DETERMINANTS OF STUDENTS' COMPLETION OF POSTGRADUATE STUDIES: A CASE OF SELECTED UNIVERSITIES IN UGANDA

BY

NOEL JAPHETH

A RESEARCH THESIS SUBMITTED TO THE SCHOOL OF EDUCATION, DEPARTMENT OF EDUCATIONAL MANAGEMENT AND POLICY STUDIES IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF EDUCATION IN RESEARCH

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DECLARATION

Declaration by Candidate

I, declare that this thesis is my original work and has not been presented elsewhere for a degree or any other award. No part of this thesis may be reproduced without the prior written permission of the author and/or Moi University.

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NOEL JAPHET

REG. NO. M.EDR/4189/20

Declaration by the Supervisors

The thesis has been submitted with our approval as the university supervisors.

Sign:…… Date: ……

Dr. Benjamin Kyalo Wambua

Department of Educational Management and Policy studies

School of Education

Moi University: Eldoret, Kenya

Sign:…… Date: ……

Prof. Proscovia Namubiru Ssentamu

Department of Educational Leadership and Management

School of Management Science

Uganda Management Institute, Kampala, Uganda

DEDICATION

I wish to dedicate this dissertation to my beloved family member Ms. Ndyabawe Deera, and staff of Kigezi College Butobere-Kabale Uganda, and mostly to the Universities that I involved in this study, and finally to my supervisors Dr. Benjamin Kyalo Wambua from Moi University-Kenya and Prof. Proscovia Namubiru from Uganda Management Institute-Uganda, and my lecturers at Moi University-Kenya for the academic skills they imparted in me.

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ABSTRACT

Completing a postgraduate programme is a great achievement to the candidate and the institution of higher learning attended. Generally, master's and doctoral programmes in Uganda take a minimum of two and three years, respectively. However, the long time it takes for the majority of postgraduate students to complete their studies, the low success rate, and the high percentage of postgraduate students who terminate their studies and drop out of the system before they graduate have remained a concern. The purpose of this study was to analyze the determinants of students' completion of postgraduate studies in selected universities in Uganda. The study was guided by four objectives namely; to analyze the relationship between research supervision and students' completion of postgraduate studies, to examine the relationship between students' perceived academic psychological state and completion of postgraduate studies, to analyze the relationship between resources availability and students' completion of postgraduate studies, and to establish the current strategies for effective research supervision in the completion of postgraduate studies. Tinto's interactionist theory was used to inform the study. The study was anchored in the pragmatic paradigm and its assumptions were employed to achieve all its objectives. A concurrent embedded mixed methods research design was employed. A total of three hundred and Fifty-six (356) participants were sampled from selected universities. Of these 230 were enrolled postgraduate students, 105 lectures/supervisors, 15 heads of department and 3 deans/directors of graduate schools and faculties of education. Both probability and non-probability sampling approaches were applied to select participants. These included simple random probability sampling techniques and purposive non- probability sampling techniques. Quantitative data were collected using a questionnaire that included scales and were analyzed using both descriptive and inferential statistics with the help of the SPSS 21.0 version. Qualitative data were generated using an interview guide and documentation analysis guide and were analyzed thematically by arranging emerging categories and themes. Results revealed that research supervision and students' completion had a positive significant relationship (r_S = .457, p (.000) < 0.01, N=230), students' perceived academic psychological state and students' completion had a positive significant relationship (r_S = .243, p (.000) < 0.01, N=230), and resources availability were not significantly related to students' completion of postgraduate studies (r_S = .111, p (0. 094) >0.01, N=230). Ordinal regression findings further revealed that research supervision had a high prediction power of students' completion of postgraduate studies compared to resources availability and students' perceived academic psychological state. It was found out that for every unit increase of research supervision, there was a predicted increase of 1.505(P<.05) in the log odds of falling at the higher level on students' completion of postgraduate studies. On the current strategies for effective research supervision in the completion of postgraduate studies, it emerged that supervisors, deans and universities embraced online research supervision, corroborative research supervision approaches, effective coordination, workshops for supervisors and students, motivation and administrative follow-up on the progress of both students and supervisors. It was concluded that research supervision and students' perceived psychological state are key in students' completion of postgraduate studies and that availability of resources does not justify timely students' completion of postgraduate studies. The study recommends that universities should establish support mechanisms for students during their research period, a policy for online research supervision and an active psychological support policy for postgraduate students. The study further recommends that a study on Students' usability and accessibility of universities' resources should be conducted in Uganda. This is because the current study revealed that the availability of resources was not significantly related to students' completion of postgraduate studies.

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ABBREVIATIONS AND ACRONYMS

AUA-	Adventist University of Africa
AUGA-	The Association of Uganda German Alumni
CERM-ESA-	East and South African-German Centre of Excellence for Educational Research Methodologies and Management
CHET-	Centre for Higher Education and Transformation
COVID-19-	Corona Virus Disease Discovered in 2019
CVI-	Content Validity Index
DA -	Document Analysis
DAAD-	German Academic Exchange Service
DGRT-	Directorate of Research and Graduate Training
DV -	Dependent Variables
EV -	Extraneous Variables
HERANA-	Higher Education Research and Advocacy Network in Africa
IV -	Independent Variables
1-CVI-	Item Content Validity Index
MoES-	Ministry of Education and Sports
MUST-	Mbarara University of Science and Technology
NCHE-	National Council for Higher Education
NHESP-	National Higher Education Strategic Plan
PhD-	Doctor of Philosophy
PHEA-	Partnership for Higher Education in Africa
PREQ-	Postgraduate Research Experience Questionnaire
S-CVI-	Scale Content Validity Index
SPSS -	Statistical Package for Social Sciences
UNCST-	Uganda National Council of Science and Technology
UNESCO-	United Nations Educational, Scientific and Cultural Organization
USA-	United States of America

CHAPTER ONE

1.0 Introduction

This chapter provides a general overview of the study. It discusses the background information of the study, statement of the problem, objectives of the study, research hypotheses, research questions, and justification of the study, the purpose of the study, the significance of the study, scope and limitations of the study, theoretical framework, conceptual framework, operational definitions of terms, and finally the chapter conclusion.

1.1 Background to the Study

Postgraduate studies are academic programs attended after attainment of the undergraduate degree. They are attained through coursework, research, or mixed mode of both (Subhan, 2015). As Subhan (2015) noted postgraduate programs are attained at different levels that include graduate certificate, graduate diploma, masters and doctor of philosophy. The current study focused on master's and doctor of philosophy studies because they emerged to be the affected with regard to completion. In line with this, Ssenyonga and Nakiganda (2020) note that postgraduate diplomas are completed in time because they do not include a research component which is taken to be the most complicated task in the postgraduate programs.

Postgraduate studies impart in students skills of understanding and creating new knowledge, networking, problem-solving, project management communicating complex ideas, research governance and organization, among others (Subhan, 2015). Such skills are too significant to any institution of learning, academic body, organization, and country, which justifies the need to improve postgraduate education.

Completing a postgraduate program is a great achievement to the candidate, the institution of higher learning attended, the academic world as well as the country in form of the economy (Pitchforth, et al., 2012). However, the quality and throughput of postgraduates are a concern worldwide among institutions of higher learning. The length of time it takes for postgraduate students to complete their studies, the success rate of postgraduate students, and the high percentage of postgraduate students who terminate their studies and drop out of the system before graduation (Rong'uno, 2016), is alarming.

As it is ascertained in some studies all over the world, the duration of postgraduate studies and the time many students take to complete have become key questions that need consistent attention, not only to students but also to institutions, funders of postgraduate studies, governments and other stake holders in higher education (Noel, et al 2021; Rong'uno, 2016). As noted in Botha, (2016) several studies have been conducted on postgraduate studies in higher education institutions globally by the World Bank; the South African Department of Education; the Association of African Universities; the United States Partnership for Higher Education in Africa (PHEA) and the Centre for Higher Education and Transformation (CHET) among others. Besides, the Higher Education Research and Advocacy Network in Africa (HERANA) with its' project on higher education and development, has been involved in research on the status of postgraduate enrolment and throughput at higher education institutions and the impact it has on world economies (Luescher-Mamashela, 2015) as cited in Botha (2016). All these studies indicate a challenge of poor students' completion of postgraduate studies, especially in Africa where 85% fail to complete in time allocated (Motseke, 2016).

In Kenya, three universities were most recognized in postgraduate training between 2001 and 2015 (Rong'uno 2016). These included the University of Nairobi, Moi University and Kenyatta University. It is evident that out of 984 students who were enrolled for doctoral education in these institutions between the years of 2001 and 2015, only 252(25%) were able to graduate with a doctoral degree during the same period (Rong'no, 2016). This means that other doctoral students were either still enrolled during that period or dropped out years.

Similarly, Mukhwana, et al.(2016) put it that masters and doctoral academic programmes are meant to run for two years and three years respectively. However, Kenyan institutions rarely meet these timelines. The majority of postgraduate students take at least double of minimum designed years to complete their programmers which has continuously pressed challenges on Kenyan public universities (Waswa, et al., 2020; Ndayambaje, 2018)

In Uganda, the completion rate for masters' degree programs between 2001 and 2008 was low; 15.8% in academic year 2001/2002, 9.1% 2002/2003, 11.6% 2003/2004, 6.0% 2004/2005, 8.9% 2005/2006, 13.2% 2006/2007 and 0% 2007/2008 (Eyangu, Bagire, & Kibrai, 2014). More so according to Kabeba and Muriisa (2015), 50% of students who enroll in doctoral programmes in African universities fail to complete their studies in the allocated time. In Mbarara University of Science and Technology (MUST) for example according to the Mbarara University of Science and Technology Graduation list (2019) out of 189 postgraduate students who graduated on the 26th graduation ceremony, only 87 (46%) completed in the specified time of their programs. On the same occasion, out of 11 Ph.D. students, only 2 (20%) graduated in the 3 years' specified time of their programs. Besides, on 6th of March 2020 Prof. Mukadasi, Director of Directorate of Graduate Research and Training

(DGRT) at Makerere University while addressing DAAD AUGA workshop on postgraduate completion and research output, noted "... *besides the significant role in generating research outputs to drive development, completion rates of postgraduates remain unsatisfactory*" (Tehereze, 2020) Therefore, this attracted the researcher's motivation to conduct the current study.

As it is clear that Sub-Saharan African universities are suffering the challenge of shortage of qualified academic staff across the board, which has made it difficult to sustain quality university education even in established universities (Hayward & Ncayiyana, 2015), it is through graduate education that more staff can be trained. Therefore, determinants of good completion rates must be sought and put into consideration for the smooth running of postgraduate programs. In agreement with Clark (2010), the completion of postgraduate programs is determined by several factors.

Supervision has been cited by various scholars like (Cekiso et al., 2019; Kaur & Kaur, 2013; Abiddin & Ismail, 2011; Smeby, 2000; Lee, 1998; Donald et al., 1995) as a cause for delayed completion of postgraduate programs. In the supervision period, the focus is put on the thesis, dissertation, or research project. According to Ngozi and Kayode (2013), the supervision schedule contributes to the thesis or dissertation delay, which means that student's graduation time will also delay.

As noted in Lessing and Schulze, (2002), during supervision, too much control threatens the originality of the student and too little control can delay completion and even lead to total failure. Holdaway and Deblois (1995) contend that regular meetings between the supervisor and the student are important to foster work progress during the research process. It is also indicated that the student-supervisor relationship

(Gumbo, 2019; Noel, et al., 2021), the effectiveness of the supervisor and the quality of supervision determine when the student completes the programme (Tahir, et al., 2012a). However, it is not justified if supervision alone can determine students' completion of postgraduate programs; hence the present study investigated the relationship between research supervision, psychological support, and resources availability and students' completion of postgraduate.

In Jonathan Norton Wellbeing Services University of Melbourne (2019), several characteristics are well noted as determining students' completion of postgraduate studies in Australia. The University highlighted disciplinary differences, admission-full time and part-time, and quality of supervision. In this same study, psychological aspects of inner self, procrastination, perfectionism, and locus of control were noted to have been out of students' control and leading to students' delay of completion of studies. According to Green (1997), procrastination has a high impact on students' completion of studies. In his study of psychological factors affecting postgraduate studies, procrastination emerged the highest and all responses sealed around it. Motivation and academic identity are also so influential in this case (Sverdlik, et al., 2018).

The research project is one of the requirements to be adhered to during postgraduate studies. van de Schoot, et al., (2013) note that postgraduate students must treat research with total commitment. Changing the topic now and then has caused Ph.D. students to take longer than expected (van de Schoot, et al., 2013). According to Rauf (2016), although the number of students registering for postgraduate programs is increasing in Sri Lanka, many students either delay completing or drop out because of thesis challenges. The amount of freedom in the research project and selecting the research area that is closely related to the supervisor's research is important in

enhancing project completion (van Rooij, et al., 2019). Therefore, during research writing time candidates must be treated with good faith by supervisors.

Although postgraduate program learning experiences through coursework are among the requirements for some universities, studies indicate that 99% complete coursework and learning with no difficulties. For instance, Ssenyonga and Nakiganda (2020) found that all registered postgraduate students in Uganda finish their coursework in time. van de Schoot, et al., (2013) also note that coursework has not been an issue for postgraduate students. Many universities in Uganda do not offer PhDs by both research and coursework, they are offered by research. This attracted the attention of this study on learning experiences as a variable that students completely depend on. Could missing coursework as a learning experience is the cause of delay in students' completion?

The availability of resources in universities is cited among the factors affecting students' completion of postgraduate studies. Using a complex analysis approach in their study, Pitchforth, et al., (2012) noted that the availability of resources like the library, computer access, and research supervisor affected students' completion of postgraduate studies. However, with current technological advancement where postgraduate students own personal computers and smartphones that can assist them in accessing online library services, but throughput is still worrying. Examination and statutory university requirements are other factors that may determine the duration of students' completion of postgraduate studies. However, this study will not focus on them because they are usually stipulated in the universities' postgraduate guidelines that are provided to each student in the admission process. It is upon the student to work within the confines of the guidelines. These factors were treated as extraneous variables.

1.2 Statement of the Problem

Completion of postgraduate studies is important because when students finish their studies and embark on their careers, they bring with them the knowledge and skills they obtain in their research, new working methods, capacity to solve complex problems, knowledge to formulate operational policies and ability to conduct research and come up with new ideas.

Unfortunately, Uganda has faced challenges of shortage of academic staff in both public and private universities for a long time (Ojambo, 2019; Mushemeza, 2016; Kyaligonza, et al., 2015). Less involvement in research by university academic staff has been registered because of high student-lecturer ratios which consistently limit the few available academic staff to engage in productive research for socio-economic development (Kyaligonza, et al., 2015).

Low completion rates and the long time students take to complete their postgraduate studies are continuously being witnessed year after the other in Uganda (Wamala, et al., 2012; Kabeba & Muriisa, 2015; Obuku, et al., 2017). For instance, according to the Mbarara University of Science and Technology (MUST) graduation list (2019), on the 26th graduation among all postgraduate candidates, only 46% were graduating in the specified time of their programs and only 20% graduated with a Ph.D. in a three-year time record.

Much as several studies have been carried out on students' completion of postgraduate studies (Styger, et al., 2014; Ismail & Meerah, 2012; van Rooij, et al., 2019; Hall, 2019; Vidak, et al., 2017; Green, 1997; Sverdlik, et al., 2018; Rugut, 2019; Akparep, et al., 2017). Few studies have been conducted in Uganda and those carried out have put less focus on master's students (Kabeba & Muriisa, 2015;

Wamala, et al., 2012; Eyangu, et al., 2014; Kasangaki, et al., 2012). Thus, the current study analyzed factors influencing students' completion of postgraduate studies in Uganda with equal focus on both doctoral and masters students.

1.3 Purpose of the Study

The purpose of this study was to investigate the factors influencing students' completion of postgraduate studies in selected universities of Uganda.

1.4 Research Objectives

i. To establish the current strategies for effective research supervision in the completion of postgraduate studies in selected universities in selected Uganda.
ii. To examine the relationship between research supervision and students' completion of postgraduate studies in selected universities of Uganda.
iii. To assess the relationship between students' perceived academic psychological state and their completion of postgraduate studies in selected universities of Uganda.
iv. To analyze the relationship between resources availability and students' completion of postgraduate studies in selected universities of Uganda.

1.5 Research Questions

1. What are the current strategies for effective research supervision in the completion of postgraduate studies in selected universities of Uganda?
2. What is the relationship between students' research supervision and students' completion of postgraduate studies in selected universities of Uganda?
3. What is the relationship between students perceived academic psychological state and students' completion of postgraduate studies in selected universities of Uganda?

4. What is the relationship between resources availability and students' completion of postgraduate studies in selected universities in Uganda?

1.6 Research Hypotheses

1. There is no statistically significant relationship between research supervision and students' completion of postgraduate studies in selected universities of Uganda.
2. There is no statistically significant relationship between students' perceived academic psychological state and students' completion of postgraduate studies in selected universities of Uganda.
3. There is no statistically significant relationship between resources availability and students' completion of postgraduate studies in selected universities of Uganda.

1.7 Justification of the Study

Uganda has over 46 public and private universities; some of these universities offer postgraduate education at masters and doctoral levels. Universities have experienced poor students' completion of postgraduate studies. Poor completion of postgraduate studies puts a country at high risk in science, technology and research output which are important in the development of any country. Therefore, it was paramount to conduct a study of this kind to contribute to the enhancement of postgraduate education in Uganda.

1.8 Significance of the Study

The study explored the contribution of conceptualized factors in determining students' completion of postgraduate studies in selected universities of Uganda as well as current strategies for effective research supervision. The findings of this study are

essential to the prospective postgraduate students and institutions of higher learning in setting strategies to enhance postgraduate studies and improve the timely completion rates of postgraduate students. It is expected that findings will guide university departments, directorates and schools in setting policies that promote quality research supervision, offer psychological therapy to postgraduate students, utilization of available resources and establishment of required resources, teaching, learning and research training.

It is further expected that the findings will guide the Ministry of Education and Sports (MoES) and Uganda National Council for Higher Education (UNCHE) in setting the requirements that should be fulfilled before accrediting postgraduate programmes for particular Universities. Uganda National Council of Science and Technology (UNCST) which conducts registration and approval of all research activities in all sectors intended to be undertaken in Uganda will be informed on challenges and activities that postgraduate students go through in their studies that need consideration in ethical clearances.

Finally, it is anticipated that this study contributed to the existing body of knowledge on the current strategies for effective research supervision; the contribution of research supervision and students' perceived academic psychological state towards students' completion of postgraduate studies.

1.9 Assumptions of the Study

This study was based on the assumption that participants knew the factors that determine students' completion of postgraduate studies in selected Universities.

All participants honestly provided information about the determinants of students' completion of postgraduate studies in selected Universities.

Postgraduate students could complete in the time allocated to the program and they prefer to complete in time.

Available resources in the form of library, computer access is enough to make the postgraduate student complete the program in time.

1.10 Scope of the Study

This study was conducted in selected universities in Uganda, both public and private. The study involved one public university and one private university. Participants of the study included enrolled postgraduate students, lecturers/supervisors, and heads of departments and deans/directors of postgraduate schools. The study focused on analyzing the relationship that research supervision, perceived students' academic psychological state and resources availability have on students' completion of postgraduate studies in selected universities in Uganda. Many theories and models explain students' completion of postgraduate studies but this study was guided by the interactionist theory of student departure by Tinto (1993). This is because this theory puts forward conditions under which a postgraduate student is likely to either persist or withdraw from the studies.

The study took nine months between December 2020 and August 2021 and considered students' study period between 2015 and 2020. Data were collected between December 2020 and February 2021. The coding cleaning and analysis of data were done between March 2021 and April 2021. The thesis report was written and submitted for examination between May 2021 and August 2021.

1.11 Limitations of the Study

This study employed a concurrent imbedded mixed-methods design, the design allowed for the collection of quantitative data for quantitative objectives and

qualitative data for a qualitative objective. Since each data set was meant to serve a particular objective, triangulation in form of comparing qualitative and quantitative data sets and findings on a single objective was not possible. More so, the design took a lot of time in planning and implementing different methods at the same time and within the same study sites.

The study was conducted in two universities that is one public and one private university. Therefore, it was not possible to gather information from other universities of Uganda.

The study was informed by the interactionist theory by Tinto (1993), the theory does not capture the variable of availability of resources. Therefore, the study did not have a theoretical explanation of the availability of resources and students' completion of postgraduate studies. Theoretical explanations are confirmed to be strong; therefore, the lack of theoretical explanation of the availability of resources and students' completion of postgraduate studies was a big limitation to the current study.

1.12 Theoretical Review and Framework

The current study grounded on Tinto's (1993) interactionist theory of student departure. He emphasized that the interaction between the student and the environment of the school leads to student persistence or withdrawal (Reisinger, 2016). Tinto's "theory" states that to persist, students need integration into formal (academic performance) and informal (faculty/staff interactions) academic systems and formal (extracurricular activities) and informal (peer-group interactions) social systems (Tinto, 1993).

The theory identified three major sources that can cause a student to withdraw, these are; academic difficulties, the inability of individuals to resolve their educational and

occupational goals, and their failure to become or remain incorporated in the intellectual and social life of the institution (Berger & Braxton, 1998a).

These interactions occur among the student and the academic and social systems of a college or university (Seidman, 2005). He posited that an increase in social and academic integration will increase students' commitment to their goals as well as towards the institution, subsequently increasing the rate of retention and completion (Harper & Quaye, (2009), cited in Reisinger, 2016). Tinto contended that social and academic integration influences a student's commitment to the institution and to the goal of graduating.

Tinto's theory is based on assumptions that student interaction with faculty members is an important component of students' integration within the social and academic systems of their institutions; more informal interaction with faculty members could increase the level of their institutional commitment and subsequently minimize the risk of withdrawal. Therefore, the study was in line with this theory that puts up interactions between postgraduate students with faculty staff through supervision and academic support, the significance of peers and their incorporation of intellectual knowledge through research.

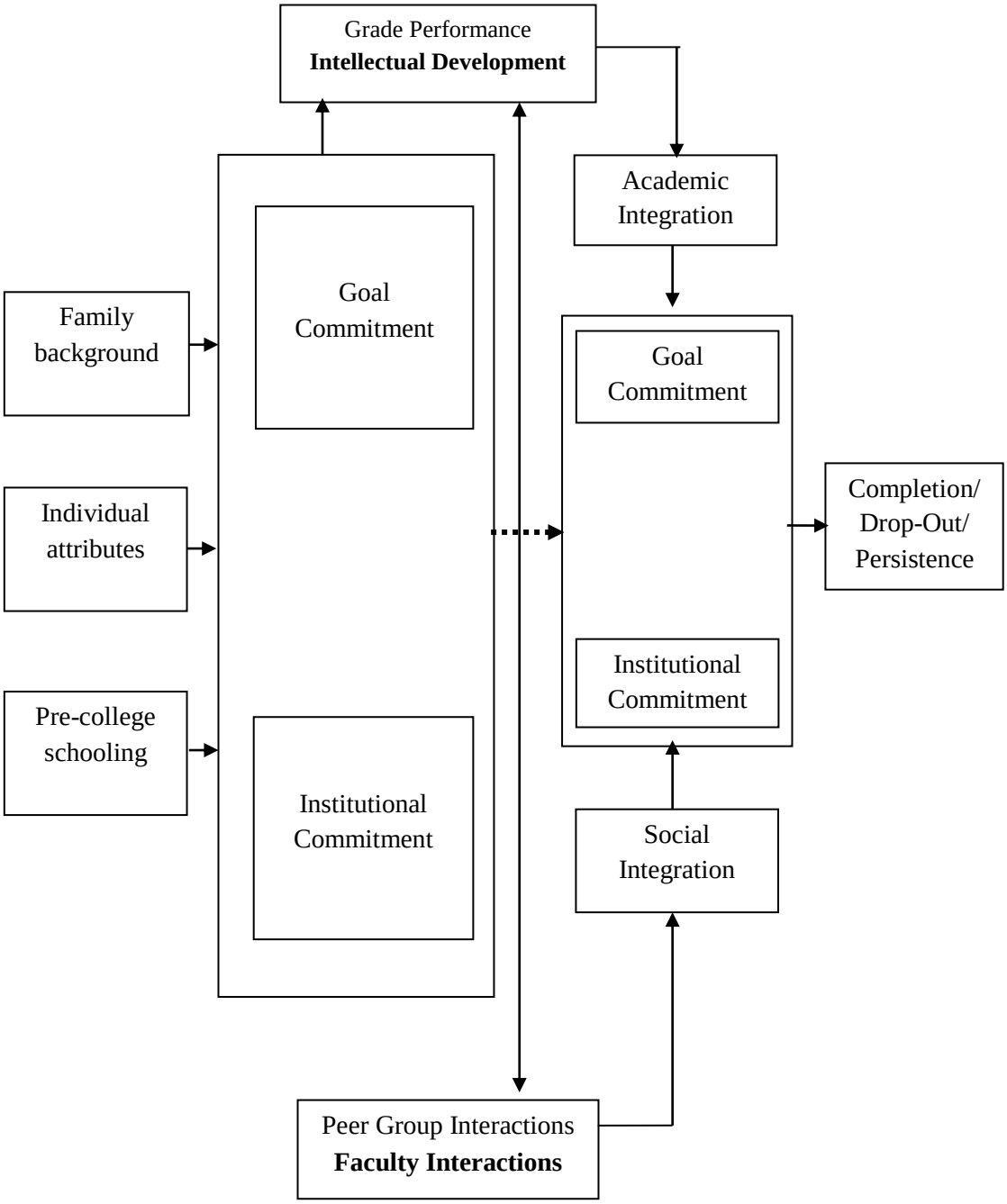
In the current study, as cited in van Rooij, et al. (2019), academic integration refers to involvement in professional activities and opportunities, collaborating with researchers, frequent contact with colleagues, integration in the department community, and receiving (and providing) academic help from/to other postgraduate students and staff. Social integration in this study is sharing mental support from peers when needed, sharing holiday and weekend stories, and social activities such as having a drink together after work and hearing about the progress of one another (van

Rooij, et al., 2019) which is a manifest of postgraduate research experiences. Therefore, the literature suggests that universities ought to integrate postgraduate students both academically, socially, and intellectually to improve their commitment to the completion of their goals and studies inclusive.

In 1982, Tinto criticized his earlier 1875 model basing on the fact that it did not adequately distinguish between the behaviors that lead to institutional transfer and the ones that result in permanent withdrawal from higher education (Aljohani, 2016). Not far from this, Tinto's interactionist theory of 1993 does not explain the behaviors between students and faculty members or peers that facilitate integration in academic and social systems. For instance, claiming that interactions between students and faculty members increase institutional commitment is a broad concept. It would be clearer if the theory would bring forth what they interact about that enhances commitment.

More so, according to this theory, academic social and intellectual integration are independent processes in each student's life and the theory does not portray consideration for different students' lifestyles, as each student has a unique attribute that situates him/her within the process. Therefore, in line with this theory, the study unveiled postgraduate students' engagements and interactions within the university's environment, social and intellectual settings through supervision, research and learning and psychosocial orientation, hence analyzing how such interactions determine their completion of studies. Tinto's 1993 theoretical model has been presented below (Figure 1) to show how students' interaction in both social and academic systems affects the completion of studies.

ACADEMIC SYSTEMS



SOCIAL SYSTEMS

Figure 1: Tinto's (1993) Theoretical Model

1.13 Conceptual Framework

The conceptual framework is a representation of a system by the design of the model (Rong'uno, 2016) or by adopting a model. The conceptual framework of this study is guided by Tinto's (1993) theoretical model (see Figure1). The conceptual framework represents how three (3) variables determine students' completion of postgraduate studies. The framework has four separate but interrelated independent variables whose role contribute either to timely or untimely students' completion of postgraduate studies. Basing on this model, supervision, resources (academic systems) and students' perceived academic psychological state are perceived to determine students' completion of postgraduate studies.

The conceptual framework showing the relationship between research supervision, students' perceived academic psychological state and students' completion of postgraduate studies

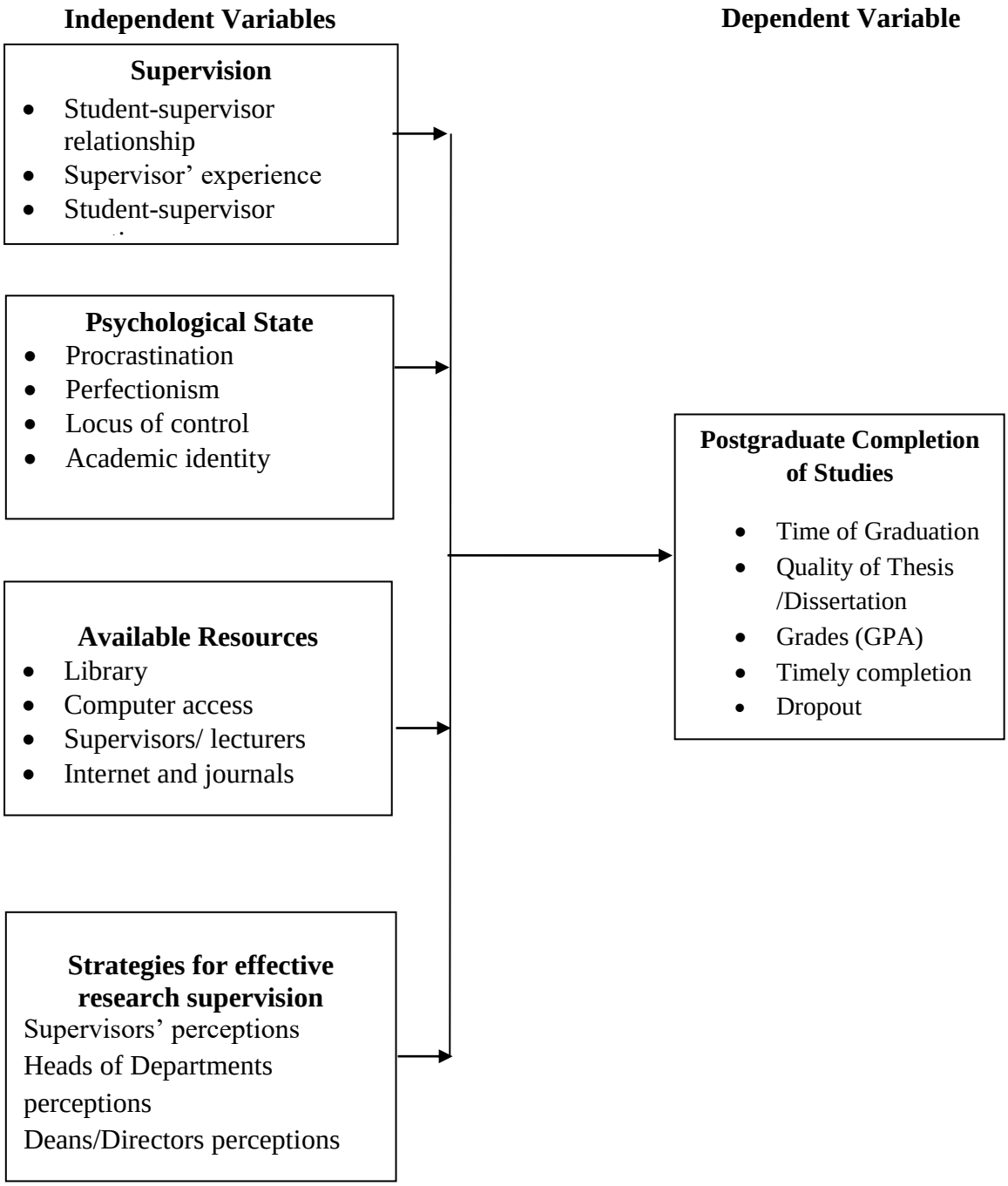


Figure 2: Conceptual Framework the relationship between factors influencing of students' completion of postgraduate studies

1.14 Definition of Terms

Academic integration: combining research skills development based on student-faculty members' interactions and corroborations with content knowledge from related academic courses (English Language, research methodologies, data analysis and academic writing.

Course work: A program's content delivered to postgraduate students in set units to deepen their knowledge and understanding within their areas of specialization.

Goal commitment: Students' determination to extend effort towards completing a postgraduate program and graduating in a specified time frame.

Learning experiences: Students' interactions, activities, strengths and challenges faced during the postgraduate coursework study period.

Peer support: Help and support that postgraduate students can give one another.

Postgraduate studies completion: A postgraduate student studying and passing all study units of the program, does a research project, defends the research project, submits the final thesis/dissertation and graduates.

Psychological state: workings of the mind of the student in a relation to the study program like motivation, locus of control, and perfectionism.

Research experiences: students' encounters when undertaking research, during supervision and learning of research courses.

Research project: a dissertation or a thesis normally required as part of the doctoral or master's degree that is expected to make a new or creative contribution in the area

of study. It is a written product of systematic and rigorous research on an important issue.

Resources: Academic and research university facilities like the library, computer access, internet access and laboratories.

Social integration: postgraduate students faculty members, peer researchers /students coming together to make a whole of the department/faculty or the university.

Supervision: guidance, mentorship offered by a faculty member or any other expert in the program area and structured meetings between the student and the supervisor in the processes of writing the research project.

1.15 Chapter Summary

This chapter has dealt with the introduction of the chapter, background of the study, statement of the problem, the purpose of the study, objectives of the study, research hypotheses, research questions, significance of the study justification of the study, the scope of the study, limitations 9of the study, theoretical framework, conceptual framework, operational definitions of terms and finally the chapter summary.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter discusses the existing body of knowledge on students' completion of postgraduate studies. It highlights the relevant literature on the trends of postgraduate studies completion in Europe, USA, Asia, Africa, East Africa, and Uganda with a specific focus on supervision, psychological factors, resource availability, students' research experiences and learning experiences and finally, chapter summary.

2.1 The Trend of Students' Completion of Postgraduate Studies in Europe

Globally, completion of postgraduate studies has remained concerned over several years. It has attracted several questions to all education sectors all over the world. In Europe, it is noted that universities experience delays in students' completion of postgraduate studies. However, the delay is minimal compared to other parts of the world, particularly in Africa.

Hasgall, et al., (n.d.) engaged stakeholders of 311 universities from 32 European countries in quest of how long graduate students, particularly doctoral students take to complete their graduate programmes. Results indicated that only 7% of the selected universities had their students complete their studies in three years. Other universities reported that their students completed their programmes between 3.5 to 5 years. Even though doctoral programmes in Europe take three years, these results indicated that in several European universities students delay for two years to complete (Hasgall, et al., n.d.).

Similarly, according to Bitusikova (2011), doctoral education remained in the background for the first two cycles of the Balogna process. Although it is indicated

that its silence was because of the decision of ministers of education in Europe to put it in the third cycle of Bologna process, it is noted that doctoral education received criticisms from the start of the 1999 Bolgona process with arguments that half of the doctoral students do not complete studies among other noted factors (Bitusikova, 2011). Halse and Levy (2014) and Roebken (2007) maintained that doctoral education has gone through scrutiny and criticism because of various challenges including the prolonged time doctoral students take to complete studies.

According to Skopek, et al., (2020), Halse and Levy (2014) and Roebken (2007) the density of supervision and support has been cited in Europe to be contributing to the completion of doctoral programmes. However, these studies did not cater for masters students. Therefore, the current study focused on both doctoral and masters students; to explore the influence of research supervision, psychological support, resources, learning and research experiences in the completion of postgraduate studies in Uganda.

2.2 The Trend of Students' Completion of Postgraduate Studies in the USA

In the United States of America (USA), universities are at stake when it comes to the completion of doctoral programmes. Several conclusions have been made concerning completion rates in the USA, especially concerning gender, race and ethnic subgroups (Wendler, et al., 2010). For instance, from the findings of Wendler, et al. (2010) it is noted that women take longer to complete a postgraduate programme than men. They further note that black students take longer to complete than white students. Whatever conclusions are attached to the completion of doctoral studies in the USA, according to Wendler, et al. (2010) it is noted that obtaining a doctoral degree in the US is a lengthy process with many students of all subpopulations graduating within 10 years

for doctoral programmes. These findings are consistently supported by the finding of the survey of US earned doctorates cited in National Science Foundation, (2019).

According to Kowarsiki (2019) the median time of completing a postgraduate programme (Ph.D.) is 6 years. It is however noted that some programmes such as arts and humanities take longer to be completed at an average of 7.1 years (Kowarsiki, 2019). The report by National Science Foundation (2019) shows that the time between entering a graduate school and obtaining a doctoral degree reduced between 1999 and 2018, especially in science and education programmes; however, it still takes longer to obtain a postgraduate degree, more especially in non-science and education programmes.

Although this literature shows the magnitude of the delay of students' completion of postgraduate studies globally, the focus was put on doctoral programmes and students'students' completion ?. Less was captured on masters programmes and students' completion. ? even though they are also housed in postgraduate schools.

2.3 The Trend of Students' Completion of Postgraduate Studies in Asia

In Asia, there is a great improvement in completion rates of postgraduate studies, China being at the top globally. Marioulas (2017) puts it that China has one of the lowest college dropout rates in the world, with sources from the Ministry of Education stating that less than 1 percent of students fail to complete their degrees. China is the top annual producer of PhDs in the world today, having surpassed the US since 2008. This is even though postgraduate programs in China resumed only in 1978 after being stopped completely during the turmoil of the Cultural Revolution (Majumder, 2014).

However much China has registered high graduation rates all over the world, several irregularities have been noted. It was observed that most universities in China have

graduation rates close to 100 percent, with students not being reprimanded for cheating, and teachers choosing to avoid trouble by simply letting everybody pass. As cited in Marioulas (2017) a 2013 article in the Workers' Daily revealed that some faculties instruct that all master students be allowed to graduate as long as their theses pass a run through plagiarism test software. According to Marioulas (2017), this is done to avoid heavy workload by teachers in form of avoiding retakes and saving poor-performing departments from being phased out.

It is also clear that China is experiencing low quality of Chinese postgraduates and this is increasing mistrust in the Chinese tertiary education system (Majumder, 2014). On a good note, it is noted that high graduation rates in China are facilitated by provisions of doing retakes of the previous semester within the next semester before graduation (Marioulas, 2017).

In Malaysia, the National Higher Education Strategic Plan (NHESP) is engineering efforts to increase the number of doctoral graduates to 60000 by 2023 (Mokhtar, 2012). Similarly, Chapman and Chien (2014) contend that since 2000, Malaysia has taken a step ahead in the expansion of postgraduate education. The enrollment of postgraduate students increased from about 21,100 in 2000 to 85,200 in 2010 (Chapman & Chien, 2014). According to Mokhtar (2012), efforts of increasing the enrollment and throughput of postgraduate students are evident in recent years. The benefits of postgraduate education include the involvement of graduates and faculty staff in research, particularly in indigenous research is at a forefront of government fundings in postgraduate education (UNESCO Institute for Statistics 2014; Chapman & Chien, 2014).

Khozaei (2014) and Sato (2016) point out that Malaysia and Asia as a whole have had an opportunity of enrolling several postgraduate students from foreign countries. This has also contributed to enrollment numbers even though, foreign nationals who enroll for postgraduate studies in Asia face challenges that are financial, psychological, family and research supervision related (Khozaei, 2014).

Conversely, despite the fact that Malaysia has registered a tremendous increase in postgraduate students' enrollments, universities in Malaysia have been affected by poor completion rates of postgraduate studies (Sian Hoon, et al., 2019; Isa & Ahmad, 2018; Sidhu, et al., 2015; UNESCO Institute for Statistics, 2014). According to Isa and Ahmad (2018), statistics revealed that by 2015, the doctoral graduation rate at a public university in Malaysia was at 12%. Among other factors, students' and supervisors' satisfaction and institutional support have continuously been cited as contributing to attrition and low completion rates of doctoral studies in Malaysia (Ngamkamollert & Ruangkanjanases, 2015; Sidhu, et al., 2015).

Molassiotis, et al. (2020) conducted a study on doctoral nursing education in East and Southeast Asia: characteristics of the programs and students' experiences of and satisfaction with their studies. In this study, it is noted that delays in the completion of nursing education doctoral students are evident. The respondents noted challenges in their program that included faculty staff shortages, lack of financial support, dissatisfaction in the program components and lack of mobility support.

In Thailand, graduate education has also expanded since 2007. According to Chapman and Chien (2014), the enrollment of postgraduate students has increased from about 193,000 in 2007 to 196,000 in 2012, particularly at the doctoral level. The development of postgraduate education was supported by the government allocating

funds for postgraduate education and setting certain universities to be graduate and research universities. Chapman and Chien, (2015) further note that Thailand and Malaysia are investing heavily in graduate education to enhance local-based university research capacity and attracting international attention, particularly from international business companies, international prospectus students and international fundings for universities. This is perceived by Thai and Malaysian governments to boost economic development.

Thailand has been able to expand postgraduate education by allowing universities to further engage in autonomous enterprises and businesses to generate funding for postgraduate education compared to their counterparts (Malaysia) who fully depend on funding from the government (Chapman & Chien, 2015). Great achievements have been registered in engineering programmes in terms of throughput. Batty and Thespol (2002) put it that at least 85 percent of the students who enroll in engineering postgraduate programmes complete their studies in time.

In agreement with Tinto 1993, Saibunmi and Trakarnrung (2016), point at the importance of integration of postgraduate students in Thai postgraduate education. His study on Barriers to Thai Doctoral Music Students' Socialisation revealed that difficulties in relationships between students and faculty, peer and learning environment are affecting students' completion of postgraduate studies. With much focus put in research for several postgraduate programs worldwide, the issue of integration should be considered for good outputs in higher education.

Taiwan has also registered improvements in higher education since 1984. According to the Ministry of Education (2015) statistics as noted in Chang and Shaw, (2015), Taiwan has increased its higher education sector from 16 universities in 1984 to 124

universities in 2014. The same statistics indicate that enrollment of masters and doctoral students increased from 9481 and 1500 students, respectively in 1984 to 172,968 and 30,549 students, respectively in 2014 (Ministry of Education, 2015 in Chang & Shaw, 2015). *'The number of doctoral programs grew from 498 in 2001 to 839 in 2013, with 341 of these 839 being newly established'* (MOE Department of Statistics, 2014 in Chang & Shaw, 2015, P. 4). As it is noted in Chang and Shaw (2015) the efforts of the government to expand postgraduate education in Taiwan are attributed to the rapid increase of student numbers at the undergraduate level, which requires more trained staff at least at a doctoral level. However, by 2014, the population of doctoral students was 2.28 of the total population at higher institutions of learning. This calls for more to be done to enhance postgraduate education in Taiwan (Chou, 2015; Chang & Shaw, 2015).

Although less literature talks about the time postgraduate students take to complete their studies in Taiwan, Lin and Chiu (2014) put it that Taiwan students who attend their postgraduate studies overseas take a shorter period compared to those who study from Taiwan. Similarly, many Taiwan students have preferred having their postgraduate studies in Western countries to their country. According to Mazzarol, et al. (2003) in (Muthaly, et al., 2013), 1.3 million Taiwan students were pursuing postgraduate studies in western countries including Newzealand, Australia, United Kingdon, USA and Canada by 2012. Among the causes of opting for overseas education include the perception that degrees in Taiwan are of low quality and the high number of postgraduate students who can not be accommodated by Taiwan universities (Muthaly, et al., 2013). However, these causes are not justified by the Taiwan government and contradict with the empirical statistics that show

improvement in postgraduate education in Taiwan (Chang & Shaw, 2015; Chou, 2015).

The literature above shows improvements in postgraduate education in Asia compared to other continents of the world. Statistics from Malaysia, China, Thailand, Taiwan and Japan clearly show a step ahead in postgraduate students' enrolment. However, in other parts of the world, particularly Africa, all eyes have been put on doctoral studies and students at the expense of masters students and studies. The statistics of completion time are also not clear apart from China. More so, apart from Malaysia, other Asian countries have remained silent on the issue of research supervision in postgraduate education systems. Among these gaps, the current study explored the determinants of postgraduate students' completion of studies in Ugandan selected universities and focus was put on both master's and doctoral studies. The impact of research supervision in postgraduate education was also analyzed.

2.4 The Trend of Students' Completion of Postgraduate Studies in Africa

In Africa, the three most contributing countries in tertiary and postgraduate education are Nigeria, South Africa and Ethiopia, with one million, five hundrend thousand and one hundred and fifty thousand150,000 tertiary students, respectively (Motseke, 2016; Botha, 2018). From the findings of Amehoe (2013), Ghana has manifesting good turn up in postgraduate education, however, poor completion rates have continuously affected many African Universities.

In South Africa, it is noted that 45% of postgraduate students, mostly doctoral students graduate at an average of five years (Cloete, et al., 2015). Besides high student dropout rates, postgraduate students tend to take longer to complete their

studies with a delayed completion rate of 37% for master students and 59% of doctoral students (Motseke, 2016).

Mutala (2009) as cited in Amehoe (2013) identifies challenges leading to poor completion rates of postgraduate studies to be: decreasing government subsidies; inadequate research capacity; poor preparation of students for postgraduate programmes; inconsistent postgraduate research guidelines; stringent statutory research permit requirements; bureaucracy in the admission process; slow thesis examination process; poor supervision, balancing occupations (jobs) and academic work; inadequate facilities; and heavy teaching loads. However, his conclusions were made based on data collected from Ghana, and the replicability of these findings has not been confirmed in other African countries, particularly Uganda which necessitated the current study.

According to Olubusoye and Olusoji (2020), in Nigeria doctoral programmes are typically meant to take four years to be completed, however, it is noted that most of the doctoral students do not become doctors even after seven years. Olubusoye and Olusoji (2020) further note that some students are known to have taken the shortest time of three years to complete their programmes while others fail to complete up to the period of ten years. Irrespective of the rank of the supervisor, employment status, the faculty, the program of study, the social-economic status, currently, the median completion time of doctoral programs in Nigeria is nine years (Olubusoye & Olusoji, 2020). Therefore despite the fact that Nigeria is among the three African countries performing well in the sector of higher education, it also faces a challenge of delay in students' completion of postgraduate studies.

Roets and Botma (2012) argue that since postgraduate students invest significant amounts of time, money and emotional resources into their studies, it is important that their investment pays off through the completion of their courses in an appropriate timeframe so that they contribute to the development of the country.

According to Akudolu and Adeyemo (2018), Africa has generally been disadvantaged with poor completion rates of doctoral studies. It is reported that Ethiopia which is among the best African performing countries in the education sector did not even graduate 20% of the enrolled doctoral candidates between 2006 and 2015. Specifically, in 2014 only 152 candidates graduated with 8.6 percent of female candidates from the total enrollment of 3,292. In 2015, 335 candidates graduated with 6.3 percent of female candidates out of a total enrollment of 3,135 (Akudolu & Adeyemo, 2018). Besides the poor throughput of postgraduates, it is reported that Ethiopia has had poor improvement in innovation systems due to a lack of specialists (Kuipers, et al., 2017).

Bireda (2015) contends that Ethiopia has inadequacy in academic and supervision support within her Universities. Research has also become a critical issue especially in policy making, and this requires a widening of postgraduate education not only in Ethiopia but also in Africa at large (Molla & Cuthbert, 2016). Therefore, the challenge of throughput of postgraduates needs to be attended to because, it is through postgraduate education that specialists in innovation systems, research and education can be trained.

2.5 The Trend of Students' Completion of Postgraduate Studies in East Africa

In East Africa, the regional economic ambitions risk failure because of deficiencies in postgraduate education and research (Nyanga, 2019). Researchers and educationists in

Kenya have blamed the shortfall of PhDs on a cocktail of challenges, among them being constrained institutional capacity and lack of supportive policy. Students generally take longer to complete their degrees than expected and those who graduate, largely from the humanities, are found wanting (Nyanga, 2019).

According to the findings of a joint study by the German Academic Exchange Service (DAAD) and the British Council launched in 2018, 90% of all students who enroll for PhDs do not graduate. Similarly, a study conducted by Akudolu and Adeyemo (2018) between 2011 and 2015 revealed that Universities in Kenya reported cases of Ph.D. dropouts with some universities at a rate of 5% and others at a high rate of 20% and 50%. This is a situation that requires urgent follow-up as attention in the region. It is also reported that in 2016 out of 6957 doctoral students who were supposed to graduate from both public and private universities offering doctoral studies in Kenya only 1,187 graduated by 2016 indicating a percentage of 17 (Akudolu & Adeyemo, 2018). Rong'uno (2016) also observed that postgraduate education in Kenya needs attention as poor completion rates are registered.

In Tanzania, according to the statistics from the University of Dar es Salam Annual Report (2016), the total enrollment of postgraduate students at the University of Dar es Salam was 13,858 candidates opting for both masters and doctoral studies. The same report indicates that the total number of postgraduate students who graduated between 2013 and 2017 was 3683 candidates for both masters and doctoral studies (University of Dar es salam Annual Report 2016). Comparing the enrollment and graduation data sets, it is clear that the postgraduate graduation rate in the university of Dar es Salam is at 26% which is a threat to all sectors. University of Dar es Salam

being the best university in Tanzania, these statistics provide a clear picture of postgraduate completion rate in line with the current study.

2.6 The Trend of Completion of Postgraduate Studies in Uganda

In Uganda, Wamala, et al. (2012) studied extended candidature non-completion of a Ph.D. at Makerere University. Administrative data of 294 Ph.D. students at Makerere University from the year 2000 to 2005 was used. The total elapsed time from first enrollment to submission of a final dissertation or thesis copy was taken as a measure of completion time. The findings estimated extended candidature (48.6%) and withdrawal (36.4%). These indicate a low timely completion rate of doctoral students at Makerere University.

Kabeba and Muriisa (2015) also report that more than 50% of students who enroll for doctoral studies in Uganda take longer to complete their studies. This finding was based on the exploration of the state of doctoral education in Social Sciences in Uganda. However, the data that (Wamala, et al., 2012; Kabeba & Muriisa, 2015) used to reach the above conclusions are over ten years old. This gap was addressed by the current study by considering the most current records of 2015 to 2020.

Despite the fact that postgraduate students take longer to complete their studies, their input is largely needed in development sectors most especially for conducting research, which triggers the formulation of relevant policies and innovation. Research is a core business of universities globally and is crucial in the scientific process as a precursor for knowledge uptake and use (Obuku, et al., 2017). Therefore, delay or failure to complete postgraduate studies should be considered keenly by all sectors to improve the research productivity within the country.

In other countries of the East African region including Rwanda, Burundi and South Sudan, limited studies have been conducted on postgraduate education and the researcher focused on three foundational countries of the East African community which include Uganda Kenya and Tanzania to explore the trend of postgraduate education in East Africa.

2.7 Strategies for Effective Research Supervision in the Completion of Postgraduate studies

Postgraduate training has registered tremendous changes in the 21st century with high numbers in terms of enrollment compared to the past. The high numbers of students enrolling for postgraduate studies globally need to turn into degrees after a particular period of studies. To achieve this, effective research supervision should be considered since research is a key aspect at the graduate level of education. The literature shows that supervisors' timely and consistent support is important in ensuring the smooth progress of students (Ismail, et al., 2017; Grossman & Crowther, 2015; Ismail, et al., 2017; Sá, et al., 2021; Watson, 2012).

The Supervisor-supervisee relationship emerged as a cornerstone in promoting effectiveness in research supervision. According to Roberts and Watson (2016), it requires good communication with supervisees and the availability of both students and supervisors during the research process to maintain a good relationship. Their findings further revealed that continued assistance and communications even after the research process is what an effective research supervisor exhibited. Ismail, et al. (2017), argued that effectiveness in research supervision should be characterized by empowering relationships. Much as the student-supervisor relationship has been supported by multiple pieces of research (Almusaed & Almssad, 2020; Orellana, et al., 2016; Wisker, et al., 2003), in cases where the supervisee and the supervisor are

colleagues, it becomes challenging to keep healthy scholarly relationships amongst themselves. Findings from Watson (2012) revealed that the role relationship is mostly ignored which subsequently affects the progress. Furthermore, it is not certain whether the student-supervisor relationship is adequate to enhance the effectiveness of research supervision within the current COVID -19 educational changes. This prompted the researcher to establish the current strategies for effective research supervision in Uganda.

Hockey (1996) advanced two major strategies that could facilitate the effectiveness of research supervision. These included strictness on deadlines and leniency on unstructured work. Participants of the same study revealed they instructed their students to produce particular work at a certain point in time and critique could be provided based on complete work. This was supported by Wisker, et al. (2003) who argued that openness at the fast stages of research could keep the students aware of what is expected of them. In compromising the unstructured work, supervisors minimized their control towards students' research work and allowed them to be innovative (Hockey, 1996). The applicability of these strategies is questionable in the current trend of graduate training due to too much time passed. Hence, the current study explored the strategies for effective research supervision in the completion of postgraduate studies in Uganda.

2.8 Students' Research Supervision and Completion of Postgraduate Studies

From a complex systems approach of factors affecting timely completion of doctoral studies (Pitchforth, et al., 2014), supervision encompasses several dimensions including student-supervisor relationship and supervisor's experience and expertise in the topic area. Pitchforth, et al. (2014) studied factors perceived to be contributing to the timely completion of doctoral studies focusing on a single research group in

Mathematical Sciences. Using the Bayesian networks, results show that supervision contributes largely to the research project, which in turn leads to the completion of doctoral programs. Although completion challenges are common at the doctoral level, this study is among several studies that have ignored masters studies yet statistics cited in Akudolu and Adeyemo (2018) and the University of Dar es Salam Annual Report (2016) indicate that there is a delay in students' completion of master's degree programs. Therefore, this study examined the determinants of completion of postgraduate studies basing on both doctoral and masters studies.

As cited in Rensburg and Mayers (2016), Wolff (2010) notes that student supervision and degree completion are very closely linked, therefore, the student-supervisor relationship should be paramount to enhance satisfaction from each other that leads to quick completion of the research project. In agreement with this, it is argued that the student-supervisor relationship is very essential because it affects the progress of student's research and completion (Namubiru-Ssentamu & Bakibinga-Sajjabi, 2020: Bachwayo, et al, 2017: Ghani, et al., 2012).

Ghani, et al. (2012) aimed at identifying the attributes of supervisors and examining elements of effective supervision from the graduate research students' perspective. The results showed that supervisors should be friendly, approachable and flexible as well as knowledgeable and resourceful and that effective supervision means to be able to establish good and professional relationships with students and to support and guide students during the research process (Ghani, et al., 2012). The finding of this study is in agreement with (Hemer, 2012; Abiddin & Ismail, 2011; Mbogo & Wambua, 2020; Namubiru-Ssentamu & Bakibinga-Sajjabi, 2020).

However, Ghani, et al. (2012) did not specify the number of postgraduate students who participated in the study and because the study focused on students' perspectives, a qualitative element would have been appropriate. The current study explored supervisors' experiences and how they perceive the support given to students in the completion of postgraduate studies using qualitative methodologies. This is because qualitative methods are appropriate in exploring people's attitudes experiences, perceptions and opinions (Kothari, 2004; Martens, 2014 & Creswell, 2018).

Sarwar, et al. (2018) conducted a study aiming at identifying factors that lead to the delay of research work completion at the postgraduate level. The sample of the study comprised 40 postgraduate students and 16 supervisors from four public sector universities of central Punjab, Pakistan. Data was generated using interviews and analyzed thematically. Among the findings, Sarwar, et al. (2018) found that the busy schedule of the supervisors, lack of experience in supervision, lack of knowledge in the relevant field, less positive attitude towards quality research work, and inability to use modern tools of communication led to the delay of completion of research at postgraduate level. These findings agree with the findings of prior studies (Rensburg & Mayers, 2016; Hemer, 2012 & Motseke, 2016). On the other hand, it is noted that their study focused on institutional factors but it did not include institutional authorities. Therefore the current study included both students, supervisors and university authorities particularly heads of departments and deans/directors of postgraduate schools.

Akparep, et al. (2017) conducted a study on demystifying the blame game in the delay of graduation of research students in universities in Ghana focusing on the case of the university for development studies. Postgraduate research students who delayed from graduation, continuing students, supervisors/administrators and graduated research

students constituted respondents for the study. Using both qualitative and quantitative analysis techniques, findings revealed that successful completion of the thesis work had a direct bearing on a harmonious relationship built on trust, cooperation and hard work between the student and supervisor. In addition, it was found out that supervisors were assigned more students to be supervised than they could have sufficient time and attention for them.

On the other hand, as Sarwar, et al. (2018) found out, Akparep, et al. (2017) also revealed that students combined work with their studies that limited the time they spent on their theses thereby leading to the delay in completion and graduation. However much the current study recognizes the findings of (Akparep, et al., 2017) it is clear their study did not reveal the major factors that contribute to the delay of completion of postgraduate research leading to delay in graduation. The current study unveiled the impact of conceptualized factors on the throughput of postgraduate students using multiple regression analysis.

Limited level of student-supervisor interaction, inadequate technical guidance from supervisors and poor or delayed feedback from supervisors are reported to have contributed to the delay of doctoral studies in Kenya (Ndayambaje, 2018). Ndayambaje (2018) came at these findings in a study he conducted aiming at exploring the effect of supervision on timely completion of a doctoral programme. The study adopted a narrative research design and targeted international Ph.D. graduates from Kenyatta University in Kenya. In total, the study dealt with six graduates of the 2015 and 2016 classes sampled using the Snowball technique. Conversely, Ndayambaje (2018) focused on only international doctoral students, and empirical studies do not justify that students' delay in completion of postgraduate

studies affects only international doctoral students. Therefore, the study included both national and international postgraduate students from the selected Universities.

Sverdlik, et al., (2018) reviewed the factors influencing doctoral students' completion, achievement, and well-being aiming to offer deep insight into the issues affecting doctoral students by reviewing and critically analyzing recent literature on the doctoral experience. 163 empirical articles on the topic of doctoral education were reviewed and analyzed. Among other factors, it was revealed that supervision may directly or indirectly affect doctoral progress. This did not deviate from earlier findings (Akparep, et al., 2017; Hackney, et al., 2014; Hemer, 2012). However, over 70% of the work reviewed in (Sverdlik, et al., 2018) is above five years ago.

Empirical studies conducted on supervision and completion of postgraduate studies do not deviate much when it comes to the findings, they all indicate that supervision affects the completion of postgraduate studies (Abiddin & Ismail, 2011; Olubusoye & Olusoji, 2020; Rugut, 2017; Ali, et al., 2016; Mbogo & Wambua, 2020; Lessing & Schulze, 2002; Kimani, 2014; McCormack, 2005; Namubiru-Ssentamu & Bakibinga-Sajjabi, 2020; Junejo & Muhammad, 2018; Sverdlik, et al., 2018; Devos et al., 2017; van Rooij, et al., 2019). However, much focus was put on doctoral studies at the expense of masters studies; this gap was addressed by the current study.

2.9 Students perceived Academic Psychological state and Students' Completion of Postgraduate Studies

The relationship between psychological aspects in students' academic performance and completion of postgraduate studies has been a concern for many years. '*Feelings of psychological and cognitive inadequacy*' (Greene, et al., 2018; Golde, 1998; Katz & Hartnett, 1976 in Gardner, 2009b as cited in Ssentamu-Namubiru & Sajjabi-

Bakibinga, 2020). Green (1997) studied the effect of psychological factors on the completion of dissertations. Procrastination, locus of control and perfectionism were cited to be contributing to the completion of students' dissertations. Sisson and Jackman (2019) also studied psychological distress among doctoral students. Five doctoral students, two females and three males participated in the study. Four of them were full-time doctoral students and one was a part-time student. Findings indicated that fear, annoyance, worry, stress affected postgraduate studies and eventually caused them to delay in completion of their studies.

According to Norton (2011), procrastination is seen as the most psychological challenge among doctoral students. This was also earlier noted in (Green, 1997). The current contextually explored how psychological factors affect students' completion of postgraduate studies and included both doctoral and masters students.

Knowing when to close a chapter and move on the other is very important in postgraduate education (Leeming, 2018). In higher education research, perfectionism has been noted to be causing some delays in postgraduate studies. According to Canter (2009), two forms of perfectionism affect the completion of tasks. He notes that maladaptive perfectionism is associated with procrastination and adaptive perfectionism is associated with the completion of tasks. Findings revealed that students who seemed to be maladaptive perfectionists took long to complete the tasks compared to their counterparts.

Much as little conducted studies indicate a link between perfectionism and delay of tasks, less has been done in line with postgraduate studies. Therefore, the current study was deemed relevant in that it will add to the currently limited literature regarding procrastination and completion of postgraduate studies.

Academic identity is another psychological factor that has been given less attention but is very crucial to all students. Ai (2017) conducted a study on constructing an academic identity in Australia as an auto-ethnographic narrative. One doctoral student participated in the study. From the findings of the study, it is reported that a student's academic identity brings mutual understanding between the student and the supervisor which eventually leads to timely completion of doctoral support. This is in agreement with (Madikizela-Madiya, et al., 2016 & Schulze, 2014). However, less has been done on academic identity and completion of masters' programs. Therefore, the current study involved both masters and Ph.D. students and analyzed the relationship between students' perceived academic psychological state and completion of postgraduate studies.

2.10 Availability of Resources and Students' Completion of Postgraduate Studies

According to Pitchforth, et al. (2014) Bayesian network structures University resources that support postgraduate studies are library access, computer access, study location, research personnel, among others. Their study stressed that these resources contribute to the completion of studies even though they focused on doctoral education.

According to Jabeen, et al. (2017) usability study of digital libraries as an analysis of user perception, satisfaction, challenges, and opportunities at university libraries of Nanjing, China, most of the respondents (total mean value =4.33, 4.26, 3.86) used digital library resources for research purposes to fulfill their thesis/dissertation and course work requirement. A total mean value of 4.156 indicated that the respondents were extremely satisfied with the authenticity of the information in available databases and completed their work in time which is also supported by (Abubakar & Akor, 2017).

This study was carried out in five Nanjing Universities, however, Jabeen, et al. (2017) contend that the study only focused on onsite and neglected remote users and non-users. Perhaps if the study had included all students with no expectation, more insights would have emerged on the effect of digital library resources on the completion of academic studies. The current study collected information from all categories of postgraduate students on the aspect of resources available concerning the completion of postgraduate studies.

Aldholay, et al. (2018) conducted a study on online learning usage and performance among students within public universities in Yemen. In their study, they noted that online learning supports students in terms of utilizing their skills and capabilities in different learning procedures, including the interaction between instructor and students and having access to learning resources and materials (McGill and Klobas, 2009) as cited. This is in agreement with (Chukwudi, et al., 2018; Soni, et al., 2018 & Aldholay, et al., 2018). Online learning requires online resources and the availability of online resources was not captured in this study and did not specify the category of respondents in the study. The present study focused on the availability of computer resources, their usage and completion among postgraduate students.

According to Oluwatobi, et al. (2014), library resources and services at the postgraduate level should support the intellectual culture-independent study among postgraduate students. Hussaini, et al. (2004) earlier noted that university libraries should be equipped with media resources, internet resources, databases, reference materials, book/e-books, software, journals/e-journals thesis and dissertation projects. With 51 respondents, Oluwatobi, et al. (2014) aimed at investigating the utilization of library resources for effective research output by postgraduate ministerial students of Adventist University of Africa (AUA) in Babcock University. Respondents in this

study affirmed that the available library resources have a very low impact on their respective research work. This influenced majority of the respondents' level of satisfaction with the use of library information resources to be perceived as low. This compelled the researcher to wonder if the available library resources were either inadequate or not used. Hence, the current study looked at availability of library resources among other resources and their relationship with completion of postgraduate studies in Uganda.

Studies indicate a link between availability and usage of several resources and accomplishment of university studies (Olaniran, et al., 2017; Soni, et al., 2018; Soria, et al., 2017; Matin & Khan, 2017; Theodore, et al., 2018 & Stienen, et al., 2016). However, one wonders if this is the case in Uganda as delay in completion of postgraduate studies is continuously occurring. According to the report by IIEP-UNESCO (2016), in Uganda, university education consumes 15.5% of the budget of the Ministry of Education and Sports. This funding goes only to the public universities, which are only nine in the whole country.

It was still questionable if it was the issue of resources that caused delays in completing postgraduate studies. The study sought to explore the relationship between the availability of resources and postgraduate throughput and recorded actions to enhance the completion of postgraduate studies.

2.11 Gaps in Literature

This chapter has discussed the broad construct of students' completion of postgraduate studies. It has looked at the trends of completion of postgraduate studies in several continents and narrowed to Uganda. Briefly, the discussion shows that students' completion of postgraduate studies is a challenge all over the world.

From the trending literature, it emerged that limited studies have been conducted in Uganda on students' completion of postgraduate studies. Therefore, the current study contributed to the existing limited body of knowledge on students, completion of postgraduate studies in Uganda.

Globally, none of the scientific studies on students' completion of postgraduate studies have included all key players and dimensions in postgraduate education. One wonders how we can base on the views of particular stakeholders to make conclusions or recommendations on this issue. The current study narrowed this gap by including postgraduate students, lecturers/supervisors, and heads of departments and deans/directors of schools.

Although many studies have been conducted on postgraduate education, less focus is put on master's studies and students. Almost every study that focuses on students' completion of postgraduate studies earmarks doctoral studies. The study narrowed down this gap by focusing on both doctoral and masters' programs as well as students.

2.12 Chapter Summary

This chapter has dealt with the introduction of the chapter, the trend of postgraduate studies completion in Europe, USA, Asia, Africa, East Africa, and Uganda. Further, the researcher has reviewed the literature on the current strategies for effective research supervision, relationship between research supervision and Students' completion of postgraduate studies, perceived psychological state and students' completion of postgraduate studies, resources availability and students' completion of postgraduate studies. The next chapter deals with research design and methodology that was adopted to conduct the study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter discusses how various methods and procedures were used in obtaining data. It presents the research paradigm, research design, area of study, study population, sampling techniques, data collection methods and instruments, research procedure, data management and analysis, and ethical considerations.

3.1 Research Paradigm

According to Martens (2014), a paradigm is a set of philosophical assumptions that guide the thinking or viewing of the world. Kivunja and Kuyini (2017) posit that a paradigm is a set of beliefs assumptions and a school of thought that informs the meaning and interpretation of research data. Paradigms provide explanations of human life differently, people can make personal beliefs and assumptions about social reality and new understandings can emerge based on a particular belief system (Babbie, 2007; Taylor & Medina, 2013) as cited in (Olao, 2020). A paradigm is a worldview that is composed of ethics, knowledge, reality and inquiry (Mertens, 2014). Paradigms guide the definition of reality and methodology in research for instance, according to Mertens (2012) researchers who portray different world views cannot communicate with one another due to differences in terms of the definitions of reality and inquiry.

This study adopted a pragmatic paradigm. According to Creswell (2018), a pragmatic paradigm is philosophical thinking that focuses on actions, situations and consequences rather than predetermined conditions like in positivism. In the pragmatic worldview, the concern is on the applications of what works in solving a

problem (Creswell 2014; Creswell, Clark & Smith, 2011). As noted in Creswell (2014), researchers guided by the pragmatic paradigm focus on the research problem and use any possible approaches available to solve a problem. Teddlie and Tashakkori (2012) argue that pragmatism is a philosophical underpinning for mixed methods research and gives room for multiple methods of inquiry in social science research. Pragmatic paradigms emphasize the use of different methods to derive holistic knowledge about the phenomenon (Kivunja & Kuyini, 2017). The pragmatic paradigm does not restrict the researcher to one thinking or reality; instead, it employs mixed-method research in that researchers freely draw from both qualitative and quantitative assumptions in research (Kivunja & Kuyini, 2017).

Therefore, based on the pragmatic nature of the inquiry, the study used a mixed-methods approach to draw multiple sources of data using multiple methods from both quantitative and qualitative approaches to explore the determinants of students' completion of postgraduate studies in Uganda.

3.2 Research Design

The pragmatic paradigm methodological claims influenced this study to employ a concurrent embedded correlational strategy of mixed methods research approach. Based on the pragmatic philosophical and methodological assumptions, the study primarily applied quantitative data and methods to measure the relationships between the predictor and outcome variables and qualitatively addressed a research question on the current strategies for effective research supervision in the completion of postgraduate studies. Creswell (2018) explained that in the embedded design of mixed methods one method can primarily be used to address the research question and another method can be embedded in to address a subtopic/question that is derived

from the major questions. One method is applied as a supplement of the other methods either to contribute to the understanding of the results obtained using the primary method or to address a question that could not be addressed using the primary method (Creswell, 2018). This overall design was appropriate for this study due to the kind of research objectives the researcher sought to achieve. For instance, data for research objective one was well collected qualitatively than quantitatively.

The study employed the concurrent embedded correlational design of mixed methods research approach because the researcher intended to measure relationships of predictor variables of research supervision, students' perceived academic psychological state and resources availability with students' completion of postgraduate studies quantitatively and to answer the research question on the current strategies of research supervision in the completion of postgraduate studies qualitatively. The embedding strategy of this study was also applied in collecting quantitative data with the added open-ended research question to supervisors on the current strategies for effective research supervision in the completion of postgraduate studies in selected Universities of Uganda.

3.3 Study Area

The study was conducted in Uganda. Uganda is one of the East African countries bordered by Kenya to the east, the Democratic Republic of Congo to the west, South Sudan to the north, Rwanda to the south-west and Tanzania to the south. The study was carried out in both public and private selected universities in Uganda. The selection of a public and a private university was preferred because postgraduate programs were offered at both public and private universities in Uganda. Although the selection of public and private universities portrayed an element of comparison, the

researcher did not intend to compare findings but the purpose was to ensure that findings could apply to both public and private universities in Uganda.

The study considered only schools/directorates of graduate studies from the selected universities. This was because they were and are the ones responsible for the coordination and management of all postgraduate programs. More so, it was easier to obtain sampling frames since all postgraduate students' and supervisors' records were primarily managed by schools or directorates of graduate studies.

According to MoES (2020), Uganda has 46 both public and private universities. However, not all of these institutions offer postgraduate education, in particular, doctoral education. More so, there are several other degrees awarding institutes and colleges, but this study focused on universities only because they are the most recognized in offering postgraduate education in Uganda. One public and one private university were selected to analyze the determinants of students' completion of postgraduate studies in Uganda. The universities were selected purposively on the premise that they offered both doctoral and master postgraduate programmes.

3.4 Target Population

The study targeted all enrolled postgraduate students, supervisors, heads of departments and faculty of Education and school of graduate studies deans and directors from both public and private universities in Uganda. Postgraduate students, supervisors, heads of departments and school directors/deans were preferred because they were key players in postgraduate education. The study constituted postgraduate students as the major target because they were exposed to several experiences during a postgraduate study.

3.5 Sampling Techniques

The study embraced both probability and non-probability sampling approaches to determine the study sample size. The sampling design discussed sampling as applied to mixed research methods.

3.5.1 Probability sampling

Probability sampling represents a group of sampling techniques that help researchers to select units from the population that the researcher is interested in studying. Collectively, these units form the sample that the researcher studied. A core characteristic of probability sampling techniques is that units are selected from the population randomly using probabilistic methods. This enables researchers to make statistical inferences from the sample being studied to the population of interest. According to Creswell (2014) probability sampling is preferred in quantitative research because it is appropriate in selecting samples from large numbers of the target population. When a sample is selected using probability sampling techniques there is a chance that each unit on the sampling frame can be selected (Kothari, 2004).

Simple random sampling was used to select enrolled postgraduate students and lecturers/supervisors. With simple random sampling, there was an equal chance (probability) that each of the targeted population will be selected for inclusion in the sample of this study (Martens, 2014). Lists of enrolled postgraduate students and lecturers/ supervisors were obtained from the graduate schools/directorates of the selected universities. After obtaining a sampling frame additional, five steps of simple random sampling as stipulated in Creswell (2018) were employed to come up with a sample of participants.

3.5.2 Non-probability sampling

In qualitative research, few cases or units are selected to provide clarity, insight, and understanding about issues or relationships in a particular context (Creswell, 2014). This called for non-probability sampling techniques including purposive sampling, convenient sampling, quota sampling and snowball sampling. With non-representative sampling, researchers sample to deepen the understanding of events, relationships and complex situations not the representativeness of study units (Acharya et al, 2013).

Purposive sampling was used to select graduate schools/directorates, heads of departments and deans/directors from selected Universities. According to (Ingleby, 2012) purposive sampling is used when recruiting samples that possess a characteristic being sought. In this study, heads of the academic departments and deans/directors of schools were selected purposively because of their commonality in handling both postgraduate students and lecturers/supervisors issues at the departmental and school level.

3.6 Sample Size Determination

Guided by Kothari (2004), the sample size determination for the finite population of quantitative data was calculated using the formula as shown below.

$$n = \frac{z^2.p.q.N}{e^2(N-1) + z^2.p.q}$$

Where;

(N) = Target population
(z) = Z-score at confidence level 95% is 1.96
(e) = Margin of error 5 %
(p) = Population portion assumed to be 50% (0.5)
(q) = 1 – p is 0.5

The participants were determined from the available sampling frame in which a simple random sampling technique was employed to select postgraduate students and lecturers/supervisors for quantitative data collection. The researcher purposively selected participants for qualitative data collection from heads of departments. The selection of participants especially heads of Departments continued for qualitative data collection continued until data saturation. The target population was 1200 for the postgraduate students therefore the sampled population became 291, the target population for the lecturers/supervisors was 120, the sampled population became 105 lecturers/supervisors 30 heads of department and 4 directors/deans of postgraduate school were recruited purposively. Table 1 summarizes the sample size and sampling techniques used.

Table 1: Sample Size Determination

Category of participant	Target population	Sample	Field Tools	Sampling technique
Postgraduate Students	1200	291	Questionnaires	Simple Random Sampling
Supervisors	120	105	Questionnaires	Simple Random Sampling
Heads of Departments	30	15	Interview Guide	Purposive
Deans/Directors	4	4	Interview Guide	Purposive Sampling
TOTAL	**1354**	**416**		

Source: Researcher Constract (2020)

3.7 Data Collection Instruments

The study used both quantitative and qualitative data collection techniques. Quantitative data collection applied students' and supervisors' questionnaires; on the other hand, qualitative data was gathered using interviews and documentary reviews.

3.7.1 Questionnaire

According to Creswell (2018), quantitative research is governed by numerically based data collection. Data can be generated using questionnaires after which numbers are used to code and transcribe the collected data to make numerical meaning out of it (Kabir, 2016). In the current study, the questionnaire was used for quantitative data collection.

The questionnaire was used as the major method of data collection because the study aimed at determining the relationship between research supervision, students' perceived academic psychological state, resources availability and students' completion of postgraduate studies. Furthermore, questionnaire advantages such as being less expensive, allowing the collection of both objective and subjective data from a big number of people, saving time, and giving valid information since it is completed at the respondent's convenience attracted more need for its application (Martens, 2014; Creswell, 2014). It also collects data from a relatively large number of respondents from their natural settings. The researcher used self-administered questionnaires to collect the information from the students and supervisors. The questionnaire tool included a section on demographic information, research supervision, students' perceived academic psychological state, resources availability and students' completion of postgraduate studies. The researcher distributed questionnaires both face to face and virtually to the selected respondents in the selected universities who filled them and returned them to the researcher.

Quantitative data was collected using questionnaires for objectives one, two, and three. Students' and supervisors' questionnaires were used separately to collect data because items were designed in a way that was relevant to each category. For

instance, the questionnaire for students intended to collect data basing on students' experiences and a questionnaire for supervisors intended to collect data basing on both personal experiences and observations. All questionnaires collected data on demographic variables.

Objective one sought to analyze the relationship between supervision and completion of postgraduate studies in Uganda. A 10-items Likert scale questionnaire adopted from expectation in the supervision questionnaire was used to collect the data (Ali, et al, 2016). Items in this questionnaire were modified to ensure that dimensions of the student-supervisor relationship, supervisors' expertise, supervisors' experiences, and access to supervisors were captured in both students' and supervisors' questionnaires.

Data on objective two was collected using the 10-items on a four-point Likert scale adapted and modified from the postgraduate research experience survey 2017 (Id, 2015). The scale covered students' experiences on the internet and journal access, library, computer services and supervisors/lecturers' availability. A 10-item questionnaire on a five-point Likert scale adapted and modified from the 1999 postgraduate research experience questionnaire (Australian Council for Educational Research, 2001), was used to collect data from supervisors. The questionnaire covered supervisors' observations and experiences on students' access to working space, library, computer access, journals and supervisors' availability.

Objective three sought to analyze the relationship between students' perceived academic psychological state and students' completion of postgraduate studies in selected universities. Data was collected using a 10-item five-point Likert scale for both the students' and supervisors' questionnaire. Items were adopted from the unintentional procrastination scale to cater for procrastination dimension (Fernie, et

al., 2017), the big three perfectionism scale for perfectionism dimension (Smith, et al., 2016), a revised version of the academic locus of control scale for college students (Curtis & Trice, 2013) and developed academic identity scale to cater for academic identity dimension (Rahiminezhad, et al., 2011) (Appendix I & II, pp155-161).

3.7.2 Interview

According to Martens (2010), in qualitative data generation, the researcher becomes an instrument that collects data either through interviews, observation, examining records and artifacts, or combining these methods. Qualitative data is generated in the form of words, signals, pictures, texts and behaviors (Creswell, 2018). To obtain data on current strategies for effective research supervision in the completion of postgraduate studies, interviews were conducted with heads of department, and deans (Teddlie & Tashakkori, 2012)

The researcher used open-ended semi-structured interviews in collecting qualitative data. Semi-structured questions were preferred because they allowed respondents to react to the same questions either asked in the same way or differently. Furthermore, as noted in Creswell (2018), semi-structured interviews have high validity and reliability levels compared to unstructured ones. An interview guide was applied and it made it possible to obtain the required data to meet the study objective four, in that it provided in-depth data that was not possible to obtain using questionnaires.

The interview guide was used to collect qualitative data from respondents after the collection of quantitative data. The researcher conducted face-to-face interviews with the selected respondents at a time appropriate to them and used open-ended semi-structured interview guides which provided a more probing insight to the study variables.

Interview guides for heads of departments and deans/ principals of schools in selected universities comprised of two parts. Part A captured background data, part B captured responses on the current strategies for effective research supervision in the completion of postgraduate studies (Appendix II & III, pp165-166).

3.7.3 Document analysis

Document analysis is a systematic procedure for reviewing or evaluating documents-both printed and electronic (computer-based and Internet-transmitted) material to obtain qualitative data. Like other analytical methods in qualitative research, document analysis requires that data be examined and interpreted to elicit meaning, gain understanding, and develop empirical knowledge (Bowen, 2009). In this study, postgraduate students' enrollment and graduation records were checked and analyzed to compare the enrolment and throughput of postgraduate students in the selected universities.

A document analysis guide was used to obtain data on student's enrollment and throughput from the selected universities. Three categories of documents were purposively sampled to be considered by the researcher. These were the postgraduate handbook, admission records and graduation records. One document analysis guide was used in a matrix form showing a document selected, objective and comments. Each part catered for one category of sampled documents. The researcher used one document analysis guide because the guide was targeted to the same category of respondents. That is, university authorities (Appendix V, p.168).

3.8 Research Procedure

Approval for the study was obtained from Moi University School of Education after which, an introductory letter was obtained from the Dean, School of Education. The

researcher presented the letter and other protocol documents to Uganda Christian University Ethics Review Committee for the review and approval of the study. After approval from Uganda Christian University-Ethics Review Committee, the researcher sought clearance from Uganda National Council of Science and Technology-Uganda to conduct the study within Uganda. The researcher provided approval letters with the request letter to the Vice-Chancellors of the selected Universities for permission to conduct the study within the universities.

Due to the current Covid 19 situations, the researcher collected data in a blended mode of both face-to-face and online. In the preparatory stages, participants who could not be accessed face to face were contacted virtually and information regarding the study was provided to them through emails.

The researcher met the heads of the departments, deans/directors of graduate schools of selected universities and explained the purpose of the study. Current enrolled postgraduate student lists, enrollment lists and graduation lists for the past five years (2016-2021) were obtained from the offices of the Director/Dean of graduate studies. The lists of all academic staff at the doctoral level and above were obtained from the offices of the Dean/Director of graduate studies. The lists contained the contact details for online data collection due to Covid-19 situations. The lists were used as sampling frames to select the participants, documentary review as well as accessing participants' contact details for virtual data collection.

The selected participants were briefed on the purpose of the study, the meaning of the study variables, the researcher’s expectations, and the ethical considerations such as the anonymity of the participants. Consent to participate was sought from all participants because at the postgraduate level all participants are above the age of 18

years, this was done in a blended format of both face-to-face and online using electronic mails.

Participants had the freedom to either participate or not and were not expected to put their names on the questionnaire for confidentiality purposes. The online questionnaire was also anonymous and they were informed that they will not be identified. The participants were guided on how to fill the questionnaire.

Finally, questionnaires were given to participants both face to face and online. For the online method, an email was sent to the participants with the link which could lead them to the questionnaire to be able to respond.

When participants completed filling in, the researcher requested them to crosscheck to ensure that they had responded to all questions. The completed questionnaires were received from the participants immediately at the end of every session by the researcher, after which they were counted for accuracy in terms of numbers. After quantitative data collection, the researcher purposively and conveniently selected participants for interview sessions.

To obtain data from documents, permission was sought from the office of the Deans/Directors of graduate school to access the relevant records. The researcher was specific to the Deans/Directors about the documents he wanted to access. That is, postgraduate handbook, admission lists and graduation lists

After obtaining the permission and the relevant documents, skimming and reading through them was thoroughly done to synthesize the information that they portrayed regarding students' admission and completion of postgraduate studies.

3.9 Validity and Reliability of Quantitative and Qualitative Research

The study used validity and reliability quality control measures. Validity and reliability are concepts that are used in quantitative research to refer to the extent to which the instrument measures what it intends to measure and the consistency of the instrument of the results of and instrument in measuring a construct several times. According to (Ihantola & Kihn, 2011), validity and reliability are properties of the study that are required through the whole process of the study.

3.9.1 Validity of quantitative research instruments

Validity is concerned with establishing whether the instrument is measuring what it is intended to measure. The content validation should be appropriate in determining the extent to which the set of items provided are a relevant and representative sample of the domain of tasks under consideration (Creswell, 2018). The researcher ensured that data that was collected using various instruments represented the content areas and specific objectives under study. This also included identifying the relevant items for each of the instruments that were employed in the study. To ensure the validity of instruments, the instruments were also developed under the close guidance of supervisors and expert validation was done. After the questions were designed, they were also pre-tested to one-tenth of the respondents in the sample. This helped to identify ambiguous questions in instruments and re-aligned them to the study objectives.

3.9.1.1 Content validity

Content validity is the degree to which an instrument represents the major construct of the study. Content validity justifies the validity of the entire instrument (Saiful & Yusoff, 2019). To ensure content validity, items of an instrument should be relevant,

appropriate and representative of the particular construct of the assessment purpose (Naveed, et al., 2017; Saiful & Yusoff, 2019). To obtain the relevance of items and questionnaires, the researcher used the content validity index method for both students' and supervisors' questionnaires, because content validation was significant in supporting the validity of the questionnaire. Four (4) experts in postgraduate education were selected to rate items in scales variable per variable prior to content validation.

Content validity index (CVI) is computed based on the ratings of experts in the study area under investigation (Polit & Beck, 2006; Saiful & Yusoff, 2019; Davis, 1992). Items of an instrument were organized on the relevance scale of 4 for experts to rate them. That is, 1= not relevant to the measured domain, 2=somewhat, 3= relevant, 4= highly relevant (Saiful & Yusoff, 2019). "*Before the calculation of CVI, the relevance rating must be recorded as 1 (relevance scale of 3 or 4) or 0 (relevance scale of 1 or 2)"* (Saiful & Yusoff, 2019, p53).

In the study, both item content validity index (I-CVI) and scale content validity index (S-CVI) were considered. Item validity index was computed by dividing the number of agreed item by the number of experts (I-CVI= agreed item/number of experts). Similarly, the scale validity index was computed by obtaining the average of item content validity for the whole scale (S-CVI/Ave = sum of I-CVI Scores/number of Items). Prior to calculating both item and scale validity index, the relevance rating was obtained from all scales. They were recorded as 1(relevance for 3 or 4) and 0(relevance for 1 and 2) this was done to extract meaning from experts' ratings (Saiful & Yusoff, 2019). Tables 2, 3, 4 and 5 show the relevance ratings of experts for all scales and the computations for content and item validity index.

Table 2: The Relevance Rating of Research Supervision Items on a Scale by Four Experts

	Expert 1	Expert 2	Expert 2	Expert 4	Experts in agreement	I-CVI
PSV1	1	1	1	1	4	1
RSV2	1	1	1	1	4	1
RSV3	1	1	1	0	3	0.75
RSV4	1	1	1	1	4	1
RSV5	0	1	1	1	3	0.75
RSV6	0	1	1	1	3	0.75
RSV7	1	1	1	1	4	1
RSV8	1	1	1	0	3	0.75
RSV9	1	1	1	1	4	1
RSV10	1	1	1	1	4	1
SVI/Ave						0.84

Table 3: The Relevance Rating of Students Perceived Academic Psychological State Items on a Scale by Four Experts

Item	**Expert 1**	**Expert 2**	**Expert 3**	**Expert 4**	**Experts in Agreement**	**1CV1**
PSY1	1	1	1	1	4	1
PSY2	1	1	1	1	4	1
PSY3	1	1	0	1	3	0.75
PSY4	1	0	1	1	3	O.75
PSY5	1	1	0	1	3	0.75
PSY6	1	1	1	1	4	1
PSY7	1	1	1	1	4	1
PSY8	1	1	1	0	3	0.75
PSY9	1	1	1	1	4	1
PSY10	1	1	0	1	3	0.75
SVI/Ave						0.87

Table 4: The Relevance Rating of Resources Items on a Scale by Four Experts

	Expert 1	Expert 2	Expert 3	Expert 4	Experts in Agreement	1-CVI
RES1	1	1	1	1	4	1
RES2	1	1	1	1	4	1
RES3	1	1	1	1	4	1
RES4	0	1	1	1	3	0.75
RES5	0	1	1	1	3	0.75
RES6	1	1	1	1	4	1
RES7	1	1	1	1	4	1
RES8	1	1	1	1	4	1
RES9	1	1	1	1	4	1
RES10	1	1	1	1	4	1
SCVI/Ave						0.85

Table 5: The Relevance Rating of Students' Completion of Postgraduate Studies Items on a scale by Four Experts

	Expert 1	Expert 2	Expert 3	Expert 4	Experts in Agreement	1-CVI
COMP 1	1	1	1	1	4	1
COMP2	1	1	1	0	3	0.75
COMP3	1	1	1	1	4	1
COMP4	1	1	1	1	4	1
COMP5	0	1	1	1	3	0.75
COMP6	1	1	1	1	4	1
COMP7	1	1	1	1	4	1
COMP8	1	1	1	1	4	1
COMP9	1	1	1	1	4	1
COMP10	1	1	1	1	4	1
SCVI/Ave						0.85

As presented in Table 3, 3,4 and 5, results revealed that both item and scale scores were had a validity index of 0.75 and higher which implied that the items and the scales were relevant in measuring the research supervision, students' perceived academic psychological state, resources availability and students completion of postgraduate studies.

3.10 Reliability of Quantitative Research Instruments

According to Roberts, et. al., (2006) reliability in research concerns the degree to which a particular measuring procedure gives similar results over several repeated trials. To test the reliability of the instruments, the researcher used the test-retest and Cronbach's alpha coefficients method. The researcher used the test-retest method because '*it indicates score variation that occurs from testing session to testing session as a result of errors of measurement'* (Mohajan, 2017). More so, according to Drost (2011), test-retest reliability was appropriate in determining the stability and consistency of the instrument over time. The test-retest method was applied by administering the same questionnaires to a pilot sample twice at an interval of two weeks before administering them to the selected sample of study participants. The pilot sample constituted one-tenth of participants picked from other populations outside the study population but with the same characteristics as the study population.

The correlation coefficient of the scores from the questionnaires of the first session and second session were calculated using a test-retest coefficient formula to establish the extent to which the contents of the questionnaire were consistent in eliciting the same responses every time the instrument was administered (Multon, 2012) The coefficient 0.77 was obtained and rounded off to 0.8.

According to Roberts, et al., (2006), a correlation coefficient of about 0.8 is considered high enough to judge the instrument as reliable for a study. After testing the reliability of the questionnaire, a Cronbach alpha was used to test the reliability of scales within the questionnaire. The Cronbach alpha was preferred because it is the common reliable measure for assessing the interrelatedness of items within a scale (Mohajan, 2017; Bonett & Wright, 2015; Tavakol & Dennick, 2011). Reliability results were as presented in table 6 below;

Table 6: Cronbach's Alpha Coefficients

Variable	Number of Items	Cronbach Alpha
Research supervision	10	.899
Psychological state	10	.822
Resources Availability	10	.855
Students' completion of postgraduate studies	10	8.33

As presented in Table 6 above, all Cronbach's Alpha values were in the range of 0.822 to 0.899 for all study variables. This can be interpreted that the items were reliable to measure the noted variables. This is because the values were above the benchmark of 0.7 which is still acceptable (Bonett & Wright, 2015).

3.10.1 Validity and reliability of qualitative data

In qualitative research, validity and reliability are ensured in line with the trustworthiness of the research findings (Creswell, 2014). Trustworthiness in qualitative research is a process of validating the research findings and making them trustful, unlike quantitative research which uses statistical methods to establish validity and reliability of research instruments (Zitomer & Goodwin, 2014).

To ensure the trustworthiness of the study findings, four aspects must be focused on. These include dependability, credibility, transferability and conformability (Anney, 2015). To ensure the trustworthiness of qualitative data in this study; dependability, credibility, transferability and confirmability were treated with care separately as follows;

3.10.1.1 Credibility

Credibility is the assurance put in the truth of the study findings. Findings are taken to be credible if they truly represent the views of the research participants (Anney,

2015). To ensure the credibility of qualitative findings in this study, the researcher sent back analyzed and interpreted data to interview participants to evaluate them and suggest changes.

3.10.1.2 Dependability

Dependability refers to the consistency of the research findings over time (Creswell, 2014). To confirm the credibility of qualitative findings in this study I coded and analyzed the obtained data twice at the interval of two weeks. The results remained the same hence considered dependable. The researcher further involved a peer researcher to do separate coding and analysis and the researcher compared the results and still, there was no variation in the results.

3.10.1.3 Transferability

Transferability is the extent to which the findings of qualitative research can be transferred to other contexts with other participants with the same characteristics (Korstjens & Moser, 2018; Golfashani, 2003). Thick descriptions and verbatim quotations were given in this study to enable readers to judge if the findings are transferable.

3.10.1.4 Confirmability

Confirmability is the degree to which the study findings are in agreement with other researchers of the same field (Anney, 2015). Confirmability enables the researcher to prove that the findings of the study are not based on his imaginations. To ensure confirmability in the current study, all events that happened during data collection were kept for reflections during analysis.

3.11 Data Management and Analysis Procedures

Data management and analysis procedures allow the researcher to determine the findings of the study. It is through data analysis that the research hypotheses are accepted or refuted and answers to the research questions are sought (Leavy, 2017). In mixed methods research data is managed and analyzed quantitatively and qualitatively.

According to Creswell (2018), Leavy (2017) and Kothari (2004), quantitative research lender for statistical analyses where data is analyzed using descriptive or inferential statistics or both. Qualitative data is analyzed through coding and organizing themes representing data captured in form words, pictures, written texts, and videos. Martens (2010) notes that qualitative data can be analyzed using the thematic analyses approach and content analysis approach.

3.11.1 Quantitative Data management and Analysis Procedures

In the current study, the Statistical Package for Social Sciences (SPSS) version 21.0 was used to manage all quantitative data collected as per objective. Responses for the demographic information sections were directly entered into SPSS version 21.0 for computation to obtain frequencies, percentages, distributions, and deviations of sample characteristics.

Objective two sought to analyze the relationship between students' research supervision and completion of postgraduate studies in selected universities of Uganda. Items of the stated supervision dimensions were computed and items of completion of postgraduate studies/ demographic data were also computed. A Spearman's rho correlation was run to determine how supervision related to students' completion of postgraduate studies in Uganda. If the rs (coefficient value) was

positive with a P-value of 0.05, it would indicate a positive significant relationship between supervision and students' completion of postgraduate studies. If rs (coefficient value) was negative with a P-value of 0.05, it would indicate a negative significant relationship between the two correlated variables (see table 20).

Objective three was to analyze the relationship between students' perceived psychological state and students' completion of postgraduate studies. A Spearman's rho was also used to determine the relationship between these two variables.

Objective four was to analyze the relationship between the availability of resources and students' completion of postgraduate studies in Uganda. A Spearman's rho correlation coefficient was also used to determine the relationship between these two variables with the help of SPSS version 21.0.

Quantitative data was analyzed by the use of both descriptive and inferential statistics to inform hypotheses testing. Hypothesis one, two and three (H_{01}, H_{02}, H_{03}) were analyzed using Spearman's rho to determine the relationship between the independent variable and dependent variable of each hypothesis. Spearmans' rho correlation technique was preferred because it is appropriate in measuring relationships between variables in data that is not normally distributed as well as non-parametric (Creswell, 2018; Chee & Queen, 2016; Sedgwick & George, 2012; Mukaka, 2012; Kothari, 2004).

3.11.2 Qualitative data management and analysis

Qualitative data for the research question was analyzed by the use of the thematic analysis method through arranging data in categories and themes identified from the specific research questions and quoted in verbatim. Data was transcribed from interview recordings and documents and a thorough preliminary read-through in all

transcripts was done to ensure clear coding. The transcribed content was cleaned and the final content was stored in a word-processing file. The transcribed content was coded, arranged into categories and themes and interpreted in line with objectives one of the study.

The process of analyzing qualitative data was done as follows; transcribing the data, working with the words, identifying codes, reducing codes to themes, counting the frequency of codes, relating categories to the literature, creating a point of view and reporting the data (Creswell & Poth, 2016). Quantitative and qualitative findings were interpreted separately according to particular objectives they served to achieve in the discussion and interpretation phase.

3.12 Ethical Considerations

At the onset of data collection, the researcher sought a clearance letter from Moi University School of Education and all other relevant authorities. The letter was used to seek approval from Uganda Christian University-Uganda Ethical Review Committee and the Uganda National Council of Science and Technology for clearance to conduct the study.

The proposal of this study was submitted to the Uganda Christian Research Ethics Committee for guidance on ethical issues, clearance and approval. Clearance from the Vice Chancellors' office, schools of graduate studies of the selected Universities was obtained before the study. Informal conversations with participants were conducted before data collection to assess their research readiness.

Each instrument contained an opening introductory paragraph requesting respondents' cooperation in providing the required information for the study. Respondents` confidentiality was protected by keeping their identities anonymous using serial

numbers instead of names. The principle of voluntary consent was declared where the respondents who were willing to participate in answering the questionnaires were requested to sign consent forms and the consent for interview respondents was audiotaped.

Obtaining consent was achieved by disclosing and explaining the purpose and significance of the research study as well as the benefits and dangers of participating in the study. Multiple perspectives and contrary findings were reported honestly. Finally, credit of ownership was given to the researcher, participant's advisors and other researchers whose work was used in the study.

3.13 Chapter Summary

This chapter covered the research design, location of the study population, sample size and sampling procedures, data collection methods and procedures, data collection instruments, data management and analysis, ethical considerations and finally the chapter summary. The next chapter deals with data analysis, presentation, interpretation and discussion.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION

4.0 Introduction

The purpose of the study was to analyze the determinants of students' completion of postgraduate studies in selected universities of Uganda. The focus was put on research supervision, students' perceived academic psychological state and resources availability. This chapter presents the analysis of data, presentation interpretation and discussion of findings from the field.

Both quantitative and qualitative data was gathered; therefore, this chapter presents descriptive statistics, inferential statistics and themes that emerged from the in-depth interviews conducted. Quantitative data was gathered to address objectives two and three and four. Interview data addressed objective one which aimed at establishing the current strategies for effective research supervision in the completion of postgraduate studies.

4.1 Quantitative Data

This subsection covers the analysis, presentation, interpretation and discussion of quantitative data. Data were analyzed using both descriptive statics and inferential statistics. The section starts with the presentation of background information, pre-data analysis and analysis of data objective per objective.

4.1.1 Demographic information for respondents

In this section, the researcher presents, discusses and interprets the respondents' response rate and characteristics. The sample characteristics covered included sex, age, type of university; nationality, programme level, year of enrollment and mode of

study for postgraduate students. On other hand, sex, level of profession, position held within the university and the type of university were considered for lecturers (Table7 and 8)

4.1.1.1 Response rate

The researcher obtained data from 291 postgraduate students and 91 supervisors/lecturers; however, data were obtained from 230 students which was a response rate of 78% of sampled postgraduate students. Much as the study aimed at gathering data from 91 lecturers, 105 participated. This discrepancy emerged to the willingness of majority of lecturers to participate in the study especially at the public university. Postgraduate students' and lecturers' response rates are within the confines of the large sample; that is, ($n \geq 30$) (Kothari, 2004). According to Kothari (2004), a response rate that is above 70% is very good for quantitative studies. Frankel and Wallen (2006) argued that 70% response rate reduces the margin of error to a smaller figure and leads to a better precision. Therefore, with the response rate of 78% and 100% of postgraduate students and supervisors/lecturers, respectively, the researcher had sufficient raw quantitative data to go on with analyses.

4.1.1.2 Sample characteristic for postgraduate students

Data on demographic characteristics were collected in categorical form from postgraduate students and lecturers/supervisors. In the students' questionnaire, demographic variables included sex, age group at the first time of enrollment, nationality, mode of the study, type of the university, degree programme level, year of enrollment and mode of study attendance. Results on sample characteristics are presented in Table 7.

Table 7: Characteristics of Postgraduate Students

Variable	Category	Frequency	Percentage
Sex	Male	133	58
	Female	97	42
Age Group	Below 24	10	4.3
	25-30	87	37.8
	31-36	59	25.7
	37-42	34	14.8
	Above 43	40	17.4
Mode of the Study	Full Time	123	53.5
	Part Time	107	46.5
Nationality	Ugandan	176	76.5
	International	54	23.5
Type of University	Public	132	57.4
	Private	98	42.6
Programme Level	Masters	136	59.1
	PhD	94	40.9
Year of Enrollment	2020/2021	38	16.5
	2019/2020	86	37.4
	2018/2019	70	30.4
	2017/2018	14	6.1
	2016/2017	22	9.6
Studies Attendance	Full time	108	47
	Part Time	106	46.1
	Mixed	16	7

Source: Questionnaire data 2021

As presented in Table 7, results indicated that that 133 (57.8%) of the respondents were males and 42.1% were females. The distribution of age groups at the time of first enrollment indicated that 10 (4.3%) of the participants were below 24 years, 37.8% (87) between the age of 25 and 30 years, 25.7.5%(59) were between 31 and 36 years 14.5%(34) were between the age of 37-42 and finally 17.4 (40) percent of participants were 43years and above at the time of enrollment for postgraduate studies. Results revealed that the number of male students enrolled for postgraduate studies in the selected universities is higher compared to the number of female students. Furthermore, the majority of the students were of youthful ages.

The study sought to establish the type of the university where participants belonged. As presented in table 2, it was revealed that 57.4% (132) of the participants belonged to the public university and 42.6% (98) of the participants belonged to the private university. Therefore, public universities have a high enrollment rate of postgraduate students compare to private universities.

For the programme level, the study constituted two levels namely masters and Doctoral levels. From the descriptive statistics presented in table 7, 59.1% (136) of the participants were master's students and 40.9% (94) were doctoral students. Both masters and doctoral students were randomly selected and had a chance of equal representation. However, results denoted that majority of the student participants were masters students.

In the sampled participating postgraduate students, 76.5% (176) were Ugandan postgraduate students and 23.5% (54) were international students. This justified that the selected universities had low numbers of international students compared to national students compared to Ugandan students.

It was noted that both private and public selected universities offered postgraduate programmes on a part-time and full-time basis. Therefore, this prompted a need to establish the distribution of participants according to the mode of their programmes. As presented in Table 7, 53.5% (123) of the participants were attending their programmes on a full-time basis and 46.5% (107) of the participants were attending their programmes on part-time. Hence it was revealed that the number of students who attended their postgraduate studies on full time is higher compared to those who attended on part-time.

4.1.1.3 Sample characteristics for lecturers

The study involved 105 supervisors/ lecturers who were drawn from both public and private selected universities. Their sample characteristics are as presented in table 8.

Table 8: Sample Characteristics for Supervisors/Lecturers

Variable	Category	Frequency	Percentage
Sex	Male	71	67.6
	Female	34	32.4
Level of Profession	Professor	5	4.8
	Associate Prof.	3	2.8
	Senior Lecturer	26	24.8
	Lecturer	71	67.6
Position	Dean/Director/Principal	2	1.9
	Head of Department	15	14.3
	Programme coordinator	13	12.4
	Lecturer	75	71.4
Type of University	Public	77	73.3
	Private	28	26.7

Source: ***Survey data (2021)***

As presented in table 8, the findings revealed that out of 105 supervisors, who participated, 71 (67.6%) were male while 34(32.4%) were female. The data acquired showed that 71 (67.6%) were at a professional level of a lecturer, 24.8% (26) at a level of a senior lecturer, 3 (2.8%) at a level of associate professor and 4.8% (5) at a level of a professor. This means that there are a limited number of supervisors at the senior level in Ugandan universities which possibly hindered the research supervision. On the position within the university, 2 (1.9%) participants were deans/principals/directors, 15 (14.3%) were heads of Department, 13 (12.4%) were programme coordinators and 75 (71.4%) were lecturers. The acquired data further revealed that majority of the participants were from the public university at 77 (73.3%) compared to 28 (26.7%) from private university which means that the staffing of public universities in Uganda is higher than that of private universities.

4.1.1.4 Students' Completion rates of Postgraduate Studies

In this section, the researcher sought to establish the students' completion rates of postgraduate studies in the universities that participated in the study. Document analysis guide was used to gather data from admission and graduation records of selected universities. The universities that participated included Makerere University, the first and longest serving public university in Uganda and Kampala International University, the first and longest serving private university in Uganda.

At both universities, postgraduate studies were offered in all schools and faculties for both masters and doctoral levels. It was further indicated that the institutions were putting efforts to enhance the throughput rates. Despite the efforts put in place for the success of graduate training, it was evident that there was a big gap between enrollment and throughput of postgraduate students. Documentary records revealed that high numbers were being admitted year after the other but could not turn into degrees after the minimum time allocated to the programmes offered. Records from one participating University were as presented in Table 9.

Table 9: Makerere University Admission and Graduation Statistics 2016-2021

Academic year	**Students admitted**		**Students graduated**	
	Masters	Doctoral	Masters	Doctoral
2016/2017	2528	175	1277	75
2017/2018	2636	142	980	69
2018/2019	3343	168	1254	56
2019/2020	27213	278	1173	61
2020/2021	-	-	1160	108

Source: Makerere University Admission and Graduation Records 2016-2021

Generally, 2528 master's students who were admitted at Makerere University in 2016/2017 academic year were supposed to graduate in two years (2017 /2018)

academic year. However, only 980 (38.8%) managed to graduate in two years' time record. Similarly, 175 doctoral students admitted in 2016/2017 were supposed to graduate in 2018/2019 academic year. However, only 56 (32%) managed to graduate in three years record time. The computations of the records in table 9 revealed that for the past five years the completion rate of masters and doctoral studies at Makerere University in the range of 34% and 42% which is not desirable.

Wamala, et al. (2012) found out that extended candidature and withdraw of doctoral students were at the rate of 48.6% and 36.4% respectively which indicated that the completion rate was low. This finding emerged from the administrative data of doctoral students enrolled at Makerere University between 2001 and 2005. Kasozi (2019) found out that completion rate for doctoral students at Makerere were at the rate of 55%. According to Kasozi (2019), the completion rate of 55% was low in relation to the institutional capacity and demand of doctoral degrees in the country.

Completion rates for masters studies have also be found to be low by other studies. This agrees with the current study which found out that the completion rate was in the range of 34% to 42%. For instance, Kahari and Kyakuha (2020) found that 95% and 94% of masters students for 2016 and 2017 respectively at Makerere University Business school failed to complete their studies in time. More still , Eyangu, et al (2014) revealed that the completion rate for masters at Makerere Business School (MUBS) ranged from 11% to 18% between 2001 and 2007 which was also very low.

From the findings of the current study and previous studies like (Kahari & Kyakuha, 2020; Kasozi, 2019; Eyangu et al., 2014; Wamala & Oonyu, 2012), it is clear that Makerere university has continually face the challenges of low completion rates which needs action.

For the other university that participated in the current study (Kampala International University), records on enrollment and graduation of masters and doctoral students were concealed on policy reasons but interviews conducted as presented in 4.1 revealed that the completion rates and Kampala International University were also low.

4.1.2 Descriptive statistics for study variables

This section gives the descriptive explanation of all study variables using means and standard deviations. The major variables of the study included, research supervision, psychological factors, and resources availability. The purpose of obtaining descriptive statistics was to summarize the information about the variability and central tendency of the items used to measure the study variables.

For easy quantitative analyses in SPSS, research supervision, students perceived academic psychological state, resources availability and students' completion items were given item codes as follows; research supervision (SPV1-10), students' perceived psychology state (PSY1-10), Resources availability (RES1-10), Students' Completion of postgraduate studies (CP1-10). Table 10 presents results from descriptive analyses of research supervision variable.

Table 10: Research Supervision

Item	Item Code	N	MEAN	SD
1. My supervisors make effort to understand the difficulties I face.	SPV1	230	3.5783	1.18596
2. My supervisors give me good guidance in topic, content selection and refinement.	SPV2	230	3.9000	.99934
3. My supervisors are available when I needed them.	SPV3	230	3.6913	1.06366
4. I and my supervisors developed a schedule for completion of my research tasks and we comply with it.	SPV4	230	3.4130	1.23586
5. My supervisors ensure that I acquire research and generic skills from them.	SPV5	230	3.7783	1.00151
6. I have regular meetings with my supervisors.	SPV6	230	3.6565	1.05289
7. I have good working relationship with my supervisors	SPV7	230	4.0522	.98764
8. My supervisors are knowledgeable and have enough expertise about the standards expected in my research area	SPV8	230	4.2217	.91014
9. My supervisors have adequate experience in my research area.	SPV9	230	4.1870	.93678
10. My supervisors have enough experience in research supervision.	SPV10	230	4.2174	.92781
Valid N (listwise)		230		

Source: Survey data 2021

Results in Table 10 indicate the descriptive statistics of responses on individual items of research supervision. Responses were obtained from 230 postgraduate students on a ten item five point Likert scale ranging from strongly disagree (coded 1) to strongly agree coded (2). Results indicated that means of items were in the range of 3.07 and 4.01 with the overall mean of 3.869. The standard deviations research supervision items were in the range of 0.910 to 1.235 with the overall standard deviation of 1.030. Majority of participants agreed with item 8 (SPV87) "*My supervisors are knowledgeable and have enough expertise about the standards expected in my*

research area' with the mean of 4.221 On the other hand, item 4 (SPV4) '*I and my supervisors developed a schedule for completion of my research tasks and we comply with it'.* Emerged with a low mean (3.413) compared to other items and the standard deviation of 1.23586. The high overall mean and low overall standard deviation denoted that responses clustered towards the mean, hence reliable to measure research supervision constructs (Alias & Ibrahim, 2015; Boos & Brownie, 2004; Manikandan, 2011).

Similarly, descriptive statistics for students' perceived academic psychological state were obtained as presented in Table 11 below.

Table 11: Students Perceived Academic Psychological State

Item	Item Code	N	MEAN	SD
1. I begin learning and research tasks as soon as I am given them.	PSY1	230	3.6043	1.23450
2. I really get my research and academic work finished in time.	PSY2	230	3.6522	1.22595
3. Often, I set a date when I want something to be done	PSY3	230	3.8348	1.01887
4. I am always concerned about the possibility of making a mistake in my academic and research work.	PSY4	230	3.8870	.91341
5. I strive to be as perfect as possible in my research and academic work	PSY5	230	4.0609	.97825
6. I always feel positive that I can improve my work	PSY6	230	4.2087	1.01513
7. I do not allow social activities to affect my studies	PSY7	230	3.6391	1.30006
8. I plan well and stick to my plan in accomplishing my academic goals.	PSY8	230	3.8261	1.16169
9. I often try to understand how the weight of my postgraduate studies would impact my future career.	PSY9	230	4.1826	.91644
10. I selected my study program according to my employer's/funder's interests.	PSY10	230	2.6304	1.51497
Valid N (listwise)		230		

Source: Survey 2020

Table 11 presents the descriptive statistics of responses on individual items of Students perceived academic psychological state as rated by participants on a ten items five point Likert scale. Responses were obtained from 230 participating postgraduate students in selected universities of Uganda. As presented in the table 11 results indicate that means of items were in the range of 2.630 and 4.208. The overall mean score of all items of Students perceived academic psychological state variable was 3.752. The standard deviations of individual items were in the range of 0.913 to 1.514 with the overall standard deviation of 1.127.

Item 6 (PSY6)*'I always feel positive that I can improve my work'* emerged with the mean score of 4.209 and a standard deviation of 1.052. This is an indication that most of participants scored in the agreement with item 6 compared to other items. On the other hand, results indicated that item 10 (PSY10) '*I selected my study program according to my employer's/funder's interests'* had a low mean of 2.630 with a standard deviation of 1.514.

To assess the distribution of responses on resources availability, acquired data was subjected to descriptive statistics analysis. Results were as presented in table 12 below.

Table 12: Resources Availability

Item	Code Item Code	N	Mean	SD Std
1. I have good access to computing facilities and services	RES1	230	3.5826	1.21118
2. I am able to organize good access to equipment that I need for my research	RES2	230	3.6478	1.11456
3. My university has appropriate financial support for research activities	RES3	230	2.6652	1.24897
4. I have access to suitable working space	RES4	230	3.5217	1.15859
5. I have access to specialist resources in my research area	RES5	230	3.2478	1.20565
6. I have access to all library services that I need	RES6	230	3.4043	1.17729
7. I have access to university internet always	RES7	230	3.2304	1.30633
8. I have access to the technical support I need.	RES8	230	3.4696	1.10830
9. My university library have enough resources of my research area	RES9	230	3.0043	1.23096
10. My university supports me to attend conferences and workshops of my area of specialization.	RES10	230	2.7522	1.28286
Valid N (listwise)		230		

Source: survey data 2020

Descriptive statistics of individual items of resources availability in selected universities as experienced by postgraduate students are presented in table 12 above. Results indicated that means of individual items were in the range of 2.752 and 3.647. The overall mean score of all items of resources availability variable was 3.252. The standard deviations of individual items ranged from 1.108 to 1.306 with the overall standard deviation of 1.204.

Results indicated that Item 2 (RES) *'I am able to organize good access to equipment that I need for my research'* had the highest mean score of 3.647 with a standard deviation of 1.114. On the other hand, results indicated that item 3 (RES 3) which states that '*My university has appropriate financial support for research activities* 'emerged the item with the lowest mean of 2.665 with a standard deviation of 1.248. Nevertheless, all the means of resources availability were close to one another had low standard deviations. This implied that responses were consistent and there was low variability in responses. Therefore, it can be concluded that responses were reliable.

For the completion of postgraduate studies, a ten item likert scale questionnaire ranked from strongly disagree (coded1) to strongly agree (coded 5) was used. Descriptive results obtained from 230 questionnaires are presented in table 13.

Table 13: Completion of Postgraduate Studies

Item	**Code** Item Code	**Mean** N	Mean	**SD** Std
1. I successfully completed the classwork of my degree programme in classwork period.	CP1	230	3.7478	1.25621
2. I am able to complete/ successfully completed developing the research proposal in scheduled time	CP2	230	3.8348	.89570
3. I am/was able to correct and analyze data in scheduled time of my degree programme	CP3	230	3.8391	.75648
4. I am/ was able to write the dissertation in allocated time of my degree	CP4	230	3.4217	1.23997
5. I am/was able to respond to comments from my supervisor/s in the shortest time possible	CP5	230	3.8913	.73669
6. I am/was able to attend to recommendations from the panelists in the given time period.	CP6	230	4.0000	.75345
7. I am /was able to submit my dissertation for examination in time	CP7	230	4.0565	.98074
8. My progress as far as my postgraduate studies are concerned is very good	CP8	230	4.2000	.92231
9. I am /was able to complete all the minimum requirements of my degree programme in time.	CP9	230	4.0522	.63855
10. I will be awarded my degree in the minimum number of years of my programme	CP10	230	3.8913	1.04544
Valid N (listwise)		230		

Source: survey data 2021

The presented results in Table 13 indicated that the mean scores of items ranged from 3.421 to 4.200 with the overall mean of 3.893. The standard deviations of individual items were in the range of 0.638 to 1.256 with the overall standard deviation of 0.922. As presented in table 13, item 8(CP8) obtained the highest mean of 4.200 with the

standard deviation of 0.922 compared to other items. Item 4 (CP4) *'I am/ was able to write the dissertation in allocated time of my degree'* was represented with the lowest mean score of 3.421 with a standard deviation of 1.239. High mean scores and low standard deviation meant that responses from participants were consistent and viable to measure the construct.

4.1.3 Descriptive statistics of study variables from supervisors' data

This section presents the descriptive explanation of research supervision, students perceived psychological state and resources availability focusing on the data obtained from lecturers/ research supervisors. This was done for the purpose of cross validating responses obtained from postgraduate students. Results were as presented in the table 14.

Table 14: Descriptive Statistics of Research Supervision from Supervisors

Item code	Item	N	Mean	Std. Dev
SPN1	I ensure that the arrangement for my students to upgrade from one academic level to another is appropriate and timely	105	4.1333	.87779
SPN2	I conduct a training needs analysis to help students identify their research skill requirements.	105	3.7619	1.22885
SPN3	I continually motivate the students I supervise.	105	4.3333	.80463
SPN4	I provide critical feedback on students' written research work in good time	105	4.3524	.79640
SPN5	I supervise students I am knowledgeable about their research areas only.	105	3.7429	1.21709
SPN6	I have adequate experience in supervising postgraduate students	105	4.2667	.82353
SPN7	I am always accessible to my students outside appointment times when the student needs help.	105	3.9143	1.18577
SPN8	I have regular meetings with my students to discuss their challenges.	105	3.8857	1.20347
SPN9	I give timely feedback to my students	105	4.2857	.82874
SPN10	I have good working relationship with my students.	105	4.3714	.83502
Valid N (listwise)		105		

Data on research supervision were obtained from lecturers using a 10 items 5 point Liket scale questionnaire. Responses were coded starting from 1-strongly disagree up to 5- strongly agree. Results as indicated in table 14 above reveals that means of individual items were in the range 3.7429 and 4.3714 leading to the overall mean of 4.105. Items scored the standard deviations that were in the range of 0.79640 and 1.22885 leading to the overall standard deviation of 0.980. Item 10 (SPN10) which stated that '*I have good working relationship with my students'* obtained the highest mean of 4.3714 with the standard deviation of 0.83503. The high mean of 4.3714

means that majority of the participants strongly agreed up on the item and the low standard deviation means that responses on that particular item among all participants were consistent. Item 5(SPN5) '*I supervise students I am knowledgeable about their research areas only'* emerged with the lowest mean of 3.7429 with the standard deviation of 1.21709. Never the less, a result indicates that item 5 was above average and had a low standard deviation. This necessitated that majority of the participants consistently agreed that they supervise students whom they are knowledgeable about their research areas.

To determine the viability of responses from supervisors on students perceived psychological state, descriptive statistics were obtained. Table 15 below summarizes the findings on students' perceived psychological state among postgraduate students as noticed by supervisors/ lecturers in selected universities of Uganda.

Table 15: Descriptive Statistics for Data Collected from Supervisors on Students' Perceived Academic Psychological State

Item Code	Item	N	Mean	Std. Dev
PSY1	My students begin learning and research tasks as soon as I give them out	105	2.9810	1.11787
PSY2	My students always want their research and academic work finished in time but they rarely do.	105	3.5524	1.35150
PSY3	It is always important to my students to be perfect in everything they do in their academic and research work.	105	3.7238	1.06964
PSY4	My students strive to be as perfect as possible in their research and academic work	105	3.3714	1.36055
PSY5	Doing work in time is always important to my students but they rarely do.	105	3.8571	1.11311
PSY6	My students plan well and stick to their plan in accomplishing their academic goals.	105	2.6000	1.33445
PSY7	My students often try to understand how Postgraduate education would impact on their future occupation.	105	3.8476	1.01698
PSY8	My students spent a lot of time concerning about which research area they should carry on and finally came to decision for a research area.	105	3.3143	1.29581
PSY9	My students did not know how postgraduate education impacts their future	105	2.3905	1.29715
PSY10	In selecting a study program my students did according to their employers/funder wishes	105	2.9143	1.08410
Valid N (listwise)		105		

Source: Survey data (2021)

Responses were gathered on a five point Likert scale questionnaire ranging from 1-strongly disagree to 5 strongly agree. As presented in table 15 above, results shows that the mean scores of the responses for individual items were in the range of 2.3905 and 3.8571 with the overall mean of 3.2552. The standard deviations of individual items were between 1.01698 and 1.36055 with the overall standard deviation of 1.204. Item 5 which stated that doing work in time is always important to my students but they rarely do scored the highest mean of 3.8571 with the standard deviation of

1.11311. The mean of 3.8571 indicated that majority of participants agreed that doing work in time is always important to their students but they rarely do. The low standard deviation meant that the responses on the item were consisted across participants. The overall mean of 3.2552 and the standard deviation of 1.204 reveals that majority of supervisors/ lecturers who participated in the study responded with undecided option consistently. This could be because the psychological state of students need keen attention to observe.

To establish the viability of responses from lecturers on students' academic psychological state in comparison with students responses, descriptive analyses were conduct and results were as presented in table 16.

Table 16: Descriptive Statistics of Resources Availability

Item code	Item	N	Mean	Std. Dev
RES1	1. My students have access to a suitable working space	105	3.2000	1.35448
RES2	2. My students have access to the technical support they need	105	3.8000	1.09545
RES3	3. My students are able to organize good access to necessary equipment	105	3.2857	1.15787
RES4	4. My students have good access to computing facilities and services	105	3.3429	1.25444
RES5	5. There is appropriate financial support for research activities for my students.	105	2.1524	.92799
RES6	6. My students have adequate provision of library facilities (including physical and online resources)	105	3.8286	1.18043
RES7	7. My students have access to specialist resources necessary for their research.	105	3.3619	1.17771
RES8	8. My students have enough time to work on their research projects	105	2.9238	1.29121
RES9	9. My students are supported by the university to attend conferences of their research area.	105	2.5429	1.36599
RES10	10. There is a good number of researchers/ supervisors my students can consult in case an unavailable	105	3.6000	1.26795
Valid N (listwise)		105		

Source: Survey data (2021)

Table 16 above presents descriptive statistics of resources availability data gathered from supervisors or lecturers. Data was collected from 105 participants from two universities both public and private. Out of 105 gathered, 73.3% (77) were from a public university and 26.7% (28) were from a private university. Findings indicated that the means of items were in the range of 2.1524 and 3.8000 with the overall mean of 3.2038. The standard deviations of individual items emerged to be in the range of 0.92799 and 1.36599. Findings revealed that the overall standard deviation of the items was 1.2073. The moderate mean and low standard deviation indicated that participants were consistently between agree and undecided range. Item 2 which stated that my students have access to the technical support they need emerged with the highest mean of 3.800 which means that majority of participants agreed that their students have access to the technical support they need. Item number five which stated that there is appropriate financial support for research activities for my students scored the lowest mean of 2.1524 which implies that majority of participants disagreed on the statement.

4.2 Normality Tests

To ensure that correlational and regression analyses were conducted using appropriate test statistics, correlational and regression analysis normality assumption was tested. The test was conducted to determine whether data collected from participating students were normally distributed (Schützenmeister, et al., 2012; Morgan, et al., 2006; Bai & Ng, 2005).

Normality can be tested using graphical and numerical methods. Using graphical methods, , normally distributed data is the one that has ‘symmetrical, bell-shape’ with the greatest frequency of scores in the middle and smaller distribution towards the extreme ends of the graph (Park, 2016). While using numerical methods, the proof

that data is normally distributed can be obtained using but not limited to Kurtosis and Skewness values, Kolmogorov-Smirnov and Shapiro-Wilk values (Mishra 2019; Park 2016; Schützenmeister, et al., 2012).

To determine the distribution of data obtained from postgraduate students, skewness, kurtosis, Kolmogorov-Smirnov and Shapiro-Wilk statistic values were used. The analysis the distribution of data was done using SPSS version 21.0. Results are presented in tables 17 and 18.

Table 17: Descriptive Statistics

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Log_Research supervision	230	-1.995	.160	-5.505	320
Log_Psychological Factors	230	-1.316	.160	1.557	.320
Log_Resources Availability	230	-.561	.160	-178	.320
Log_Completion of studies	230	-.683	.160	1.375	.320
Valid N (listwise)	230				

Source: Survey data 2020

Table 18: Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
log_SPV	.165	230	.000	.837	230	.000
log_RES	.100	230	.000	.965	230	.000
log_PSY	.153	230	.000	.885	230	.000
log_CP	.090	230	.000	.969	230	.000

a. Lilliefors Significance Correction

Table 17 and 18 present the results in form of numerical values for normality tests. The Shapiro-wilk's test (P<0.05) (Sharpilo & Wilk, 1965; Bai & Ng, 2005; Park, 2016) and the visual inspection of histograms, Q-Q plots and box plots (see appendix XII, P,184) revealed that scores obtained from postgraduate students on research supervision, students' perceived academic psychological state resources availability and students' completion of postgraduate studies were not normally distributed. As presented in table 11, the Skewness and Kurtosis values were; -1.955(SE=, 160) and -5.505(SE=.320) for research supervision, -1.316(SE=.160) and 1.557(SE=.320) for the psychological state, -.561(SE=.160) and -.175(SE=.320) for resources availability, finally -.683(SE=160) and 1.557(SE=.320) (Cramer & Howitt, 2004; Doane & Seward, 2011).

4.3 Presentation Interpretation and Discussion of Findings According to the Study Objectives

This section presents, interprets and discusses the results and techniques that were applied to analyze the data according to the study objectives. Both qualitative and quantitative study objectives are presented, analyzed interpreted and discussed within this section. The section started by addressing the qualitative research question and thereafter the quantitative hypothesis, objective by objective.

4.3.1 The Current strategies for effective research supervision in the completion of postgraduate studies in selected universities of Uganda

Objective one sought to establish the current strategies for effective research supervision in the completion of postgraduate studies. The research question which stated: *"What are the current strategies for effective research supervision in the completion of postgraduate studies?"* was used to generate data. To achieve this objective, data were gathered through individual interviews with the deans, heads of

departments and one open-ended question was included in the lecturers' questionnaire. The themes and their categories that emerged from the data were as presented in Table 19 below.

Table 19 Summary of Themes and Categories on the Current Strategies for Effective Research Supervision in the Completion of Postgraduate studies

The current strategies for effective research supervision in the completion of Postgraduate studies		
Category of participants	Emerging themes	Code categories
Deans/directors	Virtual approach	Emails
		Zoom meetings
		WhatsApp groups
	Coordination	Coordinating office
	Approach	Virtual coordination (Cohort WhatsApp groups)
		Follow up on Individual students and supervisors
	Retooling approach	Supervisors workshops
		ICT technical support
		Self-training
	Progress tracking approach	Periodic presentations
		Progress reports
Heads of Department	Expertise	Area of specialization
		Sourcing experts in the students' area of interest
	Virtual approach	WhatsApp groups
		Emails
		Zoom
	Workshops	Periodic presentations
		Supervising workshops
	Collaborative supervision	Joint feedback on progress
Lecturers / Supervisors	Virtual approach	Emails
		WhatsApp
		Zoom
	Collaborative approach	Supervision teams
		Sharing expertise
		Collegial assistance
		Intensive teaching of Theory handling colleagues

	Motivation	Monetary and non-monetary support to students and supervisors Mentoring Workshops support for both Supervisors and students.
	Operationalizing rules	Enforcing guidelines Disappearance of students Regular classwork attendance
	Harmonizing responsibility	Reasonable load allocation Reduced responsibilities to supervisor Wise time management to students. Students' work and studies balance
	Regular training	Workshops

Source: Field data (2021)

Table 19 summarizes the emerging themes from all three categories of participants. These categories included deans, heads of departments and supervisors. From the above summary of themes, findings to the research question which stated" what are the current strategies for the effective research supervision in the completion of postgraduate studies were summarized Figure 3.

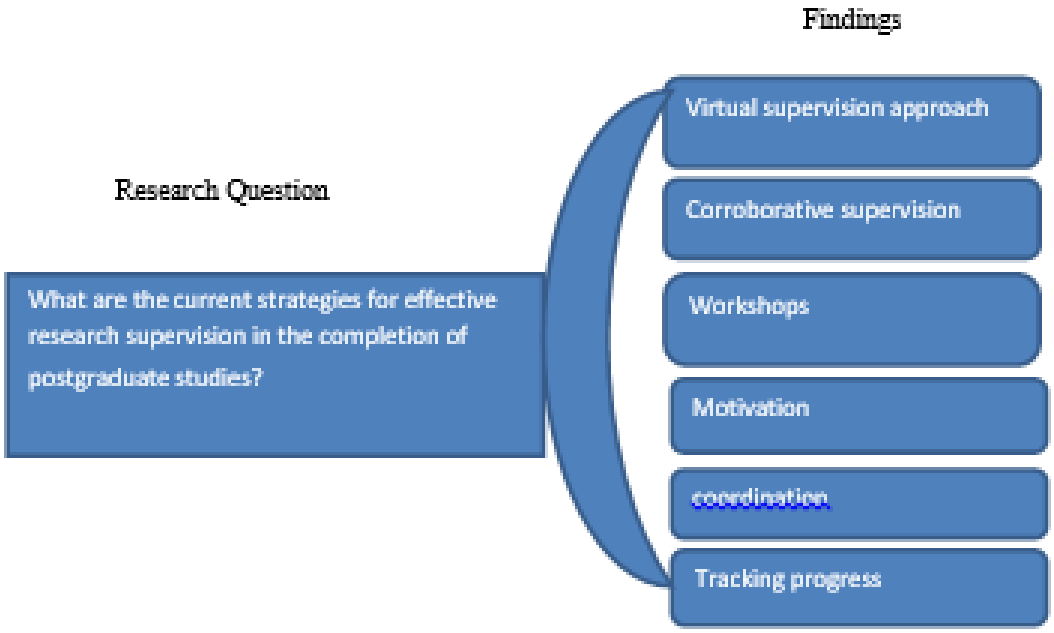


Figure 3: Current strategies for the effective research supervision in the completion of postgraduate studies
Source: Field data (2021)

4.3.2.1 Online research supervision

Online research supervision is the utilization of electronic or digital communication technologies to communicate, guide and give feedback to students at a distance during their research activities. According to Ghani (2020), online research supervision may significantly apply video and audio teleconferencing between students and supervisors. Similar to this argument, the study revealed that it is positively impactful for supervisors and students to use the opportunities in zoom conferencing technologies during the supervision process.

As summarized in table 19 participants' views revealed that online or virtual research supervision should be incorporated in the graduate research supervision. This was commonly reported by all categories of participants. One dean reported that the

school is set to graduate 15 Ph.D. students due to their adoption of online research supervision. The participant stated that

> "*For this coming graduation, we are likely to graduate 15PhDs in this school alone. That tells you the online engagements that students had with their supervisors because last year we were closed. So, students were being assisted online"* **[Dean1]**

Another participant noted that students' progress during the pandemic period hiked because of online engagements students had with their lecturers and management. The participant stated;

> *For the current, Covid taught us a lesson, you see when Covid came we had to start working online. And this has sped up the progress of students. Many defenses have happened online. Now we should try to officialize online supervision because we have seen its benefits. We want to design the regulations so that it can officially continue even after Covid* **[Director 1]**

Similarly, the head of the department reported that during the lockdown he was able to supervise a Ph.D. student up to completion and the masters students the participant supervised during the same period progressed very well. The participant further revealed that other supervisors who had not embraced the virtual means of research supervision had not even presented their students for a proposal presentation. The quotes of the participant were as presented below;

> "…For *example, personally, I have supervised 1 Ph.D. to completion within these difficult times of Covid using email communications and the other six students for masters are finalizing their work. If I can compare do you know that their colleagues who were not assisted online for maybe some reasons have even not presented their proposals*" **[Head of Department 3].**

Participants revealed that WhatsApp online platforms eased the communication between the faculties, departments and among supervisors. The following quotations illustrate how participants supported the use of WhatsApp during research supervision.

> *"Many students are joining graduate studies with obligations; we should give them options that can favor them. For example we can*

> *allow them to keep reaching us even on WhatsApp so than they fell at ease and get motivated to learn and improve their work"* **[Supervisor 38]**
>
> *"…Timely communications to both students and supervisors through WhatsApp groups. If there is any issue with supervision we communicate on graduate supervisor's forum and also to students. Then supervisors have agreed to use emails, WhatsApp and zoom sessions to assist students and this has been too helpful* **[Head of Department 3].**
>
> *"To make periodic presentations successful we created WhatsApp groups for graduate students with their supervisors in their respective cohorts. We keep posting 'the next presentation is on this date bring your proposal', finalize with your supervisors, submit your dissertation. I want to tell you this has challenged both students and their supervisors. Even after presentations, we keep posting, where are you'. We keep posting and posting updates like we are going to have vivas very soon, graduation is coming, you should be finishing…"* **[Dean 1]**
>
> *"…You notice that all institutions were closed. At first we thought that nothing much would be achieved. But quickly we adopted online engagements and supervision, we were prompted to create platforms and the progress became more even than before the lockdown"* **[Dean2]**

WhatsApp is a mobile messaging application that is specifically designed for mobile devices like phones and laptops which is used to send on spot messages to individuals and groups (Cetinkaya, 2017) Largely, WhatsApp messaging was deemed useful in follow up, updates and keeping both supervisors and students on the same pace. Similar to the current findings, (Rambe & Mkono, 2019) revealed that supervisees feels at ease in interacting with their supervisors via WhatsApp due to reduced formal situations. In Rambe and Mkono (2019), Cetinkaya (2017) Participants reported that students felt much relaxed to continuously ask questions in minimal formal WhatsApp settings compared to other means. It was reported that WhatsApp was more conducive to them. The current study further agrees with the earlier studies which revealed that WhatsApp messaging means was effective in mediating teaching,

learning and supervision of graduate students (Cetinkaya, 2017; Fadda, et al., 2020; Oyewole, et al., 2020; Sandoval-Cruz, et al., 2020).

Zoom conferencing is another online supervision technological method that was consistently supported in the current study. "*Zoom is a web-based collaborative video conferencing tool that provides quality audio, video, and screen sharing, which makes it great for virtual conferences, online lectures, online meetings, webinars, and more"*(Serhan, 2020, P, 335). Participants reported that having zoomed sessions with their students helped and would help to enhance the progress of students in research. Heads of department and faculty/school/college deans reported that zoom conferencing was used to assist students jointly. Zoom conferencing emerged to have facilitated periodic presentations which could assist postgraduate students in obtaining joint feedback from all supervisors. Supervisors also reported that students can now engage with their supervisors in a distance using the zoom facility. For example, participants stated"

> **"***In this Covid 19 I have realized that online supervision is very important. I was able to clear backlogs and as I talk students who had collected data are ready to graduate. With online supervision even if you're out of the country you can still assist your students via zoom and WhatsApp. Universities should promote online supervision and discourage the traditional means of print and bring to the university*" **[Supervisor participant 29]**

> *"I must also tell you that the shift from traditional means of research supervision is also respected here. At first we thought we could not supervise online because of the nature of our work. But I want to tell you that after students are done with experiments. The rest business is done virtually. Actually now it's no longer find me at compass during the day. It is just send to me, let's have a zoom session and people can choose to respond to students at any time"* **[Head of Department2]**

> **"***Many students come with other working responsibilities. We cannot tell them to resign their jobs but we need to support them and be available to them. Accessing a person is easy now. Let's allow them to reach us through WhatsApp, phone and even emails. We can also*

> *keep arranging zoom sessions with them so that they are not troubled at their places of work.* **[Supervisor 6]**

Similar to this finding, Mpungose (2021) urged that zoom sessions can help supervisors and students through interactions, reflections and connectedness to identify areas of improvement in learning and teaching. This could similarly apply in research supervision which is also part of teaching and learning. In contrary to the findings of the current study, Reingold (2021) contends that zoom engagements hinder meaning full learning and research in education settings. In the same study, it reported that participants felt not having meaningful learning while accessing the knowledge from different places. Students expressed fears of not having the transformation education that they desired to have in a physical setting. Serhan (2020) further revealed that in a learning setting, students preferred physical classes that online engagements this also contradicts the current study.

The findings of Reingold (2021) and Serhan (2020) could be contradicting with the findings of the current study on contextual and level of educations grounds. This is because the study by Reingold (2021) was conducted in Israel whose education and research focus on the cultural and emotional transformation of candidates which digital learning may not offer. On the other hand, the study by Serhan (2020) was carried out among secondary school students who hopefully could not explore opportunities in digital engagements with their teachers.

Finally, the study revealed that participants commended the use of online electronic mails in exchanging the work between students and supervisors. Both supervisors, Heads of Department and deans/ directors noted that with the current technological development students and supervisors no longer need travel distances or have to plan for when and how to meet. The participants had the following to say;

> **"***With the current development all of should run to virtual assistance. It is not fair to ask students to travel from other countries places of the country to come and meet you yet you can read the work make comments and send back to the students through emails and they can always communicate on WhatsApp"* **[Supervisor 37]**
>
> *Many students come with other working responsibilities. We cannot tell them to resign their jobs but we need to support them and be available to them. Accessing a person is easy now. Let's allow them to reach us through WhatsApp, phone and even emails. We can also keep arranging zoom sessions with them so that they are not troubled at their places of work.* **[Supervisor 6]**
>
> *Then supervisors have agreed to use emails, WhatsApp and zoom sessions to assist students and this has been too helpful***. [Head of Department 3]**
>
> *"…But I want to tell you that after students are done with experiments. The rest business is done virtually. Actually now it's no longer find me at compass during the day. It is just send to me, let's have a zoom session and people can choose to respond to students at any time"* **[Head of Department 2]**

Using emails to share the work between students and supervisors saves time and resources between two parties. As earlier reported by the deans that students who enroll for graduate studies in selected universities are from different parts of the world, using mails during supervisions could be at ease hence enhance the motivation on both sides.

4.3.2.2 Collaborative Research Supervision

In the sense of the current study, collaborative research supervision refers to the willingness of supervisors in the same facet to provide assistance to the same students depending on their expertise. Supervisors reported that if they put together their different talents and expertise, it would be helpful to students. This could further be explained by the following quotations.

> *"As supervisors we need to work collectively together to assist students in their research. This is because we are gifted with different talents in research"* **[Supervisor 9].**
>
> *"If as supervisors we are able to work as a team collaboratively we can make wonders. In most cases this is not the case and few people*

> *think about it. For my case I choose to collaborate with my former doctoral students and close friends and this has worked for me. In case I am unavailable my students have were to seek guidance from and proceed"* [**Supervisor 28**]:
>
> *"…In presentations we give joint guidance to our students and this has also reduced burden from supervisors because students are assisted right there…"* **[Head of Department 1]**

Cumming (2010) as cited in (Maor, et al., 2016) urged that supervision of doctoral students in a collegial and collaborative way on the side of supervisors is important in a way that it leads to co-producing of justifiable knowledge. In agreement with the current study, the benefits of a collaborative way of supervision include improved quality of the research project and cohesive exchange of expertise amongst the research teams (Trogisch, et al., 2020; Burnett, 1999). The study further revealed that a collaborative approach to research supervision can be facilitated by regular presentations.

In line with the current study, Le (2012) found out that collaborative research supervision lays a fundamental basis for sharing knowledge and imparting knowledge amongst students. This subsequently translates into timely students' completion of studies. Other studies that are supported by the current study includes Fan, et al., 2018; Gurr, 2018; Adams & Noronha, 2015; Colbran, 2014) (Nordentoft, et al., 2013

4.3.2.3 Periodic workshops

Findings revealed the need for periodic workshops for both supervisors and students. Both supervisors, Heads of departments and deans of schools revealed that with the current trend, there is a need for continuous retooling. One dean revealed that there is a paradigm shift in postgraduate training. The participant reported that currently many people are enrolling for postgraduate studies which was not the case before and

continued to say that there must be a change in doing things, especially in research supervision. This can further be explained by the quotations below:

> *"…Which they don't know is that graduate training shifted, there is a paradigm shift. More people are now going for graduate training than it was in the past. And that is why every year we are having increments in applicants. So currently one of the things is that we aim at giving training to supervisors so that they can learn modern methods of research supervision*" **[Dean 3]**

> *"…Therefore, we do periodic workshops on supervision and others and even teaching. For instance we have had works shops on online research, mentoring etc. you see supervision should go beyond academic work. It goes hand in hand with mentoring. Our people are encouraged to do that and we are really making change*" **[Head of Department 2]**

> *"Many supervisors are not researcher's hence minimal support. Supervisors should be given opportunities for retooling regularly so that they do not misguide students*". **[Supervisor 020]**

> *"The University should regularly support students and supervisors to attend conferences and seminars for good output"* **[Supervisor Participant 23].**

> **"***Supervisors should also take a training role in research methods because at times students are weak in research methods*" **[Supervisor 2]**

This finding agreed with the earlier finding in a similar context which revealed that supervisors need retooling because many of them seemed not to be conversant with supervisory practices (Atibuni, et al., 2017). Atibuni, et al. (2017) further urged that there is a need for continuous professional development first for supervisors to enhance their supervision skills and letter to students in form of sensitization. All these findings are supported by the current study.

The fact that participants noted that periodic workshops for both supervisors and students could enhance their progress confirms an earlier study by Ekpoh (2016) which revealed that departmental workshops and seminars on core research areas improve students' progress in thesis and academic writing.

4.3.2.4 Motivation

Motivation is the stimulation of students' willingness, creativity and strength to work towards the goal. In the current study motivation for students was believed to emanate from encouraging, guiding, counseling, mentoring, positive response and coming to the level of the students by lecturers. On the other hand, lecturers concurred that institutions should support them in both monetary and non-monetary terms to arouse their encouragement to support students.

Findings revealed that motivation during the research supervision is crosscutting to both supervisors and postgraduate students. Participants revealed a need for continuous motivation for both students and research supervisors. Participant's quotations were as presented below;

> **"***Supervisors are a motivating agent, we should end ever to do this because students come with a lot of problems.* **[Supervisor 29]**
>
> *"Both supervisees and supervisors should be motivated"* **[Supervisor 15].**
>
> *"We need to ensure that there is motivation both on the side of the students and supervisors. With that they will be able to move on to the next steps"* **[Supervisor 16].**
>
> **"***Beyond supervision, I give mentoring because students also have so many issues. How I wish all supervisors do that. Some supervisors are also impatient with student's weaknesses and this worsens the situation. Creating rapport and coming to the level of the student is the best strategy for effectiveness in research supervision. In this case, students will pay attention to you and focus much so that he or she does not disappoint you yet he is the one benefiting. "Motivating students is good"* **[Supervisor 35].**
>
> **"***Lucrative monetary and non-monetary need to be put in place for the research supervisors"* **[Supervisor Participant 36]**
>
> *"We have some grants in this university which are competed for by staff. And for one to get that he or she must be attached to a postgraduate student. This has changed the way people used to do things. Then we have a strategy of students and supervisors co-publishing the research work. This was not common especially to master's students but currently, supervisors are very keen and active because they want every output to count"* **[Head of Department 2].**

> *"…Then the supervisors lack motivation. More at certain point they are not paid for supervision then they are asked to take a number of students. Therefore it is rare to expect such lecturers to pay attention to the details of the student"* **[Dean 2]**

The motivation of both postgraduate students and their supervisors is important in keeping them moving during the process of research. According to Ribau (2020), 46% of the difficulties supervisors get with their students are related to their motivation. Tahir, et al., (2012a) also urged that for effective research supervision, supervisors ought to give continuous motivation to students. Findings of earlier studies revealed that motivation was significant to the side of students and was silent to the other side of supervisors.

The above findings partially agreed with (Ribau, 2020) who found that the extrinsic motivation given to students by their supervisors was very important. In the same study, supervisors agreed with the finding by 84.8%. Furthermore, Singh (2020) and Meng, et al., (2017) noted that motivation and inspiration to proceed the research project are impactful. Uniquely, the findings of the current study placed the role of motivating students by supervisors and supervisors by the university.

4.3.2.5 Coordination

The current study placed the coordination activities to the selected or elected members of staff who are tasked to continuously engage both the graduate students and their supervisors or lecturers. The coordination theme emerged from the deans and heads of the Departments who participated in the study. It emerged that to keep an eye on graduate students' and supervisors' activities both selected universities established the office of the coordinator at the department and faculty level.

Findings revealed that coordinators were doing a tremendous job and achievements as far as research supervision is concerned were visible. One dean reported that the

coordinators at their different levels take the role of following up thoroughly on every allocated supervisor and student. Challenges during research supervision were identified and dealt with right away. They could further use the online messaging systems notably, WhatsApp and emails to post updates that would challenge both the student and supervisor. One Dean stated as follows;

> *"But currently, the completion rate in this faculty is extremely high. And why is it high we have adopted the coordination format. We have coordinators whose responsibility is following up on individual students and supervisors. They take interest in knowing how students are progressing, where are they"* **[Dean 1]**

Heads of Department also reported that the coordinators were assisting in ensuring smooth research supervision as follows;

> *"Yes aaah! When it comes to graduate training in this department we have an office which is in charge. At first everything was being done here but currently the college has established a coordination office. The department of foundations was tasked to do that. But I also foresee the overall processes because still they have to pass here*" **[Head of Department 1].**

> *"Because in past there was a tendency of focusing on undergraduates who were many in numbers. We agreed to have a coordination officer for graduate students. This officer has a duty to conduct thorough follow-up on all students and supervisors. This is regularly done through online means. He is also the one in charge of posting updates on postgraduate activities in the department"* [**Head of Department 2]**

The above quotations confirm that research coordinators were playing a significant role in enhancing the effectiveness of research supervision. Speicher, et al. (n.d.) argued that coordinators play pivot roles between the students, the university and supervisors. Similarly, Hammond & Tennant (2010) Zhao (2010) found out that coordinators at graduate reveal assist both the students and supervisors in identifying areas that need development. This makes the whole institution strategize and offer training to both students and supervisors with knowledge of what should be focused

on. The same status agrees that the roles of coordinators are key in enhancing research and supervision.

Consistent with the findings of the current study, it is urged that coordinators actively integrated the students the research activeness (Brew, et al., 2017). This can be discussed that the coordinators regularly update students and even supervisors to perform their roles.

4.3.2.6 Tracking progress

According to Cardilini, et al. (2021), not only does the progress of graduate students justify the completion of the studies but also contributes to the wellbeing being of the students. Participants of the current study reported that keeping the track record of students is a lucrative habit in graduate studies. Periodic progress reports and regular presentations of research work serve the purpose of ensuring the good progress of graduate students. Also, supervisors reported that regular meetings and presentations keep students on track and make research supervision more effective. This is demonstrated by the following responses from the participants:

> *"…Have you been presenting to the department. That one is being implemented. We are ensuring progress recommendations. So every after six months they must give us returns. This one has given us a boost"* **[Director 1].**

> *"Yeah supervision is a bit of individual. Its supervisor to the student. It was difficult to track if the students are progressing. Previously we trucked the progress using progress reports and documents signed between students, and that gives us a picture of how supervision is going"* **[Dean1].**

> **"***Students and supervisors need to be regular as per agreed timelines. With technology, both should make it regularly. Sometimes supervisors are given so many university engagements which negatively affect the research supervision. If the university can look into that we can to some extent improve on completion rate*" **[Supervisor participant 32].**

> **"***Periodic meetings and presentations are enough to facilitate the progress of a student and effective research supervision*" **[Supervisor Participant 10].**

Trucking the progress of students in research received credit in ensuring effective research supervision. However, supervisors did not express any view on how tracking progress may impact their work in supervision. Instead, they reported that regular meetings with the students using blended online and face-to-face could satisfactorily enhance the progress and effective research supervision. This is supported by the following quotations:

> **"***Regular meetings and presentations are enough to facilitate the progress of a student and effective research supervision*" **[Supervisor Participant 10].**

> "For *example personally I have supervised 1 Ph.D. to completion within these difficult times of Covid using email communications and the other six students for masters are finalizing their work. If I can compare do you know that their colleagues who were not assisted online for maybe some reasons have even not presented their proposals*" **[Head of Department 3].**

Supervisors' views of ensuring progress in research supervision using blended online and face-to-face meetings were inconsistent with previous findings which positioned online meetings at the helm of quick progress of graduate students. This argument was justified in the COVID 19 pandemic period according to studies like (Cardilini, et al., 2021; Fadda, et al., 2020; Fendi, et al., 2021; Ghani, 2020; Mpungose & Khoza, 2020; Nasiri & Mafakheri, 2014; Oyewole, et al., 2020; Rambe & Mkono, 2019; Suripah, et al., 2021) that found out that online research monitoring and supervision led to quick progress of postgraduate students during Covid-19 pandemic period.

4.4 Quantitative Objectives

Quantitative objectives of the current study were; to analyze the relationship between research supervision and students' completion of postgraduate studies in selected universities of Uganda, to examine the relationship between students' perceived

academic psychological state and students' completion of Postgraduate Studies in selected universities of Uganda and to analyze the relationship between students completion of postgraduate studies.

Guided by the normality tests results in table 17 and 18 which revealed that scores of the study variables were not normally distributed, the study adopted the non-parametric statistic tests of Spearman Rank order correlational test and ordinal regression test (Liu, 2009; Liu & Koirala, 2012; Spais & Vasileiou, 2006; Artusi, et al., 2002; Croux & Dehon, 2010).

4.4.1 Research supervision and students completion of postgraduate studies in selected Universities of Uganda

Objective one aimed at analyzing the relationship between Research supervision and Students' completion of postgraduate studies in selected universities of Uganda. A research hypothesis that stated that there is no statistically significant relationship between research supervision and students' completion of postgraduate studies was tested using the Spearman Rank Order correlation coefficients. Findings were presented in table 20.

Table 20: Correlations for Research Supervision and Students Completion of Postgraduate Studies

			1	2
Spearman's rho	1.Research Supervision	Correlation Coefficient	1.000	.457**
		Sig. (2-tailed)	.	.000
		N	230	230
	2.Students,' completion of postgraduate studies	Correlation Coefficient	.457**	1.000
		Sig. (2-tailed)	.000	.
		N	230	230

**. Correlation is significant at the 0.01 level (2-tailed).

Results presented in table 20 indicated that research supervision and students' completion of postgraduate studies had a positive significant relationship at a level of 0.001 (r_S = .457, p (.000) < 0.01, N=230). This means that as research supervision increases, students' completion of postgraduate studies increases by 45.7%. These results take the same direction as earlier studies that argued that positive research supervision practices are paramount in enhancing the progress of postgraduate students(Noel, et al., 2021; Sarwar, 2018; Ghani, et al., 2012; Pitchforth, et al., 2014, Lubbe, et al., 2005). Different from the current study, limited studies established the relationship between research supervision and students' completion of postgraduate studies. Additionally, the current study gives an overview of the degree to which research supervision affects the completion of graduate studies in the Ugandan context.

4.4.2 Students' perceived academic psychological state and students' completion of postgraduate studies in selected Universities of Uganda

This section analyses the data on objective two which aimed at establishing the relationship between students' perceived academic psychological state and students' completion of students' completion of postgraduate studies. 10 Likert scale items drawn from four dimensions of procrastination, perfectionism, academic identity and locus of control were used to obtain data from 230 postgraduate students.

To analyze the relationship between students' perceived academic Psychological state and students' completion of postgraduate studies, Spearman's correlational coefficient statistic technique was used. This was preferred because students perceived psychological state and students' completion scores were proven by normality test

results in tables 17 and 18 that they were not normally distributed. Findings were as presented in table 21.

Table: 21 Spearman's rho Correlations of Students' perceived Academic Psychological State and Students Completion of Postgraduate studies

			1	2
Spearman's rho	1.Psychological State Y	Correlation Coefficient	1.000	.243**
		Sig. (2-tailed)	.	.000
		N	230	230
	2. Students completion of postgraduate studies	Correlation Coefficient	.243**	1.000
		Sig. (2-tailed)	.000	.
		N	230	230

**. Correlation is significant at the 0.01 level (2-tailed).

As presented in table 21, Spearmans' rho correlation coefficient was used to establish the relationship. Results indicated that there was a positive significant relationship between students' perceived academic psychological state and students' completion of postgraduate studies at a level of 0.001 (r_S = .243, p (.000) < 0.01, N=230). The results highlighted that any increment in tested psychological aspects supports the increase of students' completion rate of postgraduate studies. Items were stated positively for example for procrastination; items were stated in a direction that portrayed that students had efforts in avoiding it. Results on this objective were unique compared to earlier studies that could focus on one dimension(Ai, 2017; Canter, 2009; Curran & Hill, 2019) because they emerged from the combination of four psychological aspects in postgraduate education that included, procrastination, locus of control, perfectionism and academic identity.

4.4.3 Resources availability and students' completion of postgraduate studies in selected Universities of Uganda

Objective three aimed at establishing the relationship between resources availability and students' completion of postgraduate studies. A 10 items Likert scale validated questionnaire was used to obtain responses from 230 postgraduate students. The questionnaire covered items on physical, human and technological resources. To achieve this objective, responses obtained were coded, entered into SPSS version 21.0 and computed for testable resources availability variable. Because the Shapiro Wilk scores in table 18, box plots and Q-Q plots (see appendix XII, p184) revealed that scores of resources availability were not normally distributed, a Spearman rho correlation coefficient was used to test the hypothesis which stated that there is no statistically significant relationship between resources availability and students' completion of postgraduate studies. Results were as presented in table 22.

Table 22: Pearsons rho Correlations of Resources Availability and Students Completion of postgraduate studies

			1	2
Spearman's rho	1.Resources Availability	Correlation Coefficient	1.000	.111
		Sig. (2-tailed)	.	.094
		N	230	230
	1.Students' completion postgraduate studies	Correlation Coefficient	.111	1.000
		Sig. (2-tailed)	.094	.
		N	230	230

**. Correlation is significant at the 0.01 level (2-tailed).

The findings presented in table 22 revealed that there is no significant correlation between resources availability and students' completion of postgraduate studies at a level of 0.001 (r_S = .111, p (0. 094) >0.01, N=230). These results meant that an increase in resources availability increases students' completion of postgraduate studies by 11.1%, however, the impact of resources availability was not significant.

The above findings did not support the findings of previous studies that revealed the resources affected the timely completion of postgraduate studies(Matin & Khan, 2017; Theodore, et al., 2017; Nkoyo, 2016). Nkoyo (2016) argued that lack of network, inconsistent internet connectivity, power outage and irrelevant electronic information resources are the problems postgraduate students encounter while accessing and using electronic resources that hinder their progress.

4.5 Ordinal Regression Analysis to Predict Students' Completion of Postgraduate Studies

This section focuses on the ordinal regression analysis that was undertaken to determine the predictive power of research supervision, students' perceived academic psychological state and resources availability related covariates with students' completion of postgraduate studies. Ordinal regression analysis was performed after confirming that was used to analyze students' completion of postgraduate studies using the associated explanatory variables. The main aim of using the Ordinal Regression Analysis method for analyzing the data was to determine how the study variables influence (more positively or negatively) the students' completion of postgraduate studies.

Before looking at the individual predictors in the model, it was necessary to find out if the model gives adequate predictions (Eygu & Gulluce, 2017; Liu, 2009; Liu & Koirala, 2012; Spais & Vasileiou, 2006). Therefore, the researcher examined the model-fitting information as presented in table 23.

Table 23: Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	Df	Sig.
Intercept Only	1175.769			
Final	1099.080	76.689	3	.000

Link function: Logit.

The significant chi-square statistic indicates that the model gives a significant improvement over the baseline intercept-only model. This basically tells us that the model gives better predictions than if we just guessed based on the marginal probabilities for the outcome categories.

The Goodness-of-Fit results were as presented in Table 24. The table contains Pearson's chi-square statistic for the model and another chi-square statistic based on the deviance. These statistics are intended to test whether the observed data are inconsistent with the fitted model. If they are not-the significance values are large-then it would be concluded that the data and the model predictions are similar and that the model is good. Therefore, the large significant values for Pearson's Chi-Square and Deviance Chi-square showed that the model was good. Table 24 presents the goodness of fit results.

Table 24: Goodness-of-Fit

	Chi-Square	Df	Sig.
Pearson	2984.105	3240	.999
Deviance	982.758	3240	1.000

Link function: Logit.

In the regression model, the coefficient of determination summarizes the proportion of variance in the dependent variable associated with the predictor (independent) variables, with larger values indicating that more of the variation is explained by the model. Since the model consisted of only ordinal variables, the focus was put on Nagelkerke value. Nagelkerke value is an adjusted version of the Cox & Snell that adjusts the scale of the statistic to cover the full range from 0 to 1 (Nagelkerke, 1991). Therefore, as presented in table 25 the Nagelkerke value of 0.285 indicated that 28.5% of students' completion is predicated by research supervision, students'

perceived academic psychological state, and resources availability. Table 25 below presents the Pseudo R-Square results.

Table 25: Pseudo R-Square

Cox and Snell	.284
Nagelkerke	.285
McFadden	.059

Link function: Logit.

The assumption of consistency of parameters among variables was tested to compare the estimated model with one set of coefficients for all variables to a model with a separate set of coefficients for each variable (Elamir & Sadeq, 2010; Spais & Vasileiou, 2006). As presented in table 26 the results indicated that the test of proportional odds was not violated P (.614)>.05.

Table 26: Test of Parallel Lines[a]

Model	-2 Log Likelihood	Chi-Square	Df	Sig.
Null Hypothesis	1099.080			
General	1037.008[b]	62.072[c]	66	.614

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.

The parameter estimates for individual variables are presented in Table 27. Also, table 27 summarizes the effect of resources availability, Students' perceived Psychological state, and research supervision variables on students' completion of postgraduate studies. The sign of the coefficients for covariates and relative values of the coefficients for factor levels provides the highlights into the effects of predictor variables (research supervision). Students' perceived academic psychological state, and resources available on the outcome variable (students' completion of postgraduate studies). For covariates, positive coefficients indicate positive relationships between

predictors and outcome variables and negative coefficients indicate a negative relationship.

Table 27: Parameter Estimates

		Estimate	Std. Error	Wald	Df	Sig.	95% Confidence Interval Lower Bound	Upper Bound
Threshold	[CP = 2.30]	-.523	1.203	.189	1	.664	-2.882	1.836
	[CP = 2.60]	.225	.970	.054	1	.817	-1.676	2.126
	[CP = 2.70]	.687	.881	.608	1	.436	-1.040	2.414
	[CP = 2.90]	1.034	.836	1.531	1	.216	-.604	2.672
	[CP = 3.00]	2.120	.772	7.532	1	.006	.606	3.634
	[CP = 3.20]	2.621	.766	11.703	1	.001	1.119	4.123
	[CP = 3.30]	3.226	.768	17.640	1	.000	1.721	4.732
	[CP = 3.40]	3.722	.774	23.137	1	.000	2.205	5.239
	[CP = 3.50]	4.472	.787	32.333	1	.000	2.931	6.014
	[CP = 3.60]	4.969	.797	38.914	1	.000	3.408	6.531
	[CP = 3.70]	5.295	.804	43.398	1	.000	3.720	6.871
	[CP = 3.80]	5.681	.813	48.861	1	.000	4.088	7.274
	[CP = 3.90]	6.109	.823	55.087	1	.000	4.496	7.722
	[CP = 4.00]	6.550	.834	61.711	1	.000	4.916	8.185
	[CP = 4.10]	7.055	.846	69.538	1	.000	5.396	8.713
	[CP = 4.20]	7.508	.857	76.793	1	.000	5.828	9.187
	[CP = 4.30]	7.993	.869	84.698	1	.000	6.291	9.696
	[CP = 4.40]	8.733	.890	96.295	1	.000	6.989	10.478
	[CP = 4.50]	9.005	.900	100.086	1	.000	7.241	10.769
	[CP = 4.60]	9.364	.917	104.305	1	.000	7.567	11.161
	[CP = 4.70]	9.477	.923	105.379	1	.000	7.667	11.286
	[CP = 4.80]	10.327	.996	107.588	1	.000	8.376	12.278
	[CP = 4.90]	11.039	1.112	98.521	1	.000	8.859	13.218
Location	SPV	1.505	.198	57.500	1	.000	1.116	1.894
	PSY	.332	.193	2.970	1	.085	-.046	.711
	RES	-.368	.175	4.426	1	.035	-.711	-.025

Link function: Logit.

As presented in table 27, results revealed that for every unit increase of research supervision, there is a predicted increase of 1.505(P<.05) in the log odds of falling at the higher level on students' completion of postgraduate studies. This means that there is an increased probability of falling at a higher level on students' completion of

postgraduate studies if research supervision increases. These results are partially related to the earlier findings which revealed that students in Malaysia perceived research supervision as the second predictor of completion of doctoral studies (Shariff, et al., 2015). The findings confirm that the role of research supervision if vital in supporting the timely completion of postgraduate studies. This is also in agreement with several research arguments although fewer of them were based on statistical inferences (Alam, et al., 2013; Baligidde, 2019; Davis, 2019; Noel, et al., 2021; Shariff, et al., 2015; Stephens, 2014).

For students' perceived academic psychological state, results indicated that they were not statistically significant in predicting students' completion of postgraduate studies. It is revealed that for every unit increase in students' perceived academic psychological state, there is a predicted increase of 0.333(P>.05) in the log odds of falling at a higher level on students' completion of postgraduate studies. These results contradict with other correlation results of the current study in which students' perceived academic psychological state emerged to be significantly related to students' completion of postgraduate studies. Similarly, these findings contradict with (Norton, 2019; Curran & Hill, 2019; Ai, 2017; Roslan, et al., 2017; Roslan, et al., 2017; Madikizela-Madiya, et al., 2016; Schulze, 2014; Canter, 2009) that psychological aspects of procrastination, academic identity, locus of control and perfectionism had an impact on students completion of postgraduate studies.

Resources availability variable was a significant negative predictor of students' completion of postgraduate studies. For every unit increase of resources available, there was a predicted decrease of 0.368(P<.05) in the log odds of falling at a higher level on students' completion of postgraduate studies. This negative relationship between resources availability and students' completion of postgraduate studies was

in contrast with Spearman rho findings that emerged to be positive but not significant. The results further contradicted with other previous studies that found out resources were significant in enhancing the progress of postgraduate students and eventually leading to timely completion of studies (Nkoyo, 2016; Kumah, 2015).

As denoted in table 27, the regression model showing the contribution of research supervision, students' perceived psychological state and resources availability towards the prediction of students' completion of postgraduate studies is as shown below;

Y (CP) =1.505SPV+.332PSY-.368RES where;

CP is students' completion of postgraduate studies; SPV is research supervision; PSY is students' perceived academic psychological state and RES is Resources availability.

4.6 Connections of the Findings with the Theory

The study was informed by Tinto's (1993) interactionist theory. The theory advances that for students' commitment to the university's setting and towards the graduation goal, they should be both academically and socially integrated within the university system (Tinto, 1993) Tinto's theory further puts it forward that social and academic integration may occur in both formal and informal settings. "*Formal academic integration includes researching topics in the library, attending labs and classes and engagement in various activities related to academic success* (Chrysikos, et al., 2017, P. 99). Social integrations include participation in university social activities, joining clubs, interaction with peers and involvement in university extra-curricular activities (Berger & Braxton, 1998).

Both the social and academic integration aspects that emerged to enhance commitment and subsequently graduation were evident in the findings of the current study. It was revealed that multiple engagements through online platforms like Whatsapp, zoom and emails were vital in instilling commitment amongst the students. Some supervisor participants reported that they engaged with their students online to completion. Supervisors also revealed that workshops and conferences are key in enhancing the effectiveness of supervision and students' progress.

Information was also widely being shared online through WhatsApp and other online platforms. According to Zomer (2007), the effective flow of information within university students facilitates their commitment and integration. In the revision of Tinto's theory (Berger & Braxton, 1998b) contended that students' commitment and integration largely depended on how well institutions communicate expectations to students and implementation of university rules. In this study, participants expressed reluctance in implementing rules on the side of the university. Supervisors noted that after classwork, the majority of students disappear and this continuously affects their progress. Findings further revealed that faculties emphasized the implementation of the set guidelines but this could not go as planned. Selected universities ensured that there is a clear follow of information and communications to graduate students as well as the faculty by setting up coordination offices. The coordinators at both departmental and faculty were tasked to ensure that all parties are posted concerning their responsibilities which could enhance the commitment of both supervisors and students (Chrysikos, et al., 2017; Collino, et al., 2008; Zomer, 2007).

Research supervision is a scholarly two-way interaction process that involves the supervisor and a student. In the process of interactions, the level of professionalism, commitment, collaboration and respect has to be exhibited (Igumbor, et al., 2020).

The notion of interaction and commitment on the side of the students agrees with Tinto's theory of interactionist. In the current study, findings revealed that there was a moderate interaction between research supervisors and postgraduate students. This was depicted by a moderate overall mean of 3.8 on students' experiences on research supervision in the selected universities. In Igumbor, et al. (2020) researchers argued that co-supervision and collaborative means of research supervision facilitate students' commitment and interaction within the university. This also resurfaced in the current study. Supervisors reported that there was a need to embrace collaborative research supervision approaches to improve on the throughput. This was based on the fact that supervisors were endowed with different skills and it was reported that put together, they could produce good results.

Largely, connections of the findings of the current study with Tinto's interactionist theory, which informed the study, were in support of academic integration. Selected universities focused on ensuring academic integration through encouraging workshops, good flow of information on academic activities, online engagements and proper coordination. All these leaned to Tinto's assumption of academic integration (Igumbor, et al., 2020; Chrysikos, et al., 2017; Ganesh, et al.,2017; Aljohani, 2016; Voigt & Hundrieser, 2008; Tinto, 1982).

4.7 Chapter Summary

In this chapter, the researcher presented findings from the data which was obtained from the Deans, Director, Heads of Department, research supervisors and postgraduate students from two selected public and private universities of Uganda. It presents the description of quantitative data obtained from postgraduate students and supervisors, sample transcripts of the interviews conducted with the Deans and Heads of the Department and the responses of supervisors on the unstructured question on

the currents strategies for effective research supervision which was included in the questionnaire. Objectives two, three and four were achieved using Spearman rho order correlations of the data obtained from the students. Quantitative data obtained from students was accompanied by quantitative data gathered from supervisors. Objective one was achieved qualitatively using the qualitative data obtained from the Deans and Heads of the Department through individual interviews and data obtained from supervisors using unstructured questions. The next chapter of the study presents the synopsis of findings, conclusion and recommendations.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Overview

The purpose of the study was to analyze the determinants of students' completion of postgraduate studies. One longest-serving Public university and one longest-servicing private university were purposively selected for the study. The two universities were chosen for the current study because they have ventured into postgraduate education for a quite long period. The study included postgraduate students both masters and doctoral students, research supervisors/ lecturers who had taught and supervised postgraduate students, Heads of departments in the departments that offered both masters and doctoral studies, Deans of Faculties and Directors of graduate schools. A total of 230 postgraduate students, 105 supervisors, 8 heads of Department two faculty deans and one director of graduate school from two selected universities participated in the study.

The study used both quantitative and qualitative approaches and each objective applied an approach that was appropriate for it. Correlational and ordinal regression analyses were done to achieve objectives two three and four and thematic analysis was done to achieve objective one. Ordinal regression analysis was performed to determine the predictive power of the independent variables namely, research supervision, students' perceived academic Psychological state and resources available on the dependent variable of students' completion of postgraduate studies.

This chapter presents the summary of the study findings according to the study objectives, the conclusion from the findings and themes, recommendations and suggests areas for further research.

5.2 Objectives of the Study

The objectives of the study were;

To explore the current strategies for effective research supervision in the completion of postgraduate studies in selected universities of Uganda.

To analyze the relationship between research supervision and students' completion of postgraduate studies in selected universities of Uganda.

To establish the relationship perceived students' academic psychological state and completion of postgraduate studies in selected universities of Uganda.

To analyze the relationship between resources availability and students' completion of postgraduate studies in selected universities of Uganda.

5.2.1 The current strategies for effective research supervision in the completion of postgraduate studies

In this objective, the study aimed at exploring the current strategies for effective research supervision in the completion of postgraduate studies. Individual interviews with the Deans and Heads of the Department were conducted by the researcher. Other responses were obtained from supervisors using an unstructured question which was embedded in the questionnaire.

The study revealed the current strategies for effective research supervision in the completion of postgraduate studies as follows:

It was found out that the adoption of the virtual research supervision approach was ideal for effective research supervision. This was supported by Deans, Heads of departments and research supervisors. Similarly, it was evident that participants' responses revealed that collaborative research supervision could add to the

effectiveness of research supervision. Periodic workshops for both students and research supervisors emerged among the findings on the above objective. Heads of Department, Deans and research supervisors were in the view that the dynamics of graduate training now and then requires continuous retooling especially in modern methods of research supervision. It was suggested that supervisors and students need to be motivated, participants took motivations in terms of support for further training, monetary and non-monetary motivation would be important. Participants consistently reported that supervisors should regularly motivate the students and take a mentoring role during research supervision. It was also cited that the establishment of coordination offices are paramount in ensuring effective research supervision. Participants commended their roles not only in research supervision but also in the completion of postgraduate studies. Finally, it was found out that keen tracking of progress of supervisors and students during the process of research supervision keeps them focused. According the responses of the participants this could be achieved through filling of progress reports signed by both students and research supervisors. Above findings are further summarized in the figure below.

Figure 4: Summary of Findings on Strategies for Effective Research Supervision in the Completion of Postgraduate Studies

5.2.2 The relationship between Research Supervision and Students Completion of Postgraduate Studies in selected Universities of Uganda

This objective was achieved mainly by the data gathered from postgraduate students from the selected universities of Uganda. It was found out that research supervision and students' completion of postgraduate studies had a positive significant relationship (r_S = .457, p (.000) < 0.01, N=230). It was further revealed that research supervision had a high predictive power on students' completion of postgraduate studies. As presented in table 27 it is indicated that for every unit increase of research supervision, there is a predicted increase of 1.505(P<.05) in the log odds of falling at the higher level on students' completion of postgraduate studies.

5.2.3 The Relationship between Perceived Academic Psychological State and Students' Completion of Postgraduate Studies in the Selected Universities of Uganda

The above objective was achieved by the data collected from students using a questionnaire which was compared with the data on the same variable from research supervisors at the description stage. Findings indicated that perceived students' academic psychological state and students' completion of postgraduate studies had a moderate positive significant relationship (r_S = .243, p (.000) < 0.01, N=230). Findings from the ordinal regression analysis revealed that students' perceived psychological state had no significant predictive power for students' completion of postgraduate studies. It was found out that for every unit increase of students' perceived academic psychological state, there was a predicted increase of 0.333(P>.05) in the log odds of falling at a higher level on students' completion of postgraduate studies.

5.2.4 The Relationship between Resources Availability and Students' Completion of Postgraduate Studies in selected Universities of Uganda

The study set out to establish the relationship between resource availability and students' completion of postgraduate studies. This objective was met using the data obtained from postgraduate students from the selected universities. The obtained data were analyzed using Spearman's rho correlation statistics. Findings revealed that there was no significant relationship between resources availability and students' completion of postgraduate studies (r_S = .111, p (0. 094) >0.01, N=230). Ordinal regression analysis techniques were used to test the predictive power of resources available on students' completion of postgraduate studies and it was found out that the resources availability variable was a significant negative predictor of students' completion of postgraduate studies. For every unit increase of resources available, there was a predicted decrease of 0.368(P<.05) in the log odds of falling at a higher level on students' completion of postgraduate studies.

5.3 Conclusions of the Study

The study sought to analyze the determinants of students' completion of postgraduate studies in selected universities of Uganda. It was guided by four study objectives namely; to establish the current strategies for effective research supervision in the completion of postgraduate studies; to analyze the relationship between research supervision and students' completion of postgraduate studies; to examine the relationship between students' perceived academic psychological state and completion of postgraduate studies and to analyze the relationship between resources availability and students completion of postgraduate studies. From the study findings according to study objectives, the following conclusions were made;

5.3.1 The Current Strategies for Effective Research Supervision in the Completion of Postgraduate Studies

Effective research supervision is a supportive aspect of students' completion of postgraduate studies. The need to ensure effective research supervision is evident in the findings of the current study. It is justified that universities should embrace modern and technologically appropriate means of research supervision to support students and consequently enhance timely students' completion of postgraduate studies. Graduate training has shifted; today there are many students at the graduate training level compared to the past. Technology has further entered every sector including education. Therefore, supervisors and universities are encouraged by the findings of the current study to embrace technology in research supervision for its effectiveness.

5.3.2 The Relationship between Research Supervision and Students' Completion of Postgraduate Studies

Research supervision has a positive relationship with students' completion of postgraduate studies. Positive research supervision practices contribute to timely students' completion of postgraduate studies. The study revealed those positive practices of research supervision practices are; supervisors' efforts to understand student's difficulties, thorough guidance in topic and content selection, regular meetings; providing generic skills, good working relationship with students and self-resourcefulness. It is further evident from the findings that research supervision has a high positive predictive of students' completion of postgraduate studies.

5.3.3 The Relationship between Students' Perceived Academic Psychological State and Students' Completion of Postgraduate Studies

Students' perceived academic psychological state has a low positive influence on students' completion of postgraduate studies. Students who desist from procrastination behavior, try to be as perfect as they can, bare high levels of locus of control and academic identity are likely to complete their studies in time hence improving students' completion of postgraduate studies. Similarly, students' academic psychological state has a positive predictive power of students' completion.

5.3.4 The Relationship between Resources Availability and Students' Completion of Postgraduate Studies

The presence of resources within the university does not necessitate students' completion of postgraduate studies. It seemed accessibility and usability of the resources available could make meaning of their contribution to students' completion of postgraduate studies. As findings denote, it can also be concluded that universities in Uganda give less support to students to attend conferences and seminars.

5.4 Recommendations

Guided by the study findings and the above summary and conclusions, the study suggests the following recommendations which were structured according to the study objectives.

5.4.1 The Current Strategies for Effective Research Supervision in the Completion of Postgraduate Studies

It was obvious that online research supervision emerged casually most especially during COVID 19 pandemic period. Abrupt suggestions and the need for continuity of learning prompted selected universities to encourage research supervisors to continue

engaging students virtually. The study puts it clear that previously supervisors could engage students online but basing on student-supervisor arrangements. With the evidence of improvements in research supervision and students' completion of postgraduate studies attached to online research supervision, the study recommends that universities and graduate schools should design and incorporate online research supervision policies and guidelines in graduate training policies and ensure that they are applied. This would assist supervisors and students to understand what is expected of them and use the virtual opportunities for better results both formally and appropriately.

5.4.2 The Relationship between Research Supervision and Students Completion of Postgraduate Studies

Findings revealed that research supervision highly relates predicts students' completion of postgraduate studies. The study recommends that supervisors should adequately ensure to provide support to postgraduate students during their research journey. Furthermore, the study recommends that supervisors should end ever familiarizing themselves with new methods of research supervision according to the prevailing trends. Finally, self-retooling and collaboratively working with their colleagues should be taken significantly in ensuring their effectiveness.

5.4.3 The Relationship between Students Perceived Academic Psychological State and Students' Completion of Postgraduate studies

Results indicated that students' perceived academic psychological state was a significant predictor of students' completion of postgraduate studies. However, students' academic psychological state would not be easily noticed by the supervisors. The study recommends that universities ought to establish a psychological support system for graduate students. The norm of focusing on only undergraduate students

when it comes to psychological support should be revised to also cater for graduate students.

5.4.4 The Relationship between Resources Availability and Students Completion of Postgraduate Studies

It was explained in this study that irregular meetings between research supervisors and postgraduate students at a certain point were attributed to students' disappearance after classwork and during their research period. Furthermore, it was pointed out that resources at the universities are laid to keep redundant because most students are not available to use them after their classwork. With the current trend of technological advancement, students could use online means to reach out to their supervisors and access their university facilities virtually.

Both supervisors and postgraduate students reported that students are less supported to attend workshops and conferences by the university. This seemed not to be a good norm both to students and research supervisors. The study, therefore, recommends that universities should establish support mechanisms for graduate students most especially those conducting their research to attend both national and international conferences that are noted too important to their areas of interest. This could eventually enrich them with new insights and knowledge of addressing their research problems.

5.4.5 Recommendations for further research

The study was carried out in only two universities which included one public university and one private university. Two universities could not speak out for all over 46 public and private universities in Uganda. Similarly, there was a high variation in the number of participants from the private and the public university. It is therefore

recommended that a similar study should be conducted with a representative sample for both public and private universities in the country.

Also, the researcher recommends that a similar comparative study between private and public universities should be conducted in the future to generate more insights on determinants of students' completion of postgraduate studies in both private and public universities.

The current study purposed to examine the determinants of Students' completion of postgraduate studies in selected universities of Uganda. However, it focused on how the three variables including research supervision, students' perceived academic psychological state and resources available can relate to students' completion of postgraduate studies. It is therefore recommended that further research on other factors perceived to affect students' completion of postgraduate studies.

It emerged that online research supervision was preferred for postgraduate research supervision. However, the study could not look into its effectiveness. It is therefore recommended that a study can be conducted on the online effectiveness of postgraduate research supervision in a Ugandan setting.

Finally, the study contradicted previous studies on resources availability and students' completion of postgraduate studies. Findings revealed that resources availability had no significant relationship with students' completion of postgraduate studies. Therefore, the study recommends a future study on accessibility and use of university resources for postgraduate students in the Ugandan setting.

5.5 Contribution of the Study to the Body of Knowledge and Practice

5.5.1 Empirical contributions

The study exposed empirical knowledge towards effective research supervision in the completion of postgraduate studies. The knowledge emerges from the first objective of the study which aimed at establishing the current strategies for effective research supervision. A contribution has been made to adopting online research supervision in the current technological trend and Covid-19 situations. The study revealed that the commonly referred to as online informal means of communication like WhatsApp can make wonders as far as research supervision is concerned if adopted. The study further unearthed that even all other strategies for effective research supervision in the completion of postgraduate studies can be achieved through the use of digital technologies. The empirical contributions of the current study can be further explained by the figure below.

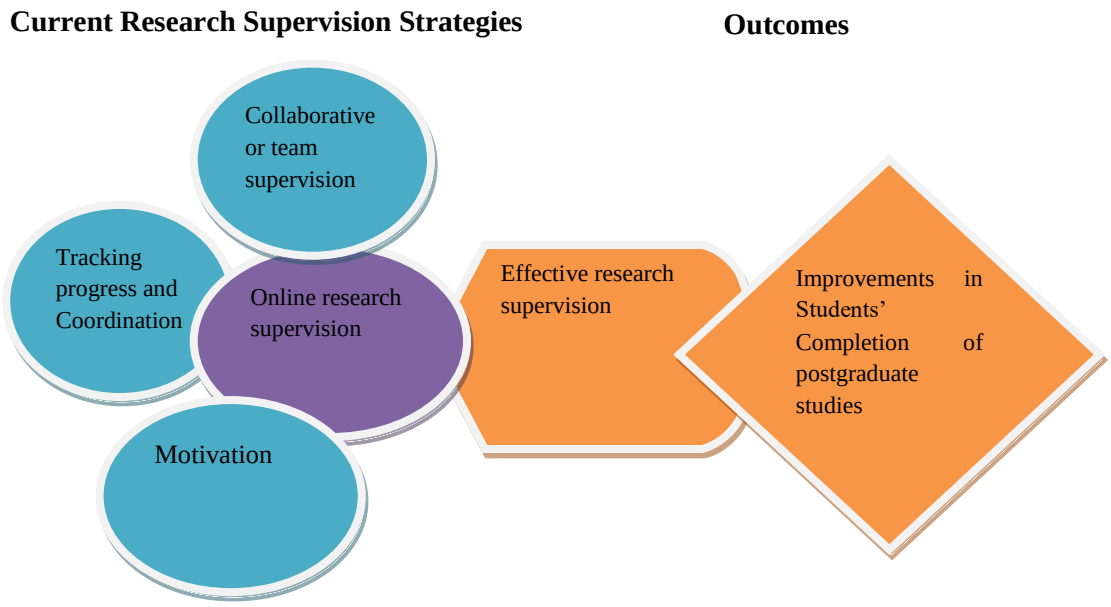


Figure 5: The Conceptual Model of the Current Strategies for Effective Research Supervision in the Completion of Postgraduate Studies

5.5.2 Theoretical contributions of the study

The current study was underpinned by Tinto's (1993) interactionist theory. The theory contends that for students' commitment to the university's setting and towards the graduation goal, they should be both academically and socially integrated with the university system (Tinto, 1993) Tinto's theory further puts it forward that social and academic integration may occur in both formal and informal settings. "*Formal academic integration includes researching topics in the library, attending labs and classes and engagement in various activities related to academic success* (Chrysikos, et al., 2017, P. 99). Social integrations include participation in university social activities, joining clubs, interaction with peers and involvement in university extra-curricular activities (Berger & Braxton, 1998). This study confirmed that social and academic interactions supported students' commitment in the selected universities.

However, Tintos aspects of social and academic integration/ interaction were based on the physical presence of students within the university. The theory did not cater for future trends like the COVID 19 situations. The current study has contributed to the theory by advancing the means of formal and informal integration to enhance the commitment of students towards achieving the goal even in difficult times.

The study has contributed knowledge that multiple engagements through online platforms like WhatsApp, zoom and emails were vital in instilling commitment amongst the students. Supervisors reported that they engaged with their students online and this kept students committed. Information regarding academic activities was widely being shared online through WhatsApp and other online platforms.

Supervisors noted that after classwork, the majority of students disappear and this continuously affects their progress. It would be difficult to maintain students'

institutional commitment yet they are away. Hence the study revealed that through online means, students can still be integrated within the social and academic systems of the university which could subsequently enhance their commitment towards the goal of graduation.

The study proposed the new concepts to be added to Tintos theory of interactions as shown in the figure below.

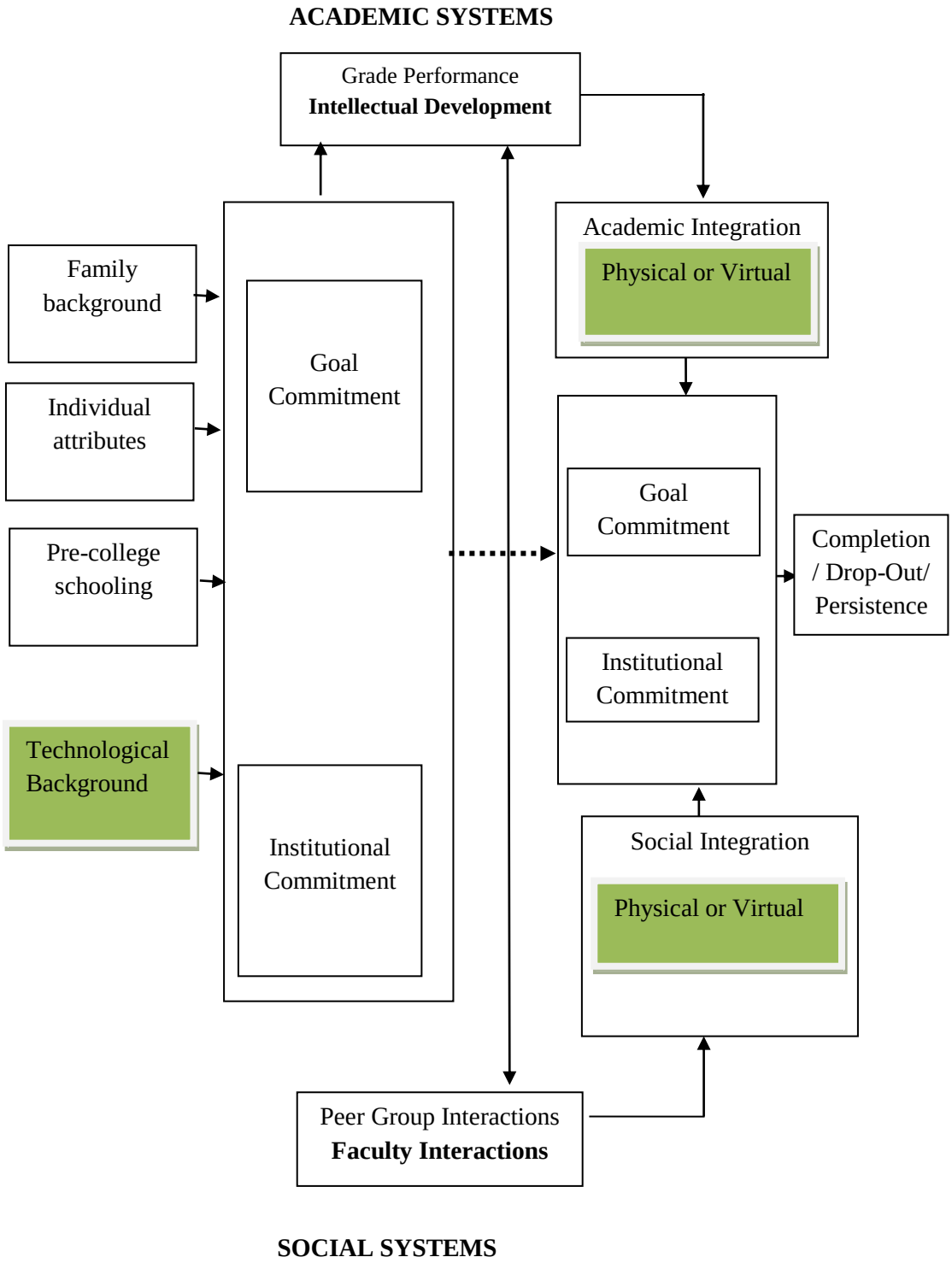


Figure 6: Tinto's Theoretical Model with added Concepts from the Current Study

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APPENDICES

Appendix I: Questionnaire for Postgraduate Students

Introduction:

I am a postgraduate student at Moi University studying the Master of Education in Research, Department of Educational Management and Policy Studies, School of Education. I am carrying out a study on ***Determinants of students' completion of postgraduate studies in selected universities Uganda.*** The information being sought is for academic purposes only and will be taken as confidential.

You are kindly requested to fill in this questionnaire honestly and return it to the administering person. Do not indicate your name anywhere in this questionnaire.

Thank you for your cooperation.

PART A:

Demographic information

Please tick your most appropriate choice

1. What is your sex?
   A. Male ( )
   B. Female ( )
2. Your age when you enrolled for your current study programme
   A. Less than 24 ( )
   B. 25-30 ( )
   C. 31-36 ( )
   D. 37-42 ( )
   E. Above 43 ( )
3. State your academic discipline
   ……..

4. What is your mode of study?
   A. Full time on compass ( )
   B. Part time (weekend and evening) ( )
   C. Part time (school based) ( )
   D. Regular off compass ( )

5. What is your nationality?
   A. Ugandan ( )
   B. International ( )

In this part, kindly tick what is most appropriate to you**.**

6. Select the type of your university

   A. Public ( )

   B. Private ( )

7. Which postgraduate programme are you pursuing?

   a. Master's programme ( )
   b. Doctoral programme ( )

8. When did you first enroll for the programme?

   A. 2020/2021 ( )
   B. 2019/2020 ( )
   C. 2018/2019 ( )
   D. 2017/2018 ( )
   E. 2016/2017 ( )
   F. Above 2016( )

9. Do you attend the programme on fulltime or part time basis?

   A. Full time ( )
   B. Part time ( )
   C. Mixed ( )

10. Select the mode of your post-graduate study programme.

    A. Course work ( )
    B. Research ( )
    C. Coursework and research ( )

11. Select what is appropriate to you as in your programme classwork progress?

    A. Commenced classwork period ( )
    B. Completed first semester of classwork ( )
    C. Successfully completed classwork ( )
    D. Completed classwork period but still attending uncompleted courses ( )

12. Is the research project part of the requirements of the programme?

    A. Yes ( )
    B. No ( )

13. At what stage are you in your research project?

A. Not yet started ( )
B. Developing the concept paper ( )
C. Developing the proposal ( )
D. Collecting data ( )
E. Analyzing data ( )
F. Writing the thesis/dissertation ( )
G. Submitted the thesis/dissertation for examination ( )

14. How do you rate your progress in your postgraduate programme?

A. Very good ( )
B. Good ( )
C. Average ( )
D. Below average ( )

15. In how many years' time do you expect to be awarded your degree?

A. 2 Years ( )
B. 3 years ( )
C. 4years ( )
D. Above 4 years ( )

16. If you have any other idea regarding your progress in your programme please indicate it in the space provided.

……..…….

……
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PART B:
Supervision and students' completion of postgraduate studies

Below is the table of statements with options to tick in line with the degree to which you have experienced the statement in research supervision. Kindly tick the appropriate in relation to what you have experienced, observed, shared in your postgraduate studies. Options of statements are arranged by their weight. Strongly disagree (1), Disagree (2), uncertain (3), Agree (4) strongly agree (5).

Statement	SD	D	UN	A	SA
1. My supervisors make effort to understand the difficulties I face.					
2. My supervisors give me good guidance in topic, content selection and refinement.					
3. My supervisors are available when I needed them.					
4. I and my supervisors developed a schedule for completion of my research tasks and we comply with it.					
5. My supervisors ensure that I acquire research and generic skills from them.					
6. I have regular meetings with my supervisors.					
7.I have good working relationship with my supervisors					
8.My supervisors are knowledgeable and have enough expertise about the standards expected in my research area					
9. My supervisors have adequate experience in my research area.					
10. My supervisors have enough experience in research supervision.					

Adopted from (Ali, et al., 2016a)

What are your other opinions on the impact of research supervision on students' completion of postgraduate studies?

……

……

……

……

……

……

PART C:

Students perceived academic psychological state and completion of postgraduate studies

Below is the table of statements with options to tick in line with the degree to which you have experienced the statement in relation to your postgraduate education. Kindly tick the appropriate in relation to what you have experienced, observed, shared in your postgraduate studies. Options of statements are arranged by their weight. SD-Strongly disagree (1), D-Disagree (2), UN-Uncertain (3), A- Agree (4) SA-Strongly agree (5).

STATEMENT	SD	D	UN	A	SA
1.I begin learning and research tasks as soon as I am given them.					
2.I really get my research and academic work finished in time.					
3.Often, I set a date when I want something to be done					
4.I am always concerned about the possibility of making a mistake in my academic and research work.					
5.I strive to be as perfect as possible in my research and academic work					
6.I always feel positive that I can improve my work					
7.I do not allow social activities to affect my studies					
8.I plan well and stick to my plan in accomplishing my academic goals.					
9.I often try to understand how the weight of my postgraduate studies would impact my future career.					
10.I selected my study program according to my employer's/funder's interests.					

Adopted from (Fernie, et al., 2017; Smith, et al., 2016; Curtis & Trice, 2013; Rahiminezhad, et al., 2011)

PART D

Resources availability and students' completion of postgraduate studies

Below is the table of statements with options to tick in line with the degree to which you have experienced the statement in relation to resources availability in your postgraduate education. Kindly tick the appropriate in relation to what you have experienced, observed, shared in your postgraduate studies. Options of statements are arranged by their weight. SD-Strongly disagree (1), D-Disagree (2), UN-Uncertain (3), A- Agree (4) SA-Strongly agree (5).

STATEMENT	SD	D	UN	A	SA
1.I have good access to computing facilities and services					
2.I am able to organize good access to equipment that I need for my research					
3.My university has appropriate financial support for research activities					
4.I have access to suitable working space					
5.I have access to specialist resources in my research area					
6.I have access to all library services that I need					
7.I have access to university internet always					
8.I have access to the technical support I need.					
9.My university library have enough resources of my research area					
10.My university supports me to attend conferences and workshops of my area of specialization.					

Adopted from (Drennan, 2008)

Appendix II: Supervisor's / Lecturer's Questionnaire

Introduction:

I am a postgraduate student at Moi University studying the Master of Education in Research, Department of Educational Management and Policy Studies, School of Education. I am carrying out a study on ***Determinants of students' completion of postgraduate studies in selected universities Uganda*.** The information being sought is for academic purposes only and will be taken as confidential.

You are kindly requested to fill in this questionnaire honestly and return it to the administering person. Do not indicate your name anywhere in this questionnaire.

Thank you for your cooperation.

Please respond to these questions in line with postgraduate studies in your institution

Part A

Demographic information

Please indicate your designation by ticking your most appropriate choice.

1. Sex Male ( ) Female ( )

2. Level of profession

   A. Professor ( )
   B. Associate professor ( )
   C. Senior lecturer ( )
   D. Lecturer ( )

3. What is your position in the management of the University?
   A. Director /Principal/Dean ( )
   B. Head of Department ( )
   C. Programme coordinator ( )
   D. Lecturer ( )
   E. Other (specify) ……..
4. What is the type of your university
   A. Public
   B. private

PART B: Supervision related factors

Respond to the following section by ticking the most appropriate column

1 SD- Strongly disagree 2. D-Disagree 3. UN- Uncertain 4. A- Agree 5. SA- Strongly agree

Supervision related factors

Statement	SD	D	UN	A	SA
1. I ensure that the arrangement for my students to upgrade from one academic level to another is appropriate and timely					
2. I conduct a training needs analysis to help students identify their research skill requirements.					
3. I continually motivate the students I supervise.					
4. I provide critical feedback on students' written research work in good time					
5. I supervise students I am knowledgeable about their research areas only.					
6. I have adequate experience in supervising postgraduate students					
7. I am always accessible to my students outside appointment times when the student needs help					
8. I have regular meetings with my students to discuss their challenges.					
9. I give timely feedback to my students					
10. I have good working relationship with my students.					

Adopted from (Ali, et al., 2016a)

From your opinions and what you have experienced, what are the current strategies for effective research supervision in the completion of postgraduate studies?

……

……

……

……

……

……

PART C

Psychological Related Aspects

Statement	SD	D	UN	A	SA
1. My students begin learning and research tasks as soon as I give them out					
2. My students always want their research and academic work finished in time but they rarely do.					
3. It is always important to my students to be perfect in everything they do in their academic and research work					
4. My students strive to be as perfect as possible in their research and academic work					
5. Doing work in time is always important to my students but they rarely do.					
6. My students plan well and stick to their plan in accomplishing their academic goals					
7. My students often try to understand how postgraduate education would impact on their future occupation.					
8. My students spent a lot of time concerning about which research area they should carry on and finally came to decision for a research area.					
9. My students did not know how postgraduate education impacts their future					
10. In selecting a study program my students did according to their employers/funder wishes					

Adopted from (Fernie, et al., 2017; Smith, et al., 2016; Curtis & Trice, 2013; Rahiminezhad, et al., 2011)

PART C:

Resources Availability Related Factors

Statement	SD	D	UN	A	SA
1.My students have access to a suitable working space					
2.My students have access to the technical support they need					
3.My students are able to organize good access to necessary equipment					
4.My students have good access to computing facilities and services					
5. There is appropriate financial support for research activities for my students.					
6.My students have adequate provision of library facilities (including physical and online resources)					
7. My students have access to specialist resources necessary for their research.					
8.My students have enough time to work on their research projects					
9. My students are supported by the university to attend conferences of their research area.					
10.There is a good number of researchers/ supervisors my students can consult in case an unavailable					

(Australian Council for Educational Research, 2001:Drennan, 2008 ; Id, 2015)

Appendix III: Interview Guide for Heads of Departments

Introduction

Thank you for accepting to participate in this study. I am Noel Japheth from Moi University, school of Education. I am conducting a study on: Determinants of students' completion of postgraduate studies: A case of selected universities in Uganda. The information that will be gathered here will be of a significant importance to the funders of postgraduate education, deans/directors of graduate schools, heads of departments, lecturers/supervisors and postgraduate students, and will help in improving on timely completion of postgraduate studies in Uganda and beyond. In addition, all information gathered will be used for academic purposes only.

Do you have any questions about the study before we begin?

PART A: Background information

1. Please tell me about yourself?
2. For how long have you served as a head of department?
3. Does this department offer postgraduate programmes? If yes, please mention the available programmes? If no why?
4. What are the roles and responsibilities of the department as far as postgraduate studies are concerned?
5. What is the status of postgraduate studies in the department? (#enrollment# time students take to complete studies# throughput rate)

PART B: Current strategies for effective Research supervision

6. From your view and what you do at the departmental level, what are the current strategies for effective research supervision in the completion of postgraduate studies?

Possible Probes for detailed information

Your information is useful could you elaborate more on that?

Thank you for that example could you be having more?

Kindly tell me more on that?

Appendix IV: Interview Guide for Deans /Directors of Postgraduate Schools

Name of interview ……..Sex……..

Date of interview……Time of interview …….

Introduction

Thank you for accepting to participate in this study. I am Noel Japheth from Moi University, school of Education. I am conducting a study on: Determinants of students' completion of postgraduate studies: A case of selected universities in Uganda. The information that will be gathered here will be of a significant importance to the funders of postgraduate education, deans/directors of graduate schools, heads of departments, lecturers/supervisors and postgraduate students, and will help in improving on timely completion of postgraduate studies in Uganda and beyond. In addition, all information gathered will be used for academic purposes only.

Do you have any questions about the study before we begin?

PART A: Background information

1. Please tell me about yourself?
2. How long have you been in this office?
3. What are your obligations as a directorate of graduate studies/School Dean in enhancing progress of your postgraduate students?
4. Do you think that as a school/directorate of postgraduate studies you are performing your obligations in enhancing students' progress? Please tell me how?

PART B: Research supervision

5. **As a dean/ director of this school, may you share with me on research supervision in this school?**
6. Have you noticed issues in postgraduate research supervision that might be affecting timely completion of studies? If yes please share the noticed issues and how you think they affect timely completion of postgraduate studies in your university.
7. Have established some current strategies for effective research supervision? If yes, from your view and what you are doing in the school /college what are the

current strategies for effective research supervision in completion of postgraduate studies?

Probes

Thank you for your cooperation.

Appendix V: Document Analysis Review Guide/Matrix

Document type	Objective	Document available	Not available	Qualitative Remarks
Admission lists	To find out the admission time and rate of postgraduates.			
Graduation lists	To find out the graduation rate of postgraduate students			

Appendix VI: Study Time Plan

Study time plan									
Study activity	1/10/2020-31/12/2020	1/01/2021-31/1/2021	1/2/2021-28/2/2021	1/03/2021-31/3/2021	1/04/2021-30/4/2021	1/05/2022-31/05/2022	1/6/2021-31/6/2021	1/7/2021-31/7/2021	1/08/2021-30/08/2021
Clearance with REC and UNCST									
Reviewing tools									
Pilot study									
Revisiting tools									
Obtaining sampling frame/Sampling									
Obtaining appointment with sampled participants									
Data collection									
Cleaning and entering quantitative data									
Data analysis for objective one									
Writing a manuscript for objective one									
Data analysis objective two									
Writing manuscript for objective two									
Data analysis for objective three									
Writing of manuscript for objective three									
Data analysis for objective four and manuscript writing									
Data analysis and manuscript writing for objective five									
Short term research visit at university of Kassel									
Presentation of manuscripts for all objectives —to international experts at University of Kassel and my supervisors									
Revisiting all manuscripts									
Final writing of the thesis									
Presentation of the thesis to -Supervisors									
Revisiting the thesis									
Submission for examination									

Appendix VII: Research Budget

Study Tittle: Determinants Of Students' completion Of Postgraduate Studies in Uganda: A case of Selected Universities

Study Period: Jan/2021-April /2020.

S/N	ITEM	UNIT	Us Dollars	Ugsh	Ksh	TOTAL COST Ksh
1.	**Research Ethical clearance and approval**					
	Gulu University Research Ethics Committee(GUREC) Uganda National Science and Technology Research clearance (UNCST).	1 1	500dollars Ex.rate @ 3,500	1,750,000	54687 Ex.rate @ 32	54687
2.	**Field Research**					
	Digital Voice Recorder	1	50dollars @3500	175000	5,468.75	5,468.75
	Transport.	4 times	50 dollars @3500	175000	5,468.75	5,468.75
	Research Assistant field allowance	30days Quant/ Qual data	445.7 dollars	52,500	1500	45000
	Research Assistant's meals and transport.	30days	300dollars	35,000	1000	20,000
	Participants' Refreshments.	20days		17,500	500	10,000
	Communication/ Air time.				3000	3,000
3.	**Stationary**					
	Reams of paper for questionnaires & thesis for examination submission.	7			370	2,590
	Reams of paper for Final Submission of the thesis.	4			370	1,480
	Printing costs.	5400pages			3	16,200
	Spiral binding cost.	8copies			240	1,920
	Hardcover binding at the library	8copies			400	3,200
4.	**Editorial work**	200pages	1,360	4,725,000	147,656.25	147,656.25
	Total					**316,670.75**

Appendix VIII: Research Authorization Letters

MOI UNIVERSITY
Office of the Dean School of Education
Tel: (053) 43001-8
(053) 43555
Fax: (053) 43555
P.O. Box 3900
Eldoret, Kenya

REF: M.EDR/4103/20 **DATE:** 27th January, 2021

TO the Vice Chancellor
Kampala International University,
P.O. Box 2000
KANSANGA, KAMPALA- UGANDA

Dear Sir/Madam,

RE: **PERMISSION TO CONDUCT RESEARCH IN RESPECT OF NOEL JAPHETH – (M.EDR/4189/20)**

The above named is a 2nd year Master of Education (M.Ed) student at Moi University, School of Education, Department of Educational Management & Policy Studies, School of Education.

It is a requirement of his M.Ed Studies that he conducts research and produces a thesis. His research is entitled:

"Determinants of Students' Completion of Postgraduate Studies: A Case of Selected Universities in Uganda."

Any assistance given to enable him conduct research successfully will be highly appreciated.

Yours faithfully,
27-01-2021
PROF. J. K. CHANG'ACH
DEAN, SCHOOL OF EDUCATION

NOEL JAPHETH

CERM-ESA, Moi University

P. O.Box 3900

Eldoret, Kenya

3rd /2/2021

To the Vice Chancellor

Kampala International University

P.O. Box 2000

Kansanga, Kampala, Uganda

Dear Prof,

RE REQUEST TO CONDUCT AN ACADEMIC STUDY IN YOUR UNIVERSITY

I am a DAAD In Country/ In region second year Master of Education in Education research student at Moi University, School of Education, Department of Educational Management and Policy Studies.

It is a requirement of my M.ED programme that I conduct research and produce a thesis. My research is titled: **"Determinants of Students' Completion of Postgraduate Studies: A case of Selected Universities in Uganda"**

I therefore write requesting you to allow me conduct my study in your university. Attached is the letter of introduction from Moi University.

Yours sincerely,

.....

Noel Japheth

+254720061098/+256777659298

noeljapheth2017@mu.ac.ke /noeljaph@daad-alumni.de

KAMPALA INTERNATIONAL UNIVERSITY

Directorate of Research, Innovation, Consultancy and
Ggaba Road,
P.O. BOX 20000 Kampala Uganda
Telephone: +256(0)
E –Mailadmin@kiu.ac.u
Website:

Prof. C. J. Diji. PhD; MNSE, MNES, M.ARSCP R. Eng (COREN)
Deputy Vice – Chancellor – Research, innovation, Consultancy and Extension
Personal: (Mobile) +256752364067; Email: chukwuemeka.diji@kiu.ac.ug; dvcrice@kiu.ac.ug

9th March, 2021

Noel Japheth

Department of Educational Management and Policy studies

School of Education
Moi University
Eldoret- Kenya.

Dear Mr. Noel,

RE: PERMISSION TO CARRY OUT RESEARCH AT KAMPALA INTERNATIONAL UNIVERSITY

With reference to your letter dated 3rd February, 2021, on the above subject matter, addressed to the Vice Chancellor of Kampala International University; I am pleased to inform you that after a thorough review of your research proposal that you have been granted permission to carry out your study titled Determinants of Students' Completion of Postgraduate Studies: A Case of Selected Universities in Uganda.

Please report to the Directorate of Higher Degrees and Research for further arrangements in regard to your study. The directorate will be informed to assist you to conduct research.

If you need further assistance do not hesitate to contact me.

Thank you

Prof. Eng. Chukwuemeka Jude Diji, PhD

DVC – Research, Innovation, Consultancy & Extension
Kampala International University, Uganda

NOEL JAPHETH

CERM-ESA, Moi University

P. O.Box 3900

Eldoret, Kenya

3rd /2/2021

To the Vice Chancellor

Makerere University

P.O. Box 27096

Kampala, Uganda

Dear Prof,

RE REQUEST TO CONDUCT AN ACADEMIC STUDY IN YOUR UNIVERSITY

I am a DAAD In Country/ In region second year Master of Education in Education research student at Moi University, School of Education, Department of Educational Management and Policy Studies.

It is a requirement of my M.ED programme that I conduct research and produce a thesis. My research is titled: **"Determinants of Students' Completion of Postgraduate Studies: A case of Selected Universities in Uganda"**

I therefore write requesting you to allow me conduct my study in your university. Attached is the letter of introduction from Moi University.

Yours sincerely,

.....

Noel Japheth

+254720061098/+256777659298

noeljapheth2017@mu.ac.ke /noeljaph@daad-alumni.de

MOI UNIVERSITY
Office of the Dean School of Education
Tel: (053) 43001-8
(053) 43555
Fax: (053) 43555
P.O. Box 3900
Eldoret, Kenya

REF: M.EDR/4103/20 **DATE:** 27th January, 2021

TO the Vice Chancellor
Makerere University
P.O. Box 27062
KAMPALA , UGANDA

Dear Sir/Madam,

RE: **PERMISSION TO CONDUCT RESEARCH IN RESPECT OF NOEL JAPHETH – (M.EDR/4189/20)**

The above named is a 2nd year Master of Education (M.Ed) student at Moi University, School of Education, Department of Educational Management & Policy Studies, School of Education.

It is a requirement of his M.Ed Studies that he conducts research and produces a thesis. His research is entitled:

"Determinants of Students' Completion of Postgraduate Studies: A Case of Selected Universities in Uganda."

Any assistance given to enable him conduct research successfully will be highly appreciated.

Yours faithfully,

27.01.2021

PROF. J. K. CHANG'ACH
DEAN, SCHOOL OF EDUCATION

MAKERERE UNIVERSITY
P. O. Box 7062
Kampala Uganda
Website: www.mak.ac.ug
Tel: +256 - 414 - 530983/691937
Fax: +256 - 414 - 533809
Email: drgt@rgt.mak.ac.ug

DIRECTORATE OF RESEARCH AND GRADUATE TRAINING

9th March, 2021

TO WHOM IT MAY CONCERN

RE: NOEL JAPHETH

This is introduce to you the above named who is a Master of Education (M.Ed) student at Moi University. Mr. Japheth is conducting research on the **DETERMINANTS OF STUDENTS' COMPLETION OF POSTGRADUATE STUDIES: A CASE OF SELECTED UNIVERSITIES IN UGANDA.**

Any assistance rendered to him will highly appreciated.

Yours sincerely,

DIRECTORATE OF RESEARCH & GRADUATE TRAINING
09 MAR 2021
DIRECTOR'S OFFICE

Buyinza Mukadasi
PROFESSOR and DIRECTOR

UGANDA CHRISTIAN UNIVERSITY
A Centre of Excellence in the Heart of Africa

02/03/2021

To: Noel Japheth
Moi University
+256754873021
Type: Initial Review
Re: UCUREC-2021-77: Determinants of Students\' Completion of Postgraduate Studies: A case of Selected Universities in Uganda, 1, 2021-02-07

I am pleased to inform you that the Uganda Christian University REC, through expedited review held on **26/02/2021** approved the above referenced study.

Approval of the research is for the period of **02/03/2021** to **02/03/2022.**

As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.
2. Changes, amendments, and addenda to the protocol or the consent form must be submitted to the REC for rereview and approval **prior** to the activation of the changes.
3. Reports of unanticipated problems involving risks to participants or any new information which could change the risk benefit: ratio must be submitted to the REC.
4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by participants and/or witnesses should be retained on file. The REC may conduct audits of all study records, and consent documentation may be part of such audits.
5. Continuing review application must be submitted to the REC **eight weeks** prior to the expiration date of **02/03/2022** in order to continue the study beyond the approved period. Failure to submit a continuing review application in a timely fashion may result in suspension or termination of the study.
6. The REC application number assigned to the research should be cited in any correspondence with the REC of record.
7. You are required to register the research protocol with the Uganda National Council for Science and Technology (UNCST) for final clearance to undertake the study in Uganda.

The following is the list of all documents approved in this application by Uganda Christian University REC:

No.	Document Title	Language	Version Number	Version Date
1	Informed Consent forms	English	1	2021-02-07
2	Data collection tools	English	1	2021-02-07
3	Protocol	English	1	2021-02-07

Peter Waiswa
For: Uganda Christian
University REC

Appendix IX: A Sample of Transcription of Interview Responses

QN what are the current strategies for effective research supervision in the completion of postgraduate studies

Responses;

Dean 1: *Yea supervision is a bit of individual. It is supervisor to the student. It was difficult to track if the students are progressing. Previous we trucked the progress using progress reports and documents signed between students, and that gives us a picture of how supervision is going on. But currently, the completion rate in this faculty is extremely high. And why is it high we have adopted the coordination format. We have coordinators whose responsibility is following up on individual students and supervisors. They take interest in knowing how students are progressing, where are they. We also have periodic presentations. To make periodic presentations successful we created WhatsApp groups for graduate students with their supervisors in their respective cohorts. We keep posting 'the next presentation is on this date bring your proposal', finalise with your supervisors, submit your dissertation. I want to tell you this has challenged both students and their supervisors. Even after presentations we keep posting, where are you'. We keep posting and posting updates like we are going to have vivas very soon, graduation is coming, you should be finishing. I must say that 90 percent of graduate students are now finishing in time and this mile stone is attributed to coordinators and online supervision. Because our coordinators continuously remind both students and lecturers. For us online engagements and supervision has worked very well. I don't know what other people are doing but for us it has worked. Our students come across the country and even outside, so we have had to engage the supervisors to be committed to them and engage them online. This has been fruitful especially in the current pandemic. And I think all our staff are embracing the online supervision, because if they were not, we would be having the gaps, or low numbers of completion but the fact that students are being presented for vivas. For this coming graduation we are likely to graduate 15PhD in this faculty alone. That tells you the online engagements that students had with their supervisors because last year we were closed. So students were being assisted online. Our supervisors are also giving enough time. Our policy is that lecturers should teach for 10 hours a week. That can be done in two days and the rest of the time they can do other things including research supervision.*

Dean 2: *Apart from the administrative aspect of it, I teach and supervise graduate students in this college. Then on the administrative part of it. You know research is the significant aspect at postgraduate level, so from the proposal, working progress, supervision, Viva and all forms of hearing there are administrative roles I perform and others. From supervision we ensure that the needful is done from time to time. Because without the approval of the principal, no candidate can make any presentation. And all hearings I am always physically present to do monitoring. Before I attend to your question first of there are some challenges; Then there are circumstance when our supervisors are forced to take up several students.*

Because of limited staff. So if they don't have interest, it becomes problematic. Then the supervisors lack motivation. More at certain point they are not paid for supervision then they are asked to take a number of students. Therefore, it is rare to expect such lecturers to pay attention to the details of the student. Then absenteeism, some lecturers here are not readily available because they have other institutions where they work. And the candidate looks for a lecturer three weeks four weeks. The candidate is waiting. Sometimes working relationship. Some supervisors don't want to go to the level of the students, you see when the supervisors goes to the level of the student, the student will know, yes my supervisor is leading me in this. The willingness the encouragement will be hear and more can be achieved. So these are some of the things. On your question, mmmh before the pandemic, students were already allocated supervisors and you notice that all institutions were closed. At first we thought that nothing much would be achieved. But quickly we adopted online engagements and supervision, we were prompted to create platforms and the progress became more even than before the lockdown. Supervisors and lecturers were asked to assist there students virtually. We had virtual hearings and presentations and even when I was in Nigeria. But challenges also emerged like connections and limited practice. But the online alternative worked for us.

Director 1: *At first we expected all supervisors to guide these students on regulations mentally, socially because supervision must go hand in hand with mentoring. But some of these supervisors they don't know also the regulations. Because they study for five years somewhere they believe also students should go through that. Which they don't know that graduate training shifted, there is a paradigm shift. More people are now going for graduate training than it was in the past. And that is why every year we are having increments in applicants. So currently one of the ways is that we are giving training to supervisors so that they can learn modern methods of research supervision. People should not supervise the way they were supervised, they should supervise according to the current trends. So we hope with that we shall be ok. What we have done at the school level, we are trickling the information to the heads of department and the heads of department are giving the information to both students and supervisors. Once they have finished course they must embark on research. So now there is since last year we have seen an improvement in progress. Like students filing the progress reports which they have not been doing. Now I emphasize that. So before you submit I must call for your file. Have you been presenting to the department. That one is being implemented. We are ensuring progress recommendations. So every after 6 months they must give us returns. This one has given us a boost.*

We have had to engage the departments to ensure that they also have a role in this. We had a problem where most of the managers were prioritizing undergraduate students and we realized that we had to rush and bring them on board and really they now pay reasonable attention to graduate students. Some people were focusing on undergraduates, once they have taught them examined them they would relax. So you reach towards completing a year and you have not seen semester results for masters or PhD. To the extent that, results are uploaded in the system, but when it comes to graduate

students you hear them say it should be the graduate school to upload the results. The way things are done for undergraduate students the same way they should be to postgraduate studies. For the current, Covid taught us a lesson, you see when Covid came we had to start working online. And this has sped up the progress of students. Many defenses have happened online. Now we are trying to officials the online supervision because we have seen its benefits. We want to design the regulations so that it can officially continue even after Covid.

Appendix X: SPSS ordinal regression output

Case Processing Summary

		N	Marginal Percentage
CP	2.30	1	0.4%
	2.60	1	0.4%
	2.70	1	0.4%
	2.90	1	0.4%
	3.00	6	2.6%
	3.20	5	2.2%
	3.30	9	3.9%
	3.40	10	4.3%
	3.50	20	8.7%
	3.60	17	7.4%
	3.70	13	5.7%
	3.80	17	7.4%
	3.90	20	8.7%
	4.00	21	9.1%
	4.10	22	9.6%
	4.20	17	7.4%
	4.30	15	6.5%
	4.40	16	7.0%
	4.50	4	1.7%
	4.60	4	1.7%
	4.70	1	0.4%
	4.80	5	2.2%
	4.90	2	0.9%
	5.00	2	0.9%
Valid		230	100.0%
Missing		0	
Total		230	

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	1175.769	76.689	3	.000
Final	1099.080			

Link function: Logit.

Goodness-of-Fit

	Chi-Square	Df	Sig.
Pearson	2984.105	3240	.999
Deviance	982.758	3240	1.000

Link function: Logit.

Pseudo R-Square

Cox and Snell	.284
Nagelkerke	.285
McFadden	.059

Link function: Logit.

Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[CP = 2.30]	-.523	1.203	.189	1	.664	-2.882	1.836
	[CP = 2.60]	.225	.970	.054	1	.817	-1.676	2.126
	[CP = 2.70]	.687	.881	.608	1	.436	-1.040	2.414
	[CP = 2.90]	1.034	.836	1.531	1	.216	-.604	2.672
	[CP = 3.00]	2.120	.772	7.532	1	.006	.606	3.634
	[CP = 3.20]	2.621	.766	11.703	1	.001	1.119	4.123
	[CP = 3.30]	3.226	.768	17.640	1	.000	1.721	4.732
	[CP = 3.40]	3.722	.774	23.137	1	.000	2.205	5.239
	[CP = 3.50]	4.472	.787	32.333	1	.000	2.931	6.014
	[CP = 3.60]	4.969	.797	38.914	1	.000	3.408	6.531
	[CP = 3.70]	5.295	.804	43.398	1	.000	3.720	6.871
	[CP = 3.80]	5.681	.813	48.861	1	.000	4.088	7.274
	[CP = 3.90]	6.109	.823	55.087	1	.000	4.496	7.722
	[CP = 4.00]	6.550	.834	61.711	1	.000	4.916	8.185
	[CP = 4.10]	7.055	.846	69.538	1	.000	5.396	8.713
	[CP = 4.20]	7.508	.857	76.793	1	.000	5.828	9.187
	[CP = 4.30]	7.993	.869	84.698	1	.000	6.291	9.696
	[CP = 4.40]	8.733	.890	96.295	1	.000	6.989	10.478
	[CP = 4.50]	9.005	.900	100.086	1	.000	7.241	10.769
	[CP = 4.60]	9.364	.917	104.305	1	.000	7.567	11.161
	[CP = 4.70]	9.477	.923	105.379	1	.000	7.667	11.286
	[CP = 4.80]	10.327	.996	107.588	1	.000	8.376	12.278
	[CP = 4.90]	11.039	1.112	98.521	1	.000	8.859	13.218
Location	SPV	1.505	.198	57.500	1	.000	1.116	1.894
	PSY	.332	.193	2.970	1	.085	-.046	.711
	RES	-.368	.175	4.426	1	.035	-.711	-.025

Link function: Logit.

Appendix XI: SPSS Correlation Outputs

Correlations

			SPV	CP
Spearman's rho	SPV	Correlation Coefficient	1.000	.457**
		Sig. (2-tailed)	.	.000
		N	230	230
	CP	Correlation Coefficient	.457**	1.000
		Sig. (2-tailed)	.000	.
		N	230	230

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			PSY	CP
Spearman's rho	PSY	Correlation Coefficient	1.000	.243**
		Sig. (2-tailed)	.	.000
		N	230	230
	CP	Correlation Coefficient	.243**	1.000
		Sig. (2-tailed)	.000	.
		N	230	230

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			RES	CP
Spearman's rho	RES	Correlation Coefficient	1.000	.111
		Sig. (2-tailed)	.	.094
		N	230	230
	CP	Correlation Coefficient	.111	1.000
		Sig. (2-tailed)	.094	.
		N	230	230

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix XII: Tests of Normality SPSS Sample Outputs

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
SPV	.107	230	.000	.941	230	.000
PSY	.106	230	.000	.948	230	.000
RES	.074	230	.004	.985	230	.018
CP	.067	230	.014	.988	230	.058

a. Lilliefors Significance Correction