm also puts research problem or phenomena as vital central focus and thus aims to use all approaches to comprehend the research phenomena (Creswell, 2003). Pragmatism is seen as the most applicable paradigm that provides the fundamental theoretical framework for mixed method research design (Maxcy, 2003; Teddlie and Tashakkori, 2003; Johnson and Onwuegbuzie, 2004; Somekh and Lewin, 2005; Mackenzie and Knipe, 2006; Morgan, 2007; Feilzer, 2010; Hall, 2012). Pragmatism is adopted for this research in order to investigate, understand and fully appreciate predictors of student performance within a Blended learning environment in higher education institutions in Tanzania.

Mixed research design is employed for this study. This research design includes both qualitative design (in-depth single case study) and quantitative design (survey). This research design was selected for the researcher to understand the phenomena better in its natural setting and investigate the variables. Surveys are quantitative strategies that employ questionnaires with the aim of generalizing a sample to population (Babbie, 1990; Creswell, 2003). Merriam (1988) defines a case study as “an intensive, holistic description and analysis of a single instance, phenomenon or social unit”. Bantin (2008) states that case studies are used to illustrate problems or indicate good practice. A case study analyses a phenomenon in its natural setting, using various data collection methods to assemble information from various research subjects (Benbasat, Goldstein, and Mead, 1987).

The study is conducted at the University of Dar-es-Salaam due to the fact that the university actively pursues Blended learning in several of its modules. The target population for this study is students participating in Blended learning modules. The study employs stratified and random sampling. A stratified random sample will be drawn from the list of learners in a Blended learning based on their disciplines. The stratified random samples are believed to be

closer to the population mean and thus appropriate for this research (Pickard, 2013).The sample size for this research was scientifically determined by

$$n = \frac{N \times Z^2}{4(N - 1)e^2 + Z^2}$$

Where:

n= Sample size

N= Population size

Z= Standard score for (1- $\alpha$ )% confidence level

e= Margin error

Data will be collected using both quantitative and qualitative research methods. This mixed research strategy will draw on both primary and secondary methods of gathering information and data (Bryman and Burgess, 1999). Primary data is collected by means of questionnaires and observation. The questionnaire that will be used to assess and measure the Learning strategies and Motivation (independent variables) is Motivational Strategies for Learning. Student performance (dependent variable) is measured by students' course marks. The mentioned instrument is frequently used in many studies; especially technological learning environment ( Peklaj and Levpušček, 2006; Yukselturk and Bulut, 2007; Çakıroğlu, 2014; Cruise, 2014). This instrument will be modified and hence customized to be used in the area of research.

Quantitative data analysis techniques to be utilized in this research will include descriptive statistics and inferential statistics. Descriptive statistics (frequency and percentage) is used to display demographic and background information of the sample population (such as age, gender and year of study). Inferential (correlation and regressions) statistical techniques will be used to explore relationships and significance between the variables (Fraenkel and Wallen, 2000). Qualitative data collected will be analysed using content analysis. Content analysis serves to identify the most important themes of the data collected on students' views on Blended Learning (Downe-Wamboldt, 1992; Hsieh and Shannon, 2005; Elo and Kyngäs, 2008). Both qualitative and quantitative data analysis will be supported by software such as Statistical Package for the Service Solutions (SPSS) and Microsoft Excel.

To validate the analysis of the findings i.e. credibility, reliability and validity of the data collected and analysed, triangulation will be implemented (Neuman and Dickinson, 2003). The results of data analysis will be triangulated in order to strengthen the research findings and conclusions. Also, the researcher will conduct a pilot study in order to test the credibility and validity of the questionnaires.

## **1.4 Research contribution**

The findings of this research will build a better understanding of the impact that motivation, digital literacy, age, gender and learning style have on predicting the performance of students in Blended learning courses in Tanzania. It is hoped that a greater understanding of the impact of these factors will mean that course developers and lecturers can better understand, respond to and predict student performance within this environment. Student performance is quite vital; thus needs to be continuously examined and assessed to guarantee quality of student experiences within a Blended learning setting.

## **1.5 Terms and definitions**

For the purpose of this thesis, a list of significant definitions is created in order for readers to understand the various issues discussed.

**Student performance:** is defined and measured by either successful completion of a course, grades, course withdrawals, skill building or added knowledge, depending on the nature of students and course's content (Picciano, 2002)

**Blended Learning:** is defined as an appropriate combination of traditional face-to face instruction combined with several learning technologies, complemented with a Learning Management System (LMS) such as the open source system, Moodle.

**Learning Strategies:** are total efforts done by students to handle and understand information provided during teaching-learning processes (Tay, 2013; Kafadar, and Tay, 2014). In other words, learning strategies can be defined as the whole set of the performed activities of a learner to give meaning to information in cognitive and affective processes.

**Motivation:** According to Kawachi (2002) motivation is an individual's level of willingness to do something to achieve a goal. Motivation refers to the level of commitment, dedication, determination and persistence of a student together with curiosity and hard work in the academic subject matter (DiPerna and Elliot, 1999; Rakes and Dunn, 2010)

## **1.6 Thesis structure**

The study is organized into seven chapters. The outline of this thesis is portrayed in figure 1.6.1 below. The first chapter, introduction, provides an overview of the study. It includes background, problem statement, research questions, research contribution, overview of research methodology, key terms and definitions, and potential contribution of the study. Chapter 2 provides a comprehensive review of the literature on the Blended learning; Blended learning in Tanzania, benefits and challenges, student performance in a Blended learning environment, predictors of student performance in a technology mediated environment as well as students' perceptions on Blended learning environment. Chapter 3 provides a general overview of learning strategies, importance of addressing learning strategies in a Blended learning environment, correlation between learning strategies and student performance in a Blended learning environment, theories and models of learning styles, and the choice of Motivated Strategies for Learning Questionnaire (MSLQ) survey instrument. Chapter 4 discusses motivation, importance of addressing motivation in a Blended learning environment, correlation between motivation and student performance in a Blended learning environment, theories and models of motivation, and the choice of Motivated Strategies for Learning Questionnaire (MSLQ) survey instrument. Chapter 5 discusses the research design, research paradigm, sources of data and participants, data collection methods, data analysis methods, research trustworthiness, bias and limitations, and ethical considerations. Chapter 6 presents the results and both qualitative and quantitative analysis of results in relation to the research questions. Chapters 7 and 8 concludes with a summary of the research undertaken, discussion on the findings related to the research questions, key contributions, limitations as well as recommendations for future research.

# 2 BLENDED LEARNING

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## 2.1 Introduction

The previous chapter provided the background and overview of the research with its objectives and contribution. This chapter reviews the literature as guided by the main research question to investigate the influence of learning strategies and motivation on student. The main research question is complimented by three sub-questions which have guided the literature review for this study. These are:

- i. What is the correlation between learning strategies and motivation to student's performance in a Blended learning environment?
- ii. To what extent are learning strategies and motivation significant predictors of student's performance in a Blended learning environment?
- iii. What is the influence of student demographic variables (age, gender, and digital literacy) on learning strategies, motivation and student performance in a Blended learning environment?
- iv. What are the perceptions of students about the factors that affect their academic performance in a Blended learning environment?

## 2.2 Description of Blended Learning

For the past decade, the number of learners enrolling for graduate academic programmes has been growing rapidly while at the same time, the number of skilled lecturers has been declining in most African universities especially in Tanzania (Lwoga, 2012). According to Tremblay, Lalancette and Roseveare (2012), the number of students enrolling in higher education institutions is growing rapidly in Sub-Saharan Africa with 8.4% average annual growth in comparison with almost 5.9% average globally. Thus, most universities are searching for better ways and methods to provide effective teaching, learning and research and to provide for the large number of students (Lwoga, 2012). In the past decades, advancements in ICT have progressively brought different tools to promote new meaningful ways of teaching and learning in academic environments (Lim, Morris and Yoon, 2006).

E-learning is among the most implemented learning technology-mediated environment in higher education institutions. E-learning allows delivery and accessibility of course materials to a lot of students at any time and place (Osguthorpe and Graham, 2003; Dziuban, Hartman

and Moskal, 2004; Akkoyunlu and Soylu, 2008). E-learning also ensured significant student convenience, flexibility and better interaction with lecturers (Wu, Hsia, Liao, and Tennyson, 2008). Yet, previous studies have shown that learning quality and quantity of students has declined in e-learning and distance education (Lim and Morris, 2009). The learning decline can be so because of delayed feedback, procrastination, lack of face-to-face interaction, changes due to the new technological tools and low motivation to comprehend online learning materials (Laurillard, 1993; Lim, 2002; Lim and Kim, 2003; Lim and Morris, 2009). Other factors that impact the effectiveness of e-learning in developing countries such as Tanzania include socialization process difficulties, poor internet bandwidth, shortage of space/areas to build e-learning centres, poor technological infrastructure and poor technical skill level (Akkoyunlu and Soylu, 2008; Paechter and Maier, 2010; Tedre, Ngumbuke and Kemppainen, 2010; Ssekakubo, Suleman, and Marsden, 2011; Lwoga, 2012; Kasse and Balunywa, 2013; Al-Hujran, Aloudat, Al-Hennawi and Ismail, 2013).

These concerns and hindering factors have forced many universities to implement and experiment with alternative learning environments in order to deal with the concerns and deliver course content effectively (Lim and Morris, 2009). The alternative solution amalgamates the benefits from both traditional and e-learning environments. This type of learning technology mediated environment is known as Blended learning. Blended learning is regarded as a by-product of the advancements in Information Communication Technology (ICT) (Lim and Mooris, 2009).

There are various definitions of Blended learning that educators and researchers have come up with. It has to be noted though that throughout the history of Blended learning, there is no common agreed and established definition of Blended learning. According to Finn and Bucci (2004), Blended learning is identified with elements of traditional classroom learning methods together with virtual learning methods. Singh and Reed (2001) and Kassab, Al-Shafei, Salem and Ootom (2015) simply defined Blended learning as a learning approach whereby more than one instructional delivery mode is utilized aiming at optimizing cost of delivery and learning outcomes.

Blended learning ideally integrates the valuable elements of both traditional and e-learning environments (Graham, 2006; Delialioğlu, 2012; Akkoyunlu and Soylu, 2008). E-learning promotes efficacy and flexibility that cannot be established in a physical class setting; while social interaction which is quite essential is promoted by a face-to-face learning setting.

Thorne (2003) positively describes the combination of both delivery modes as “a way of meeting the challenges of tailoring learning and development to the needs of individuals by integrating the innovative and technological advances offered by online learning with the interaction and participation offered in the best of traditional learning”.

Singh (2003) later modified the definition by explaining that Blended learning focuses on optimizing achievement of learning objectives by applying the “right” personal learning technologies to the “right” personal learning strategy to transfer the “right” skills to the “right” person at the “right” time”. Blended learning is also described as a combination or mixture of online learning and traditional face-to-face experiences (Garrison and Kanuka, 2004). Among the most cited definition of Blended learning is the combination of an interactive traditional classroom setting together with learning technologies (Biealawski and Metcalf, 2003). Another description of Blended learning is an incorporated approach of planned instructional and non-instructional methods that are utilized in order to foster learning experience (Rossett, Douglas and Frazee, 2003).

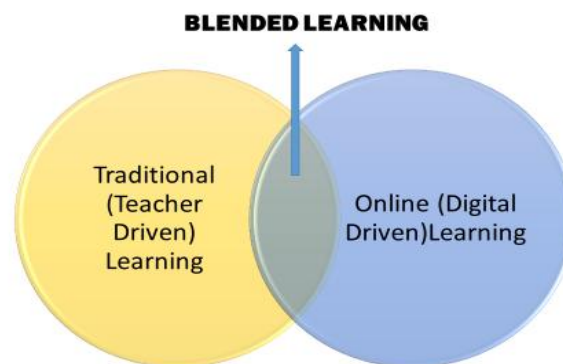
Blended learning is described as a learning setting which merges various delivery methods aiming at providing the most effective education experience (Harriman, 2004; Giannousi, Vernadakis, Derri, Michalopoulous and Kioumourtzoglou, 2009). A Blended learning environment combines the efficient characteristics of traditional learning i.e. face-to-face interaction and benefits of distance learning (Finn and Bucceri, 2004; Graham, 2006; Giannousi, Vernadakis, Derri, Michalopoulous and Kioumourtzoglou, 2009). Blended learning approaches are implemented with the aim of acquiring a balance between face-to-face interaction and online access to information (Osguthorpe and Graham, 2003; Giannousi, Vernadakis, Derri, Michalopoulous and Kioumourtzoglou, 2009). Most researchers have highlighted that Blended learning is more effective and thus has more potential when compared to a traditional learning setting (Heterick and Twigg, 2003; Twigg, 2003; Giannousi, Vernadakis, Derri, Michalopoulous and Kioumourtzoglou, 2009).

Moreover, Thorne (2003) defined Blended learning as “a way of meeting the challenges of tailoring learning and development to the needs of individuals by integrating the innovative and technological advances offered by online learning with the interaction and participation offered in the best of traditional learning.” Naaj, Nachouki and Ankit (2012) described Blended learning as the unification of video-conference facilities together with human interaction, supported with Moodle as a learning management system. Blended learning

amalgamates various content delivery approaches that are developed to support “learning and application-learned behaviour” (Naaj, Nachouki and Ankit, 2012). Thus, a Blended learning environment incorporates the benefits of a traditional learning setting with the benefits of a learning technology (e-learning) (Finn and Bucci, 2004; Naaj, Nachouki and Ankit, 2012).

Blended learning also provides a flexible environment that facilitates diverse learning strategies and needs of students through both traditional teaching and interactive online policies (Garrison and Kanuka, 2004; Holley and Dobson, 2008, Naaj, Nachouki and Ankit, 2012). The implementation of Blended learning will help “transform” most universities and this may be possible by promoting positive changes in terms of management, planning and organization (Žuvic-Butorac, Roncevic, Nemcanin, and Nebic, 2011; Naaj, Nachouki and Ankit, 2012).

In the above mentioned definitions, there are common qualifiers that describe the whole concept of Blended learning. One of the learning forms should be traditional classroom setting i.e. physical human interaction (Naaj, Nachouki and Ankit, 2012). This form should be combined at the same time with learning technology outside the traditional learning setting (Delialioğlu and Yildirim, 2007; Naaj, Nachouki and Ankit, 2012). Blended learning is rapidly being reckoned with in higher education institutions because lecturers and course developers believe various teaching and learning methods may radically improve student satisfaction, learning experience together with learning results (Lim and Morris, 2009).



**Figure 2.2.1 Description of Blended Learning**

Blended learning has been described with various names such as hybrid learning, web enhanced instruction, mediated technology, web assisted instruction and technology enhanced instruction (Delialioğlu, 2012). The term Blended learning seems to be the adopted

“de-facto” that refers to those diverse learning environments. Some researchers, however, criticize the term blending learning as the blend that takes place is in the teaching and not the learning (Oliver and Trigwell, 2005; Delialioğlu, 2012). Thus, Blended learning is proposed to be changed to “Blended teaching”, “Blended pedagogies” or “learning with Blended pedagogies” (Oliver and Trigwell, 2005; Delialioğlu, 2012). Course content in Blended learning is delivered via podcasts, wikis, learning management systems, interactive video streams, mobile devices, wireless technology, real time educational blogs, exam building tools and learning assessment resources (Christou, 2016; Eke, 2011; Clark and Mayer, 2011). Blended learning is characterized by the following five elements (Ehlers, 2009):

- Learning is not limited only to taking place in a traditional classroom setting;
- There is both formal and informal learning i.e. it takes place in classrooms, home, offices and during leisure times;
- The role of lecturers in Blended learning is as distributors of educational content and facilitators of the learning process. The role of students in E-learning is organizers;
- Students take part in both formal and informal communities; thus learning takes place in communities of learning and practises; and
- Learning is not exclusively linked and dependant on educational organisations as it is a lifelong process.

### **2.3 Blended Learning In Tanzania**

As stated in the background section of the introduction chapter, various Blended learning technologies and tools have been successfully implemented and adopted developed countries (Kasse and Balunywa, 2013). It is reported that over 80% of higher education institutions in the developed world actively use e-learning systems in support of learning and teaching, with almost 97% of the universities using different forms of VLE (Britain and Liber, 2003). On the other hand, according to the literature, most universities in third world countries especially Tanzania are still gradually implementing and adopting e-learning to support research, teaching and learning (Aguti, Walters and Wills, 2013; Bentley, Selassie and Shegunshi, 2012; Kasse and Balunywa, 2013). Despite the increased usage of ICTs in higher education institutions, there is still work at large to recognize and grasp the full potential of e-learning at all forms and categories of education in third world countries (Zernsky and Massy, 2004; Kasse and Balunywa, 2013).

A research study based on the status of e-learning in African countries revealed that 49% (174 respondents of 358 responses) from 25 African countries use Learning Management Systems (LMS) for teaching (Unwin, Kleessen, Hollow, Williams, Oloo, Alwala, Mutimucuo, Eduardo, and Muianga, 2010). A different study in 27 African nations reported that 47% of the respondents in 54 higher education institutions have set up e-learning applications (Lwoga, 2012). This clearly shows that most African higher education institutions have implemented e-learning.

As in many developing countries, the ICT sector and e-learning in Tanzania is growing at a fast rate. This is supported by the implementation of an ICT national policy, merging of telecommunications, better accessibility of internet at reduced costs and processing of data. The Ministry of Education and Vocational Training (MoEVT) formed and published the National ICT policy for Basic Education in 2007. The policy was introduced for pre-primary, primary, secondary, tertiary and teacher levels of education. The mission of the ICT policy is to incorporate ICT in teaching and learning environment in order to enhance access, equity, quality and relevance of basic education. There are six identified key “areas” which are Curriculum and Content; Infrastructure and Technical Issues; Training and Capacity Building; Planning, Procurement and Administration; Management, Support and Sustainability; and Monitoring and Evaluation. The government of Tanzania has set up various initiatives, policies and projects that support ICT and Blended learning in the education sector. These notable projects and initiatives include (Lwoga, 2012; Komba, 2009, Mtebe, Dachi and Raphael, 2011):

- *The ICT for Rural Development (ICT 4RD) pilot project*: project that examines a broadband model that will provide access to the Internet in secondary schools in Bunda, Serengeti and Bagamoyo districts.
- *Establishment of marine cables to supply reliable internet provision*: Tanzania and implemented international optic fibre i.e. SEACOM submarine, EASSy fibre-optic submarine cable system and high speed terrestrial fibre-optic cable
- *The Tanzania development Vision 2025*: this vision policy identifies education as an agent for creation of educated people that can remedy the challenges affecting the development of the nation. This policy highlights the use of ICT in education sector.
- *Higher education Development Programme (2010-2015)*: consists of policies and guidelines that will help the Ministry of Education, Science and Vocational Training to meet the public high demand of HEI

- *Tanzania Education and Research Network (TERNET)*: This is a Tanzania National Research and Education Network (NREN). It is a designated internet service provider organization that was formed on March 2007 that connects all higher education and research institutions through national ICT network
- *One Laptop per child (OLPC)*: non-profit organisation initiative whose main goal is to ensure poorest kids possess laptops
- *Science and Technology Higher Education Programme*: this programme is being supported and funded by World Bank. It aims to establish various interventions in order to enhance ICT capacity such as EMIS, MOOCs and the E-library in universities

The University of Dar es Salaam (UDSM) also established various ICT and E-learning initiatives (Komba, 2009, Mtebe, Dachi and Raphael, 2011). UDSM started offering diploma, postgraduate diploma and graduate degrees through technology-mediated teaching and learning approaches since 1970s. This was assisted and promoted by a good ICT infrastructure including Blackboard and WebCT platforms found at the main campus (Komba, 2009). UDSM executed the Technology Enhanced Independent Learning Environment (TEIL) project in 1998. This project later was funded by the Flemish Inter-University Council in 2001 (Mtebe, Dachi and Raphael, 2011). The main goal of the project was to design and execute a virtual campus. This campus offers a learner-centred online environment for the technology enabled education (Komba, 2009). This project was implemented with the aim to increase access to tertiary education and student enrolment at the university (Komba, 2009). These early initiatives include the introduction of Blackboard Learning Management System in 1998, TEIL project and Advanced Level End User Competence Upgrading Project (supported by Carnegie Corporation from 2004 to 2007) installed network infrastructure and capacity building (Mtebe, Dachi and Raphael, 2011). Almost 420 courses were developed on Blackboard by March 2010 (Mtebe, Dachi and Raphael, 2011). The Instructional Technology Resource Unit (ITRU) was established in 2002 at the university in order to build up e-learning institutional capacity (Komba, 2009). Instructional design workshops aimed for learners and academic staff is conducted at the unit (Komba, 2009). The main goals of the workshops include (Komba, 2009):

- Promote independent learning among learners

- Educate, train and make lecturers aware of various alternative ways of delivering courses
- Introduce academic staff to adaptable and adjustable course design structures that heed to learners' needs
- Educate lecturers on the new roles in the learning technology i.e. role of facilitators from role of providers
- Encourage learners to evaluate their own learning

The above mentioned initiatives have now been formalized to establish a Centre for Virtual Learning (CVL). This centre has incorporated the original existing established coordinating units of the African Virtual University - Learning Centre (AVU-LC) and the Instructional Technology Resource Unit (ITRU). Tele-centres have been set up in Dar es Salaam, Arusha, Mwanza and Mbeya to deliver education to off-campus students. An e-learning course named, "Teaching modern biotechnology through an international collaborative blackboard supported parallel course" was introduced at the unit of Microbiology within the Department of Botany, UDSM (Komba, 2009). The undergraduate e-learning course was offered in 2003 in partnership with the University of Hamline from USA (Ibid., 2009). The course focused on applied features of recombinant DNA technology. The course was conducted through the practical application of the DNA technology via Blackboard for international science learning and collaborative research (Komba, 2009). UDSM has also collaborated with the African Virtual University (AVU). AVU, a World Bank supported project, was established in order to support education in African universities (Ibid. 2009).

AVU was set up in Tanzania, South Africa, Kenya, Zimbabwe, Uganda, Rwanda, Nigeria, Mozambique, Ghana, Ethiopia and Namibia (Komba, 2009). Moreover, UDSM was a leading partner university with the Royal Melbourne Institute of Technology (RMIT) of Australia in providing business studies and computer science diplomas and graduate programmes (Komba, 2009). The tables below present enrolment information at the University of Dar-es-Salaam AVU Learning Center

The main challenge that affected the above mentioned initiatives was a lack of focus on the quality of teaching and learning in these new environments (Mtebe, Dachi and Raphael, 2011). The initiatives rather focused on motivating lecturers to use e-learning systems such as Blackboard. Thus the main objective was on the technology use and not pedagogy (Mtebe, Dachi and Raphael, 2011).

Moreover, the ongoing costs of the ICT infrastructure and staff capacity presented a further challenge (Mtebe, Dachi and Raphael, 2011). Such costs were beyond UDSM's financial budget. The funding from donors were also unpredictable and unsustainable (Mtebe, Dachi and Raphael, 2011). The low number of students in the AVU and RMIT programmes was mainly because of the high tuition fees (Komba, 2009). Students had to pay \$1100 per programme per annum (Komba, 2009). It has to be acknowledged that there were some changes implemented in order to address the challenges mentioned. The Centre for Virtual Learning decided to change from the Blackboard LMS to the open source Moodle LMS (Mtebe, Dachi and Raphael, 2011). This shift was mainly to reduce costs and thus affordability in the long term. Moodle was piloted at two ODeL units in Mwanza and Arusha provinces. Moodle was seen to offer a range of learning and teaching affordances together with the accommodation of different learning strategies (Mtebe, Dachi and Raphael, 2011).

The rapid growth of the Internet, designated and delineated by increase in bandwidth and decrease in costs, has promoted enhancement, expansion and development of Blended Learning (Bonk, 2009; Kasse and Balunywa, 2013). Additionally, it has facilitated the better relay of both formal and informal educational opportunities and chances that before were not available to millions of students in the world (Bonk, 2009; Kasse and Balunywa, 2013). The growth and changes in tertiary education has brought about a paradigm shift i.e. lecturer centredness to student centredness. This shows that lecturers are more focused on students' interests and establishes how students should learn rather than lecturers solely deciding on what should be learnt and taught (Kasse and Balunywa, 2013). Thus it is a self-paced education environment i.e. learners have authority and control within the learning environment; thus they learn, access materials and assess at their own pace (Eke, 2011; Kasse and Balunywa, 2013; Çağlar and Turgut, 2014).

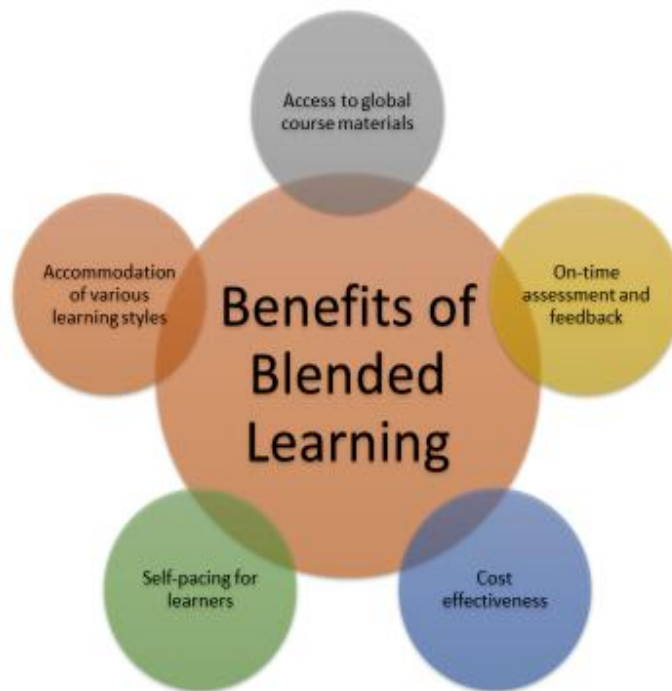
It has to be noted that when a designing for a Blended learning environment, it is essential to build up the balance and stability between traditional and e-learning modes of delivery (Akkoyunlu and Soylu, 2008a). Factors that can help in constructing such a balance include different learning strategies, various learning experiences, instructional objectives, lectures experience and the technological resources (Osguthorpe and Graham, 2003; Akkoyunlu and Soylu, 2008).

## **2.4 Benefits and Challenges facing Blended Learning**

There are numerous benefits and reasons for higher education institutions adopting Blended learning. These include: institutions improving pedagogy, cost effectiveness, increase knowledge access, improve ease of revision, promoting social interaction and promoting high levels of lecturer presence (Osguthorpe and Graham, 2003; Lim and Morris, 2009). Some of the other advantages of Blended learning include: providing students with a high level of control of their learning pace, the accommodation of various learning strategies, faster and better delivery of course content, increased information accessibility, time effectiveness through on-demand availability, personalized instruction and accountability (Lim and Morris, 2009; Bhuasiri, Xaymoungkhoun, Zo, Rho and Ciganek, 2012; Phiri, Foko and Mahwai, 2014). Blended learning provides various educational opportunities to assist learners to “develop” skills that are essential to them and their jobs (Intel, 2012; Kasse and Balunywa, 2013). ITU (2013) identified the following as benefits of Blended learning:

- Promoting personalised, situated and seamless learning
- Providing on-time assessment and feedback
- Guaranteeing the efficient use of time spent in teaching and learning
- Setting up new communities of students
- Linking and connecting formal and informal learning
- Reducing education interruption in conflict and disaster areas
- Helping disabled people
- Developing and progressing administration and communication
- Increase cost efficiency.

Students in Iowa State University recognized the accommodation of various learning strategies, the joining of threaded discussions and bulletin boards at any time and on demand availability as benefits of Blended learning (Phiri, Foko and Mahwai, 2014). Blended learning additionally offers opportunities to capture, distribute and store resources and information of various types and formats such as audio, multimedia based simulations and video (Çağlar and Turgut, 2014).



**Figure 2.4.1** General Benefits of Blended Learning (Lim and Morris, 2009; Bhuasiri, Xaymoungkhoun, Zo, Rho and Ciganek, 2012; Phiri, Foko and Mahwai, 2014).

Despite the high level of investment in the implementation and development of Blended learning tools and technology, the usage of such tools in the learning environment is quite low in Tanzania (Mtebe and Raisamo, 2014; Joel, 2015). For example, there were only 767 people using the LMS at the University of Dar-es-Salaam, 81 users at Open University of Tanzania, 49 people at the Institute of Finance Management and 103 people at the University of Dodoma (Mtebe and Raisamo, 2014; Joel, 2015). Moreover, communication tools such as email, chat and discussion forums set in the LMS are underutilized (Vovides, Sanchez-Alonso, Mitropoulou and Nickmans, 2007; Joel, 2015). Only 8% users for instance utilized the communication tools in the Open University of Tanzania (Bhalalusesa, Lukwaro and Clemence, 2013; Mtebe, 2015).

According to the e-learning report (2012), the most major limiting factor is limited bandwidth 17%, preceded by constraining financial resources, scarce human resource capacity and limited electricity all with 11%. The limiting factors for various African countries were illustrated in the figure below.

Table 2.4.1 Key constraints to eLearning at a National level (Isaacs and Hollow, 2012)

Rank	Constraining factor	%	The country most likely to identify this as a constraint	The country least likely to identify this as a constraint
1	Bandwidth is limited	17	Zambia	Kenya
2	Financial resources are lacking	11	Zambia	Nigeria
2	Human resource capacity is inadequate	11	South Africa	Tanzania
2	Electricity is limited	11	Nigeria	South Africa
5	Appropriate training is lacking	8	Kenya	Uganda
6	Appropriate hardware is lacking	7	Tanzania	Ghana
7	Lack of trained teachers	6	South Africa	Nigeria
8	Appropriate software is lacking	6	Tanzania	Ghana
8	Political will is lacking	4	Nigeria	Uganda
8	Corruption and theft of resources	4	Uganda	Zambia
11	Lack of good quality educational content	4	Tanzania	Nigeria
12	Pressure of poverty	3	Kenya	Uganda
12	Sustainability is not prioritised	3	Kenya	Tanzania
12	Leadership is lacking	3	Nigeria	Uganda
15	Instability and lack of security	1	South Africa	Zambia
15	Other factors	1	N/A	N/A

As seen in table 2.4.1 above, many ICT projects and e-learning initiatives in developing countries have been impeded by infrastructural challenges (Kasse and Balunywa, 2013). The infrastructural challenges include lack of electricity, shortage of essential devices that will promote access to online course content, shortage of space/areas to build e-learning centres and limited bandwidth (Kasse and Balunywa, 2013). Availability of computerized devices, internet and electricity is not yet at its full potential to develop and improve e-learning projects in third world countries (Grönlund and Islam, 2010; Eke, 2011; Kasse and Balunywa, 2013). The level of internet usage in Africa is lower compared to the rest of the world (Internet World Stats, 2011; Lwoga, 2012). The internet usage in Africa is 10.9% (Internet World Stats, 2011; Lwoga, 2012). In Tanzania the internet usage is even lower i.e. 1.6% (Internet World Stats, 2011; Lwoga, 2012).

Moreover, technical incompetence and shortage of pedagogical skills are other common challenges. Pedagogical skills and technical competences are significant factors that play a crucial role in configuring Blended learning software and tools (Kasse and Balunywa, 2013). Lack of such skills leads to technology mediated environments not utilizing their full potential (Kasse and Balunywa, 2013). In addition, attitudinal challenges have negatively affected Blended learning in developing countries (Kasse and Balunywa, 2013). These

attitudinal problems comprise a lack of students' readiness, shortage of the necessary resources that will influence students adopting the environment, a lack of perceived ease of use and usefulness of e-learning (Abdel-Wahab, 2008; Eke, 2011; Kasse and Balunywa, 2013).

A lack of a Blended learning plan or strategy together with the careless selection of technological tools is also a major setback to Blended learning success (Odunaike, Olugbara and Ojo, 2013; Çağlar and Turgut, 2014). A study conducted by the Organisation for Economic Co-operation and Development (OECD) showed that only 18% of higher education institutions in the Commonwealth had such strategies in 2002 with figures close to 9% in 2004 (Pilat, 2003; OECD, 2004; Paris, 2005; Kraak and Press, 2008.).

Blended learning in Tanzania also faces challenges. Factors that impede the adoption of Blended learning in African higher education institutions, especially in Tanzania, are said to include attitude towards learning technology, poor technological infrastructure, cost of learning tools and technologies, insufficient local expertise in Blended learning curriculum development, lack of training, reluctance to change, low technical literacy, poor internet bandwidth and differences in geographical and economic conditions (Tedre, Ngumbuke and Kempainen, 2010; Lwoga, 2012). Mtebe and Raphael (2013) conducted research to investigate experiences and challenges faced by students engaged in Blended learning courses in the University of Dar-es Salaam. Challenges included out-dated learning resources, poor internet connectivity and computer access, poor learning support, technical issues and non-availability of lectures during online sessions (Mtebe and Raphael, 2013). These challenges have impeded students performing well in Blended learning courses. Thus all higher education stakeholders i.e. academicians, students, universities, government and researchers should work together so as to benefit Blended learning at its full potential (Çağlar and Turgut, 2014).



**Figure 2.4.3 Key Challenges Facing Blended Learning (Tedre, Ngumbuke and Kemppainen, 2010; Lwoga, 2012; Mtebe and Raphael, 2013)**

The above section highlighted and elaborated on the various benefits and challenges facing students in Blended learning. By taking into account the challenges that students face, it is quite possible to understand and suggest remedies for learners dissatisfied in Blended learning courses (Liaw, 2008). Thus it is quite important to understand various factors that can promote and predict satisfaction of students in an e-learning environment. The section below will elaborate on the predictors on student satisfaction in an e-learning environment.

## **2.5 Student Performance in Blended Learning Environment**

Most people take in and process information and knowledge they obtain in various ways (Aud et.al, 2013). Thus it is necessary to explore various aspects that influence people's success (performing well) while perceiving information and knowledge (Aud et.al, 2013). Most lecturers implement their creative teaching and learning methods they believe will facilitate the better learning performance of students. Students however report the experience as uncomfortable and frustrating (Hung, Bailey and Jonassen, 2003). Thus understanding student performance together with their learning and motivation patterns will help in improving and maximising the effectiveness of blended learning environments.

Course marks and final examination results have frequently been used as predictors and measure of student success in technology mediated environments (Barnard, Paton and Lan,

2008; Reinhart and Schneider, 2001; Kuo, Walker, Belland and Schroder, 2013). Though most studies in technology-mediated environments explored efficiency and effectiveness of courses using course marks and final examination results, some researches suggest that they were not adequate enough to explore the effectiveness of courses and student success (Smith and Dillon, 1999; Giannousi, Vernadakis, Derri, Michalopoulos and Kioumourtoglou, 2009). Students often face new and stimulating instruction, mediated through technology, positively impacting student academic performance and levels of satisfaction (Ocker and Yaverbaum, 2001; Lo, 2010).

According to Tuckman (1975), performance is an “apparent demonstration of understanding, concepts, skills, ideas and knowledge of a person”. He suggests that grades clearly depict the performance of a student. Student performance is defined as “a multivariable phenomenon effected by study habits, prior knowledge, communications skills, time available for study and teacher effectiveness” (Picciano, 2002). Student performance is also considered to be a critical factor in successfully completing a course (Khine and Fisher, 2003; Giannousi, Vernadakis, Derri, Michalopoulos and Kioumourtoglou, 2009). Student performance is open to many definitions. Student performance is defined and measured by either successful completion of a course, grades, course withdrawals, skill building or added knowledge, depending on the nature of students and course’s content (Picciano, 2002). In universities, student performance is measured by written assignments, tests, individual and group projects (Picciano, 2002). Student performance has been affected by either student attendance, student participation and achievement (Chan and Schum, 1997; King and Ozler, 2000; Cheung and Kan, 2002; Roby, 2004). A high level of student academic performance indicates that suitably best instructional ways are employed to prompt learning and thinking of learners (Lo, 2010). When expectations of students are met and exceeded, students not only perform well but also become supporters and pioneers of promoting such technology mediated approaches in the university (Naaj, Nachouki and Ankit, 2012). Learners with high academic performance are dedicated and motivated to persist in their classes and hence are better students than their poor performing colleagues (Biner, Dean and Mellinger, 1994; Naaj, Nachouki and Ankit, 2012).

Student performance is regarded as one of the critical factors that measures the effectiveness and quality of blended learning experiences by most universities (Yukselturk and Yildirim, 2008; Moore and Kearsley, 2011; Naaj, Nachouki and Ankit, 2012). Robbins, Lauver, Le, Davis, Langley and Carlstrom (2004) suggest that student performance is “measured by

cumulative GPA which is connected to class and subject matter achievement.” It has to be noted that the measurement of student performance is quite complex and thus difficult to follow. A good example is, how is one going to define student academic performance? Will the researcher use GPA or the letter equivalents i.e. A, B, C, D and F? Will other measures of student academic performance be observed such as length of time spent studying ( day, week, month or semester). Moreover, there are questions/thoughts on how academic performance can be well defined and measured in a state of diversity (across countries).

Highly successful students in Blended learning environments who learn easily are likely to persist and also take additional courses in such environments (Biner, Dean and Mellinger, 1994; Arbaugh, 2004; Giannousi, Vernadakis, Derri, Michalopoulos and Kioumourtzoglou, 2009). It was noted that the well-planned teaching of courses in technology mediated environments affects the degree of student success in terms of academic performance (Khine and Fisher, 2003; Giannousi, Vernadakis, Derri, Michalopoulos and Kioumourtzoglou, 2009). Most students in technology mediated environments are likely to be aggravated with poor internet access, poor user interface of systems and software, no synchronous communication, tight deadline, workload and vague expectations from lecturers (DeBourgh, 2003; Giannousi, Vernadakis, Derri, Michalopoulos and Kioumourtzoglou, 2009). Student success is correlated to several learning outcomes such as persistence, retention and course quality (Koseke and Koseke, 1991; Debourgh, 2003; Allen and Seaman, 2008; Moore and Kearsley, 2011; Kuo, Walker, Belland and Schroder, 2013). Students with good performance have lower attrition rates, a high rate of persistence and motivation in learning (Keller, 1987; Biner, Summers and Dean, 1996; Allen and Seaman, 2008; Kuo, Walker, Belland and Schroder, 2013).

There are persuasive and convincing reasons for researchers to be interested in student performance. Student performance is considered as the most vital factor for students to continue learning (Sinclair, 2011; Naaj, Nachouki and Ankit, 2012). Moreover, student performance reflects all quality aspects of instructive programs in terms of evaluation of students (Sinclair, 2011; Naaj, Nachouki and Ankit, 2012). Monitoring student performance is critical especially when innovative and novel technologies have transformed the way learners interact with their lecturers and colleagues (Kaminski, Switzer and Gloeckner, 2009; Kuo, Walker, Belland and Schroder, 2013). It is also believed that student performance is significantly correlated with retention, persistence, accomplishment and the student's decision to enrol in additional courses (Booker and Rebman, 2005; Naaj, Nachouki and Ankit,

2012). Student performance is important especially when students are regarded as public relations assets of universities. Since Blended learning is being considered as the most important alternative delivery mechanism for course content in universities, it is thus critical to examine and explore factors that influence and predict student performance in a Blended learning environment.

## **2.6 Predictors of Student Performance in a Technology Mediated Environment**

The ongoing need to investigate the predictors of Blended learning success was articulated more than a decade ago (Biner et al., 1994; Dille and Mezak, 1991; Stone, 1992; Kirmizi, 2014). Previous studies focused on exploring individual unique characteristics that elaborated differences in student success (Flores, Ari, Inan, and Arslan-Ari, 2012; Stark, Lassiter, and Kuemper, 2013).

Several studies have examined various factors that contribute to better performance and efficient Blended learning. A study was conducted to identify critical factors that have an impact on the performance of online students admitted at two public universities in Taiwan for different courses (Sun, Ni and Leung, 2007). The identified seven critical factors are instructor attitude, diversity of assessment, computer anxiety, and perceived ease of use, course flexibility, perceived usefulness, and course quality. Course quality and perceived usefulness by learners are quite vital factors (Sun, Ni and Leung, 2007). The researchers emphasised that any assessment strategy should comprise students' assessment and evaluations of lecturers on student performance.

Moreover, another study by Bolliger and Martindale (2004) named several factors that have an impact on student success. These key factors include technology, course management issues, instructor and interactivity. It has to be noted that attendance, reading, students' motivation, self-regulated learning competence and attitude towards learning were seen as predictors of student success (performance) in Blended learning (Dutton, Dutton and Perry, 2002; Stewart et al., 2011).

Moore and Kearsley (2011) came up with an online education framework that identifies five factors that influence student success within an online learning environment. These are:

- Interaction and communication
- The learning environment

- Course design
- Computer self-efficacy
- Ability to control individual learning

Other factors that were identified as factors that influence student success (in terms of student performance) were useful outcomes and a satisfactory orientation (Lang and Costello, 2009; Stark, Lassiter, and Kuemper, 2013; Kirmizi, 2014). Eom, Wen and Ashill (2006) investigated learner and course design factors that influence student performance in a university technology mediated environment. The factors that were found most significant were learning strategies, self-motivation, course structure, lecturer facilitation, interaction, and instructor feedback. Dabbagh (2007) believed that a “quintessential” online learner that performs academically well has traits of self-motivation, self-direction, internal locus of control, interaction, good communication and technological skills. It has to be noted that not every learner displays the above mentioned traits. Learners may differ on their learning strategies, self-efficacy, cognitive styles, self-regulation, persistence and affective skills (Dabbagh, 2007)

Furthermore, research conducted by Lang and Costello (2009) focused on various factors that have an impact on student’s success in discussion board types of learning. The factors found were categorized into student, lecturer, social and content, and design dimensions. The social dimension included level of interactivity and engagement in an online community. Learning strategies, attitude toward learning and anxiety levels were factors found in student dimension. Content and design dimension consisted of online course materials and well-designed resources including media. Teaching style, feedback comprehensiveness and timeliness were factors found in the instructor dimension. Other studies conducted by Piccoli, et al (2001) and Sun, Tsai, Finger, Chen and Yeh (2008) also supported the above mentioned factors that have an impact on student success within online learning. Similarly, another study found that course structure, instructor feedback and facilitation, peer interaction and self-motivation were factors that influence student success (So and Brush, 2008)

Song, Singleton, Hill and Koh (2004) conducted a study to investigate students’ perceptions on effectiveness of online learning. The researchers utilized survey questionnaires that assessed learners’ perceptions on students’ traits, advantages and challenges of online learning. The findings of the study revealed that course design and time management were

the important factors while technical issues and lack of community were the most common challenges. Similarly, Muilenburg and Berge (2005) explored challenges that adult students experienced in an online learning environment. The findings of the study revealed that a lack of motivation, time management, self-discipline and learning strategies featured as important underlying challenges.

A study was conducted to investigate several student traits that influence positive student performance in an online learning environment within a technical college (Berenson, Boyles and Weaver, 2008). The research focused on examining the relationship between the emotional intelligence of students, personality type, resilience and success (performance in terms of GPA). It was found that students who were performing poorly had low emotional intelligence, personality and external locus of control. Another study, whose findings are in contrast with prior research, was carried out by DeTure (2004). The researcher explored whether self-efficacy and spatial skill (both independence and dependence forms) could be predictors of student performance (final year GPA). The end result of the research was that neither self-efficacy nor spatial skill positively and significantly predicted student's performance in the online learning environment. It has to be noted though that there was a strong positive relationship between spatial skill and self-efficacy. A similar study by Liu, Magjuka and Lee (2008) found that cognitive style was not a predictor of student performance in online learning.

Moreover, Sahin (2007) investigated the distinctive traits of technology mediated environments. From the data collected from 917 students, there were four distinctive characteristics that were positively and significantly correlated to student success. These include personal relevance, instructor support, active learning and authentic learning. In further study, attitudes of students and lecturers towards technology, user-friendly interface, computer efficacy, instructor response and proper facilitation of technical issues were raised as factors that influence student success (in terms of performance). Similarly, satisfaction with the course, perceived ease of use of the course technology and satisfaction with the lecturer were found to have strong relations with student success (satisfaction) in web-enhanced courses

The literature clearly states that ongoing research has raised various issues believed to impact student success within a Blended learning environment. These include: motivation, learning strategies, self-regulated learning elements, personality preferences, locus of control, age,

educational level, self-discipline and experience with technology (Schrum and Hong, 2002; Deryakulu, D., Büyüköztürk, Ş. and Özçınar, H., 2009; Stark, Lassiter, and Kuemper, 2013; Kirmizi, 2014).

Several other researchers showed that student performance in technology mediated environments was predicted by age, positive lecturer attitude towards technology (Baker, 2010; Sun, Tsai, Finger, Chen and Yeh, 2008); interaction (Chejlyk, 2006; Keeler, 2006; Robles, 2006; Bray, Aoki and Dlugosh, 2008)gender (Sullivan, 2001; Taplin and Jegede, 2001; Rovai and Baker, 2005); computer confidence and experience (Lim and Kim, 2003; Contreas, 2004); self-regulation (Artino, 2007; Puziffero, 2008); prompt feedback from lecturers (Baker, 2010; Ladyshefsky, 2004); personal interaction between lecturers and students (Marks, Sibley and Arbaugh, 2005; Ladyshefsky, 2004); Internet self-efficacy (Puziffero, 2006; Robles, 2006); and culture (Samovar, Porter and McDaniel, 2009; Alebaikan and Troudi, 2010). Course design was also noted as a predictor for student success in blending learning environments (Rovai and Jordan, 2004; Precel, Eshet-Alkalai and Alberton, 2009; Bonk, 2009)

For the purpose of this research, two characteristics have been selected: Learning strategies and Motivation. Learning strategies and Motivation were chosen based on the fact that they are the common and critical factors that have time and again been raised in distance education, online and e-learning environments (Allen et al., 2002; Yukselturk and Bulut, 2007; Artino and Stephens, 2009;Çakıroğlu, 2014; Harandi, 2015). There are numerous studies that have focused on postulating the influence and impact of learning strategies and motivation in distance education and Blended learning (Eastmond, 2000;Moller and Soles, 2001; Irani, Telg, Scherler and Harrington, 2003; Fahy and Ally, 2005; Yukselturk and Bulut, 2007; Artino and Stephens, 2009; Çakıroğlu, 2014;Harandi, 2015).

## **2.7 Students' Perceptions of Blended Learning Environment**

This section reviews various studies explored in the literature that have examined students' perceptions of Blended learning and factors affecting student academic performance in Blended learning environments.

Students' perceptions on both Blended learning environments and factors that have influence their academic performance have a significant effect in learning environment research (den Brok, Brekelmans and Wubbels, 2007;Zhu, Valcke, Schellens and Li, 2009). According

toAlebaikan (2010)pg. 38, perception is a “means by which information is acquired from the environment via the sense organs, is transformed into experiences of objects, events, sounds and tastes”. In general, perception is comprehended and described as “how people view and interpret the world around them”(Alebaikan , 2010 pg. 38). Students’ perceptions are avital factor to understanding and predictingtheir academic performance and learning results (Ramsden, 1991). According to Zhu, Valcke, Schellens and Li (2009), students’ perceptions are “a function of both designed context and of students’ prior experiences”.

Zhu et al., (2009a) conducted researchshowing that when students are made known to a specific learning setting, they respond differentially to the learning environment based on the learning environment’s requirments and students perceptions of the learning environment. Kamaruddin, Zainal and Aminuddin (2009) identified and assesed various determinants that affected 370 Bumiputera students’s academic performance in a learning environment from their perceptions. The students identified their housing environment, parent motivation, teacher, the university and facilities provided for learning as impacting their academic performance. A prior study was also conductedby Príncipe (2005) to analyze perception of Puerto Rico university students on internal and external classroom determinants that affect their academic performance in their first accounting course. It was found that students perceived internal classroomn factors such as teaching space environment, course plan, examinations, lecturer’s role, assignments, course (i.e accounting) concepts and small class size as positively influencing their academic performance. In addition, research was conducted to assess students’s perceptions of the educational environment at Hormozgan University of Medical Sciences, Iran (Aghamolaei and Fazel, 2010). Students overall assessed the learning environment as “bland and average”. The authors recommended improvements in the learning environment.

According to Picciano (2002), many studies on students’ performance in traditional learning settings and online learning environments also measures students perceptions on “how much” or “how well” they have learned. For instance, a study done by Mapuranga, Musingafi and Zebron (2015)investigated perceptions of open and distance learning students on factors affecting their academic performance and succesful completion of programmes at the Great Zimababwe University. The participants (50 final year students from the Faculty of Social Sciences) pinpointed student personal traits, funding, university support services and socio-economic environment as the vital factors. Moreover, research was carried out to undertsand the perceptions of Chinese Students on e-learning environments together with investigating

predictors that influence their academic performance (Zhu, Valcke, Schellens and Li, 2009). The findings revealed that students did not have positive perceptions of the actual learning environment. The Chinese students had higher expectations about a preferable e-learning environment. A recent study at one Caribbean university analysed students' perceptions of their online learning experience in order to ascertain the important determinants affecting their academic performance (Kerr, 2015). Online survey, and focus group discussion were used to gather data. Family responsibilities, the pace of courses, work, tutors' speedy feedback on assignments and quality of online course materials were the reported perceptions on determinants that affect students' academic performance. It was suggested that the implemented online learning tools should be best suited to the learning strategies of the students. Fundamentally, students' perceptions may be an important measure because such views and attitudes may be "catalysts for continuing to pursue coursework and other learning opportunities" (Picciano, 2002). Moreover, such perceptions can be used to modify and thus optimize the learning environment (Bakhshialiabad, Bakhshi and Hassanshahi, 2015). Usually, students' perceptions of factors affecting academic performance in a Blended learning environment are often overlooked. It has to be understood that it is the students that will eagerly use or not use such methods of delivery (Mansour and El-Said, 2009).

Students' perceptions and their learning satisfaction of learning in a Blended learning environment has been explored in several case studies (Bliuc, Goodyear and Ellis, 2007; Napier, Dekhane and Smith, 2011). For instance, Akkoyunlu and Soylu (2008) did a study to investigate the perceptions of students on Blended learning environment and observed their learning strategies. There were almost 40 participants in this study conducted at Hacettepe University, Ankara, Turkey. Questionnaires were used to identify the views of students on Blended learning. The findings revealed that students considered Blended learning as beneficial due to several factors. These include enhanced social interaction because of face-to-face features, enhanced learning opportunities, well-designed course content and ease of use of the web environment (Akkoyunlu and Soylu, 2008a). The overall feedback showed that students highly appreciated Blended learning. Also Shmais and Adas (2011) conducted a study that aimed to investigate the perceptions and attitudes of students towards a Blended Learning Environment, which used Online Course Container (OCC) as a course management system. The authors found that students had positive attitudes toward the learning environment in terms of the content, process and ease of use. Moreover, they found that students had higher internet and IT interests and skills due to the availability and accessibility

of the internet. Additionally, research was conducted to investigate learning strategies and perceptions of Egyptian English as Foreign Language (EFL) students with web-based course content (Aliweh, 2011). The study concluded that students perceived the course positively due to the various advantages that the learning environment provided. These included accessibility of the course materials, usefulness, convenience, enjoyment and richness of resources.

A similar study was conducted at King Khalid University, Saudi Arabia to explore students' perceptions, in terms of EFL students as participants, regarding the pros and cons of Blended learning (Zumor, Refaai, Eddin and Rahman, 2013). The study also explored suggestions by students to improve the quality of Blended Learning. The sampled population of the study comprised 160 male students. A questionnaire was used to collect the views and suggestions of the students. The authors found out that students highly rated the blending learning courses. Students believed that it broadened their reading opportunities and enriched their English vocabulary. Also, the Blended learning environment provided the suitable setting for better social interaction. In addition it was found to enhance confidence and encouraging better planning (Al Zumor et al., 2013). The students suggested that solving technical issues, increasing the number of computer labs, as well as proper student training would improve the quality of Blended Learning. The findings and suggestions were similarly concluded in another study by Shantakumari and Sajith (2014). The authors investigated the perceptions of students on Blended learning in certificate courses at the Gulf Medical University. A most recent study conducted in a developing country, Ghana, assessed perceptions of students in a Blended learning environment (Gyamfi and Gyaase, 2015). The area of study was at the University of Education, Winneba – Kumasi Campus in Ghana. The participants were eighty first year students and their lecturers. The authors found that the students had positive perceptions of the Blended learning environment. Nevertheless, students who stayed outside campus faced challenges such as a lack of internet access and slow internet connectivity.

Motteram (2006) explored student perceptions and experiences of program design in a teacher education course in a Blended learning environment. The overall responses of the students showed that “the Blended learning approach positively enhanced the learning experience”. They could organize themselves around various exercises and engage more with course modules. The course structures were not only stimulating and motivating; but also allowed students to learn at their own time (Motteram, 2006). Another study conducted by Napier, Dekhane and Smith (2011) analysed student perceptions of Blended learning courses.

The authors found that students valued self-paced online materials, flexible scheduling, high levels of responsibility for their learning and face to face interaction with lecturers. These students nevertheless expressed some agitation towards Blended learning. They were concerned with managing their time effectively, trouble in developing a sense of community with colleagues and collaborating on group projects (Beckerman and Fontana, 1987). Such findings are similar with those previously acknowledged in another study that was designed to investigate the perceptions of Japanese collegiate students on a Blended learning environment (Hirata and Hirata, 2008).

There are various researches that have studied students' perceptions of technology-mediated learning environments and the factors affecting their academic performance in such environments (e.g. So and Brush, 2008). But such studies in the Tanzanian context are scarce. Some researchers have studied Tanzanian students' attitudes and perceptions toward technology learning mediated environments. For example, Mtebe and Raphael (2013) conducted research to investigate experiences and challenges faced by students engaged in Blended learning courses at the University of Dar-es Salaam. These included outdated learning resources, poor internet connectivity and computer access, poor learning support, technical issues and non-availability of lecturers during live discussion forums and chats (Mtebe and Raphael, 2013). These challenges have impeded students performing well in Blended learning courses. Moreover, a further study was conducted to explore students' perceptions on assessing the quality of open and distance learning programmes at the Open University of Tanzania (Messo, 2014). Almost 300 students comprised the sample population of the mixed study. The general finding of the study was that almost 70% of the participants had high positive perceptions towards the distance and online learning. The students stated that technology mediated learning faced various problems such as insufficient study materials, insufficient academic staff and poor internet services. Also, a study conducted by Nalaila and Almasi (2014) explored the experiences and perceptions of students on the advantages and challenges of Blended learning applications at Mzumbe University. Mzumbe University implemented a Moodle learning system to support Blended learning courses. Interviews, focus group discussion and observation were used to collect data from almost 50 research participants. The findings revealed that students positively rated the Blended learning environment. They suggested that more courses should be taught in a Blended learning environment. In particular, students appreciated the flexible timetable and fascinating discussion forums. They also appreciated their ability to keep in touch with peers

and lecturers even when you are out of campus (Nalaila and Almasi, 2014). Amongst some of the challenges noted by students included poor technical support, pedagogical weaknesses of lecturers, scarce computer resources, unreliable power and poor internet connectivity. It is interesting to note that none of the studies have focused on student perceptions of the factors affecting academic performance in a Blended learning environment.

## **2.8 Conclusion**

The rapid growth of the Internet, designated and delineated by increase in bandwidth and decrease in costs, has promoted enhancement, expansion and development of Blended Learning. The growth and changes in tertiary education has brought about a paradigm shift i.e. lecturer centredness to student centredness. This shows that lecturers are more focused on students' interests and establishes how students should learn rather than lecturers solely deciding on what should be learnt and taught. For the purpose of this research, Blended learning is defined as an appropriate combination of traditional face-to face instruction combined with several learning technologies, complemented with a Learning Management System (LMS) such as the open source system, Moodle. Blended learning in higher education institutions can improve pedagogy, cost effectiveness, increase knowledge access, accommodate various learning strategies, improve ease of revision, promote social interaction and provide a high level of lecturer presence.

The government of Tanzania has set up various initiatives, policies and projects that support ICT and Blended learning in the education sector. These notable projects and initiatives include the ICT for Rural Development (ICT 4RD) pilot project, the establishment of marine cables to supply reliable internet provision, the Tanzania development Vision 2025, Higher education Development Programme (2010-2015), Tanzania Education and Research Network (TERNET), One Laptop per child (OLPC) and Science and Technology Higher Education Programme. The University of Dar-es-Salaam (UDSM) also established various ICT and E-learning initiatives. The UDSM started offering diploma, postgraduate diploma and graduate degrees through technology-mediated teaching and learning approaches since 1970s.

It is necessary to explore and examine various aspects that influence people's success (performing well) while perceiving information and knowledge. Course marks and final examination results have frequently been used as predictors and measures of student success in technology mediated environment. There are persuasive and convincing reasons for

researchers to be interested in student performance. Student performance is considered as the most vital factor for students to continue learning. Moreover, student performance reflects all quality aspects of instructive programs in terms of the evaluation of students. Since Blended learning is being considered as the most important alternative delivery mechanism for course content in universities, it is thus critical to examine and explore factors that influence and predict student performance in a Blended learning environment.

The literature clearly states that ongoing research has raised various issues believed to impact student success within a Blended learning environment. These include: motivation, learning strategies, self-regulated learning elements, personality preferences, locus of control, age, educational level, self-discipline and experience with technology. For the purpose of this research, two characteristics have been selected: Learning strategies and Motivation. Learning strategies and Motivation were chosen based on the fact that they are the common and critical factors that have time and again been raised in distance education, online and e-learning environments. Students' perceptions are a vital factor to understand and predict their academic performance and learning results too. It has to be noted though that students perceptions of factors affecting academic performance in a Blended learning environment is often overlooked.

# 3 LEARNING STRATEGIES

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## 3.1 Introduction

This chapter discusses in depth on influence of learning strategies as predictors of students' performance in Blended learning. In exploring such predictors, the chapter defines learning style, learning strategies and discusses the correlation on learning strategies and student performance. Moreover, there is an elaboration of the significance of learning strategies of students. The theories, models and instruments that measure learning style and learning strategies are also discussed. Finally, the Motivated Strategies for Learning Questionnaire (MSLQ), based on Pintrich and de Groot's theory of self-regulated learning, is justified as the recommended instrument to measure learning strategies of students.

## 3.2 General Overview of Learning Styles and Learning Strategies

In the past years before 2000s, there has been awareness and recognition of learning styles in different learning environments (Akkoyunlu and Soylu, 2008; Alper and Gülbahar, 2009). Graf, Liu and Kinshuk(2010)state that, "The area of learning styles is complex and many questions remain unanswered, including, a clear definition of learning styles, a comprehensive model which describes the most important learning style preferences, and questions about the suitability of learning styles". The phrase "learning style" has been defined by many researchers as discussed in the following section.

Kolb (1984) defines learning style as the "preferred individual orientation towards learning". Learning style comprises of peculiar observable practices that distinguish an individual from others. Similarly, Dunn, Beaudry and Klavas (2002) describe learning style as a group of individual traits that are biologically and evolutionarily imposed, which impacts how a learner most effectively studies. In other words, learning styles are "the means of perceiving, processing, storing, and recalling attempts in the learning process" (James and Gardner, 1995). Grasha (1996) defines learning style as individual values and attributes that affect one's ability to attain knowledge, cooperate with their lecturers and peers, and partake in learning occurrences. Learning styles are characteristics and attributes that describe how people "process information and approach learning tasks" (Akkoyunlu and Soylu, 2008). As seen above, the definitions and interpretations on learning styles predominantly focuses on methods of learning.

In a further definition, a learning style is referred to as distinct abilities in “thinking, judgement, memory and perception” through any motivating situation (Curry, 2000). Moreover, learning style is the preferred way that a person can obtain, organize and contemplate information (Fleming, 2001). According to Aragon, Johnson and Shaik (2002), learning style includes favoured methods of learners to obtain, to process, to perceive and to remember information that has been taught. These preferred methods are more or less related to the motivation and information processing behaviours of students (Aragon, Johnson and Shaik, 2002). Learning styles, according to Akkoyunlu and Soylu (2008), are characteristics of an individual in obtaining and utilizing information not only in learning but also in solving problems. Similarly, learning style is the inherited cornerstone and past experiences of a human being that enables one to have peculiar learning capabilities in the present environment (Kundi, Nawaz and Khan, 2010). Thus, learning style can be described as the amalgamation or compound of “psychological, affective and cognitive” traits that are of use as a measure or standard of how a person participates and reacts to the learning environment (Keefe, 1979; Duff, 2004).



**Figure 3.2.1 Learning Style Description**(Peterson, DeCato and Kolb, 2015)

Schunk and Zimmerman (1994), using the term self-regulated learning, describes learning style as a motivational conformity and learning procedures that students use to achieve the set objectives. They are governed and motivated by their own objectives and distinctive attributes of a certain learning environment (Schunk and Zimmerman, 1994; Wolters, Pintrich

and Karabenick, 2005; Rakes and Dunn, 2010). Learning styles exhibit and demonstrate the degree to which students participate actively in their learning process in terms of behaviour, motivation and metacognitive processes (Zimmerman and Martinez-Pons, 1990). Metacognitive processes involve the ability of students to prepare, to structure, to organize and to assess their approaches towards learning processes. Motivation, according to Zimmerman and Martinez-Pons (1990), comprises of self-efficacy and high intrinsic motivation. Behaviour is defined as the traits, manners and attributes that students utilize in order to improve their learning ways (Zimmerman and Martinez-Pons, 1990).

It is believed that learning strategies are intimately correlated to the learning styles of students (Ehrman, 1990). Learning styles are believed to be internal characteristics of students while learning strategies are external traits used by students consciously or subconsciously (Pei-Shi, 2012). Scarcella and Oxford (1992) define learning strategies as “specific actions, behaviors, steps, or techniques - such as seeking out conversation partners, or giving oneself encouragement to tackle a difficult language task -- used by students to enhance their own learning”. Learning strategies are total efforts done by students to handle and understand information provided during teaching-learning processes (Tay, 2013; Kafadar and Tay, 2014). In other words, learning strategies can be defined as “the whole set of the performed activities of learners to give meaning to information in cognitive and affective processes” (Kafadar, 2013). Learning strategies are useful methods for purposeful self-regulated learning when student selects a strategy that matches his or her learning style. Moreover, learning strategies are believed to assist students to be more responsible of their own learning (Wong and Nunan, 2011). It has been noted that learning styles are general approaches to learning, while learning strategies are specific methods that deal with learning tasks in particular contexts (Cohen 2003; Oxford, 2003; Wong and Nunan, 2011). Learning strategies are explicit behaviours or processes that students use to improve their learning (Pressley and McCormick, 1995).

In common knowledge, there is no distinct learning style that all learners conform to or use (Arp and Woodard, 2006; Akkoyunlu and Soylu, 2008; Alper and Gülbahar, 2009). Each student has their own way of learning; leading to the emergence of the popular term “personalized learning” (Arp and Woodard, 2006; Alper and Gülbahar, 2009). Personalized learning refers to learning styles, preferences and behaviours of adults (Alper and Gülbahar, 2009).

### **3.3 The Importance of Addressing Learning Strategies in a Blended Learning Environment**

It is important to understand the learning strategies of a student so as to build their learning power (Yukselturk and Bulut, 2007). Learning strategies have an effect on the level of achievement of learners together with their learning environment (Wolters, Pintrich and Karabenick, 2005; Rakes and Dunn, 2010). Each student has their distinctive learning strategy (Shell, 1991; Akkoyunlu and Soylu, 2008); some are fast learners while others are slow learners who also learn through repetition (Kundi, Nawaz and Khan, 2010). Moreover, some students prefer working alone while others prefer working in groups (Kundi, Nawaz and Khan, 2010).

It is quite important to assess the learning strategies of students in a blended learning environment. It is important to cater for different learning styles and strategies when developing and designing a blended learning environment (Wolters, Pintrich and Karabenick, 2005; Kundi, Nawaz and Khan, 2010; Rakes and Dunn, 2010). Blended learning together with its technological tools has changed the way course content is delivered; but it has not changed the essential objective of learning. If a trustworthy and valid learning style instrument is used, lecturers may use the assessment results as a premise for relaying responsive education (Kemp, Morrison and Ross, 1998; Akkoyunlu and Soylu, 2008; Kim, 2011). Students' performance and learning effectiveness are improved when lecturers enhance their teaching styles and learning environment to accommodate student learning styles (Kim, 2011). Moreover, by understanding their learning strategies, students will participate more in their learning and take control of resources (Rogers and McNeil, 2009; Rakes and Dunn, 2010). Students pursuing online courses are advised to assess their learning strategies, time management and participatory skills (Whilser, 2005; Alper and Gulbahar, 2009). This will help them to contemplate to what extent the courses offered via online learning are appropriate for them (Whilser, 2005; Alper, and Gülbahar, 2009). The whole learning process will be improved once learning strategies of students are understood (Hamada, Rashad and Darwesh, 2011; Alper, and Gülbahar, 2009). As learning strategies proffer knowledge about differences in various learning preferences, the delivery of courses can be designed to support the learning strategies and even increase academic success (Akdemir and Koszalka, 2008; Alper, and Gülbahar, 2009). Most researchers have indicated that the increase in motivation, performance, and achievement can be produced if the pedagogy is delivered in the favoured learning strategies of a student (Shih and Gamon,

2001; Fahy and Ally 2005; Manochehri and Young, 2006; Bezalel and Barth, 2007; Akkoyunlu and Soylu, 2008; Alper, and Gülbahar, 2009).

Shih et al., (1990) found that learners who used learning styles or strategies such as planning, elaboration and memorizing notes were more likely to succeed in this type of environment than the ones who didn't use such styles. Moreover, further study was conducted to ascertain to what extent learning styles of learners are connected to success in online learning environments, especially with regard to participation and cooperation (Battalio, 2009). The researchers concluded that there are "significant associations between students' learning strategies and success in distance education" and this suggests a potential relationship between learning strategies and mode of delivery (Battalio, 2009).

### **3.4 The Correlation between Learning Strategies and Styles to Student's Performance in Blended learning**

Most researchers and educators concur that learning is most likely to be provided when needs and learning strategies of students are met by a given environment (Dziuban, Moskal and Hartman, 2004; Fearing and Riley, 2005; Kundi, Nawaz and Khan, 2010). Sirkemaa (2001) suggests that it is likely that information technology permits personalization of students' learning experience and accommodation of various different learning strategies. There are studies that were conducted to explore and examine the effect of learning strategies and learning styles in university courses (Jones, Reichard and Mokhtari, 2003; Terry, 2001). Many researchers have included learning strategies as their focus in their studies on determining student's satisfaction, academic performance, learning behaviour and online course effectiveness (Smith and Ragan, 1999; Mitchell, 2000; Chen and Lin, 2002; Dunn, Beaudry and Klavas, 2002; Barnes, Preziosi and Gooden; 2004; Kolb and Kolb, 2005; Morris, Finnegan and Wu, 2005; Hummel, 2006; Yukselturk and Bulut, 2007; Akkoyunlu and Soylu, 2008; Sun, Tsai, Finger, Chen and Yeh, 2008). Certain studies specifically articulate the significance importance of learning strategies in technology based environments (Jonassen et al., 1995; Puzziferro, 2006; Manochehr, 2007; Heaton-Shrestha, Gipps, Edirisingha and Linsey, 2007; Kundi, Nawaz and Khan, 2010; Alper and Gülbahar, 2009).

There are various studies that have revealed that learning strategies play a crucial part in how students react to a web-based pedagogical program (Alper and Gülbahar, 2009). Learners display distinctive intellectual styles exhibiting varying preferences with reference to web based or Blended learning aspects (Alper and Gülbahar, 2009). A study conducted by Hsieh

and Dwyer (2009) explored the efficacy of various reading strategies and learning strategies (internal or external of control styles) possessed by students for tests in online environments. The researchers determined that “different reading strategies have different instructional structures and functions in facilitating students’ achievement of different types of learning objectives” (Hsieh and Dwyer, 2009).

A study was conducted on learning styles and their impact on online modes of instruction (Butler, 2004). The outcome of the study showed that there were noteworthy negative and positive relationships between the modes of instruction and learning styles. For instance, the concrete sequential style displayed a positive association with usage of emails. The concrete random style showed negative relationship with online examinations. The abstract sequential type exhibited a positive correlation with computer simulation but yet a negative one with multimedia usage. The mentioned learning styles are based on Gregorc Learning style model. (Gregorc,2006)

Graf, Liu and Kinshuk(2010)recommend an automatic method for discerning, establishing and recognizing learning styles of students in a Learning Management System (LMS). A deductive study was conducted on the learning styles of learners from their conduct and behavioural manners in an online course. The automatic approach is based on deducing and understanding learning styles of students from their behaviour in technology mediated environments (specially the learning environment where LMS is utilized). The automatic approach is DeLeS standalone tool. The term “DeLeS” is an acronym for “Detecting Learning Styles”. This standalone tool extracts/identifies information on the behaviour of students from the LMS. The information obtained is then used to compute learning styles. The DeLeS tool presents a list of students’ learning style preferences with respect to learning style dimensions and semantic groups. This tool can be used for any learning management system. The DeLeS tool utilizes a literature-based approach to deduce learning styles. This approach produces better outcomes than the data driven approach. The tool comprises of two parts i.e. the data extraction and calculation components. The data extraction part deals with extracting important information from the LMS database to deduce learning styles preferences. The calculation component is responsible for receiving raw data, transforming it, and using literature-based approach. This is done in order to deduce learning styles from the information. About 127 learners were suggested as the sample population of this study. The study compared the outcomes of the automatic approach versus results of the learning style survey. The deductive study produced findings that showed the automatic approach is

appropriate for recognizing learning styles. It is believed that lecturers will understand clearly the learning styles of their students through the DeLeS tool (Graf, Liu and Kinshuk, 2010). Moreover, lecturers would be better equipped to understand why and when their students face difficulties in learning. Students too become knowledgeable of their own learning styles which helps them to get to know their strengths and weaknesses better (Graf, Liu and Kinshuk, 2010). The researchers concluded that “instructors’ awareness of the learning styles and cultural context may be helpful for increasing students’ performance in web-based learning environments” (Graf, Liu and Kinshuk, 2010). Similarly, Coole and Watts (2009) examined collective Blended learning styles in online environments where-by they pointed out the essence of web-based delivery conforming to the distinctive preferred learning styles of trainees. Their study concluded that “in the Blended learning environment, students with social, aural, verbal, and solitary learning styles are likely to have a high academic achievement respectively” (Coole and Watts, 2009).

An investigative study was conducted on the effect of learning strategies on university learners’ preferences in a web-based environment (Johnson, 2007). The study focused mainly on two web-based methods of delivery i.e. quizzes and group discussions (Johnson, 2007). They observed that each student had their learning preferences. Active learners preferred face-to-face group discussions rather than web-based ones (Johnson, 2007). Visual learners had more preference for quizzes via a web based environment than the web based group discussions (Johnson, 2007). All this was proven by showing the decrease in academic success in a state of less preferred learning circumstances. Johnson (2007) came to the conclusion that “instructional applications of web-based technology may provide mechanisms to accommodate student learning preference more consistently in higher education”.

Additionally, action research was conducted by Saeed, Yang and Sinnappan (2009) to substantiate their research framework on learning strategies. The core concept of the research framework was established on the fact that learning strategies of students do affect the students’ preferences on usage of technology; which positively impacts student performance and academic success. The research highlighted a substantial connection between learning strategy of students and their technology preferences together with academic success and satisfaction. This is also validated by Akkoyunlu and Soylu (2008) who proved that “students’ views on the Blended learning process, such as ease of use of the web environment, evaluation, face-to-face environment, etc., differ according to their learning

preferences". Benbunan- Fich and Hiltz (2003), Akdemir and Koszalkah (2008), and Popescu (2010) also regarded the importance of conducting a study on the relationship between learning strategies and student performance and online or Blended learning method of delivery. Thus the sub-question on whether there is a significant relationship between learning strategies and academic success is quite critical to the answer.

It has to be noted though when it comes to the relationship between learning strategies and student performance, there are conflicting opinions. Some researchers have found that learning strategies do have an impact on student performance (Loomis, 2000); though, some have established that there is no significant association between student performance and learning strategies (Shih and Gamon, 2001; Wang et al, 2006).

### **3.5 Theories and Models of Learning Strategies and Styles for Blended Learning**

According to Felder and Silverman (1988), a learning style model is a means of grouping learners according to several scales regarding ways they acquire and process information. Due to the fact that each learner has a distinct learning strategy during various pedagogical activities(Dunn et al., 1995b), there are various theories and models of learning strategies discussed in the literature. These models have features that differentiate them from each other. All the learning strategies and styles models together with their learning strategies inventories are not discussed in this chapter as it is beyond the scope of the research. The research focuses on a few chosen learning strategies and styles models with their instruments that are, according to the literature, applicable and useful to a Blended learning environment in higher education institutions. The following sections describe learning strategies and styles considered to be most relevant to this research. These include:

- Felder-Silverman Learning Model (1988)
- Grasha-Reichmann Learning Style Scales (1996)
- Dunn and Dunn Learning Styles (1978)
- VARK model
- Kolb's Learning Styles (1984)
- Pintrich and de Groot's theory of self-regulated learning

#### **3.5.1 Felder-Silverman learning style model**

The Felder-Silverman Dimensions of Learning Style model was constructed based on a combination or hybrid of a number of theories e.g. Jung's theory of psychological types and information processing. The model integrates or joins various dimensions found in Myers-Briggs model (Sensing/Intuitive), Pask model (1976) together with Kolb's information

processing dimension (Active/Reflective). In contrast to Gregorc and Butler learning style model, Felder and Silverman (1988) do not view or observe learning styles to be persistent. Learning styles may vary because of time and/or circumstance (Felder and Silverman, 1988). According to this model, learning styles may be classified into the following types of learners:

- *Active and reflective learners:* Active students understand that knowledge is obtained by doing something active such as discussion and group work while reflective students need to reflect personally about what they have learnt. It is possible that students can be active sometimes and at other times reflective.
- *Sensing and intuitive learners:* Intuitive students learn by discovering prospects and relationships while sensing students prefer learning facts. Sensing students are more practical and careful while intuitive students work faster and are more innovative.
- *Visual and verbal students:* Verbal learners prefer to learn more from written words and spoken explanations. Visual students learn and retain information best from diagrams, pictures, flowcharts and demonstrations. It has to be noted that more learning takes place when both verbal and visual presentation of information are applied.
- *Sequential and global learners:* Sequential students learn well by comprehending information in a logical flow (linear steps). Global students learn by absorbing material randomly thus learning in big jumps. Global students make the connection between the reading materials later on.

The inventory that applies Felder-Silverman learning style theory is the Index of Learning styles (ILS). It categorizes learners into four dimensions i.e. active versus reflective; visual versus verbal; sequential versus global; and sensing versus intuitive. This instrument comprises of 44 multiple choice questions. The ILS contains four polar scales which each contains eleven choices. The ILS inventory is considered favourable to investigate learning styles in a computer-based educational system and technology enhanced learning environment (Cha et al., 2006; Graf, Viola, Leo and Kinshuk, 2007; Akbulut and Cardak, 2012; Torre, 2013). A comparative study conducted by Henry (2008) investigated the relationship between learning styles and satisfaction of courses taught in traditional and Blended learning environments. It was concluded that visual students were likely to be more satisfied with courses taught in Blended learning environment compared to verbal students.

On the other hand, Özdilek, Göktalay and Uzun (2012) suggested and designed a learner guide to assist students on how they can utilize a Blended learning environment more productively with regard to their learning styles. The learner guide, in form of a flowchart, was developed by utilizing Felder and Silverman's Learning Style Model. The guide also incorporated suitable teaching strategies for each Felder-Silverman learning style dimension based on a literature review. The researcher believes that a learner guide may prove quite beneficial to lecturers who teach in a Blended learning environment. Moreover, the learner guide will give students greater insight as to their learning styles and how to utilize their learning styles in a Blended learning environment.

The Felder-Silverman Model is among the most common and applicable models utilized in learning systems and technology mediated environments (Carver and Howard, 1999; Kuljis and Liu, 2005; Graf, Viola, Leo and Kinshuk, 2007; Derntl and Graf, 2009). The Felder-Silverman Learning Style Model has been regarded as a suitable model because it describes the learning style of students in more details (Graf, Liu and Kinshuk, 2010). The four domains in the model show how a learner retains information, becomes involved with their learning materials and how students can apply the information retained to new activities (Willems, 2007). The model, through the utilization of scales rather than modes, describes the strengths of learning style preferences. This enables educators to differentiate strong and weak preferences of a distinctive learning style. Also, the Felder-Silverman Learning Style model includes the concept of tendencies i.e. showing that a student with high preference can sometimes perform differently (Derntl and Graf, 2009). Thus, the learning style considers "exceptions and extraordinary situations" (Graf, Liu and Kinshuk, 2010). Moreover, there are studies that have been conducted and proved the reliability and validity of Index of Learning styles inventory (Zywno, 2003; Felder and Spurlin, 2005; Graf, Liu and Kinshuk, 2010).

One of the main criticisms of the Felder-Silverman learning style model, together with its inventory, is the unreliability of learning style measurements easily accessible on the internet (Provitera and Esendal, 2011). The inventory provides limited accuracy with regard to self-perceptions. Moreover, the learning style measurements are of "little help in student learning" (Provitera and Esendal, 2011). Unfortunately, an individual gets restricted information when one does not concur with the results. It has to be noted also that the questionnaire is quite repetitive.

### 3.5.2 Grasha-Reichmann learning style model

The Grasha-Reichmann Learning Style Scale is a 60 item self- assessment checklist that uses a five point Likert scale and illustrates six learning styles(Alper and Gülbahar, 2009). The assessment checklist or questionnaire evaluates the learning styles of university students through social affective viewpoints on the different approaches a student uses in a classroom environment (Keefe, 1979; Alper and Gülbahar, 2009). The learning style elaborated by Grasha and Reichmann is alike to Dunn and Dunn's theory i.e. it focuses on learning precedence of an individual(Rayner and Riding, 1997). The Grasha-Reichmann learning style instrument was initially developed in 1970 and was based on the assumption that learning styles can be described in terms of three bipolar elements i.e. dependent vs. independent, collaborative vs. competitive, and participative vs. avoidance

Initially, Grasha and Reichmann constructed items that would measure the poles of each dimension, the sum of six scales. The instrument was revised to a 90 item inventory (15 items per scale) that used a five point Likert scale. Due to the fact that the instrument did not produce a factor structure that agrees with the dimensions that it was supposed to investigate, it was shortened to 60 items (Kumar, Kumar and Smart, 2004). The learning styles that were developed are:

- *Independent students*: This is a group of students that prefer to study alone and not study with fellow colleagues. They prefer self-paced instruction.
- *Dependent students*: This is a group of students who prefer to be taught and guided by lecturers. They demonstrate little intellectual curiosity.
- *Competitive students*: These students learn well in a competitive learning environment. They learn in order to perform better than their colleagues. They like attention
- *Collaborative students*: These students acquire knowledge by collaborating and sharing with their lecturers and colleagues.
- *Avoidant students*: Students from this group do not like attending class or take part in any class activity. They feel overwhelmed when participating in such activities.
- *Participant students*: Students from this group are enthusiastic about taking part in various class activities and discussions. They like to discuss class materials.

It has to be understood, though, that this instrument deals more with recommending preferred learning styles for interacting with fellow colleagues and lecturers. Grasha-Reichmann Learning Styles model has been utilized to identify the learning styles of tertiary students in a technology enhanced learning environment (Yang, 2008). A study conducted by Kumar, Kumar and Smart (2004) looked at the effect of information technology on the learning styles of students. A proposed conceptual framework was constructed recommending the correlation between instructional methods and information technology to students' learning styles. Pre/post-tests constructed on the Grasha-Reichmann Learning Styles model were implemented. The tests were utilized to evaluate, over a semester, the changes in learning styles. The sample population comprised students studying three college-level courses. The findings of the study showed an important increase in the Collaborative, Participant and Independent learning styles of students during the semester (Kumar, Kumar and Smart, 2004).

Another study was conducted to investigate the impact of learning styles and students' learning process on Blended learning adoption (Gawande, 2015). The study took on a quantitative approach and used Grasha-Reichman Learning Styles model. The results of the study indicated that Facilitator and Competitive learning styles have significant effect on blending learning adoption. Moreover, blending learning adoption was found to be positively affected by demographic factors such as gender, age and computer experience (Gawande, 2015).

The model has also been utilized to investigate the correlation between learning styles and academic performance (Bahar, 2009). Moreover, the model explores social interaction of learners with their colleagues, lecturers and the learning process (traditional learning or online instruction) (Steele, 2012). The items in the questionnaire are correlated to the classroom activities and interactions with fellow colleagues and lecturers. Thus, information obtained from the questionnaire will reveal behaviours and perceptions of students (Uzun, Goktalay, Öncü and Şentürk, 2012). However, the Grasha-Reichmann Learning Styles model was developed to investigate how students react to various classroom activities and not assessment of their personal or cognitive traits (Kumar, Kumar and Smart, 2004). Moreover, the instrument is not well validated

### **3.5.3 Dunn and Dunn Learning Styles**

The Dunn and Dunn Learning Styles model, one of the oldest and most widely used models, was developed by Rita and Kenneth Dunn (1978 and 1992). The Dunn and Dunn learning style theory determines preferred methods of a learner for concentration and learning information. These learning styles take into consideration five dimensions of stimuli i.e. environmental, emotional, sociological, physical and physiological needs. Similar to Joseph Hill's model, Kenneth Dunn and Rita Dunn's model is founded on the assumption of matching student learning styles to teaching styles; which is the most effective way of improving learning. According to Dunn and Dunn (1978), various studies showed that “

- students can identify their own learning styles;
- when exposed to a teaching style commensurate with the way they believe they learn, students score higher on tests, fact knowledge, attitude, and efficiency than do those taught in a manner incongruent with their style; and
- it is advantageous to teach and test students in their preferred modalities”

There are various versions of inventories based on the Dunn and Dunn learning style model. Dunn and Dunn showed that lecturers usually teach in a way they prefer their students to learn. They also seem to like students who express a learning style similar to their learning styles.

The Learning Styles Inventory was initially created for children. There are three versions of Learning Styles Inventory for children i.e. kindergarten to grade 2, grade 3 and 4, and for grade 5 to grade 12 (Derntl and Graf, 2009). This inventory is a self-reporting survey that includes 104 items. It uses a three-alternative Likert scale – true, false and unsure. The Building Excellence Inventory is an up to date version developed for adults. This version comprises of 118 items. It utilizes a five-point Likert scale. This inventory has been applied in various studies to investigate and explore the effectiveness of matching versus mismatching learning preferences to learning results, identifying developmental patterns and establishing correlations between variables (Derntl and Graf, 2009)

An advantage of utilising the Dunn and Dunn learning style model in Blended learning is the exploration and concern of instructional and environmental preference of the learning environment (Steele, 2012). The model “affirms preferences rather than aiming to remedy weaknesses” (Coffield, F., Moseley, D., Hall, E. and Ecclestone, K., 2004). However, the main concern of using the Dunn and Dunn learning style model is the validity and reliability of the instrument (Coffield, F., Moseley, D., Hall, E. and Ecclestone, K., 2004). Moreover, it

does not consider the variances and dissimilarities among people (Deborah, Baskaran and Kannan, 2014). The other challenge is that the model deals “with preferences as relatively fixed and constitutionally based”, thus resulting in an over generalization (Coffield, F., Moseley, D., Hall, E. and Ecclestone, K., 2004)

### **3.5.4 VARK model**

VARK is an acronym for Visual, Aural, Read/Write and Kinesthetic. The VARK survey instrument, which is based on the learning style theory, was developed in 1998 as a method of measuring learning style preferences that will assist students to understand their way of learning. With regards to the VARK model, each learning style has suitable learning tasks and methods. Thus learning styles are categorized according to the preferred sensory mode and tasks that take place in the learning environment. Learners with visual learning styles learn well when the information is presented in a form of pictures or diagrams. They are easily disrupted by movements in their learning environment. Aural students prefer to learn by listening to lecturers and fellow learners (Rajkoomar, 2015). They are easily disturbed by noises. Learners with read/write learning style focus on absorbing information in the form of printed words and text i.e. summarizing lecture notes and reviewing past exam papers. Kinesthetic learners learn well through experiences and practical examples. They focus well by touching things and being active. It is possible for an individual to have more than one learning preference i.e. visual-aural (VA) or visual-aural-kinesthetic (VAK). It has to be noted that there are resemblances and overlaps from Kolb Learning Styles and Felder-Silverman Learning Styles Theories. According to Fleming and Baume (2006), the main ideas and thoughts that form the VARK model are:

- Students and instructors behaviours (including learning) are influenced by modal preferences.
- Both lecturers and learners can identify the application of a distinctive learning preference modality.
- Modal preferences are not established but are constant in the medium term.
- Learning strategies and teaching strategies can correspond to modal preferences.
- When the ways of accessing information corresponds to the modality preferences of learners, it is likely that the information will be understood.

- When the methods of learning and teaching match up to the modality preferences of students, it is likely to promote effectiveness of learning approach and persistence in learning.
- A vital requirement for a student's learning progress is knowledge of one's learning preferences mode.

The main purpose of the survey instrument is to “begin a process of thinking about how students prefer to learn thereby acting as a catalyst for metacognition” (Rajkoomar, 2015). The inventory offers feedback on chosen modes for communicating. The VARK survey inventory comprises of thirteen multiple choice questions. Ten questions have four options and three questions have three options. The options match up to the four sensory modes i.e. visual, auditory, read/write and kinesthetic.

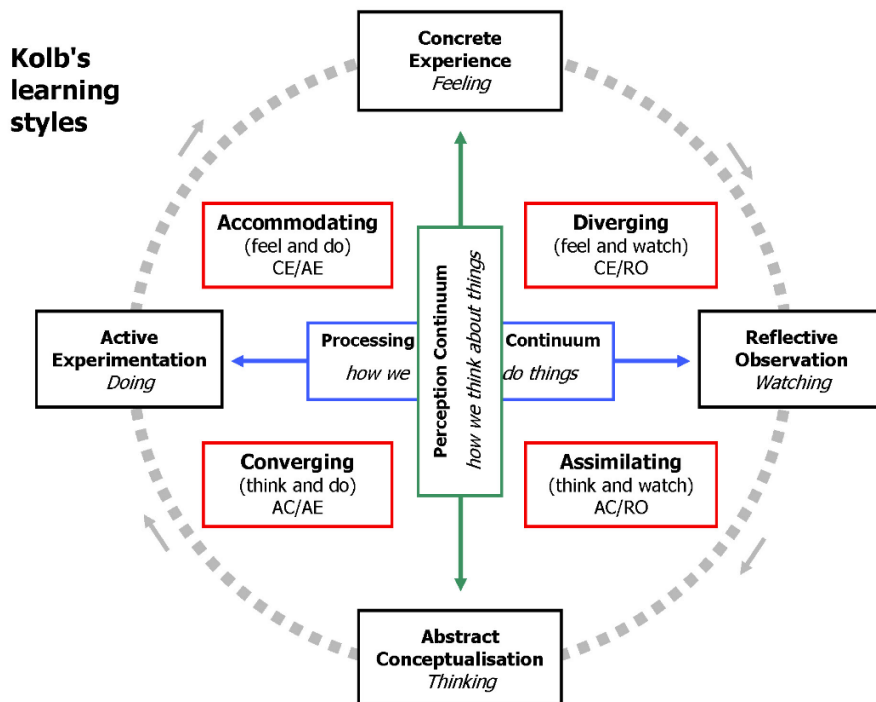
A study by Eom, Wen and Ashill (2006) investigated learning styles on learning end-results and satisfaction in an online learning environment. It was concluded that students with visual and read/write learning styles are more satisfied in an online learning environment. This was because the learning environment comprises of less oral learning environments and active experiences. Also Rakap (2010) and Drago(2000) showed similar significant outcomes with regards the influence of learning styles of online students.

The reason the VARK model may be applied to measure learning styles in a Blended learning environment is with regards to presentation and absorption of information. A Blended learning environment is a combination of both traditional learning and online learning. Thus given the way the learning environment is presented, the use of learning preferences has to be considered. As the VARK model is based on sensory mode preferences of learning, it is considered a good method in determining learning styles in a Blended environment (Renner, Laumer and Weitzel, 2014). However, the limitation and challenge of using the VARK model in a Blended learning environment is low validity and reliability (Deborah, Baskaran and Kannan, 2014).

### **3.5.5 Kolb's Experiential Learning Theory**

Another prominent theory that analyses different learning styles is the Experiential Learning Theory (ELT). The Kolb Experiential Learning Theory describes learning as “the process whereby knowledge is created through the transformation of experience”(Deryakulu, Büyüköztürk and Özçınar, 2009). Knowledge is a by-product of comprehending information and transformation experience (Deryakulu, Büyüköztürk and Özçınar, 2009). For learners to

study effectively, they need four divergent abilities: Concrete Experience abilities, Reflective Observation abilities, Abstract Conceptualization abilities and Active Experimentation abilities (Deryakulu, Büyüköztürk and Özçınar, 2009). The whole concept of experiential learning is illustrated in Kolb's Experiential Learning Cycle and Learning styles as described below.



**Figure 3.5.1 Kolb's Experiential Learning Cycle and Learning Styles**

The people who are best in both Concrete Experience and Active Experimentation (i.e. feeling and doing) are known as *Accommodators* (Kolb, 1984; Alper and Gülbahar, 2009). Their greatest strength is in executing activities, carrying through the plans and being involved in new experiences (Kolb, 1984; Deryakulu, Büyüköztürk and Özçınar, 2009). People who are best in Concrete Experience and Reflective Observation (i.e. feeling and watching) are *Divergers* (Kolb, 1984; Alper and Gülbahar, 2009). According to Kolb (1984), experts that have this type of learning style are usually personnel managers, organizational development consultants and counsellors. People with both Abstract Conceptualization and Active Experimentation abilities (i.e. thinking and doing) are known as *Convergers* (Kolb, 1984; Alper and Gülbahar, 2009). Their greatest influence and power lie in practically applying ideas. *Assimilators* are the ones who have both Abstract Conceptualization and Reflective Observation abilities (i.e. thinking and watching) (Kolb, 1984; Alper and Gülbahar, 2009). They are believed to have great ability in being able to produce and form

theoretical models (Kolb, 1984; Deryakulu, Büyüköztürk and Özçınar, 2009). Kolb's learning cycle model was further developed by Healey and Jenkins (2000) and Manochehr (2006) and thus improved by the correlations among learning styles, situations and environments. This is illustrated in the following table.

Table 3.5.1 Learning Styles and Conditions (Manochehr, 2006)

Learning style	They learn best through	Condition
Diverger	Feeling and watching	Learn when allowed to observe and gather a wide range of information
Assimilator	Thinking and watching	Learn when presented with sound logical theories to consider
Converger	Thinking and doing	Learn when provided with practical applications of concepts and theories
Accommodator	Feeling and doing	Learn when allowed to gain "hands on" applications

Kolb's learning style inventory is usually applied to investigate learning styles in an online learning environment because it classifies types of students based on their learning experiences. Terrell and Dringus (2000) together with Lippert, Radhakrishnam, Plank and Mitchell (2001) carried out their research focused on examining student' learning styles in an online learning environment. The researchers used Kolb's learning style to assess the learning styles of students with high computer knowledge. The two studies revealed that learning style didn't affect student success in online learning. Learning style does, however, influence the precedence and priority for the online delivery format. For example, it was observed that learners who were Assimilators and Convergers were quite content and at ease pursuing online courses. Another study conducted by Manochehr (2006) observed that learners with the Assimilation learning style (learn well through lectures and papers) and the Converger learning style (learn well through observations, field work and laboratories) performed better within a Blended learning context. Manocheler previously had investigated the effects of e-learning versus traditional learning based on learning styles of students. Kolb's Learning Style was the survey tool implemented for the evaluation study. It was found that learning style was quite significant for e-learning (Manochehr, 2006). Some researchers have used Kolb's LSI to explore the relationship between student's successes and learning styles in a technology mediated learning environment. For instance, Wang, Wang, Wang and Huang(2006) explored the impact of learning style and formative assessment on student success in a Web-based learning environment. Quasi-experimental research was conducted. The sample population comprised of 455 students. These students were tested using Kolb's

Learning style Inventory. The findings of the research concluded that formative assessment strategy and learning styles are vital factors that affect student success in a Web-based learning environment. There was no correlation between the factors i.e. learning styles and formative assessment strategy (Wang et al., 2006).

Kolb's LSI has been used extensively to evaluate learning styles and preferences in online learning studies (Terrell and Dringus, 2000; Federico, 2000; Fahy and Ally, 2005; Liegle and Janicki, 2006; Wang, Wang, Wang and Huang, 2006; Lu et al., 2007). This learning model is regarded to be a suitable model to explore learning styles in a Blended learning environment because it is more learner-centred than teacher-focused. Thus, it "promotes holistic learning in the context of a self-paced online learning environment". However, there are various criticisms on Kolb's Experiential Learning Theory. It has been argued that the learning style model is overly simplistic and thus takes a linear type of approach (Jarvis, 2011; Lee, 2014). The instrument "probes general behavioural tendencies, rather than asking people directly how they learn" (Huang, Lin and Huang, 2012). Moreover, some stages of the learning activities process can be overlooked or "repeated several times in any sequence" (Lee, 2014). Another shortcoming of this model is that the empirical support of the questionnaire is weak.

### **3.5.6 Pintrich and de Groot's theory of self-regulated learning**

For the purpose of this research and the survey instrument adopted, Pintrich and de Groot's theory of self-regulated learning is elaborated extensively. According to Boekaerts and Corno (2005), Perry et.al (2006) and Molden and Dweck (2006); self-regulation is a learning technique that is led by metacognition (planning, monitoring and regulating tasks); strategic action (organization, time management and evaluating self-development) and motivation to learn (goal setting, task value and self-confidence) (Boekaerts and Corno, 2005; Perry, Phillips and Hutchinson, 2006; Molden and Dweck, 2006). Self-regulated learning is summarized by Zimmerman and Martinez-Pons (1990) as "the degree to which students are metacognitively, motivationally, and behaviourally active participants in their own learning process". It is believed that the academic performance of students is affected by the way they organize and bring together their strategies and objectives (Dowson and McInerney, 2003; Dowson and McInerney, 2004; Cruise and Graham, 2014). For a learner to learn well, he/she needs a well-developed selection of learning tactics. Moreover, the student requires the capacity to correctly evaluate learning activities together with the capacity to explore and organize effectively. Such strategies that will influence how and when they grasp knowledge best (Garner, 1990). The learning sets of tactics are believed to be connected to the adopted

learning approach and standard of learning results(Pintrich, Smith,García and Mckeachie, 1993).

Students who learn in a self-regulated learning environment, such as an online, e-learning and Blended learning environment, are “metacognitively, motivationally, and behaviorally active participants in their learning”(Zimmerman, 1990). Successful e-learning students according to this theory, are believed to keep track of their own improvement on objectives they have set i.e. they have high levels of meta-cognition. This enables them to give consideration to effectiveness and efficiency of their learning methods. Moreover, these students become more involved in and persevere to continually use learning strategies/styles that they believe will “maximize the degree to which learning occurs”(Credé and Phillips, 2011).

Also, the students, who have self-efficacy in such self-regulated learning settings are likely to see any learning activity as intriguing. Thus, Schunk and Zimmerman (1994) states that self-regulated learning has three elements i.e. motivations, meta-cognitions and behaviors. They are assumed to be vital determinants/predictors of academic performance (Zimmerman, 1990; Duncan and McKeachie, 2005; Credé and Phillips, 2011).Understanding the different learning strategies that students utilize is quite beneficial to both instructors and students. Also, such knowledge provides a helpful understanding and comprehension about perceptions of learners on learning and the effectiveness of learning.

Learning strategies comprise of various behavioural expertise and cognitive processes (Weinstein and Meyer, 1991; Shih and Gamon, 2002). Cognitive learning strategies are behavioural skills that students use to boost their comprehension, consolidation and absorption of the latest information(Cross and Steadman, 1996; Shih and Gamon, 2002). General components of learning strategies comprise elaboration, rehearsal, organization, resource management, metacognition and comprehension (Weinstein and Meyer, 1991; Cross and Steadman, 1996; Shih and Gamon, 2002).

It is vital for students to manage and control their personal learning procedures in a student – centred learning environment(Chen, 2002; Alharbi, Paul and Henskens, 2011). There are basic or common assumptions while/ there are numerous models on self-regulated learning (Curry, 1983; Pintrich, 2004; Alharbi, Paul and Henskens, 2011). Primarily, the student is regarded as an active player in the learning process and not a passive recipient of knowledge. Also, it is believed that the student has the ability to regulate, manage and control the learning process. Finally, students can set an objective and evaluate the learning process to decide

whether the learning tasks meet the set objectives. Students can utilize and even enhance their learning strategies or styles through the following techniques (Pintrich and De Groot, 1990):

- *Cognitive learning strategies*: these learning approaches are utilized by students to handle or manage their course materials. These approaches include elaboration techniques such as paraphrasing, summarizing and associating new data to existing knowledge. Cognitive learning strategies also include critical thinking which helps in evaluating the course materials' credibility and developing rankings of displayed information
- *Metacognitive learning strategies*: these learning approaches are founded on the knowledge of student self-regulating their own learning activities. This can be done by planning and monitoring. Planning activities comprises establishing objectives and composing questions. Monitoring activities comprise self-assessment to substantiate the comprehension of students.
- *Resource management strategies*: these learning approaches need the students to control their learning setting. This comprises time management techniques and learning environment. Also, seeking assistance and learning from fellow peers are techniques in this category.

Thus, Pintrich and de Groot suggest eight categories of learning approaches that help in processing information. These include rehearsal, complex rehearsal, elaboration, complex elaboration, organizational, complex organisational, comprehension monitoring and affective and motivational. Rehearsal, elaboration and organization are specific cognitive strategies that are used by a student in order to obtain knowledge while learning (Pintrich and de Groot, 1990). This theory also discusses metacognitive and resource management strategies. Metacognitive strategies refer to self-recognition and skills used by learners to plan, monitor, regulate and facilitate their learning strategies (Pintrich and de Groot, 1990). Resource management strategies are the abilities of students to effectively use learning resources such as time, effort, peers and lecturers (Pintrich and de Groot, 1990).

The theory of learning and information processing establishes the basis for learning strategies section of the Motivated Strategies for Learning Questionnaire. Cognitive, metacognitive and resource management are the three main scales of the learning strategies section. The

subscales specifically related to the cognitive measure are Critical thinking, Organization and Rehearsal. The measures that are under the metacognitive scale include planning (constructing objectives), monitoring and regulating. The final construct, resource management, is measured by time and study environment, effort regulation, peer learning, and help seeking. The constructs, subscales and measure are highlighted in the table below.

**Table 3.5.2MSLQ learning strategies measures**

<b>Cognitive</b>	<b>Metacognitive</b>	<b>Resource Management</b>
Rehearsal	Metacognitive Self-regulation	Time & Study Environment
Elaboration		Effort Regulation
Organization		Peer Learning
Critical Thinking		Help Seeking

This theory on learning strategies assists in determining and explaining why one student excels well in a certain course when another student does not. Moreover, it aids in explaining the reasons why a student may perform better than others in a certain academic activity (Credé and Phillips, 2011). It is believed that the motivational and cognitive traits related to an academic activity together with the learning conduct utilized by a learner vary to a great extent across the tasks the student needs to perform. For instance, motivational traits, cognitive traits and learning styles of a student may differ in various classes such as a seminar class for a major course versus a compulsory education class. Also motivational traits, cognitive traits and learning styles change across different academic activities within the same course e.g. preparing for a multiple choice paper versus writing the final examination.

### **3.6 The Choice of Motivated Strategies for Learning Questionnaire (MSLQ) survey instrument**

The Motivated Strategies for Learning Questionnaire (MSLQ), based on Pintrich and de Groot’s theory of self-regulated learning, has been selected as the preferred survey instrument for this research study. The theory deals with the behaviours and activities of students rather than the rationale behind the model (Dinsmore, Alexander and Loughlin, 2008; Lee, 2014). Also, self-regulated learning theory concentrates more on the interaction between the learning environment (in our case, Blended learning environment) and the person (in our case,

students). The theory focuses extensively on academic learning (Dinsmore, Alexander and Loughlin, 2008; Lee, 2014). Self-regulated learning theory aligns well with the learner - focused Blended learning approach. In such a learning environment, students most of the time are left to learn using their own learning devices. Thus, students become more aware of their own organizing, examining, thinking, assessing own progress and inspiring them to learn (Zimmerman, 1990; Butler and Winne, 1995; Boekaerts and Corno, 2005; Perry, Phillips and Hutchinson, 2006; Lee, 2014). The Motivated Strategies for Learning Questionnaire is also useful for investigating learning styles for tertiary students in a Blended learning environment for the following reasons:

- The reliability and validity of the instrument has been established in terms of its purpose to identify and investigate learning styles
- It was developed to investigate learning strategies in educational learning environments
- The instrument is freely available online and easy to use and modify
- It can be easily administered
- It is easy to score and interpret

The MSLQ has been employed to evaluate motivational characteristics and learning strategies of tens of thousands of learners (Credé and Phillips, 2011). A search on the *ScienceDirect* database shows over 300 articles that have utilized MSLQ. A certain study found there were significant correlations between student performance in online courses and learning techniques and motivation (Shih, Ingebritsen, Pleasants and Flickinger, 1998). Moreover, students who utilized memorization, elaboration and organization were considered more likely to perform better than the rest. A study conducted by Shih and Gamon (2001) investigated the correlations between learning strategies and final grade in online courses. Learning strategies were measured using thirteen questions from the Motivated Strategies for Learning Questionnaire (MSLQ). It was found that “student use of learning strategies contributed 25% towards their achievement in the online courses in the study”.

Learning strategy is believed to be an important determinant of students’ learning with regard to age (Zhu, Au and Yates, 2016). For instance, it was found that in a group of standard eight pupils, those who had higher levels of self-regulation performed well in their class. Moreover, out of 290 high school students pursuing geometry classes, there was a significant relationship between their academic scores and their motivation and effort

management (Pokay and Blumenfeld, 1990). Likewise, another study dealing with standard seven pupils, found that the academic results of such students were positively correlated to their intrinsic value, self-efficacy, test anxiety, strategy use, metacognitive traits and resource management traits. Some studies indicated that the utilization of various cognitive strategies of students i.e. elaboration, rehearsal and organization promote students in engaging more in learning resulting in “first-class” academic performance (Weinstein, 1986; Deryakulu, Büyüköztürk and Özçınar, 2009; Dickinson and O’Connell, 1990; Pintrich, Smith, García and McKeachie, 1993; Cruise and Graham, 2014).

Several researchers such as Pintrich, Smith, Garcia and Mckeachie (1991, 1993); Yukselturkand Bulut (2007); Kauffman, Ge, Xie and Chen (2008); Puzziferro (2008); Kauffman, Zhao and Yang (2011) and Tsai, Shen and Tsai (2011) have found that learners with high levels of self-regulated learning abilities perform better in tertiary education. For instance, the learning styles of eighty tertiary students pursuing an online computer course were investigated (Yukselturk, 2007). The findings showed that learning strategies influenced learning outcomes of the students. Similarly, Puzziferro(2008) realized final examination marks are positively correlated to effort, study environment and regulation of time of students. Such positive significant correlation between self-regulation of learners and learning results have been documented by Shih and Gamon (2001);Thompson, Meriac and Cope(2002); Whipp and Chiarelli (2004) and Khatib (2010). By reviewing the findings of studies that have used the MSLQ,has indeed provided vital information on the validity of the learning strategies under self-regulated learning theory.

The MSLQ was employed compare the self-regulated learning’s usage in both traditional learning and computer lab environments (Chen, 2002). The selected population was 197 students who were pursuing a business course that was taught both in a traditional face to face environment (lectures) and in a computer lab environment. These students were in their first and second years and had high levels of computer literacy. Chen (2002) decided to utilize only some of the subtypes from the learning strategies section (i.e. rehearsal, complex rehearsal, elaboration, complex elaboration, organizational, complex organisational, comprehension monitoring and affective and motivational) for the motive of the study. The pre-eminent learning strategy that was observed by Chen (2002) in a traditional learning environment (lecture setting) is effort regulation. Time and study environment management was the most appropriate learning strategy in a computer lab setting (Chen, 2002). It should

be noted that the researcher however did have some concerns on whether the number of the target sample population affected the findings or results of the research.

A descriptive exploratory research study was conducted by Mullen (2007) which employed the Motivation Strategies for Learning Questionnaire. The main objective of the study was to examine the application of Self-Regulated Learning (SRL) by accelerated BSN program students. Similarities and/or dissimilarities of students were noted based on the extent the student completed a degree i.e. one-third or two-thirds of the completion duration of the degree. The main presumption of the research was that learners with more clinical experience on which their learning was based made more progress in the programme (Mullen, 2007). These learners were also believed to possess great organizational skills (Mullen, 2007). It was noted that subscale scores had high level of relevance and importance to the group of students that had progressed further in the course.

Moreover, levels of effort regulation and time & study environment subscales were high for students who had gone a long way through the program. These students had actually developed SRL approaches that enabled them to learn in a spirited manner and wisely utilize the resources. Students who were specifically finalizing their last semester had high scores of peer learning. This was believed to be due to the fact that these students (the ones who had already done two thirds of the programme) had been working in groups of three during their programme. Hence, the outcome of the research supports the importance of small groups that assist learning. It was also noted that indeed a student with vast knowledge uses or employs more SRL approaches and appreciates the time worth spent for studying.

Key Features raised in the various

Learning Styles Models

	<b>Felder-Silverman</b>	<b>Grasha-Reichmann</b>	<b>Dunn and Dunn</b>	<b>VARK</b>	<b>Kolb's Experiential Learning</b>	<b>Pintrich and de Groot's theory of self-regulated learning</b>
<b>Focus on the academic method of learning and teaching</b>	X	X	X	✓	✓	✓
<b>Social Interaction (Interaction with peers and lecturers)</b>	X	✓	X	X	X	X
<b>Accommodation of personal learning-style preferences through complementary instructional and counselling intervention</b>	X	X	✓	X	X	X
<b>Learner – centred focus</b>	X	X	X	X	✓	✓
<b>Based on effect of various stimuli (sociological, physiological, psychological and emotional) on academic skills</b>	X	X	✓	✓	X	X
<b>Assessment of individual traits and dissimilarities between people</b>	X	X	✓	X	X	X
<b>Considers learning styles as tendencies instead of obligatory types</b>	✓	X	X	X	X	X
<b>Lecturers using learning styles as a basis of their instruction</b>	X	X	✓	X	X	X

<b>Instructional preference of learning method</b>	X	X	✓	✓	X	X
<b>Environmental aspect of learning method</b>	X	X	✓	X	X	✓
<b>Model used in technology enhanced learning environments especially e-learning</b>	✓	X	X	✓	✓	✓
<b>Dimensions and modes of model based on perception of information and processing by students</b>	X	X	X	X	✓	X
<b>Scales, rather than types, are used to describe strength of learning style</b>	✓	X	X	X	X	✓
<b>Learning styles are considered to as flexibly stable learning preferences</b>	✓	X	X	X	✓	X
<b>Non-Generalization of the learning styles</b>	✓	✓	X	X	X	✓
<b>Measures academic success of students</b>	X	✓	✓	✓	✓	✓
<b>Based on learning strategies and conceptions</b>		✓				✓
<b>Reliability and Validity</b>	X	X	✓	X	X	✓

Table 3.6.1 Strengths and Weaknesses of Learning Styles Model

Key:

✓ - Identified in the models

X – Not identified in the models

### **3.7 Conclusion**

By understanding their learning strategies, students can plan their learning process with greater clarity achieve to do a required task well. Since Blended learning is grounded on self-discipline and self-regulation, understanding and awareness of learning strategies is critical. Moreover, as indicated in the literature, learning strategies does have a level of effect on satisfaction, academic performance, participation, interaction and collaboration in online and Blended learning environment. It is important to assess and understand the learning strategies of a student in a Blended learning environment. This will help to build their learning power. Lecturers may use the outcomes of the learning strategies assessment to assist in providing a responsive educational approach. The whole learning process will be improved once learning strategies of students are understood.

There are various theories and models of learning strategies and styles. A Few selected learning strategies and styles models with their instruments that are considered applicable and useful to Blended learning environment in higher education institutions were discussed. These included Hill's Cognitive Style Mapping, Dunn and Dunn Learning Styles, Kolb's Learning Styles, Gregorcand Butler Learning Styles, Felder-Silverman Learning Model, Grasha-Reichmann Learning Style Scales, Hermann Brain Dominance Models (1996) and Pintrich and de Groot's theory of self-regulated learning. Pintrich and de Groot's theory of self-regulated learning was elaborated on. The Motivated Strategies for Learning Questionnaire, survey instrument based on the Pintrich and de Groot's theory of self-regulated learning has been chosen as it is believed to be the most appropriate instrument for investigating learning strategies for tertiary students in a Blended learning environment. This is because the instrument concentrates more on the interaction between the learning environment (in our case, Blended learning environment) and the student. Also, the instrument is freely available online and easy to use and modify. The next chapter discusses the influence of motivation on students' performance.

# 4 MOTIVATION

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## 4.1 Introduction

This chapter elaborates on the effect of motivation as a predictor of student performance in Blended learning. In exploring motivation, various definitions of motivation are provided and the correlation between motivation and student's performance is elaborated on. Moreover, the significance of motivation is explored. The theories, models and instruments that measure motivation have been discussed in depth. The Motivation Strategies for Learning Questionnaire (MSLQ) is the recommended instrument to measure the motivation of students for this study.

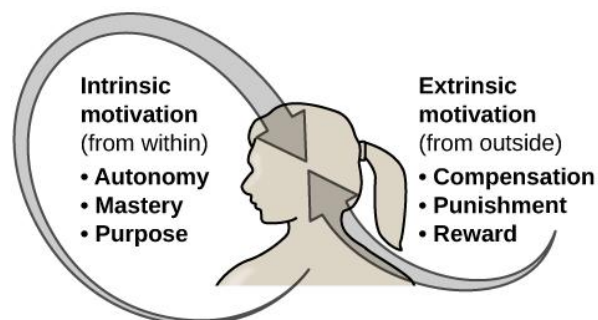
## 4.2 General Overview of Motivation

There has been an increase in interest on the impact of student motivation in an online and Blended learning environment (Ronsisvalle and Watkins, 2005). The interest has increased together with the development and progress of the opportunities that online and Blended learning can offer (Ibid. 2005). Motivation is one of the most critical elements of learning in any kind of environment (Yukselturk and Bulut, 2007; Kim, 2011). There are different definitions of motivation based on various characteristics. According to Kawachi (2002) motivation is an individual's level of willingness to do something to achieve a goal. This definition is also recognized and acknowledged by Hartnett, St George and Dron (2011). Schunk and Zimmerman (1994) define self-motivation as the individual's generated energy that makes one committed to achieve a certain objective. Motivation is the process where people perform an objective-directed task (Rakes and Dunn, 2010). In their book titled "Essentials of organisational behaviour", Robbins and Judge (2013) define motivation as the "processes that accounts for an individual's intensity, direction and persistence of efforts towards attaining a goal". The term motivation is commonly considered and regarded as a process where people initiate and keep an objective-directed activity (Pintrich, 1995; Alexander and Murphy, 1998). Academic motivation refers to the level of commitment, dedication, determination and persistence of a student together with curiosity and hard work in the academic subject matter (DiPerna and Elliot, 1999; Rakes and Dunn, 2010). Motivation to learn and study may not take place till low level needs (endurance, security, safety and

sense of belongingness) and self-esteem are met (Maslow, Frager and Fadiman, 1970; Kupritz, 2003). According to Ford (1992), learning motivation is defined as the planned pattern of pursuing objectives, emotions and beliefs. Wlodkowski (1985) defined learning motivation as “a force to arouse, give direction to, continue, and choose a particular learning behaviour.”

According to Kim (2011), each student has his or her motivation for working and studying. Motivation can be categorized into two types, i.e. intrinsic and extrinsic motivation. Intrinsic motivation can be defined as “the performance of a task for the inherent performance it brings an individual rather than for some separate consequence” (Rakes and Dunn, 2010). Intrinsic motivation involves processes of internal thoughts such as inquisitiveness, interest and accomplishment (Bandura, 1997; Kember, 1995; Sternberg, 1999). An individual is said to be more motivated when one has set clear objectives or beliefs that he or she can achieve and is certain on how to go about achieving them (Bandura, 1997; Lent, Brown and Larkin, 1986; Marsh, Walker and Debus, 1991). Extrinsic motivation involves external tangible recompenses and gratuity e.g. rewards bonus, promotions, acknowledgment and recognition of one’s efforts (Bandura, 1997; Kember, 1995; Sternberg, 1999).

These two types of motivation (specifically intrinsic motivation) seem to incorporate features and components of Weiner’s attribution theory, Pintrich’s goal orientation theory and self-efficacy theory based on Bandura (1997) and Bandura (1993). When a student assigns or accredits their academic results to internal reasons, they can control and become proficient in a particular subject and the likelihood of success is certain (Weiner, 1980; Nicholls, 1984; Dweck, 1986; Rakes and Dunn, 2010). Moreover, it is believed that deep learning happens when students have high levels of intrinsic motivation (Bruner, 1962; Schank, Berman and MacPherson, 1999; Sternberg, 1999).



**Figure 4.2.1 Types of Motivation (Rakes and Dunn, 2010)**

### 4.3 The Importance of Addressing Motivation in a Blended Learning Environment

Advancement, development and improvement in motivation should be one of the important objectives of a distance or online educational programme offered by a higher education institution (Keegan, 1996; Holmberg, 1995; Olgren, 1998; Kearsley, 2000; Schrum and Hong, 2002; Kırımı, 2015). This is because there is no face-to-face cooperation and communication. Moreover, motivation has greater significance because students are pursuing courses, often in isolated places and in learning environments where they are required to learn at their own pace (Kim, 2011). Hence, motivational beliefs and self-regulated study habits may be more significant for such students to be more independent and self-governing (Schunk and Zimmerman, 1994; Ronsisvalle and Watkins, 2005). It was established that student motivation does have an impact on his or her understanding, keenness, performance and satisfaction. Students will exhibit high levels of performance when they have discerned and achieved the objectives. They will also be satisfied when all set tasks have been successfully accomplished throughout a course.



**Figure 4.3.1 Advantages of Motivation as mentioned from above**

Although motivation is essential to the learning process, it is not uncommon for students to lack motivation (Rakes and Dunn, 2010). Students pursuing studies in a Blended learning environment have difficulties in continuing to be motivated. This is because social separation and technical difficulties can lead to frustration. Almost all learning environments present challenges, Blended learning environments present peculiar and distinctive challenges. The challenges include ensuring the success of Blended learning courses by using the appropriate technologies and matching the best delivery methods to the performance objectives (Rakes and Rakes, 2010). Thus, it is quite important for students to be able to guide and control their motivation (Wolters, Pintrich and Karabenick, 2005; Rakes and Dunn, 2005).

## **4.4 The Correlation between Motivation and student success in Blended learning**

Some of the most commonly used motivational variables for predicting student success rate include:

- Self-efficacy (Pintrich and DeGroot, 1990; Schunk and Zimmerman (1994; Bandura, 1997)
- Intrinsic and extrinsic motivation (goal value) (Pintrich and Garcia, 1991)
- Control beliefs (Pintrich and Garcia, 1991)
- Task value (Pintrich and Garcia, 1991)

Motivation has mainly two characteristics that need to be considered in an online and Blended learning environment (Kim, 2004):

- Task value that a learner allocates or designates, for example: does the designated task have any value or use? Is the student in charge of the task? What award or benefits will the learner obtain from completing the task?
- Expectations the learner has for completing the degree or course successfully; i.e. are the course assignments and is the work too difficult? Do students possess prior experience in different courses? Do students have the required knowledge, mastery and expertise?

Motivation is considered one of the effective contributors, predictors and determinants of student success (Ames and Ames, 1985; Dweck and Legget, 1988; Wylie, 1989; Dembo and Eaton, 2000; Alexander, Cici, and Gibson, 2006; Yukselturk and Bulut, 2007, Kim, 2011). Motivation is also a significant factor for students' performance in online and Blended learning environment (Keller, 1999; Sankaran and Bui, 2001; Song, 2000; Schrum and Hong, 2002; Waschull, 2005; Ronsisvalle and Watkins, 2005; Yukselturk and Bulut, 2007; Kim, 2011; Kirmizi, 2014).

Motivation is believed to have a direct impact on student's academic performance (Kirmizi, 2014). A study conducted by Frankola (2001) observed that the completion rate of students in online learning environments is strongly correlated to their motivation levels. A further study conducted by Eddy and Epeneter (2002) revealed that students who were successful in their first online learning attempt, were highly motivated students. They were more proactive in preparing for their tests, preparing a plan to deal with stress and they even anticipated the

examination experience (Eddy and Epeneter, 2002). Similarly, learners who decided to self-enrol for online courses were more likely to succeed than those who were forced to enrol (Kurtz, Sagee, and Getz-Lengerman, 2003; Thomerson and Smith, 1996; Wang and Newlin, 2002).Cope and Hannah (1975) and Kember (1995), while investigating student progress, identified motivation as a key factor in both persistence and attrition of students. A student will persevere when they have an academic objective (Cope and Hannah, 1975; Kember, 1995).

An investigative study was conducted on the influence of motivation and success within the application of Blended learning environments in a foreign language class (Isiguzel, 2014). The area of study was at Nevsehir Hacı Bektas Veli University, Turkey. The sample population consisted of third year students pursuing tourism and hotel management programs. The sample population consisted of 62 students i.e. 35 students belonged to an experimental group and 27 students belonged to the control group. The experimental group attended the course via a Blended learning environment i.e. 14 hours of online learning and 6 hours of traditional face to face learning. The control group simply learnt in a traditional learning environment i.e. 6 hours of traditional face to face learning. Data was collected through the German Language Learning Motivation Scale together with German course achievement tests. The researchers observed that students in the experimental group attending German courses in a Blended learning environment performed better when compared to the control group (Isiguzel, 2014). Moreover, the experimental group of students had a higher level of motivation when compared to the control group. These findings shows that the language classes conducted in the Blended learning environment vs.the traditional learning environment, had different “effects by means of increasing success and motivation”(Isiguzel, 2014). It was understood that the Blended learning environment, which scored higher on the motivation scale when compared to traditional learning, was more effective in increasing motivation in the German language classes study.

Al-ani (2013) conducted research into Blended learning to identify factors that could influence student success, motivation, collaboration and communication. The researcher also investigated obstacles or challenges students face in using Moodle in a Blended learning environment. The sample population comprised of 283 students from Sultan Qaboos University, Oman. The research highlighted a connection between the usage of a Learning Management System (Moodle) in a Blended learning environment and students’ achievement, motivation, collaboration and communication. The findings of the research

showed that utilizing Moodle in Blended learning had an average level of effectiveness related to the motivation of students. Also, it had an average level of effectiveness related to achievement of students and students' collaborations and communication (Al-ani, 2013). The researcher also found that there was no statistically significant difference among student perceptions in relation to faculty and gender types. Thus, the flexibility of such a learning environment would seem to increase the motivation of students and their desire to learn. It has to be noted that the students faced obstacles while using Moodle in their learning. These include network disruption, defects in the university network and feeling worried when doing online quizzes. The Cisco Networking Academy utilizes the internet to deliver standard-based online testing and centrally developed curriculum. A study was conducted to investigate the delivery of student programs and the determinants that have an effect on student achievement in the Cisco Networking Academy (Dennis et al., 2006). The sampled population comprised of 10,731 learners from 1651 schools. The findings of the research revealed that motivation, gender, age and student ability were the most influential determinants of students' achievement. It was noted that Blended learning (combination of centralized curriculum, standards-based testing and local instruction) worked well and enabled students to "reach their own potential" (Dennis et al., 2006).

A study conducted by Kassab, Al-Shafei, Salem and Otoom (2015) investigated the correlations between motivation, self-regulated learning, course experience and academic achievement of medical students in a Blended learning environment. The sample population comprised of almost 170 students. The researchers measured the Blended learning experience using the Student Course Experience Questionnaire (SCEQ) together with the e-learning Experience Questionnaire. The SCEQ is amongst the most widely utilized questionnaire to evaluate the learning experience of students. The instrument comprises five scales i.e. good teaching, clear goals and objectives, appropriate assessment, appropriate workload, and generic skills (Kassab, Al-Shafei, Salem and Otoom; 2015). The E-learning Experience Questionnaire consists of 32 items that evaluate the quality of the e-learning component. It comprises four scales: Good e-Teaching, Good e-Resources, Appropriate Workload and Student Interaction (Kassab, Al-Shafei, Salem and Otoom; 2015). Motivation and self-regulated learning were measured by the Motivated Strategies for Learning Questionnaire (MSLQ). Students' marks at the end of the course were used as determinants of academic achievement. It was found that perceived quality of the face-to-face component of Blended learning has an influence on the motivation of learners. The SCEQ scale "good teaching"

directly influences intrinsic goal orientation and control of learning subtypes of motivation. Moreover, self-efficacy of learners was directly affected by appropriate course workload. E-learning scale directly influenced peer learning and critical thinking of students. Metacognitive regulation was indirectly influenced by E-learning scale. Students' examination scores were directly influenced by the resource management regulation strategies, time and study environment, and effort regulation. It was noted there were no direct correlations between SCEQ scales and students' marks. The findings obtained were believed to have significant implications while developing Blended learning for medical students.

#### **4.5 Theories and Models of Motivation for Blended Learning**

In the following section, motivational theories will be discussed. The common theories of motivation include Self-Efficacy theory, Maslow's hierarchy of needs theory, Achievement Goal theory, McGregor's Theory X and Theory Y, Locke's Goal-setting theory, Pintrich's Expectancy-value model of motivation, Alderfer's ERG Theory, Interest Development model, Adam's Equity Theory, McClelland Theory of Learned Needs, Herzberg's Motivation-Hygiene Theory, Vroom's Expectancy Theory, and attribution theory (Yukselturk and Bulut, 2007). Figure 4.5.1 illustrates the common motivational theories discovered in the literature.



**Figure 4.5.1 Motivational Theories**

While discussing all the motivational models with their corresponding inventories is beyond the scope of this research, those models with inventories believed to be applicable and useful to a Blended learning environment in higher education institutions are discussed. The following section includes motivational theories considered to be most relevant to this research. These include:

- ARCS model
- Self Determination Theory
- Lim and Kim’s Conceptual Framework of Online Learning Motivation
- Pintrich’s Expectancy-Value

#### **4.5.1 ARCS model**

ARCS is an acronym for Attention, Relevance, Confidence and Satisfaction. This model of motivation was developed by Keller (1987) to kindle and manage motivation of students to learn. The ARCS model tries to blend behavioural, cognitive and affective learning theories. The main objective of this motivational model is to utilize strategies that advance “the motivational appeal of instruction” (Ocak and Akcayir, 2013). The ARCS model shows that external conditions can influence motivation of students (Huett, Kalinowski, Moller and Huett, 2008).The ARCS model comprises of three components: a set of four dimensions of

human motivation beliefs, a set of procedures for improving motivation in teaching, and a design paradigm for motivation. The model comprises four dimensions and twelve sub-dimensions. Each dimension can be put into application in various educational contexts, and “motivational interventions can be focused on within a general category or specific subcategory of model”.

**Table 4.5.1 Keller's ARCS Model Summary**

<b>Attention</b>	<b>Relevance</b>	<b>Confidence</b>	<b>Satisfaction</b>
A1 Perceptual Arousal	R1 Goal Orientation	C1 Learning Requirements	S1 Natural Consequences
A2 Inquiry Arousal	R2 Motive Matching	C2 Success Opportunities	S2 Positive Consequences
A3 Variability	R3 Familiarity	C3 Personal Control	S3 Equity

The ARCS model has been applied to investigate motivation in a computer based system of learning and distance education environments (Lee and Boling 1996; Song and Keller, 1999; Huett et al., 2008; Ocak and Akcayir, 2013). For example, a study was conducted to improve the motivation and retention of undergraduate students studying a computer applications course in an online learning environment (Huett et al., 2008). The ARCS model was utilized in the study. The study found that there is an importance of addressing motivational and retention needs of online students (Huett et al., 2008). Relevance has been reported as a vital motivator in an e-learning process (Moshinskie, 2001; Hardré, 2008; Bonk, 2009). Another study was conducted by Huett (2006) to explore the Confidence component of the ARCS model to improve the motivation and success of 180 online undergraduate students at the Texas University. The researcher also investigated the influence of the aforementioned confidence strategies on the remaining ARCS model categories (i.e. attention, relevance and satisfaction) and overall student motivation. The two quantitative questionnaires used were the Course Interest Survey (CIS) and the Instructional Materials Motivational Survey (IMMS). They were used to measure confidence and motivation respectively. The independent variable comprised of ARCS confidence tactics. The dependent variables consisted of confidence and academic success. Moreover, scores for the remaining ARCS components (attention, relevance and satisfaction) together with overall motivation scores were computed for comparison reasons. It was found that an increase in motivation does translate into increased academic success.

The above studies were used to show the application of the ARCS model in a Blended learning environment with similar characteristics of computer and web-based learning

environments. However, researchers have noted that there is a lack of literature that shows explicitly the application of the ARCS model in a Blended learning environment (So and Brush, 2008; Wu, Tennyson and Hsia, 2010; López-Pérez, Pérez- López and Rodríguez-Ariza, 2011).

The ARCS model is among the most common models to assess motivation in traditional and technology mediated learning environments. It is suitable because it is learner-focused. Every stage or step of the ARCS model centres on the student. This ensures positive results as the student is engaged throughout the process. Moreover, the ARCS model is an active model that promotes learning participation. This model is also flexible i.e. it can be incorporated and implemented in various learning experiences and the learning environment. The ARCS model is relevant over time and is simple to use.

However, one of the shortcomings of the ARCS model is that it is difficult to assess when various students do not have the same level of motivation in a group. It does not provide easy prescriptive solutions to motivational issues. Moreover, it takes quite a long time to complete all categories of the model (Attention, Relevance, Confidence and Satisfaction). Not only that but also the ARCS model requires learning environment designers to have knowledge of all the ARCS motivational categories. It does not cater or assist in motivating students who are not interested in learning.

#### **4.5.2 Lim and Kim's Framework of Online Learning Motivation**

Lim and Kim (2003) developed a theoretical framework of online learning motivation based on Vroom's expectancy theory, Atkinson's expectancy-value theory, Wlodkowski's Time Continuum Model and Keller's ARCS model. The researchers constructed a typology of six learning motivation variables. These include Reinforcement, Course relevance, Interest, Self-Efficacy, Affect and Learner Control. Reinforcement has been considered to be vital to learning motivation (Weiner, 1994) Reinforcement involves grades, lecturer feedback, peers and technical support. Course relevance is referred to the "value of course content related to the jobs and studies of a student" (Lim and Morris, 2009). Perceived level of course relevance determines the level of motivation (Herzberg, Mausner and Snyderman 1959; Atkinson 1964; Lim and Morris, 2009). Level of interest is a motivational variable that promotes student engagement during learning. When a learning activity is intriguing and challenging, students will be motivated (Malone, 1981). Self-efficacy is another motivational variable. This variable is the degree of belief an individual has to be able to perform an

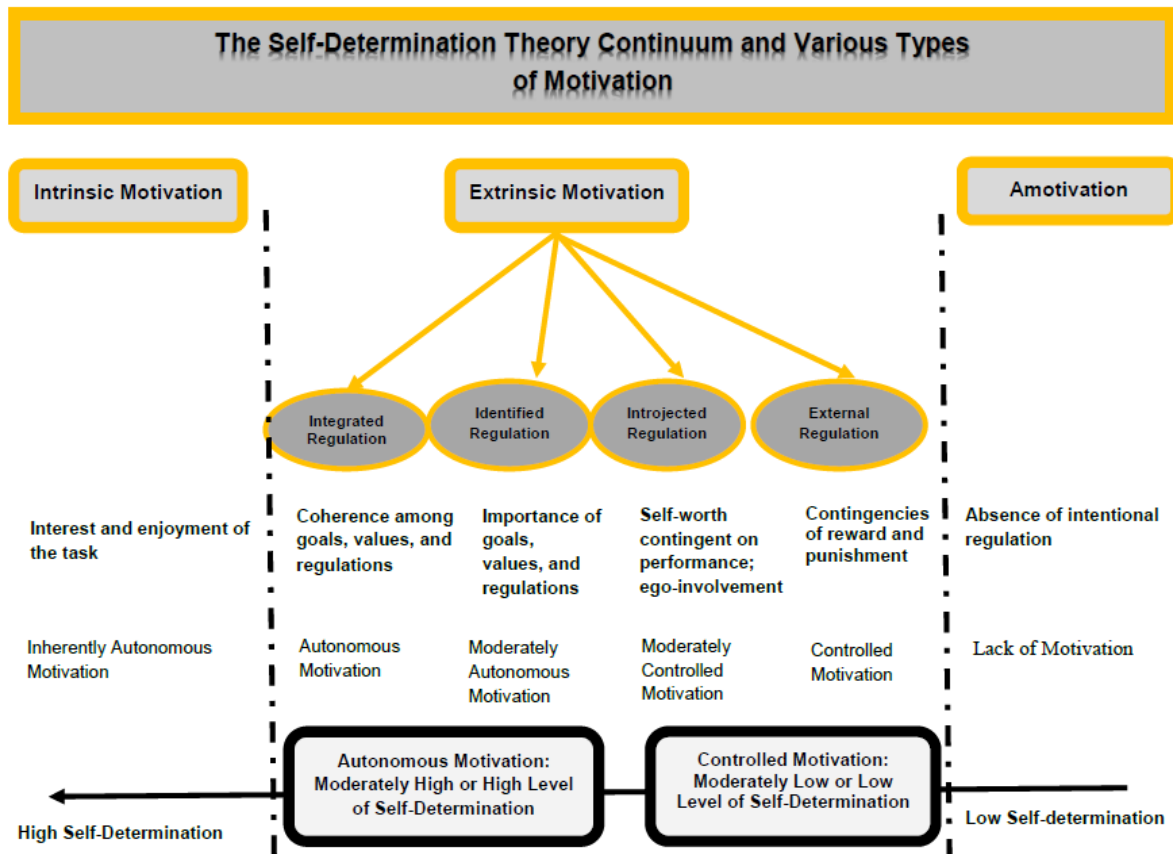
activity. Affect, the fifth motivational variable, describes the reaction, sensation and feeling during the learning experience (Lim and Morris, 2009). The last motivational variable in this framework is Learner control. This variable is important in the field of technology and instructional systems (Reigeluth, 1989; Chung and Davis, 1995).

Though the model was originally created to assess motivation in online learning environments, Lim and Kim's framework may be applied in assessing motivation in Blended learning environments. Blended learning environments share some similar characteristics with other computer and web-based learning environments such as online learning environment. A study conducted by Lim and Morris (2009) focused on investigating the influence of instructional and student variables on learning outcomes for a Blended learning course offered to undergraduate learners. The variables included demographic factors, learning styles, instructional design and learning motivation. Motivation was assessed by the Learning Motivation Questionnaire (LMQ). The questionnaire, based on Lim and Kim (2003) theoretical framework, comprises of 24 questions representing the six learning motivation variables in the framework. The sample population comprised of 60 undergraduate students. It was found that some motivational variables had a more direct (positive) influence on learning of students than some of the other instructional variables. Course relevancy was the only motivation subtype that positively correlated with an increase in student learning within a Blended learning environment. Also, affect, reinforcement, learner control and self-efficacy were positively correlated to perceived learning application of students (Lim and Morris, 2009). Perceived learning application is one of the learning outcomes categories identified by the researchers. Perceived learning, another category of learning outcomes, was significantly correlated to all the motivational types.

This framework is suitable for application in a technology mediated environment because it comprises of the advantageous or suitable motivational variables, which have been assessed in computerized and web-based learning environments. As stated above, the motivational variables are from well-known motivational theories such as Vroom's expectancy theory, Atkinson's expectancy-value theory, Wlodkowski's Time Continuum Model and Keller's ARCS model. Lim and Kim researched motivational variables that are significant to online instruction. However, the disadvantage is the paucity of studies that guarantees reliability and validity of the framework and its instrument.

### **4.5.3 Self-Determination Theory**

Self-Determination Theory, developed by Deci and Ryan (1985) is a motivational theory that concentrates on behavioural growth of individuals (Grolnick, 2015). Self-Determination Theory is one of the motivational theories that has rapidly grown and been applied in education, psychology, medicine, health-care, counselling and sports fields (Hasenfeld, 1987;Grolnick, 2015). This is a growing motivational theory especially in educational literature. This motivational theory is based on behaviour of an individual being influenced by three “Basic Psychological Human Innate Needs (BPHIN)” (Noour and Hubbard, 2014). These include the need of autonomy, the need of competence and the need of relatedness. Self-Determination Theory categorizes three types of motivation; namely, Intrinsic Motivation (IM), Extrinsic Motivation (EM), and Amotivation (AM). Intrinsic motivation is a type of motivation where one enjoys doing tasks with pleasure, interest and satisfaction (Deci, Connell and Ryan, 1989; Noour and Hubbard, 2014).This is contrary to extrinsic motivation, which refers to an individual desire to perform activities not for the sake of enjoyment but to meet a goal (Deci, Connell and Ryan, 1989; Noour and Hubbard, 2014). For instance, students are ready to learn in order to acquire better rewards such as marks. Extrinsic motivation is classified into four variables: integrated, identified, introjected, and external regulations. Amotivation is a category of motivation that refers to “an individual who has a negative outcome in performing activities, and it means anxiety, distraction, dropping out, and negative effects” (Noour and Hubbard, 2014). For example, Students who experience lack of intention to connect in a learning activity due to the absence of instructional course materials.



**Figure 4.5.2 The Self-Determination Theory (Deci and Ryan, 1985)**

Self Determination Theory has been used to investigate optimal performance and motivation of students and even of lecturers in schools, colleges and universities. This motivational theory has also been applied in technology mediated learning environments. For instance, Xie, Debacker and Ferguson (2006) found that intrinsic motivation is a greater predictor of student engagement in virtual learning. A study was conducted to investigate the correlation between the type of education (distance and traditional learning environment), motivation and performance (Réka, Kármén, Susana, Kinga, Edit, and Kinga, 2015). The case study was at Babes-Bolyai University in Romania involving 162 Psychology and Educational Sciences students. The researchers applied Self Determination Theory to investigate student motivation. It was found that extrinsic and intrinsic motivation reveal contrasting patterns in full-time students versus distance students. For instance, distance students had higher levels of intrinsic motivation compared to full-time students. A high level of extrinsic motivation was found within the full-time students. Moreover, the researchers found that intrinsic self-regulation has an effect on academic performance.

Another study explored the impact of student motivation on the advantages and challenges of Blended learning in the Egyptian Higher Education environment (Noour and Hubbard, 2014). The study also explored the perspectives of students on Blended learning according to Self-Determination Theory (SDT). A face-to-face questionnaire was utilized to collect data from three colleges in an Egyptian Higher Education Institution. The sampled subjects consisted of 616 undergraduate students. The students were drawn from branches in Cairo, Alexandria and Port Said. The questionnaires examined the Intrinsic Motivation (IM), Extrinsic Motivation (EM), Amotivation (AM), Autonomy, Competence and Relatedness of Egyptian undergraduate students with respect to Blended learning acceptance. It was found that there was a “positive and mutually casual” correlation between learners’ motivation and IM, EM, and AM. It was found that Autonomy has a significant influence on IM. The researchers expected so because it “was observed that the need for autonomy is achieved when learners have the opportunities of freedom of choice in using and interacting with VL activities” (Noour and Hubbard, 2014). The study also documented students who were intrinsically motivated by greater flexibility in access, social interaction, feedback and assessment, time management, learning style, ease of use, general awareness and learning experience in teaching and learning (Noour and Hubbard, 2014). The researchers also found Egyptian students adapting to the challenges of Blended learning. The reasons for students’ amotivation included lack of technological infrastructure, isolation, lack of social interaction, lack of technical and facilities support and social awareness.

Self-Determination theory is considered to be amongst the most suitable theories to be applied in any learning environment (ten Cate, Kusurkar and Williams, 2011; Vansteenkiste and Sheldon, 2006). One of the strengths of Self-Determination Theory is to help lecturers and facilitators understand what motivates the student. It proposes a learning space in which students can be creative and more engaged. Moreover, Self-Determination theory supports autonomy to allow students to explore new ideas. Self-Determination theory’s analysis of motivational practices is founded on “thorough analyses of basic psychological needs of human beings” (Guo, 2007). Self-Determination Theory maintains a full understanding of goal-related behaviour and psychological development and well-being. This theory promotes the prediction of social conditions that may allow performance (Ryan and Deci, 2000). However, the theory fails to provide intrinsic incentives or driving forces for a student to be personally motivated (Hagger and Chatzisarantis, 2011). The theory offers little or no guidance on how amotivation (lack of motivation) can be ameliorated.

#### **4.5.4 Pintrich's Theory of Expectancy-value**

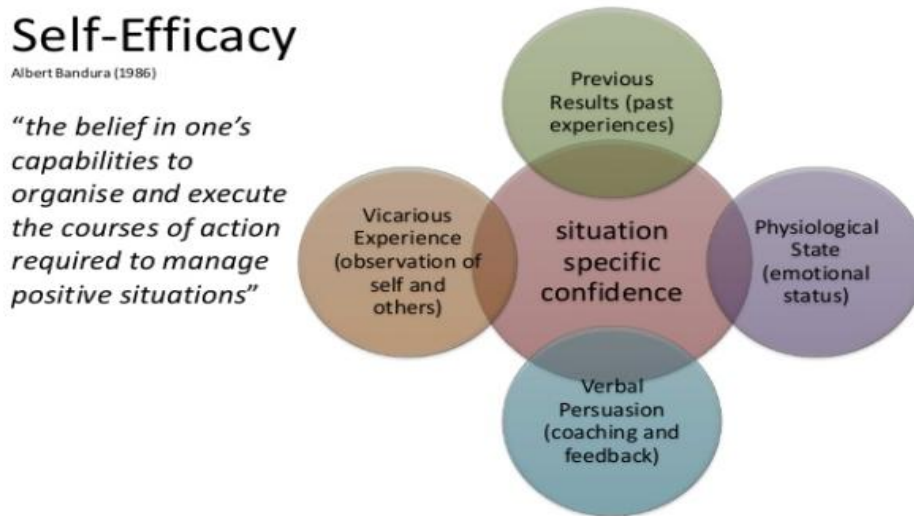
For the purpose of this research and the survey instrument adopted, Pintrich's theory of Expectancy-value is elaborated on and compared to the above mentioned theories. One of the theoretical motivational models that has been commonly used is the general expectancy-value model of motivation by (Pintrich and Groot, 1990). This theory acknowledges the role of a learner as an active participant in the learning process (Zimmerman, 2000; Pintrich, 2004; Montalvo and Torres, 2004). The motivation of the learner and his/her ability to utilize metacognitive learning tactics are the basis of the self-regulated learning theory (Kirmizi, 2014). According to this model, there are three motivational elements which relate to:

- Value components such as task value and goal orientations. These components deal with students' choice to accomplish a certain task.
- Self-efficacy and control beliefs. These components are based on the students' perspective on executing a certain task.
- Affective or emotional concept of test anxiety

The expectancy element of motivation refers to "students' beliefs that they can accomplish a task" (Pintrich and deGroot, 1990). The two subtypes of expectancy component are self-efficacy and control beliefs for learning. The definition of self-efficacy is a bit broader compared to other subtypes. Self-efficacy refers to beliefs by an individual in his or her capacity of conducting a particular duty (Bandura, 1997; Puzziferro, 2008). People are actively participative and self-responsible for their own progress in attaining objectives based on their beliefs (Bandura, 1997; Puzziferro, 2008). Self-efficacy is the individual characteristics and traits that give description and explanation of one's participation in a particular activity (Puzziferro, 2008). Puzziferro (2008) believes that personal attributes do not directly affect the behaviour of a person; they rather affect an individual to the degree or level that impacts self-efficacy. Thus, self-efficacy acts as a motivational factor that affects and impacts conduct, performance and achievement (Puzziferro, 2008).

The term "academic self-efficacy" means the perceived capacity of an individual to perform a certain task whose end result expectations provide value to educational activities (Zimmerman, 2000). Academic self-efficacy of a student has to deal with achieving certain objects throughout the various learning activities (Bandura, 1993, 1997; Zimmerman, 2000). It is believed that students with high self-efficacy are likely to use modifying self-regulatory learning strategies and study skills (Lynch and Dembo, 2004b). Thus, students' perceptions of

personal self-efficacy are correlated to self-regulatory activities that have an effect on performance. Students who recognize and are more interested in many available career opportunities are the ones with high self-efficacy (Bandura, 1997; Zimmerman, 2000). Such students rigorously prepare for opportunities and are more likely to persevere in their academic attempts and efforts (Bandura, 1997; Zimmerman, 2000). It has to be noted that efficacy deals with expectations that differ among individuals. For instance, learners with “weaker expectations” lose hope easily when faced with challenges (Bandura, 1997; Pajares and Miller, 1994). Students with strong expectations and who possess self-mastery persist and endure when faced with challenges (Bandura, 1997; Pajares and Miller, 1994).



**Figure 4.5.3 Self-Efficacy Concepts (Bandura, 1997)**

Control beliefs as a subtype of expectancy component refers to “students’ beliefs that outcomes are contingent on one’s own effort, rather than external factors such as the teacher or luck” (Duncan and McKeachie, 2005). The value element of motivation is based on the reasons learners engage in an academic task (Pintrich and deGroot, 1990). The three subtypes of value component are intrinsic goal orientation, extrinsic goal orientation and task value beliefs. Goal orientation, according to Pintrich, Smith, Garcia and McKeachie (1991), is “a learner’s general goal or orientation toward a course”. The degree to which a student participates in a learning activity to meet individual objective and satisfy personal interest is an intrinsic goal orientation. Extrinsic goal orientation indicates the degree to which an individual participates in an activity as a means to an end. Intrinsic goal orientation concentrates on learning and mastery while extrinsic goal orientation concentrates on marks

and approval from others (Duncan and McKeachie, 2005). Goal orientation is a significant variable not only in academic performance but also in completion of courses in technology-mediated learning environment (Lynch and Dembo, 2004a). Task value beliefs focus on judging how motivating, useful and significant the course content is to the student. The third element of motivation involves affective or emotional responses towards the activity (Pintrich and deGroot, 1990). Text Anxiety is the subtype of affect component which focuses on fear and distress of students over doing exams. Expectancy, value and affect are considered as the main types or scales of the motivational section of the MSLQ instrument (Pintrich, 2000; Carpenter, 2011). The constructs, subscales and measures are highlighted in the table below.

**Table 4.5.2MSLQ Motivation section measures**

<b>Expectancy</b>	<b>Value</b>	<b>Affect</b>
Control of Learning Beliefs	Intrinsic Goal Orientation	Test Anxiety
Self-Efficacy for Learning and Performance	Extrinsic Goal Orientation	
	Task Value Beliefs	

The aforementioned theory is significant to online and Blended learning. It is important for researchers, educators, lecturers and student success pioneers to understand the impact of motivation. The expectancy, value and affect constructs are quite significant in understanding and dealing with learning technology, the online course content, participation and completion of courses (Wang and Newlin, 2002; Ronsisvalle and Watkins, 2005). Bandura (1993) states that “students’ beliefs in their efficacy to regulate their own learning and to master academic activities determine their aspirations, level of motivation, and academic accomplishments”. This claim has been proven by research conducted by (Osborn, 2001) on distance learning students. Osborn (2001) found that students with high confidence and computer literacy skills were more likely to succeed and persist in such a learning environment. This proves motivation constructs (expectancy, value and affect) can predict academic success, performance and persistence.

## **4.6 The Choice of Motivated Strategies for Learning Questionnaire (MSLQ) survey instrument**

The Motivated Strategies for Learning Questionnaire (MSLQ), based on Pintrich's theory of expectancy value, has been selected as the preferred theory of motivation for this study. The theory suggests that motivation is not a trait of students, rather motivation is "dynamic and contextually bound" (Duncan and McKeachie, 2005). The expectancy-value theory is directly related to educational, vocational and other success related decisions a student makes (Neuville, Frenay and Bourgeois, 2007). Also, Pintrich's expectancy-value theory concentrates mostly on the learning and performance of students (which is the focus of this research) on academic tasks or in a learning environment (in our case, Blended learning environment) (Dweck and Leggett, 1988; Pintrich, 2000, Neuville, Frenay and Bourgeois, 2007). The theory focuses extensively on academic learning together with student success prediction, course enrollment choice, persistence, career aspirations and task engagement.

The MSLQ is a commonly used instrument to examine motivation levels of students together with their learning strategies. The MSLQ uses self-regulation and motivation constructs. This instrument is established from beliefs and perspectives that learners should be utilizing a high level of thinking rather than simply memorizing in order to attain knowledge (Carpenter, 2011). It is believed that learners should be educated and trained on how to think critically and utilize resources effectively (Carpenter, 2011). Thus there is a necessity and demand for learners to improve and refine their critical thinking skills and other learning tactics (McKeachie, Pintrich and Lin, 1985; Carpenter, 2011). In addition, as stated in the previous chapter, MSLQ is also useful for investigating motivation for tertiary students in a Blended learning environment because:

- It was designed to measure learning strategies and motivation of tertiary undergraduate students as they pursue specific course(s)
- The reliability and validity of the instrument has been established in terms of its purpose to identify and investigate learning strategies
- It was developed to investigate motivation in educational learning environments
- The instrument is freely available online and easy to use and modify
- It can be easily administered
- It is easy to score and interpret

The MSLQ has been employed to assist our understanding on the motivational constructs, examine the basic features of the multiple goals and the existing personal disparities in self-regulated learning strategies (Harackiewicz, Barron, Tauer, Carter and Elliot, 2000; Polleys, 2002; Allen et al., 2002; McKeachie, Lin and Middleton, 2004; Duncan and McKeachie, 2005). The instrument has been frequently used to examine and to explore various characteristics of teaching and learning including:

- Pedagogical tactics such as lecture–discussion approaches (Barise, 2000; Wilke, 2003), coaching (Hamman, Berthelot, Saia and Crowley, 2000), verbal praise (Hancock, Bray and Nason, 2002), constructivist and objectivist instruction, reciprocal peer tutoring and communal peer tutoring(Hargis, 2001; Rittschof and Griffin, 2001);
- Course design, such as different levels of instructional control, supportive learning and teaching space objectives( Karabenick, 2004; Eom, 2009)
- Interceding processes, especially for gifted and talented students together with developmental students (Ray, 2003); and
- Technology mediated learning space, such as different categories of multimedia designs, online, internet-based or computer-based education (McManus, 2000; Hargis, 2001; Hancock, Bray and Nason, 2002), and video conferencing (Seibert, 2002).

In research conducted by Duncan and McKeachie (2005), they pinpointed more than fifty exhaustive and profound research studies covering various fields that used the MSLQ instrument. Most researches prefer using this questionnaire as it can be employed as the entire instrument or just the subsections (Carpenter, 2011). If the researcher wants to use the MSLQ in its entirety, then all eighty one items will be used. The researcher can use the motivation section (thirty one items or selected questions from the main six can be chosen) if his or her study focuses just on motivation(Pintrich, Smith, Garcia and McKeachie, 1991; Carpenter, 2011).There is also a learning strategies sub-section consisting 9 learning strategies scales with fifty items(Pintrich, Smith, Garcia and McKeachie, 1991; Carpenter, 2011). It is recommended that the MSLQ should be utilized to determine the relationship between motivation and academic performance during class time/session (Pintrich, Smith, Garcia and McKeachie, 1991; Pintrich, 1995; Duncan and McKeachie, 2005; Artino, 2005; Carpenter, 2011).

Various studies have employed the MSLQ and a lot of data has been gathered. A study was conducted by Lin and McKeachie (1999) to examine both types of motivation (intrinsic and extrinsic) among a group of students at the University of Michigan. The students selected were pursuing a Learning to Learn course at the higher education institution. Lin and McKeachie (1999) did not use all fifteen subscales of the MSLQ. For the purpose of the study, two subtypes of goal orientation were used to measure intrinsic and extrinsic motivation. From that's study, the researchers noted that a moderate or adequate level of extrinsic motivation was more suitable as a predictor of student success. Moreover, the researchers came to the conclusion that learners who performed very well were the ones with strong intrinsic motivation together with adequate extrinsic motivation. In the context of Lin and McKeachie (1999), extrinsic motivation relates to observable and noticeable outcomes of the learning e.g. course marks and students competitiveness. Lin and McKeachie (1999) concluded that performing students were motivated by achieving high marks and at the same time highly competitive comparing their own results with those of their peers. Similarly, motivation was found to be the influential predictor of distance learners' persistence in a California community college (Menager-Beeley, 2001). There was a positive relationship between learners who persist in class and their task values. As explained in this chapter, Section 4.5.4, task value is an element of motivation that involves affective or emotional responses towards the learning activity. The study revealed a negative relationship between students who dropped out after five weeks and task values.

There are, however, studies showing that motivation of students has no significance to distance learning students' performance. A study at the Maryland community college observed that motivation was statistically insignificant to predict completion of courses (Muse, 2003). The MSLQ was used in a study in order to investigate self-efficacy, intrinsic and extrinsic goal orientation (motivation) to predict students' academic performance. The study involved almost five hundred learners registered at a community college for undergraduate courses. There was no statistically significance for three predictors found via simultaneous and stepwise multiple regressions. In another study conducted at the Alabama community college, there was a statistically negative relationship between intrinsic motivation and academic course marks (Bates, 2006). The target population involved 112 learners that registered for microcomputer application subjects that were conveyed in either a

face to face or in an online environment. Hence, these studies suggest that intrinsic motivation is a negatively statistically important factor for predicting student success.

Research was conducted using the MSLQ instrument in order to investigate the academic performance of nursing students (Yost, 2004). This study was a replication of another research study conducted by Pintrich and DeGroot (1990) that also included various graduate nursing students. The main presumption of the research was that student's motivation has a direct effect on student's application of self-regulated learning approaches. Yost (2004) observed there was a significant correlation between motivational sub-elements (intrinsic and task values) and three metacognitive sub-elements (elaboration, critical thinking and metacognitive self-regulation) within the motivation section. Elaboration and self-regulation were appreciably correlated to extrinsic value (Yost, 2004). A statistically crucial correlation between intrinsic value and peer learning within resource management approaches (Yost, 2003). Students with high levels of motivation appreciate and value learning from their fellow learners (Yost, 2004). The researcher also observed within the boundaries of expectancy construct that "Self-efficacy for learning and performance was significantly correlated with elaboration, critical thinking and metacognitive self-regulation with metacognitive self-regulation being the highest" Yost (2003). Moreover, a high level of correlation was noted between rehearsal and critical thinking learning approaches when test anxiety was included. Test anxiety was statistically positively correlated to peer-learning and help seeking when resource management construct was evaluated. Thus, the study concluded that learners with high level of motivation were the most probable ones to use self-regulated learning approaches. For instance, a learner who is concerned with performing in their tests usually seek support from their fellow students.

The following table summarises the key features (strengths and weaknesses) of the motivation models as discussed above.

Key Issues raised in the various

Motivation Theories

	ARCS Model	Self-Determination Theory	Lim and Kim's Model of Online Learning Motivation	Pintrich's Expectancy Value
Focus on the academic method of learning and teaching	X	X	X	✓
Two main types of motivation i.e. Intrinsic and Extrinsic	✓	X	X	✓
Motivational variables to predict success i.e. Self-efficacy, Control Beliefs and Task Value	✓	✓	X	✓
Learner – centred focus	✓	X	X	✓
Set of common variables found in prior theories	X	✓	X	X
The additional motivation type i.e. Amotivation type of motivation (an individual who has a negative outcome in performing activities)	X	✓	X	X
Motivation directly related to educational, vocational and other success related decisions a student makes	X	✓	X	X
Environmental aspect of learning method	X	✓	X	✓
Model utilized in technology enhanced learning environments especially e-learning	✓	✓	✓	✓

<b>Connection between motivation and learning</b>	X	X	✓	✓
<b>Motivation as a goal-directed process that is instigated and sustained</b>	✓	X	X	✓
<b>Measurement of academic success</b>	X	✓	✓	✓
<b>Simplicity and Easy to use the instrument</b>	✓	X	X	✓
<b>Reliability and Validity of the instrument</b>	✓	X	X	✓

**Table 4.6.1 Key issues vs. Motivational theories and Models**

Key:

✓ – Identified in the theories

X – Not identified in the theories

## **4.7 Conclusion**

Advancement, development and improvement of motivation are among the important objectives of a technology mediated environment offered by a higher education institution. Since Blended learning is grounded on self-discipline and learning at your own pace, understanding the effect of motivation and its attributes on student performance is quite essential. Moreover, the literature suggests that motivation of a student does have an impact on his or her understanding, keenness, performance and gratification of learning in an online and Blended learning environment.

There are various theories and models of motivation. A few selected motivation models with their instruments that are applicable and useful in a Blended learning environment in higher education institution were discussed. These included Keller's ARCS model, Wlodkowski's Time Continuum Model, Ryan and Deci's Self-Determination Theory and Pintrich's Expectancy-Value Theory. Pintrich's Expectancy-Value Theory was elaborated on extensively and compared to other fore-mentioned mentioned models. The Motivated Strategies for Learning Questionnaire, survey instrument based on the Pintrich and de Groot's theory of self-regulated learning and Pintrich's Expectancy Value theory, has been chosen as it is useful to investigate motivation for tertiary students in a Blended learning environment. This is because the theory concentrates mostly on the learning and performance of students (which is the focus of this research) on academic tasks or in a learning environment (in our case, Blended learning environment). Moreover, the instrument has been used in numerous studies to investigate the motivational traits of students. Also, the instrument is freely available online and easy to use and modify. The following chapter discusses in details the methodological procedures that the researcher used in this research.

# 5 RESEARCH METHODOLOGY

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## 5.1 Introduction

The previous chapters highlighted the paucity of research on the predictors of student performance in a Blended learning environment in a Tanzanian context. It also highlighted the critical need to understand the predictors of student performance together with perceptions of students about such factors.

This chapter discusses in detail the paradigm, research design, research strategies, sampling procedures and sample size, data collection methods, instruments and analysis methods, data quality control and ethical considerations underpinning this study. Finally, in order to validate trustworthiness, credibility, reliability and validity of the research, triangulation was employed. Its justification of being employed is thoroughly elaborated.



**Figure 5.1.1**The Research process Onion adapted from Saunders, Lewis and Thornhill (2000)

## 5.2 Research Paradigm

A paradigm is defined as a group of beliefs that dictates how a study should be conducted, how findings should be interpreted and directs scientists in a certain discipline on what should be researched (Bryman, 2004). Moreover, paradigm is defined as “a loose collection of logically related assumptions, concepts, or propositions that orient thinking and research” (Bogdan and Biklen, 1998). Paradigms are “opposing worldviews or belief systems that are a reflection of and guide the decisions that researchers make” (Tashakkori and Teddlie, 1998). In literature, at least four various meanings of paradigm have been identified (Greene, 2007; Creswell and Clark, 2007; Morgan, 2007). The meanings are “world view”; “epistemological stance”; “shared beliefs among a community of researchers” and “model examples of research”. The definition of paradigm as an epistemological stance has been the most frequently used in the social science area (Morgan, 2007). The choice of paradigm influences the motivation, intent and expectations for the research (Bogdan and Biklen, 1998; Mackenzie and Knipe, 2006; Mertens, 2014).

This research is conducted using the pragmatism paradigm. Pragmatism is an emerging area, since 1990s, where various disciplines have shown great interest in pragmatism which has become popular in applied social research areas (Creswell 2003; Tashakkori and Teddlie 2003; and Schumacher and McMillan, 2006; Greene 2007; Creswell and Clark 2007; Mertens, 2014). According to Creswell (2003), Pragmatism in general is an approach to research that mixes quantitative and qualitative data collection and analysis methods within the whole research process. The central focus of the pragmatism paradigm is the research problem and thus all important approaches will be applied to understand the phenomena (Creswell, 2003; Mackenzie and Knipe, 2006). Pragmatic pioneers and researchers connect “the choice of approach directly to the purpose of and the nature of the research questions posed” (Creswell, 2003). The researchers focus on the “what” and “how” of the research phenomena (Creswell, 2003, Mackenzie and Knipe, 2006). Pragmatism is considered as a philosophical cohort that fits together the insights that both qualitative and quantitative methods provide (Johnson and Onwuegbuzie, 2004)

The Pragmatism paradigm is chosen as the suitable paradigm for this study as it provides the appropriate environment for the researcher to observe, examine and comprehend well how students perform in a Blended type of learning environment. Moreover, the researcher could collect and record learning strategies, motivational traits and perceptions of students through

questionnaires and observation methods in a social-cultural context where learning takes place.

Pragmatism is oriented “toward solving practical problems in the real world rather than on assumptions about the nature of knowledge” (Feilzer, 2010; Ralph Hall, 2012). The main aim of the Pragmatism paradigm is to infer strengths and reduce weaknesses of both quantitative and qualitative methods in a single research study (Johnson and Onwuegbuzie, 2004). Pragmatism permits researchers to address the research questions that are not answered wholly by quantitative or qualitative methods (Armitage, 2007). This is supported by Darlington and Scott (2002) who noted “that in reality a great number of decisions of whether to take a quantitative or qualitative research approach are based not on philosophical commitment but on the belief of a design and methodology being best suited to purpose.” Thus, Pragmatism offers a way to select several methods that can help the researcher answer the important research questions of the phenomena investigated (Johnson and Onwuegbuzie, 2004).

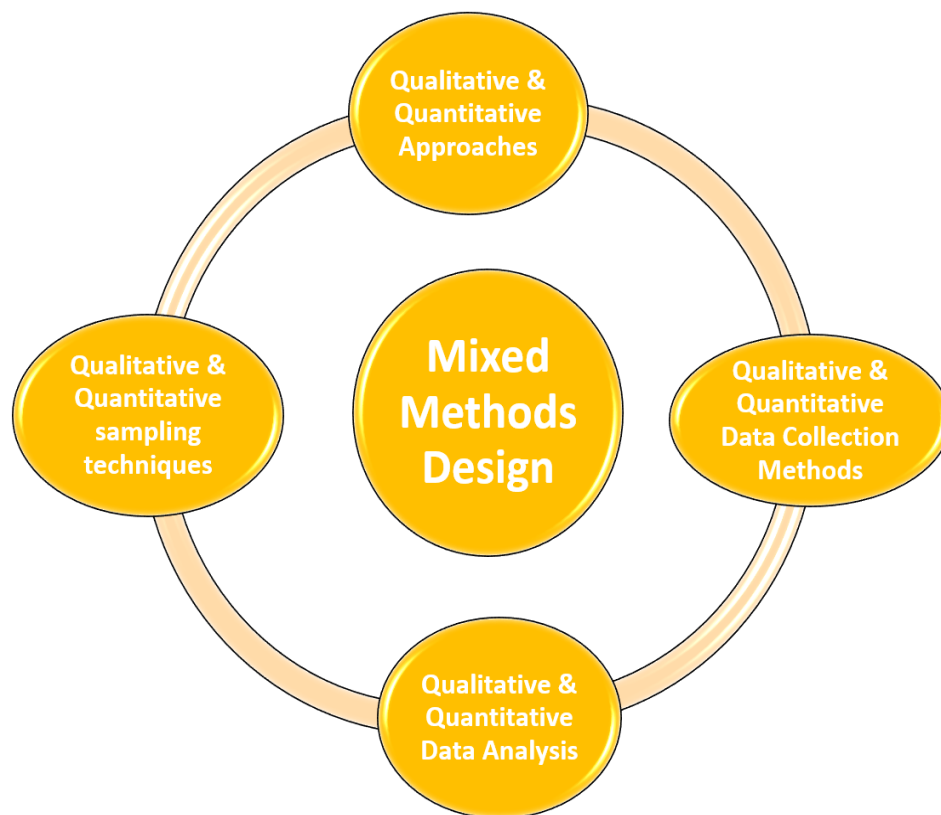
### **5.3 Research Design**

According to Mouton (1996, p.175), the research design gives assistance to “plan, structure and the execution of the research to maximise the validity of the findings”. Yin (2003, p.19) also defines research design as “an action plan for getting from *here* to *there*, where ‘here’ may be defined as the initial set of questions to be answered and ‘there’ is some set of (conclusions) answers”. Thus, research design can be described as the research master plan that guides the researcher on how to conduct the study. The research design for this study is a mixed method where both qualitative and quantitative methods are employed.

According to Johnson and Onwuegbuzie (2004), mixed research design is “the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study.” Mixed research design is an approach that uses both qualitative and quantitative approaches in a research study that collect and analyse data (Creswell, 2003; Creswell and Clark, 2007; Teddlie and Tashakkori, 2003; Mertens 2014). Mixed methods research design indicates “mixing” of quantitative and qualitative data during the data collection and analysis phases of a research study (Creswell, 2003; Armitage, 2007). Similar to the Pragmatism paradigm, the mixed method research design aims to infer strengths and reduce weaknesses of both quantitative and qualitative methods in a single research study (Johnson and Onwuegbuzie, 2004).

According to Teddlie and Tashakkori(2003), Creswell (2003) and Creswell and Clark (2007) stated the following as distinctive characteristics of mixed methods:

- The use of Quantitative and Qualitative methods within a single research study
- A research design that explicitly indicates the ordering and precedence that is allocated to qualitative and quantitative aspects of data collection and analysis
- An emphasis on the way triangulation will be utilized
- Pragmatism as the philosophical stance of the research
- A clear account of the way quantitative and qualitative facets relate to one another in the research



**Figure 5.3.1 Mixed Research Design**

The fundamental principle of mixed research design states that “researchers should collect multiple data using different strategies, approaches, and methods in such a way that the resulting mixture or combination is likely to result in complementary strengths and non-overlapping weaknesses”(Johnson and Turner, 2003;Johnson and Onwuegbuzie, 2004). It has to be understood that the most vital aspect to both pragmatism and mixed methods research design is research questions(Johnson and Onwuegbuzie, 2004). The philosophicalsystem and

research methods should “follow” research questions in a manner such that the most useful answers are obtained (Johnson and Onwuegbuzie, 2004).

Several researchers have put forward several arguments in justifying using mixed method research design. Such reasons motivated the researcher to use such an approach. Rocco, Bliss, Gallagher, and Pérez-Prado, (2003) and Bryman (2004) stated the following as valid reasons to adopt a mixed methods approach:

- The logic of triangulation
- Improving the accuracy of data obtained
- The capacity to fill in the gaps left when implementing one dominant approach
- Producing a more complete picture through amalgamating information from the various data sources
- The application of quantitative research to assist qualitative research and vice versa
- Understanding the perspective of both the researcher and researched
- To address the generality problem
- As support in sampling the population e.g. the participants in the questionnaire survey can be screened for focus group discussion or interviews
- To study different features or characteristics of a phenomena.

To address the fore-mentioned objectives, the researcher developed a mixed method research strategy that backs up the pragmatic single case study nature of the research. A quantitative design (i.e. survey/questionnaire) IS implemented to answer the first, second and third sub-questions. The qualitative design (i.e. written open-ended questionnaire) IS implemented to answer the fourth sub-question that deals with the perceptions of students. The researcher believes that this research design will provide detailed information sufficient to address the research sub-questions of this study:

- v. What is the correlation between learning strategies and motivation to student performance in a Blended learning environment?
- vi. To what extent are Learning strategies and Motivation significant predictors of student performance in a Blended learning environment?
- vii. What is the influence of student demographic variables (age, gender, and digital literacy) on learning strategies, motivation and student performance in a Blended learning environment?

viii. What are the perceptions of students about the factors that affect their academic performance in a Blended learning environment?

The figure below depicts the research process.



**Figure 5.3.2 Research Process Steps**

### **5.3.1 Research Methodological strategy**

The research methodological strategy is a plan or approach of enquiry, which shifts from the philosophical stance to research design and data collection (Armitage, 2007). It is usually proposed that when you take a certain approach to a paradigm, it implies that you take a particular approach to research (Armitage, 2007).

This study is about investigating the influence of learning strategies, demographic factors and motivation on student performance in a Blended learning environment. It also focuses on understanding the perceptions of students regarding factors that affect their academic performance in a Blended learning environment. Thus, due to the fore-mentioned processes,

mixed (both quantitative and qualitative methods) research design can better explain and interpret the effect of the variables and perceptions of students. This approach enables the researcher to give a detailed elaboration of the research phenomena. It also gives the researcher the opportunity to document the student' perceptions and the relationships among the variables i.e. learning strategies, motivation, demographic factors and student performance).It has to be noted that there are several challenges in using this kind of research design. Mackenzie and Knipe (2006) list three main challenges:

- Lack of researcher expertise and knowledge in qualitative and quantitative methods
- The utilisation of quite extensive data collection and resources to carry out a mixed method study
- The possibility of not mixing both qualitative and quantitative methods well to address the research questions

The research design includes both a qualitative design (in-depth single case study) and quantitative design (survey). A case study is defined as “empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly defined” (Yin, 2003). Gillham (2000, p.1) also defines a case study as an investigation or exploration that attempts to address the identified research questions which seek a “range of different evidences from the case settings”. Thus, a case study is one of several research strategies which aim to understand people in a social context as a community or case. The case maybe an event, program or activity that takes place in a bounded or confined place and time. A case study investigates a bounded system in detail, utilising various data sources found in the case setting (Mackenzie and Knipe, 2006). All the collected data are sorted in order to reach the best possible answers to address the research questions. Hence, a researcher gains critical understanding as to why a certain event occurred as it did (Merriam, 1998). Also the researcher might advise what important aspects should be extensively researched in the future (Merriam, 1998). This kind of research strategy is quite beneficial in conditions where the contextual or circumstantial situation of the event/program studied is important. Moreover, it is useful in situations where the researcher has no control over the events as they occur.

Given the nature of the paradigm adopted for this study together with the nature of the research questions, a single case study is considered to be the most suitable strategy to be employed. This is because the strategy provides an organized method of collecting data,

analysing information and reporting the outcomes effectively. Hence, the researcher together with the targeted audience understands a particular problem in depth. Unlike other research strategies, case studies do not employ specific data collection and analysis methods (Merriam, 1995, p.145). Thus, a variety of data collection and analysis techniques are chosen in this study to provide a more cogent picture of a particular situation. Moreover, a single case study methodology presents various participant perspectives and utilization of several data collection techniques. More specifically, the single case study examined learning strategies and motivation as predictors of students' success in a Blended learning environment within higher education institutions in Tanzania using the University of Dar es Salaam as a case study. Mertens (2014) insists that the single case study's effectiveness is more appealing in the education and psychology sectors, especially when investigating an explicit instructional initiative or strategy. The fundamental viewpoint of a single case study is not to prove but improve (Stufflebeam, Madaus and Kellaghan, 2000).

Quantitative research methods make use of questionnaires, experiments and surveys to collect data (Hittleman and Simon, 1997). In the case of this research, questionnaires/surveys are used. Surveys are quantitative strategies that employ questionnaires with the aim of generalizing a sample to population (Babbie, 1990; Creswell, 2003). The data is tabulated in the form of numbers which allow the data to be described by the use of data statistical analysis. The survey method is pursued to determine correlations that are common across the entities, thus providing generalized information about the phenomena of research. The researcher measured variables (learning strategies and motivation) on a sample of participants. The researcher then further expressed the relationship between the variables using statistical techniques. The main challenge of using a questionnaire is to ask the right questions in the appropriate way in order to get the correct information

## CASE STUDY

	DIMENSIONS	SCORE
01	Controllability	Red arrow
02	Deductability	Red arrow
03	Repeatability	Red arrow
04	Generalisability	Red arrow
05	Discoverability (explorability)	Green arrow
06	Representability (potential model complexity)	Green arrow
NB Green arrow = High; Blue= Medium; Red= Low		

## SURVEY

	DIMENSIONS	SCORE
01	Controllability	Blue arrow
02	Deductability	Blue arrow
03	Repeatability	Blue arrow
04	Generalisability	Green arrow
05	Discoverability (explorability)	Blue arrow
06	Representability (potential model complexity)	Blue arrow
NB Green arrow = High; Blue= Medium; Red= Low		

Figure 5.3.3 Relative Strengths of Case Study and Survey (Gable, 2009)

### 5.3.2 Data that will be collected

The data collected will focus on answering the research sub-questions of this research:

- i. What is the correlation between learning strategies and motivation to student performance in a Blended learning environment?
- ii. To what extent are Learning strategies and Motivation significant predictors of student performance in a Blended learning environment?
- iii. What is the influence of student demographic variables (age, gender, and digital literacy) on learning strategies, motivation and student performance in a Blended learning environment?
- iv. What are the perceptions of students about the factors that affect their academic performance in a Blended learning environment?

### 5.3.3 Sources of Data and participants

#### 5.3.3.1 Study Area

Tanzania is the main focus of this research. The researcher chose Tanzania because the researcher is a Tanzanian who is knowledgeable about the utilization of Blended learning in a Tanzanian context. The study will be conducted at the University of Dar-es-Salaam due to the fact that the university actively pursues Blended learning in several of its modules.

The University of Dar-es-Salaam has established various learning centres that offer courses outside of the campus including the Centre for Virtual Learning (CVL) (Mtebe and Raphael,

2013; Nihuka, 2014). The CVL is an Open Distance and E-learning (ODeL) Centre at the university that coordinates the delivery of E-learning and distance academic programmes (Nihuka, 2014). These programmes include a Postgraduate Diploma in Education (PGDE), a Postgraduate Diploma in Engineering Management (PGDEM) and a Masters degree in Engineering Management (MEM) (Mtebe and Raphael, 2013). Moreover, the CVL assists in developing and delivering blended learning programmes (Mtebe and Raphael, 2013). In fact, the CVL provides pedagogical support for lecturers to effectively facilitate Blended learning programmes (Mtebe and Raphael, 2013) and also administers a Moodle based LMS system and other software for Blended learning courses (Mtebe and Raphael, 2013).

### 5.3.3.2 Population

The participants in this study are undergraduate students who are enrolled for degrees or courses that are being delivered via Blended learning at the university. As indicated in table 5.3.1 below, the selected degrees on offer are at the College of Humanities, College of Natural and Applied Science, College of Social Science and College of Agriculture and Fisheries. College of Humanities and College of Natural and Applied Science.

**Table 5.3.1** The subjects of the case study

<b>College</b>	<b>Degree</b>
College of Social Science (CoSS)	<ul style="list-style-type: none"> <li>• BA in Statistics</li> <li>• BA in Library Information Studies</li> </ul>
College of Natural and Applied Science (CoNAS)	<ul style="list-style-type: none"> <li>• MSc in Mathematics</li> </ul>
College of Information and Communication Technologies (COICT)	<ul style="list-style-type: none"> <li>• BSc in Computer Science</li> <li>• BSc in Computer Engineering and Information Technology</li> <li>• MSc in Computer Science</li> </ul>
University of Dar es Salaam Business School (UDBS)	<ul style="list-style-type: none"> <li>• Bachelor of Commerce in Accounting</li> <li>• Bachelor of Commerce in Finance</li> </ul>

### 5.3.3.3 Data sources

The primary sources of data in this research include available documented body of facts related to the Blended learning environment at University of Dar-es-Salaam, the semi-structured interviews with undergraduate students enrolled at the university and the technical experts at Centre of Virtual Learning (CVL).

### 5.3.3.4 Sampling procedures

It is important to select the appropriate population that will provide meaningful data to the research questions. The researcher must therefore choose the right sample in order to answer the research questions well. The study employed probability sampling i.e. stratified and simple random sampling. Stratified sampling is a relevant sampling technique that formulates and frames “proportionate and meaningful” collation between the population (Teddlie and Yu, 2007). A stratified random sample is drawn from a list of learners in Blended learning based on their disciplines and gender. Random sampling is a well-known sampling technique. This sampling technique “occurs when each sampling unit in a clearly defined population has an equal chance of being included in the sample”(Teddlie and Yu, 2007). Both random and stratified sampling are efficient because such samples naturally reveal the characteristics of the whole population. The stratified random samples are believed to be closer to the population mean and thus appropriate for this research (Teddlie and Yu, 2007; Pickard, 2013).

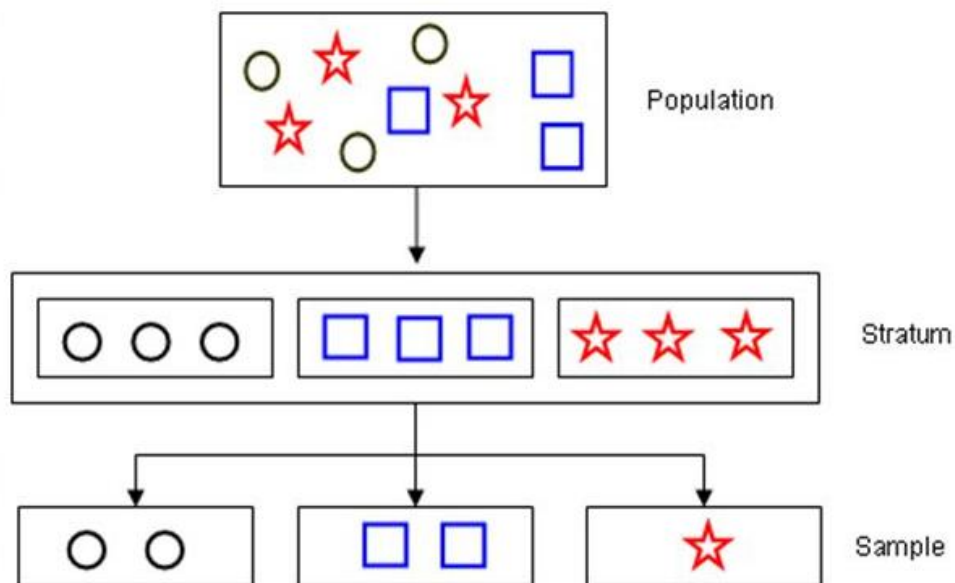


Figure 5.3.4 Stratified Random Sampling

The sample size for this research was scientifically determined by

$$n = \frac{N \times Z^2}{4(N - 1)e^2 + Z^2}$$

Where:

n= Sample size

N= Population size

Z= Standard score for (1- $\alpha$ )% confidence level

e= Margin error

Z (standard score) that is used for this research is 1.282 and sampling error is 0.10. The standard score and sampling error was chosen because of the target sample population. The number of sample population expected is above 150 students.

### **5.3.4 Data collection methods and instruments**

The main methods employed for collecting data are questionnaires and observation. Primary data is collected by means of questionnaire survey instruments. The questionnaire is constructed from the Motivated Strategies for Learning Questionnaire. The questionnaire applied in this study is conveniently designed in order to precisely collect data on characteristics, attitudes and experiences of the targeted population. In addition, a written open-ended survey on views and perceptions of learners and their Blended learning experience as well as factors influencing student success within such learning environment were combined with the MSLQ.

#### **5.3.4.1 Questionnaires**

Non-electronic surveys are used in this study. It has to be noted that a pilot study was conducted to test the paper based questionnaires. It was necessary as the researcher restructured the questions better and trained research assistants to disseminate well the questionnaires. This specific type of questionnaire is implemented due to the distinctive traits of the learning environment, study population and the data collection's effectiveness and efficiency. The survey comprises of close-ended questions designed to gather the relationship of the variables studied (motivation, learning strategies, demographic variables and student performance). Thus, the questions are articulated and particularized based on the research

sub-questions of this study. The survey starts with non-complex questions then progress to difficult themes in order to bolster up participants' interest and stimulate progressively answering of questions.

An introductory/cover letter is attached to the survey. This document explains the objective and significance of the study. It also requests consent to partake in the research. The researcher provides her contact information in case of any query. The phrasing of the questions is formulated according to the variables investigated in this study. The major benefits of implementing such a survey are efficiency and opportunity for subjects to respond all together at the same time. The challenges of utilizing such a survey are the openness of a less unprompted response and the researcher's judgment for sampling procedures.

The vital features of the questionnaire design that produce consistent answers are reliability and validity(Pintrich, Smith, García and McKeachie, 1993). Providing the participants with the same exact questions guarantees reliability of the questionnaire(Pintrich, Smith, García and McKeachie, 1993). Validity, a difficult concept to establish, is guaranteed when the measured presumptions drawn from the instrument are exclusively correct. The following are procedures in support of designing a rigorous questionnaire:

- a. Accurate and correct terminologies while paraphrasing the questions should be used
- b. The questions should be stated by using simple words
- c. It is advised to avoid making unwarranted assumptions about the participants
- d. Conditional information should come before the question
- e. Binary or double-barreled questions should not be utilized
- f. A suitable answers format should be chosen
- g. It is advisable to pre-test the questionnaire

The motivated Strategies for Learning Questionnaire (MSLQ) is used to obtain data that will address the first, second and third research sub-questions.

The Motivated Strategies for Learning Questionnaire (MSLQ) was developed due to the fact that educators and researchers continuously need an instrument that examines learning strategies and motivation to assist and monitor the learning progress of students (Duncan and McKeachie, 2005). This instrument is also built on the fact that students are "active processor of information whose beliefs and cognitions mediated important instructional input and task characteristics" (Duncan and McKeachie, 2005). The assumptions of the theoretical model that founded the MSLQ instrument states that motivation and learning strategies are not

students' characteristics. Rather, Motivation is “dynamic and contextually bound” and learning strategies can be studied and be managed by students (Duncan and McKeachie, 2005).

The MSLQ instrument is commonly used when compared to some other instruments (Learning and Study Strategies Inventories) because it is developed to focus on course level (Duncan and McKeachie, 2005). Course level is the most suitable analytical level, found between the most general learning situations level and the unreasonable narrowed specific learning level in a certain course. As elaborated in the literature review, Motivated Strategies for Learning Questionnaire (MSLQ) has been employed in various studies. It has been used by students pursuing certain courses for self-evaluation objectives of their strengths and weaknesses. Moreover, lecturers have used MSLQ to get students' feedback and assist making decisions on improving teaching (Duncan and McKeachie, 2005). MSLQ has been used very often to focus on the use of motivation and learning strategies throughout various content areas and target populations (Duncan and McKeachie, 2005). These include:

- Undergraduate statistics
- Undergraduate chemistry
- High school social studies
- Middle school physical education
- Black American undergraduates
- Female undergraduate engineering majors
- Nursing students
- Quite talented, accomplished and capable high school learners

In a nutshell, the MSLQ instrument has proven to be quite reliable, constructive and valuable and it can be adopted and particularized by students, educators and researchers (Duncan and McKeachie, 2005). That said, the MSLQ has not been used extensively in research investigating postgraduate students.

The Motivated Strategies for Learning Questionnaire comprises of two main sections i.e. motivation and learning strategies. Within the motivation section, there are thirty one items that examine and explore learners' objectives, students' beliefs in how they do well and their nervousness and concerns about course work marks (Duncan and McKeachie, 2005). The learning strategy segment comprises of thirty one items that assess use of various metacognitive learning strategies by students. Moreover, the learning strategies segment

consists of nineteen items that focus on various resource management methods of students (Duncan and McKeachie, 2005). The final MSLQ product that is used comprises of eighty one items. These items are “scored” on a” seven-point Likert-type scale”. The scale ranges from 1 i.e. *not all true of me* to 7 (*very true of me*). Scores for a certain scale are obtained by calculating the mean of all the items that form that scale. For example, the goal orientation scale comprises of four items. Hence, the goal orientation mark of a student is calculated by adding and obtaining the mean of all four items. As highlighted in the literature review, the MSLQ instrument can be in its entirety or only some components of the instrument may be selected (Duncan and McKeachie, 2005). The scales are developed in a way that they can be particularized and be employed to address the needs of the researcher (Duncan and McKeachie, 2005). For this study, both the motivational scales and learning strategy sections are utilized.

**Table 5.3.2 Motivated Strategies for Learning Questionnaire**

Coefficient Alphas and Items Comprising the 15 MSLQ Scales		
<i>Scale</i>	<i>Items Comprising the Scale</i>	<i>α</i>
Motivation scales		
Intrinsic Goal Orientation	1, 16, 22, 24	.74
Extrinsic Goal Orientation	7, 11, 13, 30	.62
Task Value	4, 10, 17, 23, 26, 27	.90
Control of Learning Beliefs	2, 9, 18, 25	.68
Self-Efficacy for Learning and Performance	5, 6, 12, 15, 20, 21, 29, 31	.93
Test Anxiety	3, 8, 14, 19, 28	.80
Learning strategies scales		
Rehearsal	39, 46, 59, 72	.69
Elaboration	53, 62, 64, 67, 69, 81	.75
Organization	32, 42, 49, 63	.64
Critical Thinking	38, 47, 51, 66, 71	.80
Metacognitive Self-Regulation	33r, 36, 41, 44, 54, 55, 56, 57r, 61, 76, 78, 79	.79
Time and Study Environment Management	35, 43, 52r, 65, 70, 73, 77r, 80r	.76
Effort Regulation	37r, 48, 60r, 74	.69
Peer Learning	34, 45, 50	.76
Help Seeking	40r, 58, 68, 75	.52

The scales in the motivation section are founded on three constructs i.e. expectancy, value and affect (Duncan and McKeachie, 2005). Cognitive, metacognitive and resource management strategies are types of scales comprising the learning strategies section.

It is estimated that to administer and answer the questionnaire would take 10 to 15 minutes. The students are reassured that there is no right or wrong answer. The surveys are organized into three categories. The first section of the questionnaire comprises of

demographic questions. The second section comprises of particularised questions from Motivated Strategies for Learning Questionnaire. In addition to the sections mentioned, the researcher poses open-ended questions to survey students' views on the Blended learning environment together with the factors that they perceive to influence their performance. Data is gathered by means of a written questionnaire. The additional questions are analysed qualitatively. This is because the questions ask respondents to give suggestions and comments resulting in descriptive information.

#### **5.3.4.2 Observation**

The researcher as an observer will conduct observational methods of data collection by simply observing how students learn and interact within a Blended learning environment. This method is considered quite advantageous. By observing students using various technological instructional methods (discussion forums, active learning quiz, online chat), the researcher could see how students learned in terms of interpretation of the course and where they don't understand and or fail to use the resources. The researcher is aware that the learners might change their learning behaviour when they know they are being watched. This may be solved by frequent observation visits that result in the students feeling at ease. The researcher will record all observations in a set of field notes. According to Merriam (1988), field notes comprises of "descriptions of the setting, the people, activities, direct quotations or summaries of what people said and observer comments".

### **5.3.5 Data analysis methods**

A large amount of data, both qualitative and quantitative, is anticipated to be accumulated from the data collection methods described in the above section. The accumulated data will be in number of forms including open-ended questionnaire transcripts, tables of numbers and observer field notes.

Quantitative data analysis techniques utilized in this research include descriptive statistics and inferential statistics. Inferential statistics such as the Chi-Square test and correlation, regressions statistical techniques will be used. Qualitative data collected will be analysed using content analysis. The justification for each research method used in this research will be discussed in this chapter.

#### **5.3.5.1 Quantitative Data**

The quantitative analysis methods are applied in this research in order to ascertain and establish whether motivation and learning strategies are predictors of student success in a

Blended learning environment. In this research, the researcher is attempting to obtain conclusions about student population by drawing a small sample of students.

The statistical package used for these outputs will be the SPSS package. The above mentioned statistical methods measure variables on a sample of students and show the relationships between variables (motivation, learning strategies and student performance). Descriptive data (frequency and percentage) displays demographic and background information of the sample population. Correlation analysis techniques are used to examine the relationship between the predictors and student success. This will be done by correlating the participants' answers to the subscales found in the questionnaire instrument - Motivational Strategies for Learning.

**Table 5.3.3 Statistical Analysis methods for research sub-problems**

<b>Research Problems</b>	<b>Variables involved</b>	<b>Statistical methods</b>
What is the correlation between learning strategies and motivation to student performance in a Blended learning environment?	<ul style="list-style-type: none"> <li>• Learning strategies</li> <li>• Motivation</li> <li>• Student performance</li> </ul>	Correlation measure
To what extent are Learning strategies and Motivation significant predictors of student performance in a Blended learning environment?	<ul style="list-style-type: none"> <li>• Learning strategies</li> <li>• Motivation</li> <li>• Student performance</li> </ul>	Chi-square measure
What is the influence of student demographic variables (age, gender, and digital literacy) on learning strategies, motivation and student performance in a Blended learning environment?	<ul style="list-style-type: none"> <li>• Age</li> <li>• Gender</li> <li>• Digital literacy</li> <li>• Learning strategies</li> <li>• Motivation</li> <li>• Student performance</li> </ul>	Chi-square measure  Correlation measure

### **5.3.5.2 Qualitative Data**

Qualitative data analysis is defined by Bogdan and Biklen (1998) as “working with the data, organising it, breaking it into manageable units, coding it, synthesising it, and searching for patterns”. The main objective of content analysis is to determine and discern the themes, patterns, meanings and concepts obtained from the collected data. In a single case study like this research, the collection and analysis of qualitative data is employed hand in hand in a repetitious cycle. Both collection and analysis techniques inform each other. Open-ended questions will be presented and students will respond by writing.

The researcher will code the data obtained from the open-ended questions obtained from surveying students’ perceptions on Blended learning. Coding data is a technique that identifies code and categorizes the primary outlines of the data (Patton, 1990). Codes, in content analysis, are defined as “tags or labels for assigning units of meaning to the descriptive or inferential information compiled during the study” (Miles and Huberman, 1994). This technique organizes the chunk of information for analysis. As a result, this analysis technique organizes the data that addresses the fourth research sub-question. *Folio Views* database management software will be utilized for coding the data.

### **5.3.6 Research trustworthiness, bias and limitations**

It is vital to integrate and combine the right strategies that guarantee the quality of the study and its findings (Patton, 1990). The researcher will incorporate rigorous methods by employing systematic data collection methods (MSLQ survey instrument, observation and written open-ended survey) and conclude with systematic data analysis techniques (descriptive and inferential statistics). The incorporation and utilization of various strategies will be used to triangulate the data. Triangulation is the traditional criteria used for this research case study to ensure credibility of the whole study in terms of objectivity, reliability and validity.

#### **5.3.6.1 Triangulation**

According to Yin (2003), triangulation is an approach that uses multiple informers, data sources and methods (i.e. MSLQ survey instrument and open-ended questions as employed in this research). Patton(1990) defines triangulation as the utilization of end results that are obtained when one data set substantiates another. Triangulation in social research comprises various measures and methods of observed phenomena that get over bias and validity problems (Blaikie, 2000; Yin, 2003). Moreover, this approach helps to collect various

perspectives so as to grasp an absolute understanding of the phenomena (Yin, 2003; Creswell, 2003). By doing so, conviction and credence of the research findings become enhanced and augmented (Painter and Rigsby, 2005). The triangulation approach compares data to validate, authenticate and ratify the research findings (Patton, 1990; Creswell, 2003). This approach helps the single researcher to uncover biases while studying phenomena.

Triangulation is often mentioned as a main method of verifying research data (Sayre, 2001; Patton, 1990). Nevertheless, there are discussions whether triangulation really offers the satisfactory process of validating research findings. Various perspectives have led to the conclusion that triangulation's significance is in providing better comprehension. Triangulation attempts to provide a bigger picture of the phenomena and not "necessarily a more certain one" (Richie and Lewis, 2003, p 44).

According to Patton (1990), the forms of triangulation include investigator/analyst triangulation, theory triangulation, data triangulation and methods triangulation. Specifically, methods triangulation will be the approach used to evaluate and verify the research findings of this research study. With methods triangulation, various data collection and analysis methods, both qualitative and quantitative, are utilised. The MSLQ survey instrument, written open-ended survey questions and observations (with field notes) are conducted the undergraduate students. The results from the observation and written open-ended survey are triangulated with the results from MSLQ. Hence, the triangulation processes is done at various levels or stages in order to concentrate on the final research findings.

#### **5.3.6.2 Limitations**

One of the limiting factors is the sampling of the study population. The sample size chosen may have not represented accurately all students at the university and higher education in general. This is due to time constraints. Thus the researcher cannot guarantee generalization. Moreover, the research will not investigate all predictors that have influence on students' performance in a Blended learning environment. The study will focus on motivation and learning strategies. The other predictors are left for future research. The study will only interview students as the key part of Blended learning. The researcher will not interview other stakeholders i.e. lecturers, administration and technical experts. The universities in Tanzania are spread throughout the country. The institution that was chosen as a case study was University of Dar-es-Salaam. The University of Dar-es-Salaam actively pursues

Blended learning in several of its modules offered by the institution, as indicated. This university was chosen because of accessibility, time and monetary constraints.

## 5.4 Ethical considerations

In this research case study, the researcher will interact with students, thus crossing their threshold of private space, weaknesses and individual learning capabilities in order to gather data. This is a concern that Silverman (2000, p.201) highlights for researcher investigating a single case study. The researcher's investigation and interaction raises several ethical issues that needed to be addressed. The researcher understands that she will have the responsibility and duty to respect the prerequisites, rights, desire and cultural values of the participants as advised by Creswell (2003). There are issues that any researcher must consider before, during and after the research has been carried (Miles and Huberman, 1994). Such issues include:

- a) Informed consent (Do participants have the full knowledge of what is involved?)
- b) Harm and Risk (Can the research harm the subjects of the research?)
- c) Privacy, anonymity and confidentiality (Will the research meddle in the personal space of participants?)
- d) Intervention and advocacy (What should the researcher do if participants show inappropriate behaviour?)
- e) Cultural Sensitivity (Did the researcher consider the values and cultural aspects when interviewing the research subjects?)

The researcher will take the appropriate steps in order to follow ethical standards in maintaining the privacy, rights, dignity, confidentiality, rights and obscurity of participants. The following activities were carried out in order to address the ethical issues:

- a) Informed consent  
The participants were informed of the purpose of the research and the data collection methods. The researcher explained to the participants what their exact roles are in this research. In addition, the participants gave their informed consent in written format as in *Appendix E*
- b) Harm and risk  
The researcher guaranteed participants that they will not be put in any situation that may be harmful because of their participation.

- c) **Honesty and trust**  
Honesty, trust by the subjects of the research and trustworthiness of the data will be ensured by the researcher complying with all the ethical standards that are set for the research.
- d) **Privacy, confidentiality and anonymity**  
Participants will be assured that confidentiality and anonymity are adhered to by making sure that any identifying threats are removed before official proclamation of the knowledge. This will include the anonymising of names as per the approved ethics application.
- e) **Voluntary participation**  
Research subjects clearly understand that the research is for academic and that their participation is entirely voluntary

## **5.5 Conclusion**

This chapter discussed the research paradigm employed for this research. Moreover, it elaborated and justified the research design, strategy and methodologies implemented; including data collection tools, data analysis techniques, participants and ethical concerns. The research design for this study is mixed method where both qualitative and quantitative methods are employed. Quality and credibility of the research is ensured through triangulation. The next chapter will illustrate the results of the empirical exploration and analysis on the data collected.

# 6 PRESENTATION OF RESEARCH FINDINGS

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## 6.1 Introduction

This chapter discusses the findings and analysis of the data obtained from the questionnaires administered to the students at the University of Dar-es-Salaam. The profile of the study sample is presented in section 6.3. Section 6.4 presents the discussion on the correlation between learning strategies and motivation to students' performance in a Blended learning environment. Section 6.5 elaborates on learning strategies and motivation as significant predictors of students' performance in the Blended learning environment. The influence of students' demographic variables on learning strategies, motivation and students' performance in a Blended learning environment is elaborated on in section 6.6. Section 6.7 presents the discussion of the students' perceptions on the Blended learning environment

## 6.2 Questionnaire submission rates

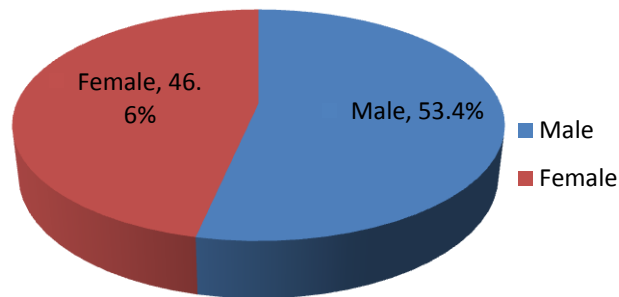
The researcher followed a manual process for administering questionnaires. The respondents were handed paper-based questionnaires to fill in. A total of 269 questionnaires were administered. The number of questionnaires received back was 234. Thus the sample consisted of 234 students, with a response rate of 90%. The presentation of results is in accordance with the themes that answer the main research question, research sub-questions and the relevant questions generated to address the main research question. The main research question of the study was to investigate the influence of learning strategies and motivation on students' performance in a Blended learning environment.

## 6.3 Profile of sample

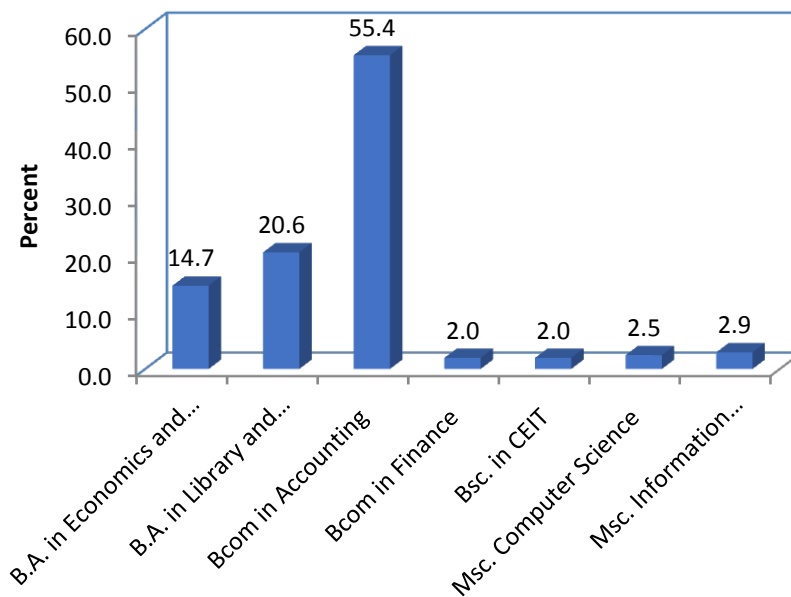
The profile characteristics of the research sample comprised of the students registration number, title of the degree, age, year of study, gender and marital status. The registration number of students was used only to attain the final course grades of students to match their MSLQ scores with their academic performance.

The sample of this research consisted of 53.4 % males and 46.6 % females. Undergraduate students comprised 91% of the sampled students, while postgraduate students comprised the remaining 9%. The degrees that students were pursuing included B.A. in Economics and

Statistics (14.7%), B.A. in Library and Information Studies (20.6%), B.Com in Accounting (55.4%), B.Com in Finance (2.0%), BSc in Computer Engineering and Information Technology (2.0%), M.Sc. Education (0.4%), M.Sc. in Computer Science (2.5%), M.Sc. Information Management Systems (2.9%), M.Sc. Mathematics (1.3%), M.Sc. Mathematical Modelling (1.3%) and non-identified (1.7%), which represent a wide range of degrees taught in the university.

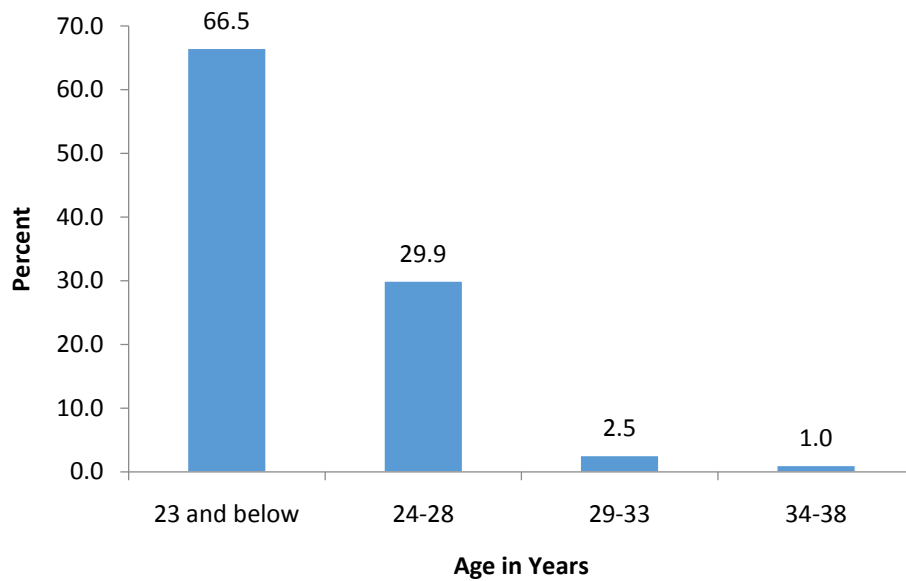


**Figure 6.3.1 Gender Distribution**



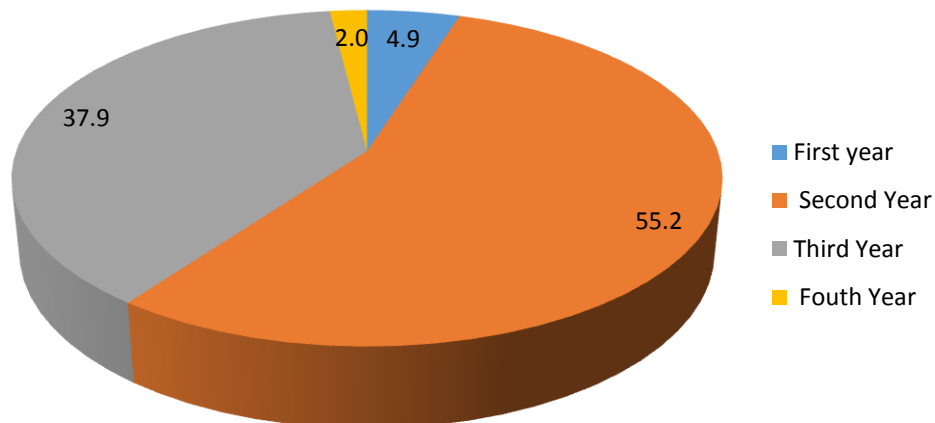
**Figure 6.3.2 Number of students according to the degree category**

Respondents were asked to also indicate their age. Most of the participants were between 19 and 23 years (66.5%). The second highest participant group were in the 24 to 28 age group (29.9%)



**Figure 6.3.3 Age Distribution**

The participants were also asked to indicate their year of academic study at the university. The year of study was categorised as First year, Second year, Third year and Fourth year. Figure 6.3.4 indicates that a significant number of the participants were second year students (55.2%), followed by third year students (37.9) %.



**Figure 6.3.4 Year of Study Distribution**

## **6.4 Correlation between learning strategies and motivation to students' performance in BL**

The first sub-question of this study was, "What is the correlation between learning strategies and motivation to students' performance in a Blended learning environment?" The

relationship was determined through the Pearson Correlation coefficient. The results are shown in the table 6.4.1.

**Table 6.4.1 Pearson Correlation Analysis of Learning Strategies and Motivation to Students' Performance in Blended Learning (Source: Filled Data, 2017)**

		Performance		
		Pearson Correlation	Sig	N
<b>Motivation</b>	Motivation (Overall)	.085	.234	199
	Intrinsic Goals Orientation	.093	.191	199
	Extrinsic Goals Orientation	-.012	.867	199
	Self-Efficacy	.113	.111	199
<b>Learning Strategies</b>	Learning strategies (Overall)	-.059	.405	200
	Rehearsal	.035	.621	200
	Elaboration	-.063	.378	200
	Organization	-.041	.562	200
	Critical Thinking	-.087	.221	199
	Metacognitive Self-Regulation	-.117	.100	200
	Time and Study Environment	-.085	.231	200
	Effort Regulation	-.015	.837	200
	Peer Learning	.139	<b>.049</b>	200
	Help Seeking	.016	.817	200

As indicated in Table 6.4.1, the relationship between motivation and student performance was a very weak relationship. Also the relationship between learning strategies and student performance is a weak positive relationship. It was interesting to note though, that the correlation between Peer learning (Learning strategies category) and student performance was statistically significant and a positive linear relationship.

## **6.5 Learning strategies and Motivation significant predictors of student performance in BL**

The second sub-question was, “To what extent are Learning strategies and Motivation significant predictors of student performance in a Blended learning environment?” The significance of the predictors was assessed through regression analysis. The results are shown below.

**Table 6.5.1 Regression Analysis of Learning Strategies and Motivation Predictors of Student Performance (Source: Filled Data, 2017)**

Dependent Variable: <b>Performance</b>		<b>Coef.(B)</b>	<b>t</b>	<b>Sig.</b>	<b>R<sup>2</sup></b>
<b>Model 1</b>	Motivation	5.153	4.108	<b>.000</b>	0.949
	Learning Strategies	7.117	5.299	<b>.000</b>	
<b>Model 2</b>	Intrinsic Goal Orientation	4.797	4.223	<b>.000</b>	.943
	Extrinsic Goal Orientation	.913	.859	.391	
	Self-Efficacy	6.015	4.798	<b>.000</b>	
<b>Model 3</b>	Rehearsal	2.871	2.346	<b>.020</b>	0.949
	Elaboration	2.020	1.403	.162	
	Organization	.358	.224	.823	
	Critical Thinking	-1.043	-.766	.444	
	Metacognitive Self-Regulation	.348	.180	.858	
	Time and Study Environment	.959	.556	.579	
	Effort Regulation	3.103	3.401	<b>.001</b>	
	Peer Learning	2.499	2.131	<b>.034</b>	
Help Seeking	1.559	1.235	.218		

As seen from Table 6.5.1 Model 1, overall, Motivation and Learning strategies have a statistically significant effect on student performance at 5 percent level of significance. The  $R^2$  indicates that 94.9% of the students' performance is explained by motivation and learning strategies. Thus, motivation and learning strategies are significant predictors of student performance in a Blended learning environment. In terms of the motivation categories, Intrinsic Goal Orientation and Self-efficacy have a statistically significant effect on student performance, and  $R^2=0.943$  showing that 94.3% of the performance is explained by motivation categories (as seen in Model 2). The learning strategy sub factors; Rehearsal, Effort Regulation and Peer Learning have a significant effect on student performance, and  $R^2= 0.949$  showing that 94.9% of the performance explained by learning strategies categories (as seen in Model 3). All of these significant predictors have a positive linear relationship with performance since their coefficients (B) are all positive. This implies that as the scores of these predictors rise, performances increases and vice versa.

## 6.6 Influence of student demographic variables on learning strategies, motivation and student performance

The third sub-question was, “What is the influence of students’ demographic variables (age and gender) on learning strategies, motivation and students’ performance in a Blended learning environment?” Regression analysis was employed to test the effect of age and gender on performance, learning strategies and motivation. Since gender was a categorical variable (1. Male, 2. Female), then males were treated as a reference category.

**Table 6.6.1 Results of Regression Analysis of Demographic Variables on Performance, Learning Strategies and Motivation**

Results of Regression Analysis of Age and Gender on Performance					
Performance	Coef.(B)	Std. Err.	t	sig	R <sup>2</sup>
Age	2.58503	0.04692	55.09	<b>0.000</b>	0.9677
2. Gender	3.69554	1.59122	2.32	<b>0.021</b>	
Results of Regression Analysis of Age and Gender on Motivation					
Motivation	Coef.(B)	Std. Err.	t	sig	R <sup>2</sup>
Age	0.2129	0.00498	42.79	<b>0.000</b>	0.9468
2. Gender	0.21823	0.16865	1.29	0.197	
Results of Regression Analysis of Age and Gender on Learning Strategies					
Learning strategies	Coef.(B)	Std. Err.	t	sig	R <sup>2</sup>
Age	0.19763	0.00409	48.32	<b>0.000</b>	0.9588
2. Gender	0.33881	0.13815	2.45	<b>0.015</b>	

The results in Table 6.6.1 above show that age and gender significantly influence performance as their significance values are less than 0.05. The coefficient of age (0.19763) shows there is a positive linear relationship between age and performance; thus an increase in one year of age results in an increase of 2.58% in their performance. The coefficients of gender (3.69554) indicate that females have a relatively higher performance when compared to males.

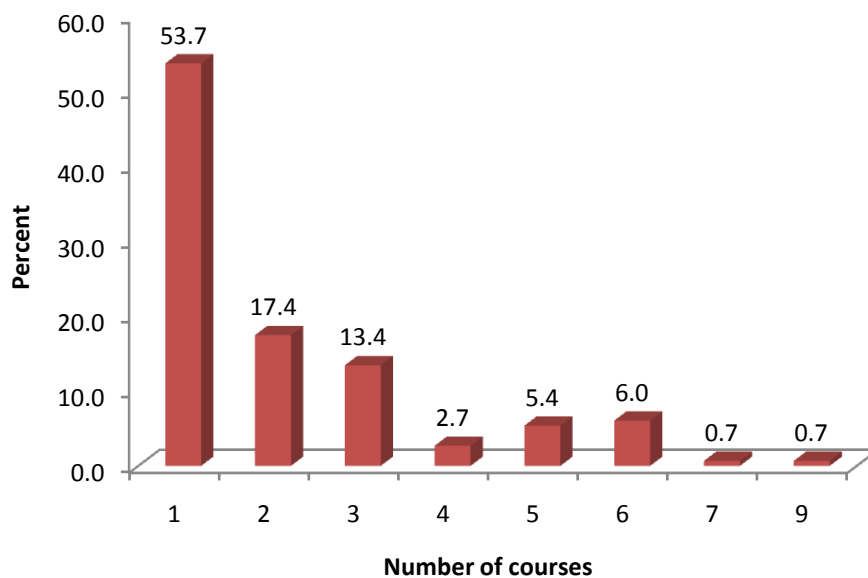
For motivation, only age was found to be statistically significant at 5%. The coefficient also shows that age has a positive influence on motivation (motivation increases with increasing age). For the learning strategies, both age and gender were found to be statistically significant. Likewise, age was found to have a positive influence on learning strategies. The coefficient of gender is positive showing that scores in learning strategies increases with the increasing proportion of females.

## 6.7 Students' Perceptions of a Blended Learning Environment

One of the sub-questions of this research was to understand the perceptions of students about the Blended learning environment. This included getting views of students on the factors that affect their academic performance.

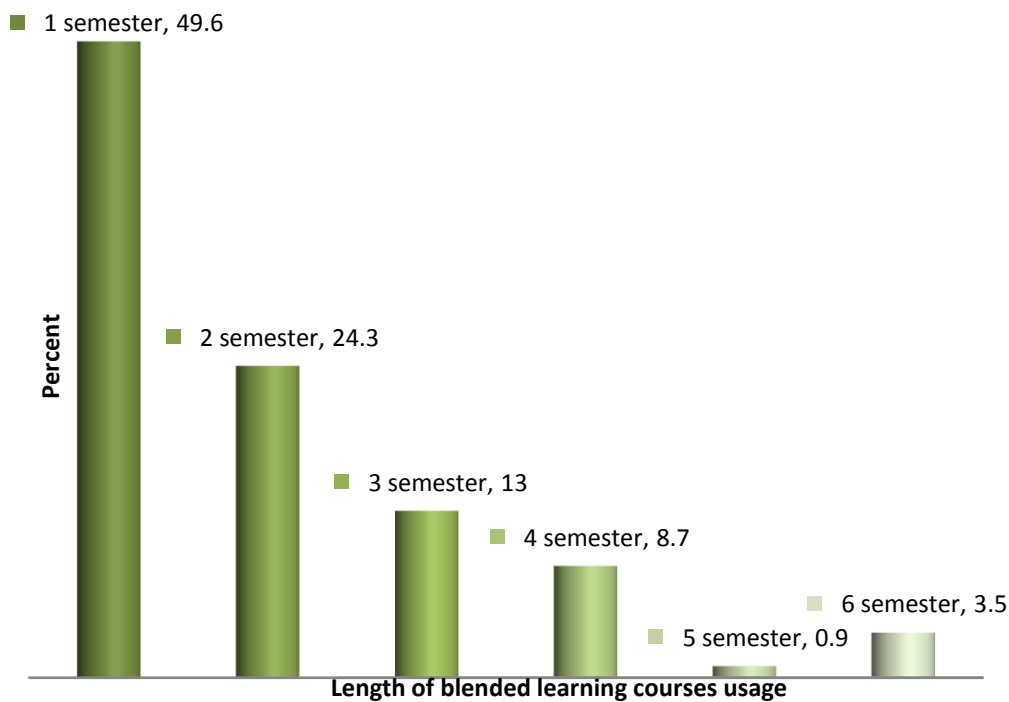
### 6.7.1 Usage of Blended learning environment in terms of number of courses and frequency

Respondents were asked how many courses they had pursued in a Blended learning environment. Figure 6.7.1 depicts the number of courses that have been taught in the Blended learning environment. The majority of students (53.7%) stated that they had pursued one course only. As seen, the number is quite low compared to the average number of courses students pursue in an academic year. This indicates that the Blended learning environment has not been extensively adopted in the University of Dar-es-Salaam.



**Figure 6.7.1** Courses taught in a Blended learning environment

Moreover, participants were asked how long they had used the Blended learning environment. Figure 6.7.2 shows the highest frequency of length of usage is one semester (49.6%), followed by two semesters (24.3%).



**Figure 6.7.2 Frequency of Blended Learning Courses Usage**

### 6.7.2 Modules of Blended learning environment tools used

The other question that participants were asked was, “What technical features of the Blended learning system (UDSM Learning Management System) would you say you used most effectively?” The responses are tabulated below. As seen from the table 6.7.1, opportunities for self-assessment questions and feedback, as well as the email platform and discussion forums were the modules that students reported using the most.

**Table 6.7.1 Responses to "what modules of Blended learning system have been using effectively?"**

Modules of the Blended learning system used most effectively			
	Responses		Percent of Cases
	N	Percent	
Opportunities for self-assessment questions and feedback	106	26.3%	47.5%
Email platform	103	25.6%	46.2%
Discussion Forums	98	24.3%	43.9%
Chat	54	13.4%	24.2%
Calendar	42	10.4%	18.8%
<b>TOTAL</b>	<b>403</b>	<b>100.0%</b>	<b>180.7%</b>

### 6.7.3 Academic tasks for which students use Blended learning

Respondents reported using the Blended learning environment at the UDSM for mostly accessing lecture slides and tutorials (89.3%). It was also noted that respondents utilized the Blended learning environment to access announcements from lecturers and share materials.

**Table 6.7.2 Responses to "In what academic tasks do you use the Blended learning environment for?"**

<b>Frequencies for Academic tasks in Blended Learning Environment</b>			
	Responses		Percent of Cases
	N	Percent	
<b>Access lecture slides and tutorials</b>	208	36.0%	89.3%
<b>Share materials</b>	117	20.2%	50.2%
<b>Access announcements from lecturers</b>	107	18.5%	45.9%
<b>Academic discussions</b>	64	11.1%	27.5%
<b>Catch up on missed lectures</b>	50	8.7%	21.5%
<b>Ask lecturer questions</b>	32	5.5%	13.7%
<b>TOTAL</b>	578	100.0%	248.1%

### 6.7.4 Advantages of Blended Learning Environment

Table 6.7.3 illustrates the frequencies of student responses to the question that was asked on the advantages of using Blended learning as a learning method.

**Table 6.7.3 Responses to "what are the advantages of using Blended learning as a learning method?"**

<b>Frequencies for Advantages of Blended Learning Environment</b>			
	Responses		Percent of Cases
	N	Percent	
<b>Flexibility of being able to complete assignments at any place/any time</b>	150	15.8%	64.7%
<b>Increase the flexibility of learning provision</b>	144	15.1%	62.1%
<b>Reduced costs</b>	135	14.2%	58.2%
<b>Help stimulate better understanding</b>	98	10.3%	42.2%
<b>Increases student motivation</b>	94	9.9%	40.5%
<b>Meets students' learning goals and needs</b>	94	9.9%	40.5%
<b>Promotes completion of courses and degree</b>	90	9.5%	38.8%
<b>Convenience of not having to come to campus as often</b>	70	7.4%	30.2%

<b>Make students more employable</b>	45	4.7%	19.4%
<b>Stops students from dropping courses</b>	31	3.3%	13.4%
<b>TOTAL</b>	951	100.0%	409.9%

As indicated in table 6.7.3, the majority of participants suggest that the flexibility of being able to complete assignments at any place/time is a major advantage of using the Blended learning environment. Other main advantages included increasing the flexibility of learning provision, reduced costs, helping to stimulate better understanding, motivating students and meeting students' learning goals and needs. Other advantages, not tabulated, that students found in using the Blended learning environment include simplicity of accessing learning materials, saving time, easy and convenient use, frequent use of e-resources and an increase in awareness of using technology. Though the percentage value of some of the benefits is low, they are still considered relevant.

### 6.7.5 Challenges students face in a Blended learning environment

With regard to the question that investigates student challenges in using the Blended learning environment, table 6.7.4 provides a summary of these responses. About 69.7% of the respondents suggested that they faced challenges in using the Blended learning environment.

Table 6.7.4 Responses to "what are the challenges you face in using Blended learning environment to succeed?"

<b>Frequencies for Challenges you face in using a Blended learning environment</b>			
	<b>Responses</b>		<b>Percent of Cases</b>
	<b>N</b>	<b>Percent</b>	
<b>Slow internet connections</b>	135	22.0%	76.7%
<b>Lack of advanced ICT skills</b>	92	15.0%	52.3%
<b>Poor ICT infrastructure to support Blended learning environment</b>	90	14.6%	51.1%
<b>Lack of knowledge and skills in using the Blended learning environment</b>	72	11.7%	40.9%
<b>Unreliable power supply</b>	70	11.4%	39.8%
<b>Lack of expertise on the use of tools and technologies in Blended learning</b>	48	7.8%	27.3%
<b>Lack of time for exploring in detail the Blended learning tools</b>	47	7.6%	26.7%
<b>Lack of support from instructors</b>	43	7.0%	24.4%

<b>Social deprivation of learners</b>	18	2.9%	10.2%
<b>TOTAL</b>	615	100.0%	349.4%

From the table above, the majority of respondents suggest that a slow internet connection was one of the main challenges they faced. Other major obstacles include a lack of advanced ICT skills, poor ICT infrastructure to support the Blended learning environment, lack of knowledge and skills in using the Blended environment, and unreliable power supply. Other challenges that students noted, not tabulated, include limited academic information on the environment, inadequate number of computers and a lack of motivation.

### **6.7.6 Factors that motivated students to succeed in the blending learning environment**

The researcher asked respondents what factors motivated them to succeed in a Blended learning course. Prior to that question, the participants were asked whether the use of the Blended learning environment motivated them to learn and succeed in their degree; and 198 respondents (84.6%) acknowledged that using the environment did help them to succeed. The responses are tabulated below.

**Table 6.7.5** Responses to "what other factors do you think makes you motivated to succeed in a Blended learning course?"

<b>Frequencies of factors that motivate you to succeed in a Blended learning course</b>			
	Responses		Percent of Cases
	N	Percent	
<b>Familiarity with the technologies</b>	163	16.4%	72.8%
<b>Habit of sharing information and content with others</b>	128	12.9%	57.1%
<b>Attending training course on the Blended learning environment</b>	122	12.3%	54.5%
<b>Attitude towards the Blended learning environment</b>	119	12.0%	53.1%
<b>Presence of facilities and supporting infrastructure</b>	115	11.6%	51.3%
<b>Support from the university management</b>	99	10.0%	44.2%
<b>Getting technical support on the use of the Blended learning environment</b>	97	9.8%	43.3%
<b>Expertise on the use of the Blended learning environment</b>	93	9.4%	41.5%
<b>Being rewarded for using the Blended learning environment</b>	55	5.5%	24.6%
<b>TOTAL</b>	991	100.0%	442.4%

Familiarity with the technology was seen as a major motivating factor for students succeeding in the environment. Other motivating factors the majority of respondents found were the habits of sharing information and content with others, attending training courses on

the Blended learning environment, their attitude towards the environment, and presence of facilities and supporting infrastructure.

### 6.7.7 Most useful learning strategies in the Blended learning environment

In addition, the researcher inquired, what learning strategies were most useful for learning in a Blended learning environment. The responses are tabulated below.

Table 6.7.6 Responses to "what strategies do you think are most useful for learning in a Blended learning environment?"

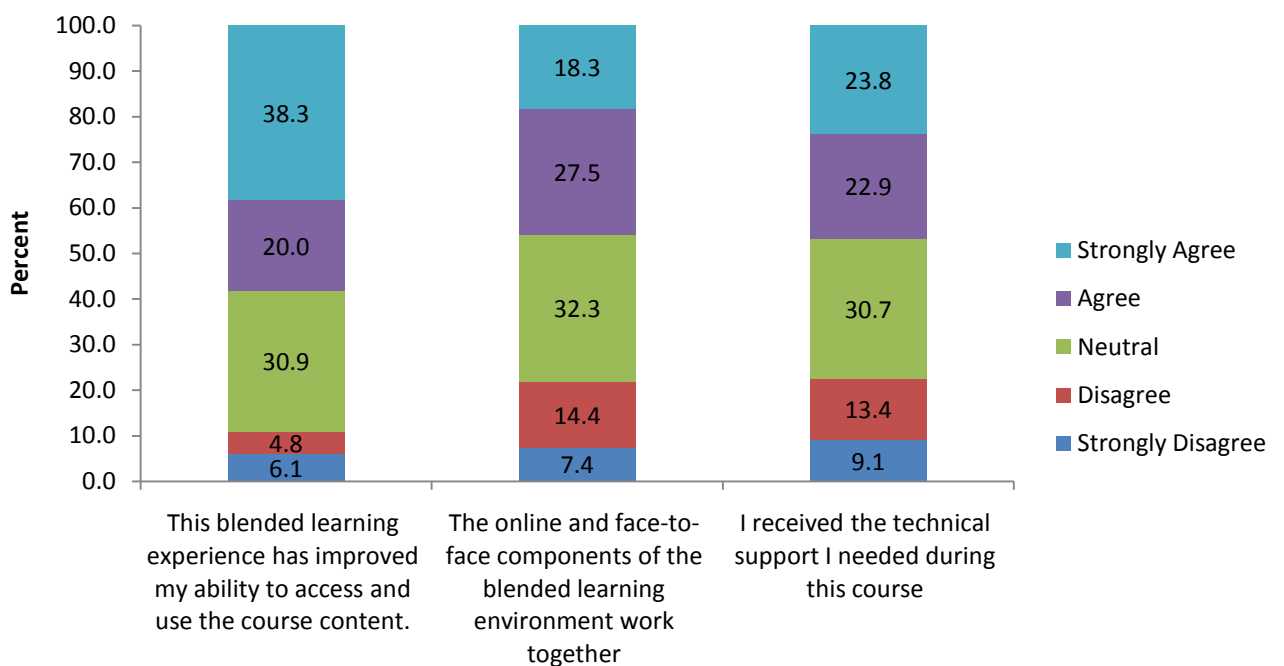
<b>The most useful learning strategies in the Blended learning environment</b>			
	Responses		Percent of Cases
	N	Percent	
<b>Combine lecture notes with Images, figures, illustrations and photographs</b>	172	14.9%	75.8%
<b>Habit of sharing information and content with others</b>	149	12.9%	65.6%
<b>Ask for help and clarification</b>	148	12.9%	65.2%
<b>Working with your colleagues</b>	137	11.9%	60.4%
<b>Reading and focusing on specific information, structures, key words, or phrases</b>	132	11.5%	58.1%
<b>Create mental, oral or written summary of notes</b>	120	10.4%	52.9%
<b>Explain and describe ideas with many details</b>	109	9.5%	48.0%
<b>By brainstorming ideas</b>	97	8.4%	42.7%
<b>Reading or listening to the same lecture over again</b>	87	7.6%	38.3%
<b>TOTAL</b>	1151	100.0%	507.0%

The majority of participants (75.8%) stated that combining lecture notes with images, figures, illustrations and photographs was a useful learning strategy for the environment. Other learning strategies that students found quite useful were habits of sharing information and content with others, asking for help and clarification and working with their colleagues.

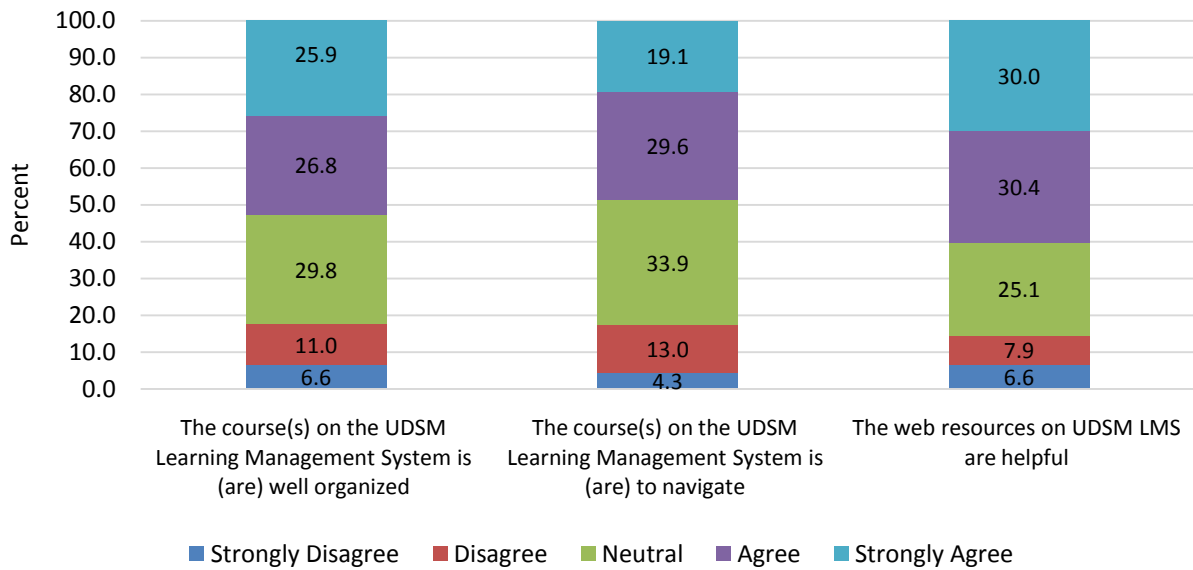
### 6.7.8 Likert scale questions on students perceptions

A likert scale ranging from 1 = strongly disagree to 5 = strongly agree was used to evaluate and assess responses on the access and use of course content, online and face to face components of the Blended learning environment working together; and technical support. Figure 6.7.3 illustrates the perceptions of students on the environment with respect to content quality and technical support. As can be seen from figure 6.7.3, the perception of students on

their ability to access and use course content is very high at 58.3%, made up of 38.3% and 20% (strongly agree and agree respectively). Students suggested that the Blended learning experience had improved their ability to access and use course content. The graph also revealed a neutral perception of participants on the environment (32.3%) as they neither agreed nor disagreed on online and face-to-face components of the Blended learning environment working together. It was found that 30.7% of the respondents neither agreed nor disagreed that technical support is provided. An encouraging 46.7%, made up of 23.8% and 22.9% (strongly agreed and agree respectively) agreed that technical support is provided during the Blended learning course.

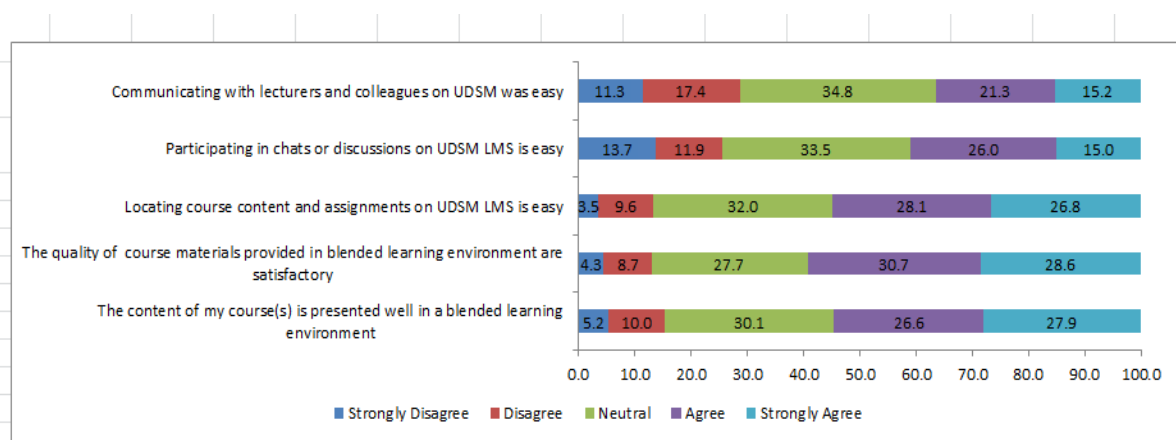


**Figure 6.7.3** Likert Scale Results of Students' Perceptions of Blended Learning Environment



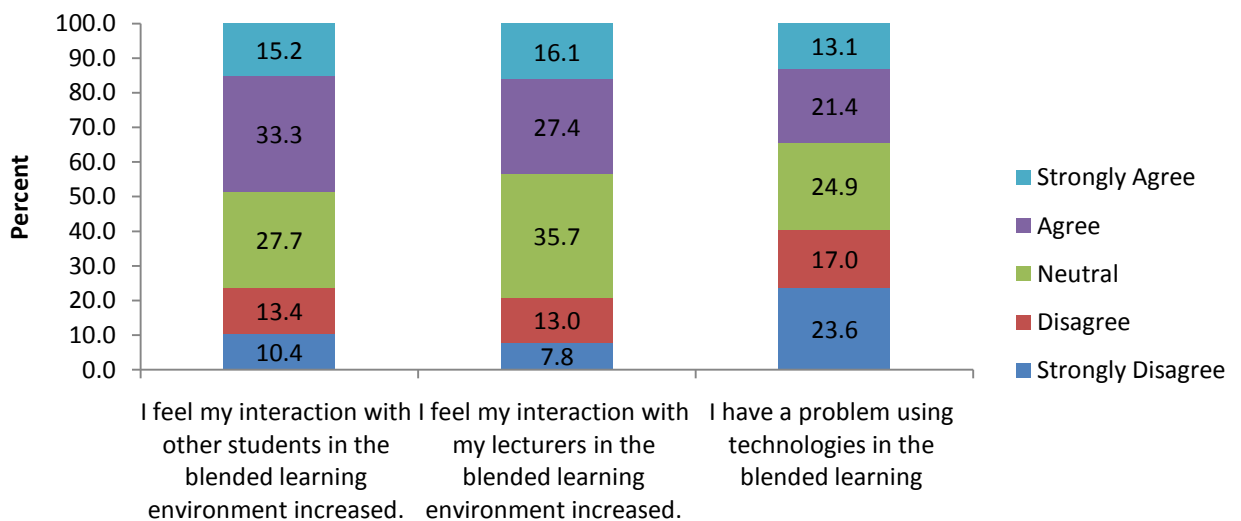
**Figure 6.7.4** Likert Scale Results of Students' Perceptions of Blended Learning Environment

Figure 6.7.4 presents the perceptions of students on the Blended learning environment with respect to the helpfulness of web resources, ease of navigation and good organization. 60.4% of the respondents, made up of 30.4% and 30% (strongly agree and agree respectively). Students agree that the web resources found on the Learning Management Systems are helpful. 33.9% of the respondents agreed and disagreed equally that courses in the environment were easy to navigate. There was a slight margin of difference with responses on the perception of courses taught in the environment being well organized. It was found that 30.7% of the students neither agreed nor disagreed. However, 52.7%, made up of 25.9% and 26.8% (strongly agreed and agree respectively) agree that the courses taught in the environment were well organized.



**Figure 6.7.5** Likert Scale Results of Students' Perceptions of the Blended Learning Environment

Figure 6.7.5 illustrates other perceptions of students on the environment. As seen in figure 6.7.5, the majority of participants neither agreed nor disagreed that communicating with lecturers and colleagues on the UDSM was easy (34.8%). Moreover, 41 % of the students, made up of 15% and 26% (strongly agreed and agree respectively) that participating in chats or discussions in a Blended learning environment was easy. There were similar responses to questions regarding locating course content and the course presentation on the LMS. 59.3% of the students, made up of 28.6% and 30.7% (strongly agreed and agree respectively), suggesting that the quality of course materials provided in the environment were satisfactory. It has to be noted from the graph that there was no huge difference among the responses on the perceptions of students.



**Figure 6.7.6** Likert Scale Results of Students' Perceptions of Blended Learning Environment

From figure 6.7.6, the majority of students (48.5%), made up of 15.2% and 33.3% (strongly agree and agree) that their interaction with other students in the environment increased. 48.5% of the students, made up of 16.1% and 27.4% (strongly agree and agree) that their interaction with lecturers in the environment increased. With regards to having problems using the Blended learning environment technology, 40.6% of the participants, made up of 23.6% and 17% (strongly disagree and disagree) with this perception. This shows that students are happy using the technologies in this environment.

## 6.8 Conclusion

From the findings, there is supporting evidence to bring about changes with the implementation of the Blended learning environment at the University of Dar es Salaam. The

study confirms that motivation and learning strategies are significant predictors of student performance in a Blended learning environment. However, there was a weak positive relationship between the investigated predictors and student performance. The study also showed that age and gender significantly influence performance. In terms of motivational categories, Intrinsic Goal Orientation and Self-efficacy have a statistically significant effect on student performance. With learning strategy sub factors, it was found that Rehearsal, Effort Regulation and Peer Learning have a significant effect on student performance. Moreover, age and gender significantly influence performance. For motivation though, only age was found to be statistically significant. Furthermore, both age and gender were found to be statistically significant to learning strategies.

This chapter also showed various perceptions of students on the Blended learning environment. The study showed that the Blended learning environment has not been extensively adopted at the university. This is due to the low frequency of courses pursued on the blending learning environment. It was also found that the majority of students used the Blended learning environment to access lecture slides and tutorials. Moreover, most participants stated that the flexibility of being able to complete assignments at any place/time was the major advantage to using this environment. The major challenge that students faced was a slow internet connection. However, respondents agreed that the Blended learning experience had improved their ability to access and use course content. In this study, familiarity with the technology was seen as a major factor that motivated students to succeed in the Blended learning environment. The majority of the participants stated that combining lecture notes with images, figures, illustrations and photographs was a useful learning strategy for the Blended learning environment.

# 7 DISCUSSION OF THE FINDINGS AND RECOMMENDATIONS

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## 7.1 Introduction

Chapter seven provides a review and discussion of the findings as related to the research questions of the study and the review of the literature. Moreover, recommendations are provided to mitigate the various concerns discussed in the findings

## 7.2 Discussion on the findings related to the research questions

The results of the data analysis and quantitative measures discussed are provided to answer the main research questions and sub-questions of the research. This research study was guided by the main research question; namely, *what influence do learning strategies and motivation have on student performance in a Blended learning environment?*

In order to address the main research question, the following research sub-questions were included:

- i. What is the correlation between learning strategies and motivation to student performance in a Blended learning environment?
- ii. To what extent are learning strategies and motivation significant predictors of students' performance in a Blended learning environment?
- iii. What is the influence of students' demographic variables (age and gender) on learning strategies, motivation and students' performance in a Blended learning environment?
- iv. What are the perceptions of students about the factors that affect their academic performance in a Blended learning environment

Findings related to the above research questions and literature reviews are discussed. Recommendations are also provided to the discussed findings.

### 7.2.1 Relationship between learning strategies and motivation to students' performance in a Blended learning environment

In support of the first sub-question, a Pearson Correlation revealed that the relationship between student performance and motivation in a Blended learning environment was positively weak. This was also true of the correlation between learning strategies and performance. The findings are contrary to the findings of Zimmerman (2002), Whipp and

Chiarelli (2004), Puzziferro (2006) and Lim and Morris (2009). The reason behind these findings might be that the relationship between the predictors and performance are mediated by other students' engagement-related activities such as in-class assignments and class presentations. Moreover, it might be due to the fact that students did not have control of their learning nor the learning environment (Zimmerman, 2002). Another reason might be the nature and usage of the Blended learning environment in the University of Dar-es-Salaam. From the qualitative findings (students' perceptions and observation) of this study, the Blended learning environment was not a mandatory component of the course; thus lessening the importance of motivation and learning strategies to students' performance. Most lecturers used it to simply post lecture slides and tutorials; and to submit assignments only. In addition, the majority of students pursued one Blended learning course per semester or even across the whole academic year. The modules of the Blended learning tool that were frequently used were emails and discussion platforms.

It was interesting to note that there was a moderate positive linear relationship between peer learning (learning strategies category) and students' performance. This sub-factor falls under resource management strategic techniques where students seek assistance and learn with their peers (Pintrich and De Groot, 1990). This finding is supported by the qualitative findings of this study whereby 65.6% of students indicated that the habit of sharing information and content with peers is the most useful learning strategy in order to perform well in a Blended learning environment. In addition, 60.4% of the students stated that working with colleagues is another useful learning strategy to perform well in a Blended learning environment.

#### ***7.2.1.1 Recommendations***

As stated above, it was found that the relationship between motivation and learning strategies to students' performance in a Blended learning environment was positively weak. Thus, this issue was in need of attention. It is therefore recommended that:

- i. The course design should be flexible to accommodate various motivational traits and learning styles of students.
- ii. Course designers and lecturers should understand motivational factors and attitudes towards a Blended learning environment so that they can stimulate and get students to participate actively in the learning environment.
- iii. Students should understand, choose, master and monitor their appropriate various motivational and learning strategies; and thus becoming self-regulated students. This

will help them to perform better in a Blended learning environment. Also, it will help them to achieve their personal academic goals. Students should evaluate for themselves what motivational factors and learning strategies are suitable to study course content in a Blended learning environment.

- iv. Course designers should develop the Blended learning environment in a way that students share information with and learn with their peers. This will promote a peer learning strategy that most students indicated is the most useful learning strategy.

### **7.2.2 Learning strategies and Motivation as significant predictors of student performance in a Blended learning environment**

To answer the second sub-question, the significance of the predictors was run through a regression analysis. Overall, it was found that motivation and learning strategies have a statistically significant effect on students' performance at 5%. Thus, motivation and learning strategies are significant predictors of students' performance in a Blended learning environment. This result confirms the findings of Zimmerman (2002), Eom, Wen and Ashill (2006), Lapointe and Gunawardena (2004), Lim and Morris (2009), Lawet al., (2010) and Wu et al., (2010).

In terms of the motivation categories, intrinsic goal orientation and self-efficacy have a statistically significant effect on student performance. The present results seem to be consistent with other studies such as Pintrich and DeGroot, (1990), Zimmerman (2002), Eom, Wen and Ashill (2006), Lapointe and Gunawardena (2004), Lynch and Dembo (2004), Rodriguez Robles (2006), Lim and Morris (2009), Lawet et al., (2010) and Wu et al., (2010) who found a significant relationship between the fore mentioned motivational categories and students' performance. As explained in the literature review, self-efficacy is defined as the perceived capacity of an individual to perform a certain task whose end result expectations provide value to educational activities (Zimmerman, 2000). Intrinsic goal orientation is the degree to which a student participates in a learning activity to meet individual objectives and satisfy personal interest. This finding is supported by the qualitative findings of this study whereby 53.1% of the students state that their attitude towards a Blended learning environment is a major motivational factor to succeed in a Blended learning environment.

With learning strategies sub-factors; rehearsal, effort regulation and peer learning, these sub-factors have a significant effect on students' performance. The significant effect between the mentioned categories of learning strategies and students' performance in this study supported findings by Orhan, (2007), Yukselturk and Bulut (2007), Puziffero (2008), Kassab, Al-

Shafei, Salem and Otoom (2015), Stammou (2016), Broadbent (2017) and Kintu, Zhu, and Kagambe (2017). As explained in the literature review, rehearsal strategies (that fall under cognitive learning strategies) include techniques such as paraphrasing and summarizing notes. Effort regulation and peer learning strategies (that fall under resource management strategies) comprise of techniques such as effective use of learning resources (such as time and effort); and seeking help and learning from fellow colleagues. This finding is supported by the qualitative findings of this study too whereby 65.6% of students indicated that their habit of sharing information and content with peers is a most useful learning strategy that helps them to perform well in a Blended learning environment. In addition, 62.6% of the students stated that asking for help and clarification is another major learning strategy that helps them to perform well in a Blended learning environment. In support of this, students reported being able to communicate using email and or the chat facility enabled them to seek clarity and support. Moreover, 60.4% of the students stated that working with colleagues is another useful learning strategy that contributes to performing well in a Blended learning environment. This finding might also be due to the nature of a Blended learning environment in the case study. It is easier for students to share, brainstorm and exchange ideas with their peers.

#### **7.2.2.1 Recommendations**

The finding of the study shows that motivation and learning styles are significant predictors of students' performance in Blended learning environment. With motivation specifically, intrinsic goal orientation and self-efficacy were found to have a statistically significant effect on student performance. Rehearsal, effort regulation and peer learning, learning strategy sub-factors, were found to have a significant effect on students' performance. Thus, it is recommended that:

- i. Educators and Blended learning designers should utilize learning strategies and motivation inventories for the purpose of class preparation, selecting educational technologies and designing course content.
- ii. Lecturers need to focus on motivating their students to promote self-efficacy and intrinsic goal orientation. Lecturers should urge their students to believe in themselves and their abilities to perform well.
- iii. Lecturers also need to focus on understanding and supporting learning strategies of students (especially rehearsal, effort regulation and peer learning) in Blended learning environments. They should support and encourage students to seek assistance

whenever necessary, to collaborate with one another and to practice paraphrasing/summarising notes and sharing and discussing these summaries.

- iv. University management should train or emphasize upon lecturers the essence of motivational beliefs and learning strategies; and the need for students to utilize their motivational beliefs and learning strategies during learning.
- v. Lecturers should also help their students to understand the importance of building up self-efficacy, intrinsic goal orientation as well as use of rehearsal, effort regulation and peer learning strategies to improve their learning process.

### **7.2.3 Influence of demographic variables on learning strategies, motivation and student performance in a Blended learning environment**

This section addresses research sub-question three. The demographic factors that were analysed within the scope of this study were age and gender. The quantitative findings confirmed the significant influence of gender and age on students' performance. This finding supports that of Dennis et al. (2006); So (2009); Gawande (2015); and Zhu, Au and Yates (2016). The findings of these researchers revealed that gender and age were the most significant predictors of students' performance. It was also found that females perform better than males. This can be due to various interrelated factors such as female students showing more interest in such courses compared to their male colleagues. Moreover, in such learning environments, female students interact and participate more in educational discussions and remain more connected in their learning (Royai and Baker, 2005). It has also been found that female students express a more positive attitude towards technology mediated learning environments (Sullivan, 2001). It is also believed that female students value the possibility of learning at any place and time (Grabinsk, Kedzior and Krasodomska, 2015). Du and Kolmos (2009) stated that "Blended learning is a female-friendly" environment that provides opportunities for application and collaboration". This in turn affects their performance level.

In addition, both age and gender were found to be statistically significant to learning strategies. This finding supports that; likewise, age was found to have a positive influence on learning strategies. The coefficient of gender is positive showing that a score in learning strategies increases with the increasing proportion of females. This finding supports findings of previous studies as highlighted by Al Khatib (2010). It is believed that female students persist further, appreciate more learning and seek help from instructors and colleagues during learning (Al Khatib, 2010). This finding is supported by this research as it was seen that

female students were more engaged with learning in the Blended learning environment than male students. For motivation, only age was found to be statistically significant at 5%. The coefficient also shows that age has a positive influence on motivation (motivation increases with increasing ages). This finding seems to be consistent with other studies such as that of Bandura (1997).

#### **7.2.3.1. Recommendations**

As indicated in the results, it was found that female students performed better than males. Moreover, both age and gender were statistically significant to learning strategies. Thus, it is recommended that both female and male students should be encouraged to study and learn in the Blended learning environment together. Course designers and lecturers should use Blended learning as a means to bridge the gap between gender discrepancies in academic success.

### **7.2.4 Students perceptions of student performance in a Blended learning environment**

#### **7.2.4.1 Usage of Blended learning environment in terms of number of courses and frequency**

One of the sub-questions of this research was to understand the perceptions of students about the Blended learning environment. There were several questions that aimed at getting detailed information and understanding by students of the Blended learning environment at the University of Dar-es-Salaam. One of the questions required students to state the number of courses they had pursued in a Blended learning environment. Eighty students(53.7%) stated that they had pursued one course in a Blended learning environment. As it is seen, the number is quite low compared to the average number of courses that students pursue in one academic year. This indicates that the Blended learning environment has not been extensively adopted at the university. Also, students were asked to state how long they had used the Blended learning environment including tools. It was found that the highest frequency of using the Blended learning environment was one semester (49.6%). This is in agreement with what Mtebe and Raisamo (2014) and Joel (2015) who reported in their studies that the usage of Blended learning technologies and tools in the learning environment is quite low in Tanzania. Usually, students do not use Blended learning tools such as the LMS after they have been trained; thus totally abandoning them (Mtebe and Raisamo, 2014; Joel, 2015). It was noted that low usage is in part, due to major goals of students and lecturers not being

aligned with or dependent on the learning environment. This can impede students performing well in Blended learning courses. Thus all higher education stakeholders i.e. academicians, students, universities, government and researchers should work together so as to integrate the various Blended learning tools including the Learning Management System (LMS) so that these environments can become second nature to all stakeholders.

#### ***7.2.4.2 Modules of Blended learning environment tools used***

The other question that students were asked was, “What technical features of the Blended learning system (UDSM Learning Management System) would you say you use most effectively?” It was found that opportunities for self-assessment questions and feedback, email platform and discussion forums were modules used most effectively. This is contrary to the findings of Vovides, Sanchez-Alonso, Mitropoulou and Nickmans, (2007); and Joel (2015) who reported that communication tools such as email, chat and discussion forums set in a LMS are underutilized. Lecturers who used the LMS for their courses did post announcements on forums and answer students’ inquiries. It was observed that students preferred above mentioned tools because they foster a social environment where they can learn through peer interaction and lecturers acting as facilitators. In the case of the University of Dar-es-Salaam, lecturers and students communicate and collaborate using these communication tools. When students were asked what academic tasks they used the LMS in, they suggested using the Blended learning environment to access lecture slides and tutorials to a large extent and to a lesser extent using the Blended learning environment to share materials. It was observed that lecturers provided students with notes and catch-up materials

#### ***7.2.4.3 Advantages of Blended learning environment and challenges students face in the learning environment***

Students were also surveyed about in perceptions as to the benefits of Blended learning as a learning method. The majority of students stated that the flexibility of being able to complete assignments at any place/time was a major advantage to using the Blended learning environment. Other main advantages cited include increasing the flexibility of learning provision, reduced costs and encouraging motivation. This is in agreement with what Osguthorpe and Graham (2003); Clancy (2007); Lim and Morris (2009); and Phiri, Foko and Mahwai (2014) reported in their studies as the advantage of Blended learning. It is believed that students considered the flexibility of being able to complete assignments off campus as a major benefit. Students were also asked about the challenges they faced when using the Blended learning environment. It was also observed that students rated the increasing

flexibility of the learning environment as encouraging motivation as they enjoyed catching up on a course in their own time. The majority of students stated, however, that a slow internet connection was a major challenge. Other main obstacles comprised lack of advanced ICT skills, poor ICT infrastructure, lack of knowledge and skills in using the Blended environment as well as unreliable power supply. The stated qualitative findings support those of Tedre, Ngumbuke and Kemppainen (2010); Grönlund and Islam (2010); Eke (2011); Isaacs and Hollow (2012); Lwoga (2012); Kasse and Balunywa (2013); and Mtebe and Raphael (2013) on the main challenges facing Blended learning in an African context, especially Tanzania. Despite the implemented ICT infrastructure that supports Blended learning, students were observed frustrated when there was slow internet connection, and this is perceived to be an inhibitor of their ability to learn well. Good internet connections, presence of advanced ICT skills, proper ICT infrastructure and technical competences are crucial factors that contribute hugely in implementing successful Blended learning environments

#### ***7.2.4.4 Factors that motivated students to succeed and most useful learning strategies in Blended learning environment***

In addition to the fore mentioned questions, students were asked about what other factors motivated them to succeed in a Blended learning course. Familiarity with technologies was seen as a major factor that motivated students to succeed in the Blended learning environment. Other factors that the majority of students found motivates them to succeed are habits of sharing information and content with others, attending training courses on the Blended learning environment and presence of facilities and supporting infrastructure. Furthermore, the researcher inquired as to what learning strategies were most useful for learning in a Blended learning environment. The majority of students stated that combining lecture notes with images, figures, illustrations and photographs was a useful learning strategy for a Blended learning environment. Other learning strategies that students found quite useful were habits of sharing information and content with others, asking for help and clarification, and working with their colleagues (11.9%). This is in agreement with what Singh and Reed (2001); Dziuban, Hartman and Moskal (2004); and Clark (2006) reported that human support (including working with peers) is quite important to students. A plausible explanation for the above strategies to be highly rated is because students preferred the active and individualized learning environment.

#### ***7.2.4.5 Likert scale questions on student perceptions***

Likert scales ranging from 1=strongly disagree to 5=strongly agree were used to evaluate and assess responses on the access and use of course content, online and face to face components of the Blended learning environment working together; and technical support. Most students agreed that the Blended learning experience had improved their ability to access and use the course content. This finding suggests there is a problem with face-to-face components working together with Blended learning tools. From observation, the qualities of face-to face components were of a high quality compared to the online components. In traditional learning, students and lecturers tend to elaborate more and ask critical questions. With regards the technological component of Blended learning, both lecturers and students were simply posting and sharing materials. It was not perceived as a mandatory component of the teaching and learning experience. This affects students in receiving knowledge and feedback from multiple sources; and applying this information well (Bliuc, Ellis, Goodyear and Piggott, 2007; Collopy and Arnold, 2009; Hsu, 2011; Owston, York, and Murtha, 2013). Moreover, it was found that most students agreed that technical support is provided during the Blended learning course. This is in agreement with what Singh and Reed (2001) and Dziuban, Hartman and Moskal (2004) reported that human support (including technical support) is quite important for students participating in a Blended learning environment. Students depend on good technical support that provides a personal touch and assists with problems, sustaining their interest and also motivating them to learn.

Other Likert scale questions inquired about student perceptions of the helpfulness of web resources within the LMS, ease of navigation and good organization. Majority of the students agreed that the web resources found on the Learning Management Systems are helpful. Also, they agreed that courses with the Blended learning environment were easy to navigate. There was a slight margin of difference with responses as to whether courses taught in the Blended learning environment are well organized. 29.8% of students neither agreed nor disagreed with the statement while 26.8% of them agreed that the courses taught in the Blended learning environment are well organized. The difference of students' responses implies that course design in a Blended learning environment is not strongly emphasized in the area of study. This is contrary to Lee and Rha (2009) and Giossos, Koutsouba, Lionarakis and Skavantzios (2009) whose studies show the importance of highly organized and easily navigated content in a Blended learning environment. The plausible explanation to such finding is because students faced problems in using traditional and technical components of Blended learning

together. Thus some students felt the course content to be poorly organized. It was observed that the course instructor and Blended learning courses developers do not collaborate to design the course content. That might be another explanation for the perception of poor course content organization.

Additional Likert scale questions explored students' perceptions with respect to the ease of communicating with lecturers in the environment as well as ease of participation, ease of locating course content, quality of course materials and presentation of course content. The majority of students neither agreed nor disagreed that communicating with lecturers and colleagues on the UDSM was easy. Moreover, the majority of students neither agreed nor disagreed with the fact that participating in chats or discussions in a Blended learning environment was easy. The neutrality of students' responses implies that participation and communication in the Blended learning environment are not emphasized. Students feel that communication and participation helps them to obtain direct support, engage more with their colleagues, develop a strong learning community and thus promote students' performance and satisfaction (Collopy and Arnold, 2009; Castle and McGuire, 2010; Owston, York, and Murtha, 2013). Furthermore, the majority of students stated that locating course content on the LMS was easier and that the contents of the courses were presented well. In addition, most students said that the quality of the course materials provided in the Blended learning environment was satisfactory.

Lastly, Likert scale questions explored students' perceptions of the Blended learning environment with respect to student-student interaction, lecturer-student interaction and technological challenges using the Blended learning environment. The majority of students agreed that their interaction with other students in the Blended learning environment increased. Jung, Choi, Lim and Leem (2002) and Rodriguez Robles (2006), suggested that learner-learner interaction is important in technology mediated learning environments such as the Blended learning environment. This further supports Effort Regulation and Peer Learning strategies having significant influence on student performance in a Blended learning environment. The majority of students, however, neither agreed nor disagreed that their interaction with their lecturers in the Blended learning environment increased. This is in contrary with what was reported by Chejlyk (2006) and Keeler (2006) that learner-instructor interaction is a significant factor that contributes to learning outcomes. A plausible explanation for the finding is students feel lecturers are not aware of their personalized learning practices. For instance, lecturers might assume that a student may well who does not

engage in class (asking or answering questions) is disengaged. In reality, that student learns by self-reflection or summarizing new data to existing knowledge. Also another plausible explanation is the nature of the study area setting. The contact time with lecturers in the university is less, even when the technical components (such as discussion forums) were incorporated in the learning environment.

With regards to problems in using the technology in a Blended learning environment, most students disagreed with such a perception. This shows that students are happy using technologies in a Blended learning environment. The stated qualitative findings supports Concannon, Flynn and Campbell (2005); Ginns and Ellis (2007); and Bower, Dalgarno, Kennedy, Lee and Kenney (2015) on students' positive attitude towards using technology. As stated earlier, proper ICT infrastructure is a crucial factor that plays a huge role in creating a successful Blended learning environment. Students were comfortable using the different technical components of the Blended learning environment such as email platform and discussion forums. It was observed that students perceived integration of technology in to the teaching-learning environment to be important

#### **7.2.4.6 Recommendations:**

An effective Blended learning environment is vital to support teaching and learning through the use of technology. There were various issues and concerns addressed by students with regards the Blended learning environment. Therefore, the following recommendations will address students concerns and issues:

- i. A proper planning evaluation study of the design and implementation of the Blended learning environment should be conducted. It should be noted that all stakeholders should be fully involved.
- ii. The university ICT policy should be defined to provide an agenda for development and application of various ICT projects. It is important that all stakeholders contribute to and own the policy.
- iii. The university should facilitate an increase in internet accessibility and bandwidth to ensure effective learning and teaching through technology.
- iv. The university management, through the Centre of Virtual Learning (CVL), should make sure that students have at least moderate ICT skills and that there is a strong ICT infrastructure in place
- v. It is important that all key players or stakeholders in the university are familiar with the existing Blended learning tools and the importance of the Blended learning

environment in relation to teaching and learning. This can be done through formal organized awareness programmes; visits to departments where the university LMS is extensively used; and to conduct short training programs for students and lecturers. This can promote awareness and contribute to a change of attitude towards Blended learning environment.

- vi. Strategies for recruiting, training and the retention of the required technical support staff should be in place. Technical support is a vital part of the implementation and integration of Blended learning tools in the university.
- vii. There should be continuous monitoring and evaluation conducted to assess usage of Blended learning tools among students and lecturers.
- viii. Power supply/backup technology should be available for running the various Blended learning tools and technologies.
- ix. Course designers should make sure that the online and face-to-face components of the Blended learning environment work together.
- x. The course content of Blended courses should consist of multimedia applications and interactive examples, which will be updated frequently in order to cater for needs of students and new technologies
- xi. Course designers should ensure that course content in the Blended learning environment is easy to navigate around and well organized.
- xii. Lecturers and students should effectively use the LMS for various academic tasks such as students asking lecturers questions or students catching up on missed lectures instead of only using it for sharing materials and accessing lecture slides.
- xiii. Course designers should properly configure the LMS so that students can easily participate in and communicate with their lecturers and colleagues through discussion forums and chats.
- xiv. It is recommended that interaction between students and lecturers in the Blended learning environment is increased. Such interaction contributes to students performing better. Lecturers should encourage students to make use of online practice exercises and discussion forums.

### **7.3 Conclusion**

This chapter provided a review and discussion of the findings as related to the research questions of the study and the review of the literature. One of the major findings of this study is that the relationship between motivation and learning strategies to students' performance in

a Blended learning environment was positively weak. Moreover, motivation and learning styles are significant predictors of students' performance in a Blended learning environment. With motivation significant, intrinsic goal orientation and self-efficacy have a statistically significant effect on student performance. Rehearsal, effort regulation and peer learning are learning strategies sub-factors that have a significant effect on students' performance. It was also found that female students performed better than males. Moreover, both age and gender were statistically significant to learning strategies. However, in the case of motivation, only age was found to be statistically significant.

There were concerns raised when students were asked about their perceptions of the Blended learning environment. It was found that the Blended learning environment has not been extensively adopted at the university as the number of Blended learning courses is quite low compared to the average number of courses that students pursue in an academic year. The majority of students stated that the flexibility of being able to complete assignments at any place/time was a major advantage of using the Blended learning environment. Other advantages included increasing the flexibility of learning provision, reducing costs, helping to stimulate better understanding, students motivation and meeting students' learning goals and needs. Moreover, most students stated that a slow internet connection was one of the major challenges they faced. Other obstacles comprised of a lack of advanced ICT skills, poor ICT infrastructure to support the Blended learning environment, lack of knowledge and skills in using the Blended environment, and unreliable power supply. Most students strongly agreed that the Blended learning experience had improved their ability to access and use course content. It was found that there is a problem of face-to-face components working together with Blended learning tools. It was implied that in the courses designed for the Blended learning environment, participation and communication were not strongly emphasized. Students were also not happy with using technologies in the Blended learning environment.

Recommendations are provided to mitigate the various concerns discussed in the findings. One of the recommendations is course designers and lecturers should understand motivational factors and attitudes towards a Blended learning environment so that they can stimulate and get students to participate actively in the environment. Also, lecturers need to focus on motivating their students to promote self-efficacy and intrinsic goal orientation. Lecturers should urge their students to believe in themselves and their abilities to perform well. Moreover, a proper planning evaluation study of the design and implementation of Blended learning environment should be conducted. It should be noted that all stakeholders

should be fully involved. In addition, it is important that all key players or stakeholders in the university are familiar or at least know about the existing Blended learning tools and the importance of Blended learning in relation to teaching and learning. This can be done through formal organized awareness programmes; visits to departments where the university LMS is extensively used; and short training courses for both students and lecturers.

# 8 CONCLUSION

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## 8.1 Introduction

Chapter eight provides summarized description of the research. Moreover, this chapter provides summary of the findings as related to the research questions of the study and the review of the literature. Finally, the contribution of the study as well as recommendations for further research is provided.

## 8.2 Summary of Research

### 8.2.1 Introduction and Background

Blended learning is described as a learning setting or environment which merges various delivery methods and techniques, aiming to provide the most efficient experience to both lecturers and students (Giannousi et al., 2009). For the purpose of this research, Blended learning is defined as an appropriate combination of traditional face-to face instruction combined with several learning technologies, complemented with a Learning Management System (LMS) such as the open source system, Moodle. A student is a key role player within a Blended learning environment; thus it is important to understand the predictors that may contribute to a successful learning experience(Beaudoin, Kurtz and Eden, 2009). Despite a high level of investment into Blended Learning, students face various challenges that have impeded them performing well in Blended learning courses (Mtebe and Raphael, 2013). Moreover, there is a paucity of research on the influence that learning strategies and motivation have on student success in Blended learning courses in Tanzania HEI. The purpose of this research was to examine and explore how students' performance in a Blended learning environment is influenced by motivation and learning strategies; using the University of Dar es Salaam as a case study. It has been suggested that learning strategies and motivation are the common and critical predictors of students' performance that have time and again been raised in distance education and in online and Blended learning environments (Allen et al., 2002; Yukselturk and Yildirim, 2008; Artino and Stephens, 2009; Çakıroğlu, 2014; Harandi, 2015).

### **8.2.2 Review of Literature**

The literature was reviewed to describe Blended learning in general, Blended learning implementation in Tanzania in particular; benefits and challenges facing Blended learning in Tanzania; student performance in Blended learning Environment; predictors of student performance in a technology mediated environment; and students' perceptions on Blended Learning environment. It is necessary to explore and examine various aspects that influence people's success (performing well) while perceiving information and knowledge. Course marks and final examination results have frequently been used as predictors and measures of student success in technology mediated environments. There are persuasive and convincing reasons for researchers to be interested in student performance. Student performance is considered as the most vital factor for students to continue learning. Moreover, student performance reflects all quality aspects of instructive programs in terms of evaluation of students. Since Blended learning is being considered as the most important alternative delivery mechanism for course content in universities, it is thus critical to examine and explore factors that influence and predict student performance in a Blended learning environment. For the purpose of this research, two characteristics were selected: Learning Strategies and Motivation. Learning strategies and Motivation were chosen based on the fact that they are the common and critical factors that have time and again been raised in distance education, online and e-learning environments. Students' perceptions are a vital factor to understand and predict their academic performance and learning results too.

Chapter 3 discussed the influence of learning strategies as predictors of students' performance in Blended learning. In exploring such predictors, the chapter defined learning style, learning strategies and discussed the correlation between learning strategies and student performance. By understanding their learning strategies, students can understand how to prepare to do well. Since Blended learning is grounded on self-discipline and self-regulation, understanding and awareness of learning strategies is critical. Moreover, it is indicated in the literature that learning strategies do have a level of effect on satisfaction and academic performance. Moreover, there was an elaboration of the significance of learning strategies of students. The theories, models and instruments that measure learning style and learning strategies were also discussed. There are various theories and models of learning strategies and styles. A few selected learning strategies and styles models with their instruments that are applicable and useful to a Blended learning environment in higher education institution were discussed. These included Hill's Cognitive Style Mapping, Dunn and Dunn Learning Styles,

Kolb's Learning Styles, Gregorc and Butler Learning Styles, Felder-Silverman Learning Model, Grasha-Reichmann Learning Style Scales, Hermann Brain Dominance Models (1996) and Pintrich and de Groot's theory of self-regulated learning. Finally, the Motivated Strategies for Learning Questionnaire (MSLQ), based on Pintrich and de Groot's theory of self-regulated learning, was justified as the recommended instrument to measure learning strategies of students.

The effect of motivation as a predictor of student performance in Blended learning was elaborated in chapter 4. Advancement, development and improvement of motivation are among the important objectives of a technology mediated environment offered by a higher education institution. Since Blended learning is grounded on self-discipline and learning at your own pace, understanding the effect of motivation and its attributes on student performance is quite essential. In exploring motivation, various definitions of motivation are provided and the correlation between motivation and student's performance was elaborated on. Moreover, the significance of motivation was discussed. The theories, models and instruments that measure motivation were discussed in depth. A few selected motivation models with their instruments that are applicable and useful in a Blended learning environment in higher education institution were discussed. These included Keller's ARCS model, Wlodkowski's Time Continuum Model, Ryan and Deci's Self-Determination Theory and Pintrich's Expectancy-Value Theory. Pintrich's Expectancy-Value Theory was elaborated extensively compared to other mentioned models. The Motivation Strategies for Learning Questionnaire (MSLQ) was also recommended as an instrument to measure motivation of students for this study.

### **8.2.3 Methodology**

The research approach in terms of orientation to knowledge was Pragmatism. Mixed research design was employed for this study. This research design included both qualitative design (in-depth single case study) and quantitative design (survey). The study was conducted at the University of Dar-es-Salaam due to the fact that the university actively pursues Blended learning in several of its modules. The target population for this study was postgraduate and undergraduate students participating in Blended learning modules. The questionnaire that was used to assess and measure the learning strategies and motivation (independent variables) is the Motivational Strategies for Learning (MSLQ) Questionnaire. The researcher collected qualitative data using open-ended and closed questions in a paper based questionnaire. The quantitative data were statistically analysed using SPSS. The qualitative data were collected,

stored and analysed using Microsoft Excel. Pearson Correlation and Regression Analysis were used to analyse quantitative data. Content/Thematic analysis was used for the analysis of the open-ended questions from the questionnaire.

### **8.3 Summary of Findings to research questions**

This research was guided by the main research question, namely:

*What influence do learning strategies and motivation have on student performance in a Blended learning environment?*

A summary of findings for the research sub-questions are presented below

#### **8.3.1 Relationship between learning strategies and motivation to students' performance in a Blended learning environment**

This section summarizes the results for the first research sub-question: "What is the correlation between learning strategies and motivation to student performance in a Blended learning environment?" It was found that the relationship between student performance and motivation in a Blended learning environment was positively weak. This was also true of the correlation between learning strategies and performance. It was interesting to note though that there was a moderate positive linear relationship between peer learning (learning strategies category) and students' performance

#### **8.3.2 Learning strategies and Motivation as significant predictors of student performance in a Blended learning environment**

This section summarizes the findings for the second research sub-question: "To what extent are learning strategies and motivation significant predictors of students' performance in a Blended learning environment?" Overall, Motivation and Learning strategies have a statistically significant effect on student performance. Thus, motivation and learning strategies are significant predictors of student performance in a Blended learning environment. In terms of the motivation categories, Intrinsic Goal Orientation and Self-efficacy have a statistically significant effect on student performance. The learning strategies sub factors; Rehearsal, Effort Regulation and Peer Learning have a significant effect on student performance.

### **8.3.3 Influence of demographic variables on learning strategies, motivation and student performance in a Blended learning environment**

This section summarizes the findings for the third research sub-question: “What is the influence of students’ demographic variables (age and gender) on learning strategies, motivation and students’ performance in a Blended learning environment?” The findings showed that age and gender significantly influence performance. It was also noted that females have a relatively higher performance when compared to males. For motivation, only age was found to be statistically significant. The findings also showed that age has a positive influence on motivation (motivation increases with increasing ages). For the learning strategies, both age and gender were found to be statistically significant.

### **8.3.4 Students perceptions on student performance in a Blended learning environment**

This section summarizes the findings for the third research sub-question: “What are the perceptions of students about the factors that affect their academic performance in a Blended learning environment?” In order to understand the perceptions of students on a Blended learning environment, several questions were constructed to get detailed information. Students were asked how many courses they had pursued in a Blended learning environment. The majority of students (53.7%) stated that they had pursued one Blended learning course. This indicates that the Blended learning environment has not been extensively adopted by students in the University of Dar-es-Salaam. Moreover, the students were asked how long they had used the Blended learning environment. The highest frequency of usage was one semester (49.6%), followed by two semesters (24.3%). In addition, students were asked what modules features of the Blended learning system (UDSM Learning Management System) they had used most effectively. Students reported using self-assessment questions with feedback as well email and discussion forums as being the most used features in the LMS. With regard to the advantages of the Blended learning environment, the majority of students stated that flexibility of being able to complete assignments at any place/time was the major advantage of using the Blended learning environment. Students were also asked what the challenges in using the Blended learning environment are. The majority of students stated that a slow internet connection was the major challenge they faced (22%).

The researcher also asked students what other factors motivated them to succeed in a Blended learning course. Familiarity with the technology was seen as a major motivating factor for students to succeed in the Blended learning environment (16.4%). In addition to that, the researcher inquired, from their perceptive and understanding, what learning strategies were

most useful for learning in a Blended learning environment. Majority of the students (14.9%) stated that combining lecture notes with images, figures, illustrations and photographs was a useful learning strategy for a Blended learning environment.

Likert scale ranging from 1 = strongly disagree to 5 = strongly agree was used to evaluate and assess responses on the access and use course content, online and face to face components of the Blended learning environment working together; and technical support. The perceptions of students on their ability to access and use of course content is very high at 38.3%. They strongly agreed that the Blended learning experience had improved their ability to access and use the course content. 30.4% of the students agreed that the web resources found on the Learning Management Systems are helpful. In addition, the majority of students neither agreed nor disagreed that communicating with lecturers and colleagues on the UDSM was easy (34.8%). The 30.7% of the students, however, said that the quality of the course materials provided in the Blended learning environment was satisfactory. Furthermore, the majority of the students agreed that their interaction with other students in a Blended learning environment increased (33.3%). The 35.7 % of the students, however, neither agreed nor disagreed that their interaction with their lecturers in the Blended learning environment increased. With regard to having problems using technologies in a Blended learning environment, 24.9% of the students neither agreed nor disagreed while 23.6% strongly disagreed with this perception. This shows that students are happy with using technologies in a Blended learning environment.

## **8.4 Key Contributions**

The purpose of this research was examine and explore how student's performance in a Blended learning environment is influenced by motivation and learning styles; using the University of Dar es Salaam (Tanzanian HEI) as a case study. The main research question of the study is what influence do learning styles and motivation have on student performance in a Blended learning environment. The main research question is supported by the following sub-questions:

- i. What is the correlation between learning styles and motivation to student performance in a Blended learning environment?
- ii. To what extent are Learning styles and Motivation significant predictors of student performance in a Blended learning environment?

- iii. What is the influence of student demographic variables (age, gender, and digital literacy) on learning styles, motivation and student performance in a Blended learning environment?
- iv. What are the perceptions of students about the factors that affect their academic performance in a Blended learning environment?

The findings of the study revealed learning strategies and motivation as significant predictors of student performance in a Blended learning environment. This is quite significant for lecturers, educators, Blended learning environment designers and academic institutions. The findings of this research build a better understanding of the impact that motivation, digital literacy, age, gender and learning style have on predicting the performance of students in Blended learning courses in Tanzania. Understanding the differences among learning strategies and motivation traits of students is likely to assist in the creation of flexible teaching strategies in Blended learning environment. Thus course developers and lecturers can better understand, respond to and predict student performance within this environment. By assessing learning strategies and motivation of students in relation to their performance will help in including the important course components into the Blended learning program. It is hoped that this research provides some meaningful information and better understanding of the learning-teaching phenomena in technology mediated learning environment.

## **8.5 Limitations and Recommendations**

### **8.5.1 Limitations**

There were several limitations that existed in this study. One of the limitations of this research was the sample size. The study focused mainly on undergraduate students in a few academic disciplines in one Tanzanian Higher Educational Institution. While valid, the findings should not be generalized when applied to other faculties or even other universities. Also, the study used a long paper-based questionnaire survey which may have limited the accuracy of the students' responses. Moreover, the questionnaires were distributed towards the end of the students' academic year. This could be a limiting factor in terms of their subjective feelings on the predictors of student performance in a Blended learning environment. Another limiting factor of this study is that the researcher assessed predictors from students' perspectives only. In addition, Blended learning design factors were not assessed. Doing so could provide a better understanding of the perceptions of students. Furthermore, this study examined only motivation and learning strategies as predictors. Other predictors such as personality traits, teaching strategies of lecturers, course quality and locus

of control were not included as variables of the study. Despite the thoroughness of the questionnaire, it did not inquire whether students' learning experiences in the Blended learning environment ended in completion or not. This would be useful to know whether students do complete their Blended learning courses.

## **8.5.2 Recommendations**

### ***8.5.2.1 Recommendations for case study***

The researcher recommends that educators and the Blended learning designers should utilize learning strategies and motivation inventories for the purpose of class preparation, selecting educational technologies and designing course content. The course content of Blended courses should consist of multimedia applications and interactive examples, which will be updated frequently in order to cater for the needs of students and new technologies. It is important to understand, to know, and to develop sensitivity to different learning strategies and motivation levels of students within the Blended learning environment. Given the importance of motivation of students, especially self-efficacy and intrinsic goal orientation; Blended learning course designers and lecturers should have a closer scrutiny on the mentioned factors and have a pre-course assessment. Various activities enhancing self-efficacy and intrinsic goal orientation should be designed into Blended learning courses as a means of helping students to complete and perform well.

Moreover, the researcher recommends that the university should carefully establish instructional policies for the Blended learning environment. Also, there should be continuous monitoring and evaluation conducted to assess usage among students and lecturers. Furthermore, it is important for lecturers to demonstrate good attitude towards the Blended learning environment together with its tools. Also, lecturers should be trained in using a technology mediated environment before adopting such environment in their courses. It is also important for students to be trained and have a good perspective about usefulness of Blended learning environment. It was found that most of the teaching rarely used the Blended learning technology for teaching. Thus, in order to improve the Blended learning environment, the University of Dar es Salaam management should invest heavily in the Blended learning environment and mandate that it is used. The management should invest more in ICT facilities and support staff. The researcher also recommends that lecturers, educators and Blended learning environment designers should utilize various learning methods rather than using mandatory learning methods that do not cater for all students'

learning needs. Interaction, both learner-learner interaction and learner-instructor interactions, should be encouraged in both synchronous and asynchronous modes in Blended learning environment. This will help students to work together, share information and solve problems.

#### ***8.5.2.2 Recommendations for Further Research***

Further research is needed to assess and understand how learning strategies and motivation influence students' engagement in the Blended learning environment. Also, further research is needed to assess how other factors such as teaching strategies of lecturers, locus of control, course design, and personality traits affect performance of students. This might help to understand better the learning of students in such technology mediated environment. It is recommended, in terms of generalization, that further research should target broader population. The study can extend to include students from other colleges at the UDSM and even other universities. Also a longitudinal study would provide more generalizable results. Such study is likely to provide greater individual variability in terms of learning strategies and motivational traits. Research should be extended to include the perceptions of lecturers on the Blended learning environment. Further research is also needed to investigate the differences in students' performance between Blended learning courses and traditional learning courses. Further research should also utilise more data collection methods such as interviews and focus group discussion. Finally, further research is needed to further assess the significant differences in various motivational traits and learning strategies that contribute to students' performance in the Blended learning environment.

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## 10 APPENDICES

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### 10.1 APPENDIX A: SURVEY INSTRUMENT

Dear Student,

Blended learning is the combination of face-to-face (lectures) and technology-enabled learning environments. As you will know, the University of Dar-es-Salaam currently offers several courses using a Blended learning system.

It is apparent that while some students at the university thrive in a Blended learning environment, others do not. For this reason, I am attempting to understand the impact of student learning styles and motivation on student academic success within the Blended learning environment at your university.

Please kindly complete the attached questionnaire and return it to the person who gave it to you. Your support in this regard will be greatly appreciated.

You have been asked to provide your registration number and this is to be able to compare your academic results in Blended learning courses you have participated in with your perceptions captured in this survey.

PLEASE NOTE:

This research has been approved by ethics committees from the University of Dar-es-Salaam and Rhodes University. In addition, the Vice Chancellor of your University has given his permission for this study.

Your answers to this questionnaire and any personal information including marks will be kept **highly confidential** and only used in this research study. In the final description of the results of this study, **NO PERSONAL IDENTIFICATION OR PERSONAL DATA WILL BE IDENTIFIABLE**. All data will be anonymized. This condition is material in the

granting of the ethics approval for this study and will be adhered to strictly. Please note that you are welcome to withdraw from completing this questionnaire at any stage.

*If you are in doubt about how to answer a question, please ask the researcher.*

Thank you in advance for your cooperation and support.

***Tumaini J. Kabudi***

***MSc. Student - Rhodes University***

***E-mail: [tunicpj@gmail.com](mailto:tunicpj@gmail.com)***

## Section A: Background Information

Please answer the following questions as clearly as you can:

**REGNumber:** \_\_\_\_\_

**The title of your degree:** \_\_\_\_\_

**Age:** \_\_\_\_\_

**Year of study**

- First Year**
- Second Year**
- Third Year**
- Fourth Year**

**Gender:**

- Female**
- Male**

**Marital status:**

- Single**
- Engaged to be married**
- Married**
- Separated/Divorced**
- Widowed**

**Including courses in this semester, how many courses that use Blended learning (UDSM Learning Management System) have you taken? \_\_\_\_\_**

## Section A: Perceptions of the Blended Learning Environment

1. For how long have you been using the Blended learning environment (UDSM Learning Management System)?
  - 1 semester
  - 2 semesters
  - 3 semesters
  - 4 semesters
  - 5 semesters
  - 2 trimesters

2. To what extent do you use the Blended learning environment (UDSM Learning Management System) for accomplishing academic tasks?
- Regularly
  - Sometimes

3. In what academic tasks do you use the Blended learning environment (UDSM Learning Management System)? Please tick all that apply

- Access lecture slides and tutorials
- Academic discussions
- Share materials
- Access announcements from lecturers
- Ask lecturer questions
- Catch up on missed lectures

Other tasks (please specify): \_\_\_\_\_

4. What are the advantages of using Blended learning as a learning method? Please circle all that apply.

- Convenience of not having to come to campus as often
- Reduced costs
- Promotes completion of courses and degree
- Make students more employable
- Stops students from dropping courses
- Flexibility of being able to complete assignments at any place/any time
- Increase the flexibility of learning provision
- Increases student motivation
- Help stimulate better understanding
- Meets students' learning goals and needs

Other advantages (please specify): \_\_\_\_\_

5. Do you face challenges in using a Blended learning environment in your learning process?

- Yes
- No

6. If yes to question 5, what are the challenges you face in using a Blended learning environment? Please tick all that apply

- Lack of knowledge and skills to use Blended learning environment
- Lack of advanced ICT skills
- Lack of expertise on the use of tools and technologies in Blended learning
- Slow internet connections
- Social deprivation of learners
- Lack of support from instructors
- Lack of time for exploring these tools in Blended learning in details
- Poor ICT infrastructure to support Blended learning environment
- Unreliable power supply

Other challenges (please specify): \_\_\_\_\_

7. What technical features of the Blended learning system (UDSM Learning Management System) would you say you use most effectively? Please circle all that apply

- Discussion Forums
- Email platform
- Chat
- Calendar
- Opportunities for self-assessment questions and feedback

Other modules (please specify): \_\_\_\_\_

*Please answer the questions below to the best of your ability. If you strongly agree with a statement, circle 5; if you strongly disagree, circle 1. If the statement is more or less true of you, find the number between 1 and 5 that best describes you. If you are in doubt about how to answer a question, please ask the researcher.*

**SCORING**

**1      2      3      4      5**

**Strongly disagree**

**Strongly agree**

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 8. This Blended learning experience has improved my ability to access and use the course content. | 1 | 2 | 3 | 4 | 5 |
| 9. The online and face-to-face components of the Blended learning environment work together.      | 1 | 2 | 3 | 4 | 5 |
| 10. I received the technical support I needed during this course.                                 | 1 | 2 | 3 | 4 | 5 |
| 11. The course(s) on the UDSM Learning Management System is (are) well organized.                 | 1 | 2 | 3 | 4 | 5 |
| 12. The course(s) on the UDSM Learning Management System is (are) easy to navigate.               | 1 | 2 | 3 | 4 | 5 |
| 13. The web resources on UDSM LMS are helpful.  | 1 | 2 | 3 | 4 | 5 |
| 14. I feel my interaction with other students in a Blended learning environment increased.        | 1 | 2 | 3 | 4 | 5 |
| 15. I feel my interaction with my lecturers in a Blended learning environment increased.          | 1 | 2 | 3 | 4 | 5 |
| 16. I have problems using technologies in a Blended learning environment                          | 1 | 2 | 3 | 4 | 5 |
| 17. The content of my course(s) is presented well in a Blended learning environment.              | 1 | 2 | 3 | 4 | 5 |

18. The quality of course materials provided in the Blended learning environment is satisfactory 1 2 3 4 5
19. Locating course content and assignments on the University Learning Management System (LMS) is easy 1 2 3 4 5
20. Participating in chats or discussions on the University LMS is easy 1 2 3 4 5
21. Communicating with lecturers and colleagues at the University LMS is easy 1 2 3 4 5
22. Based on your experience, what advice or recommendations can you give to promote academic performance in Blended learning courses?
- 
- 

## Section B: Motivated Strategies for Learning Questionnaire

The following questions inquire about your motivation for and attitudes about the Blended learning environment (lectures and UDSM LMS/ERP). Use the scale below to answer the questions. If you think the statement is very true of you, circle 7; if a statement is not at all true of you, circle 1. If the statement is more or less true of you, find the number between 1 and 7 that best describes how you feel.

### SCORING

1 2 3 4 5 6 7

Not at all true of me

Very true of me

### 1 Part A. Motivation

1. In a Blended learning , I prefer course material that motivates me to learn new things. 1 2 3 4 5 6 7
2. In a Blended learning class, I prefer course material that interests me, even when it is difficult to learn. 1 2 3 4 5 6 7
3. The most satisfying thing for me in a Blended learning course is trying to understand the content carefully. 1 2 3 4 5 6 7
4. When I have the opportunity, I choose assignments that I can learn from even if they don't promise good grades. 1 2 3 4 5 6 7
5. Getting a good pass mark in a course conducted in a Blended learning environment is the most satisfying thing for me. 1 2 3 4 5 6 7
6. The most important thing for me is to improve 1 2 3 4 5 6 7



Other factors (please specify): .....

18. Did the use of the Blended Learning environment motivate you to learn and succeed in your degree?

- Yes
- No

Additional comments.

## Part B. Learning Strategies Scales

	<b>SCORING</b>						
	1	2	3	4	5	6	7
	<b>Not at all true of me</b>						<b>Very true of me</b>
1. In a Blended learning environment, when I study for a course, I repeat the materials to myself over and over.							1 2 3 4 5 6 7
2. In a Blended learning environment when studying a class taught I read the notes and readings over and over again.							1 2 3 4 5 6 7
3. In a Blended learning environment, I cram key words to remember important things						1 2 3 4 5 6 7	
4. I make lists of key terms and cram the lists in a Blended learning environment and cram the lists.							1 2 3 4 5 6 7
5. When I study for a course taught in a Blended learning environment, I combine information from different sources, such as lectures, readings and discussions.							1 2 3 4 5 6 7
6. I try to connect ideas taught in a Blended learning course to those ideas in other courses							1 2 3 4 5 6 7
7. When studying for a class taught in a Blended learning environment, I try to connect the material to what I already know							1 2 3 4 5 6 7
8. When I study for courses in a Blended learning environment I write short summaries of the important ideas from course notes.							1 2 3 4 5 6 7
9. I try to understand the material taught in a Blended learning environment by connecting the readings and the lecture notes.							1 2 3 4 5 6 7
10. When studying in a Blended learning environment, I try to apply ideas from course notes in other class activities such as lecture and discussion.							1 2 3 4 5 6 7

11. When I study in a Blended learning environment, I summarize notes to help me be organized. 1 2 3 4 5 6 7
12. When I study for a course in a Blended learning environment, I go through the class notes and try to find the most important ideas. 1 2 3 4 5 6 7
13. When I study for a course in a Blended learning environment, I make simple charts, diagrams or tables to help me organize the course materials. 1 2 3 4 5 6 7

**SCORING**

- |   | <b>1</b>                     | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b>      |                        |
|---|------------------------------|----------|----------|----------|----------|----------|---------------|------------------------|
|   | <b>Not at all true of me</b> |          |          |          |          |          |               | <b>Very true of me</b> |
| 14. When I study for a course taught in Blended learning, I go through my class notes and summarize important concepts.                     |                              |          |          |          |          |          | 1 2 3 4 5 6 7 |                        |
| 15. In Blended learning environment, I always ask things I hear or read in a course taught to see if I understand.                          |                              |          |          |          |          |          | 1 2 3 4 5 6 7 |                        |
| 16. In a Blended learning environment, I always look for evidence of a theory or conclusion.  |                              |          |          |          |          |          | 1 2 3 4 5 6 7 |                        |
| 17. In a Blended learning environment, I use the course notes as a starting point and try to form my own ideas about the course.            |                              |          |          |          |          |          | 1 2 3 4 5 6 7 |                        |
| 18. In a Blended learning environment, I try to connect my own ideas and thoughts to what I am learning in this Blended learning course.    |                              |          |          |          |          |          | 1 2 3 4 5 6 7 |                        |
| 19. In a Blended learning environment whenever I read or hear a conclusion in a Blended learning course, I think about possible options.    |                              |          |          |          |          |          | 1 2 3 4 5 6 7 |                        |
| 20. During blending learning class time, I often miss important points because I'm thinking of other things.                                |                              |          |          |          |          |          | 1 2 3 4 5 6 7 |                        |
| 21. When studying for the Blended learning course, I make up questions to help me focus while studying.                                     |                              |          |          |          |          |          | 1 2 3 4 5 6 7 |                        |
| 22. In a Blended learning environment, when I become confused about something I read, I go back and try to make sense (understand).         |                              |          |          |          |          |          | 1 2 3 4 5 6 7 |                        |
| 23. If course notes for a class taught in a Blended learning environment are difficult to understand, I change the way I read the notes     |                              |          |          |          |          |          | 1 2 3 4 5 6 7 |                        |
| 24. In a Blended learning environment, Before I study new course notes carefully, I often read them quickly to see how notes are organized. |                              |          |          |          |          |          | 1 2 3 4 5 6 7 |                        |
| 25. In a Blended learning environment, I ask myself question to make sure I understand the notes I have been                                |                              |          |          |          |          |          | 1 2 3 4 5 6 7 |                        |

studying in the Blended learning class.

26. In a Blended learning environment, I try to change the way I study in order to connect to the courses' requirements taught via Blended learning 1 2 3 4 5 6 7

**SCORING**

- |   | 1                            | 2 | 3 | 4 | 5 | 6 | 7                      |
|---|------------------------------|---|---|---|---|---|------------------------|
|   | <b>Not at all true of me</b> |   |   |   |   |   | <b>Very true of me</b> |
| 27. While I often read course material provided on the university LMS, I often find I don't know what it was about                              |                              |   |   |   |   |   | 1 2 3 4 5 6 7          |
| 28. I try to think about a topic and decide what I will study in the topic rather than just read the topic when studying.                       |                              |   |   |   |   |   | 1 2 3 4 5 6 7          |
| 29. When studying a course taught in a Blended learning environment I try to identify which concepts I don't understand well.                   |                              |   |   |   |   |   | 1 2 3 4 5 6 7          |
| 30. When I studied for a course in a Blended learning environment, I set goals for myself in order to plan my learning activities when I study. |                              |   |   |   |   |   | 1 2 3 4 5 6 7          |
| 31. If I get confused taking notes in a class taught via a Blended learning environment, I make sure I check after class.                       |                              |   |   |   |   |   | 1 2 3 4 5 6 7          |
| 32. I usually study in a place where I can concentrate on reading my course notes.  |                              |   |   |   |   |   | 1 2 3 4 5 6 7          |
| 33. In a Blended learning environment, I make good use of my study time for the courses taught.   |                              |   |   |   |   |   | 1 2 3 4 5 6 7          |
| 34. In a Blended learning environment, I find it hard to stick to my own study timetable  |                              |   |   |   |   |   | 1 2 3 4 5 6 7          |
| 35. In a Blended learning environment, I have a regular place reserved for studying.  |                              |   |   |   |   |   | 1 2 3 4 5 6 7          |
| 36. I make sure I keep up with the weekly readings and assignments for courses taught in a Blended learning environment.                        |                              |   |   |   |   |   | 1 2 3 4 5 6 7          |
| 37. I attend classes taught via Blended learning regularly.   |                              |   |   |   |   |   | 1 2 3 4 5 6 7          |
| 38. When studying in a Blended learning environment, I often find that I don't spend very much time because of other personal activities.       |                              |   |   |   |   |   | 1 2 3 4 5 6 7          |
| 39. When studying in a Blended learning environment, I rarely find time to revise my notes or readings before an exam.                          |                              |   |   |   |   |   | 1 2 3 4 5 6 7          |

40. When studying in a Blended learning environment, I Often felt lazy or bored and eventually quit 1 2 3 4 5 6 7

**SCORING**

**1 2 3 4 5 6 7**  
**Not at all true of me Very true of me**

41. I worked hard to do well in this Blended learning course even if I didn't like what we were doing. 1 2 3 4 5 6 7

42. In a Blended learning environment, when course work is difficult, I give up or only study the easy parts. 1 2 3 4 5 6 7

43. When studying in a Blended learning environment even when course notes are boring and not interesting, I manage to keep reading until I finish. 1 2 3 4 5 6 7

44. When studying for courses taught in a Blended learning environment, I often try to explain the notes to a classmate or a friend. 1 2 3 4 5 6 7

45. When studying in a Blended learning environment I try to work with other students from my class to complete the course assignments. 1 2 3 4 5 6 7

46. When studying for a Blended learning course, I often set time to discuss the course notes. 1 2 3 4 5 6 7

47. When studying for a Blended learning course, even if I have trouble learning the material; I try to do the work on my own, without help from anyone. 1 2 3 4 5 6 7

48. When studying for a Blended learning course, I ask the lecturer to explain well concepts I don't understand. 1 2 3 4 5 6 7

49. When studying for a Blended learning course, when I cannot understand the course notes I ask another student in class for help. 1 2 3 4 5 6 7

50. When studying for a Blended learning course, I try to identify students in my class whom I can ask for help if necessary. 1 2 3 4 5 6 7

51. What strategies do you think are most useful for learning in a Blended learning environment? Please circle all that apply
- Combine lecture notes with Images, figures, illustrations and photographs
  - Working with your colleagues
  - Reading and focusing on specific information, structures, key words, or phrases
  - Create mental, oral or written summary of notes
  - Reading or listening to the same lecture over again
  - Habit of sharing information and content with others
  - Ask for help and clarification

- By brainstorming ideas
  - Explaining and describing ideas with great details
- Other strategies (please mention)

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**End of Questionnaire, thank you for participating.**

## 10.2 APPENDIX B: Invitation to Participate In Research Letter



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20<sup>th</sup> May 2017

University of Dar-es-Salaam,  
P.O.Box 35091,  
Dar-es-Salaam  
Tanzania

Dear Student

### **Re: Invitation to participate in research study**

You are invited to participate in a research study entitled “The Predictors of Student Performance in a Blended Learning Environment at a Higher Education Institution (HEI) in Tanzania: A Case Study at the University of Dar es Salaam”. The aim of this research is to determine how student’s performance in a Blended learning environment is influenced by motivation and learning styles. Your participation and cooperation is important so that the results of the research are accurately portrayed.

The research will be undertaken by means of questionnaires and the data to be collected from this research will be quantitative data. Your identity and that of your institution will be treated with complete confidentiality. The collection of this data will require about 30 minutes of your time to complete.

We will provide you with all the necessary information to assist you to understand the study and explain what would be expected of you (the participant). These guidelines would include the risks, benefits, and your rights as a study subject. Furthermore, it is important that you are aware that this study has been approved by a Research Ethics Committee of the university.

Participation in this research is completely voluntary and this letter of invitation does not obligate you to take part in this research study. To participate, you will be required to provide written consent that will include your signature, date and initials to verify that you understand and agree to the conditions. Please note that you have the right to withdraw at any given time during the study without penalty.

Thank you for your time and I hope that you will find our request favourable.

Yours sincerely,

Ms Tumaini J Kabudi  
Research Student

Mr. Chris Upfold  
Supervisor