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Original Article

ADAPTING LEECH'S MODEL TO EXPLORE PREDICTORS OF SUCCESSFUL DOCTORAL STUDENT COMPLETION IN MAKERERE UNIVERSITY: A CONCEPT PAPER

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ABSTRACT

Successful doctoral student completion (SDSC) is important to the individual student, the university and the general labour market. SDSC can make the student gain entry into rigorous research. The university can be assured of an increased number of future faculty who would keep the disciplines alive and the labour market will be assured of increased supply of a highly productive human resource. However, in Makerere, evidence of unsuccessful doctoral student completion is reported in terms of delayed doctoral student completion and low research publications by doctoral students. If such a trend continues, doctoral students, Makerere and the general labour market may be deprived of the benefits of successful doctoral student completers. Therefore, efforts have to be devoted to ensuring that doctoral students become successful completers. Thus, this paper discusses how the adaption of Leech's model can be used to explore predictors of SDSC at Makerere University in an attempt to avert the situation. The paper has provided the concept of SDSC; the predictors of SDSC as per Leech's model; and literature related to SDSC and the predictors as per this model. Lastly, a conclusion is offered with a hope that through this paper, doctoral students shall be helped to know some of the predictors of their successful completion. Academic Managers concerned with academic issues in Makerere University and perhaps other young universities would also be helped to review and improve their doctoral programs and create favourable environments at both micro and macro levels to help doctoral students emerge as successful completers.

INTRODUCTION

Originally, in the 17th century in Medieval Europe, a doctorate was proof that one had taught at the university level for some time (Probst & Lepori, 2008). Later in the early 1800s, the PhD was regenerated as a research degree in Germany with the development of the Humboldtian ideas (Probst & Lepori, 2008). Humboldtian ideas were developed by Wilhelm Von Humboldt who introduced the first PhD by research in Berlin University currently known as Humboldtian

University. According to Humboldt, a university was a place where teaching and research concurrently took place. Thus, the university aimed to teach and to conduct research. Around the 1980s with the growth of higher education institutions and the increase in doctoral holders, the aspect of fulfilling the third mission was added to teaching and research. The third mission according to Probst and Lepori (2008) enjoins any university to serve as a transfer of knowledge to bring about societal change and doctoral holders are to serve as agents to bring about this change, by serving the university and the general community. From these major milestones since the doctorate began, a PhD holder is expected to have abilities to teach, do research and to bring about societal change.

Systematic reviews have been conducted on doctoral studies. Jones (2013) carried out a meta-synthesis examining the recurring themes and issues in doctoral studies, those that were yet to be explored and those not fully explored or remained unfamiliar. Jones used 995 doctoral studies from 45 journals published over a period of 40 years from 1971 to 2012. Using thematic analysis, Jones showed that previous studies had concentrated mainly on six themes namely, preparation of doctoral students for teaching; doctoral program design; preparation of doctoral students to do research and to write; employment and career prospects for doctoral graduates; doctoral student-supervisor relationship; and the doctoral student experience. Jones revealed that the whole field of doctoral study and all these themes had been under-researched especially the areas of preparing doctoral students to teach, to conduct research and to write. Therefore, Jones called upon educational institutions and supervisors to have an understanding of these issues to help prepare doctoral students to transit into future scholars. Jones proposed further research in areas such as supervisors' perception of their students and the influence of supervisors' feedback. This paper intends to narrow some of these gaps by exploring the predictors of successful doctoral student completion (SDSC) at Makerere University.

RESEARCH PROBLEM

Successful doctoral student completion (SDSC) is important to many stakeholders. The stakeholders include the student, the university, and the labour market. SDSC on the side of the student is an entry into rigorous research (Lovitts, 2005; 2008). To the university, according to Jiranek (2010, p. 1), successful doctoral student completers are not only "a cost-effective means for universities to achieve their research outputs but are also an investment in the research capacity of the future". Jiranek further observes that such students make the university to increase her chances of attracting more doctoral entrants and research funds from funding agencies. The university will also be assured of future faculty and stewards of disciplines (Maynard, 2017). Therefore, when the doctoral students complete successfully, the labour market (employers) will be assured of an adequate and highly productive supply of human resource (Wao & Onwuegbuzie, 2011).

The importance of doctoral completion notwithstanding, in Makerere most doctoral curricula do not embed an aspect of preparing doctoral students on how to teach, a job most of them will do when they become future faculty. It has also been reported by scholars that a good number of doctoral students in Makerere University at times fail to complete, delay or dropout of the program (Wamala, Ocaya & Oonyu, 2012). They particularly reported that out of the 294 doctoral graduates of 2000-2005 cohort, only 15% had completed within the period of five years, 48.6% had extended candidature beyond five years and 36.4% had withdrawn from the program. The PhD graduation list for 2017 indicated that out of 77 doctoral graduands, three had not published any article at all, four had one publication each, and 24 had the bare minimum of two publications each. Such evidence is indicative of unsuccessful doctoral student completion and if such a trend continues, the unsuccessful students may miss the chance of entry into rigorous research. The university may not maximise its research outputs and may have reduced chances of attracting more doctoral entrants and research funds from funding agencies. The general labour market may be deprived of the required human resource. To avert this situation, it is necessary to isolate predictors

that can explain the problem of unsuccessful doctoral student completion. Although there may be a number of predictors that can explain the problem, the paper intended to explore the predictors as suggested in Leech's (2012) model.

This paper aimed at exploring the predictors of successful doctoral student completion (SDSC) as advanced by Leech's (2012) model. The paper adopted a mixed approach meaning by taking both the positivist and interpretive research approach. On the positivist side, the paper was guided by four study objectives, namely exploring the individual resources; study program; microenvironment; and macro environment. On the interpretive side, the paper is guided by five research questions, namely, what does the term successful doctoral student completion (SDSC) mean to different stakeholders. How favourable were/are individual resources; study program; micro environment; and macro environment to the doctoral students' completion in Makerere University.

The paper supplements the existing literature on how SDSC is conceptualized. The insights of the paper shall contribute to the understanding of the predictors of SDSC, in addition to testing Leech's model. The paper shall aid in coming up with a new conceptual framework on the predictors of SDSC. Practically, the paper is envisaged to help doctoral students to know some of the factors that enhance or retard their chances of being successful completers. Academic managers not only in Makerere University and in perhaps other young universities would also be helped to review and improve their doctoral programs and create favourable environments at both micro and macro levels to help doctoral students emerge as successful completers.

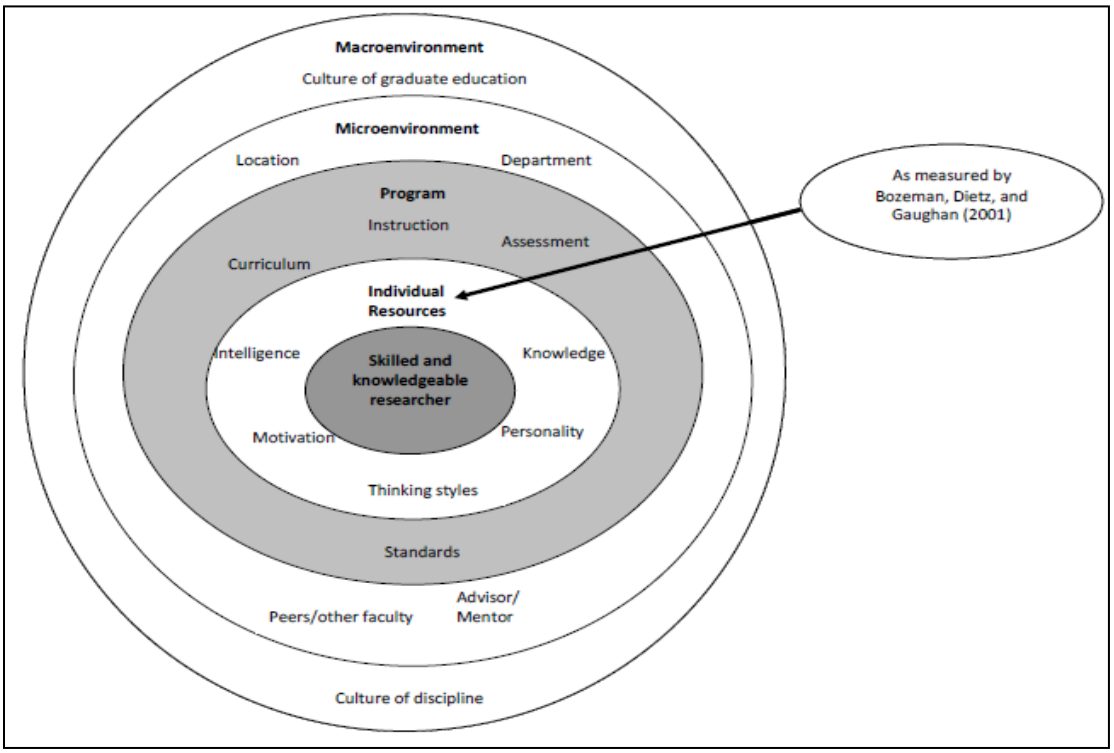
THEORETICAL REVIEW

This paper is primarily based on Leech's (2012*)* Model of Educating Knowledgeable and Skilled Researchers (see *Figure 1*). Leech's model was preferred because it is comprehensive as it is a synthesis of three models that is Bozeman, Dietz and Gaughan (2001), Lovitts (2005) and Levine (2007) that were reviewed.

Leech's model addressed almost all the factors pointed out by earlier theorists and studies on factors related to educating knowledgeable and skilled researchers and particularly in schools of education. At the centre of the model is an individual assumed successful to whom Leech refers to as a knowledgeable and skilled researcher, and for the case of this paper, this will be the main variable, namely successful doctoral student completion (SDSC).

Leech's model postulated four predictors that influence the individual's ability to become a knowledgeable and skilled researcher namely individual resources, program, micro-environment, and macro-environment. Leech assumed that an individual who may be a doctoral student has resources namely intelligence, knowledge, thinking style, personality, and motivation that shape his/her capacity of being a knowledgeable and skilled researcher. The doctoral students are subjected to a program, which according to Leech includes the expected standards from a doctoral student; the curriculum, which a student is subjected to; the instruction or how this curriculum is passed on and assessed. The way the program is structured for example by clearly spelling out what is expected of a doctoral student; how the program is taught and assessed play a big role in ensuring that the student becomes a successful researcher. The doctoral students are also influenced by the micro and macro environments he/she studies in. Leech takes the micro-environment to be the immediate setting of a learner that includes the department that the student is in; its location in the university; the advisor/mentor; other faculty; and peers of the learner. Leech also takes the macro environment to be the social culture and institutional context of the student, which she operationalises as the culture of graduate education in the university the student is in and the culture of the discipline the student is pursuing. Leech assumes that if all the four factors are favourable, the student will transit into a successful or knowledgeable and skilled researcher.

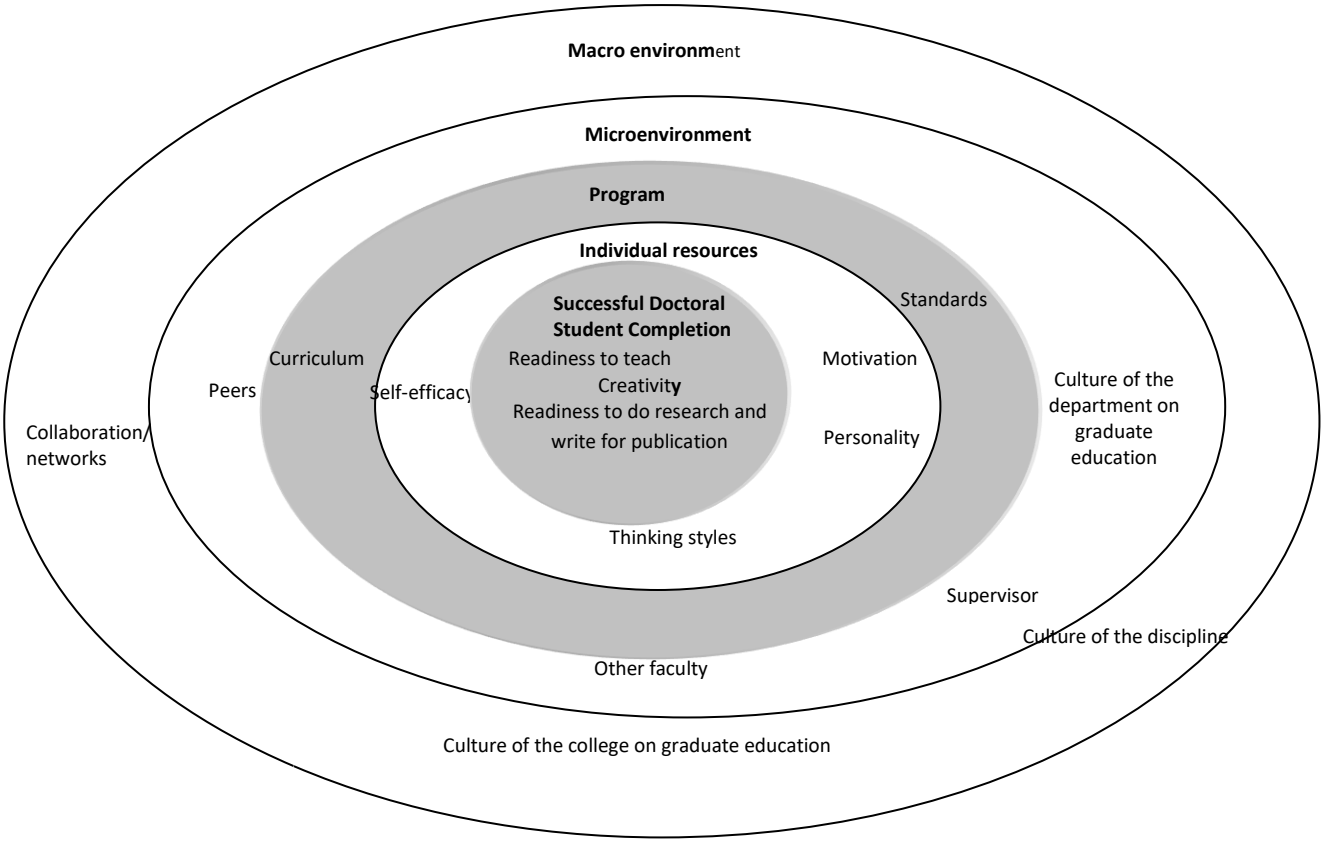
Figure 1: Leech's Model on Educating Knowledgeable and Skilled Researchers



Source: Leech, 2012, p. 32

Basing on Leech's (2012) model (see *Figure 1*), the framework in *Figure 2* was developed to guide the study. It was conceptualized that successful doctoral student completion (SDSC), the main concept as shown at the centre of *Figure 2* is denoted by the readiness to teach, creativity, and readiness to do research and to write for publication. The concepts we adapted from sources as indicated. The four predictors (independent variables) were individual resources, program, micro-environment and macro-environment. It is conceptualised the first predictor for a successful doctoral student was the individual's resources such as motivation, personality, thinking styles, and self-efficacy. The second predictor a doctoral student's program of study was operationalised as curriculum and standards. As for the third predictor a doctoral student's microenvironment, it was expressed in term of the culture of the department on the graduate education, supervisor, other faculty and peers. The fourth conceptualised predictor of a doctoral student's macro-environment was the culture of college on graduate education; the culture of the discipline; collaborations/networking.

Figure 2: Conceptual Framework on Predictors of Successful Doctoral Student Completion



(Concepts based on Bagaka's et al., 2015; Brightman, 2009; Freeman Jr., 2014; Montuori, 2005; 2008; Montuori & Donneley, 2013; Leech, 2012; Lovitts 2005; 2008; Phillips & Pugh, 2010; Yazdani & Shokooh, 2018).

Individual-Resource and Study Completion

In *Figure 2*, it was operationalised individual resources as motivation, personality, thinking styles and self-efficacy. Empirical studies have related individual factors and student completion and/or performance. Broadbent's (2016) study investigated how some of the variables related to self-efficacy and motivation influenced a student's academic achievement/success. Using a questionnaire involving 310 first-year students of health psychology at an Australian university. Broadbent (2016) revealed that self-efficacy had a significant and positive relationship with the student's academic achievement. Students who had high levels of self-efficacy recorded higher academic success. Such students had set higher goals for themselves and had a greater commitment to their studies. Broadbent (2016, p. 40) further found "amotivational", which means complete lack of motivation, had predicted academic success. However, intrinsic and extrinsic motivation constructs did not predict the students' academic success. The author particularly revealed that students who had been academically confident and had been motivated were more academically successful. As a limitation of his study, Broadbent (2016, p. 46) reported that, "no traditional correlates, such as intelligence, secondary school grades, or other previous grades were considered in this study; yet, these more traditional predictors of academic achievement have been found to have positive, small to medium effects". He reported that the timing of measurement had impacted on his finding by noting that,

> *While the psychosocial measures were captured from Week 11 of [the] semester in the present study, findings of the impact of self-efficacy and other predictors on academic performance may have differed if measured earlier, for example during the first weeks or midpoint of the semester (p. 46).*

Fatemi and Heidarie (2016) conducted a study, which aimed to determine the relationship between the thinking styles and academic achievement of the high school students in Ahvaz, Iran. Using a descriptive and correlational design, they collected data from 320 students that they analysed using descriptive statistics and Pearson Correlation. The results revealed a significant relationship between "legislative, executive, oligarchic, monocratic, anarchic, hierarchic, judiciary" as variables of thinking styles and academic achievement. As a gap of their study, they pointed out that, "focusing on the female students as the sample, the lack of causal analysis, using the questionnaires due to the lack of a precise instrument for measuring the academic achievement of the students are considered as some limitations of this study" (1359),

Guntern, Korpershoek and van der Werf (2017) examined the joint impact of personality characteristics and self-efficacy on the perceived academic achievement of medical students. Particularly they dealt with the relationship of variables of self-discipline, social activity and emotional stability from the five-factor model (FFM) of personality and self-efficacy on academic achievement. Data was collected via questionnaires from 863 medical students in their pre-clinical years from Switzerland and Austria who had achieved the highest scores during their admission. Using logistic regression analysis, they revealed that self-discipline had been positively related to students' academic achievement while social activity had been negatively related. Self-efficacy had a significant contribution to students' academic achievement. As gaps in their study, they reported that the measurements of the high school grades and academic achievements had been based on students' self-reports. The sample used was small because of missing grade point average, GPA scores, and that there had been an unequal distribution of the students in the different performance groups, with very few students in the lowest-performing category. They consequently suggested that the predictive impact of the personality characteristics and self-efficacy on outcome criteria other than students' academics still needed to be investigated. Some of the gaps identified in the literature are what we intend to address; for example, considering motivation, personality and self-efficacy as constructs in our study.

Program of Study and Student Completion

The second predictor was the program of study, which was expressed as its curriculum and standards. The literature indicates that several studies have had an interest in how study programs influence graduate students' performance and completion. Bagaka's et al. (2015) explored the features of a doctoral program that enhanced students' success in a Midwestern university college of education. Their aim was to provide information on how to make doctoral programs more effective. Using a survey involving a sample of 113 respondents who including both doctoral students still on program and alumni. They also held two focus group discussions involving 20 participants some of whom were doctoral students and others, alumni. The quantitative data were analysed using multiple linear regression and qualitative data using multi researcher coding. The quantitative and qualitative findings of Bagaka's et al. (2015) converged in highlighting the importance of program support/program structure, advisor support/faculty mentorship, and research engagement/formation of scholars on doctoral students' success. Bagaka's et al. pointed out several gaps for future researchers to address. First, they regretted that their study could not be generalised, as it was limited to only one doctoral program in a college of education in one university. Second, they noted that since their study involved the alumni, "one possible limitation is that the accuracy of information from the alumni depends on long-term memory of their experiences while in the program" (p. 338).

Freeman Jr. (2014) investigated the strategies that doctoral students from non-top ranked higher education programs could employ to best prepare themselves for faculty opportunities and ensure their competitiveness to become higher education

faculty at top-ranked faculty programs after acquiring their doctorates. Freeman Jr. collected data using interviews from a sample of 39 purposively selected program coordinators, department heads and deans. Using thematic data analysis, two major strategies were found to increase students' competitiveness. The first strategy was scholarly development via presentation and publication, while the other strategy was professional development through networking/collaborations. Apart from these two major strategies, Freeman Jr. reported a few participants who suggested teaching as a possible strategy for those who desired to join the faculty. Therefore, Freeman Jr. called for further research to find out whether graduates were being prepared for teaching. He stated, "More research is needed to find out whether higher education programs adequately prepare graduates for the professoriate". However, Freeman Jr. reported gaps in his study, namely that his sample size had been small and that he had made a limited observation of participants' surroundings because he had used phone interviews. Gaps in these studies warrant the need for further studies to test the hypothesis arguing whether study programs positively predict SDSC.

Micro Environment and Study Completion

The micro-environment was operationalised as the culture on graduate education of the department in which a student is studying, the supervisor, other faculty and peers of the student. Past studies on how the micro-environment affect graduate completion. Littlefield, Taddei and Radosh (2015) examined the impact of collaboration and peer to peer experiences on doctoral completion of three peers in a part-time doctoral program in three universities in the US. They collected data from the peers using a qualitative narrative inquiry. Using thematic analysis, they found that collaboration and peer to peer experiences were important in that they led to "identification of a common goal presumably that of successful doctoral completion; amicable group dynamics, peers to peer support, and intentional relational learning". Unfortunately, Littlefield et al. did not directly point out gaps left in their study for future researchers. However, judging from the sample chosen for their study, the three peers were too few to enable the generalisation of the study findings.

Woolderink, Putnik, van der Boom and Klabbers (2015) evaluated the relational aspects of PhD supervision. In particular, they explored the "expectations, experiences, and opinions of PhD candidates and supervisors regarding each other's role, thereby focusing on positive and negative contribution aspects". A website questionnaire consisting of both open and closed-ended questions was used to collect data from 54 PhD students and 52 supervisors of the Graduate School CAPHRI, Maastricht University in the Netherlands. Using thematic analysis, they found out that, "both groups considered, personality, knowledge, skills, communication and coaching the major factors contributing to a successful PhD trajectory". They also found out that "a good match between PhDs and supervisors is essential for a successful PhD trajectory". However, Woolderink et al. reported gaps; first, they pointed out that their "response rate was limited" and secondly, the authors could not "pair the responding PhD candidates with the responding supervisors considering that participation was anonymous". They reported other gaps such as not exploring PhD candidates' attitudes, knowledge or skills and failed to relate how a given strategy addressed a particular problem since questions on problems and strategy were separated. In addition, they conducted their study within one graduate school and so their results could not be generalised. Gaps in these studies leave room for the need for further studies to test the hypothesis on the ability of microenvironment of the doctoral student to positively predict SDSC.

Macro-environment and Study Completion

The fourth predictor, the macro environment is explained in terms of culture on graduate education of the college in which a student is studying, the culture of the discipline the student is pursuing and collaboration/networks the student is engaged in. Studies have related the macro-environment to doctoral completion. Bitzer, Trafford and Leshem (2014) evaluated the effectiveness of collaboration in preparing doctoral candidates and supervisors for global research contexts. The study involved three senior academics from England, Israel and South Africa who collaborated on cumulative research and developmental efforts concerning doctoral education and professional supervisor development. Their research involved a pilot study,

qualitative reporting from participants and reflective statements of senior academics. Their findings highlighted four implications for the global promotion of doctoral and supervisor practices.

> *First that when the professional development of supervisors was broadened to include global quality criteria, the effectiveness of candidates and supervisors would be enhanced; (2) developmental opportunities which emphasised doctoral outcomes and what such outcomes meant globally were important for effective supervision; (3) universities needed research-based guidelines for professional development to actively support doctoral supervisors in their various and multiple roles; (4) explicit criteria and research were needed regarding doctoral features to promote originality, scholarship, academic rigour, research design and research dissemination in global contexts (p. 28).*

However, as a gap, Bitzer, et al. reported that their study had involved only three participants and hence their findings could not be generalised.

Frick, Albertyn, Brodin, McKenna and Claesson (2016) explored how doctoral education prepared students for an academic career. They purposively sampled 20 participants employed in academic positions and were in the process of completing or had completed their programs in the past five years. They sampled the participants from four of what they termed as "research-intensive universities", two from each of Sweden and South Africa taking five participants per institution. Using interviews, they collected data, which they analysed thematically. The study findings revealed five themes of early-career academic practice namely tension between academic freedom and fulfilling multiple roles; developing a scholarly approach; lacking strategies for surviving as a researcher, insufficient preparation for teaching and supervision; and missing support in networking" (p. 208). Thus, they recommended that doctoral programs should consider how this preparation, especially in the area of networking, could be improved to help graduates in their practice after completion. However, Frick et al. did not point out any limitations of their study. However, basing on the gaps raised by the authors (Bitzer et al., 2014) of the earlier study there is still need for further studies to test the hypothesis on the effect of the micro-environment of the doctoral student in positively predicting SDSC.

CONCLUSION

From the above review, it is evident that SDSC is important to the student, the university and, and the labour market. However, evidence of unsuccessful doctoral student completion is reported not only in Makerere University but also across other higher learning institutions globally. Thus, efforts have to be devoted to developing doctoral students into becoming successful completers. To do so, the adaption of Leech's model to explore the four predictors of SDSC is proposed. We reviewed literature related to the four predictors (individual resources, program of study; microenvironment; and macro environment) and study. We hope that our paper will help the research community by contributing to the existing body of knowledge in the area of SDSC. Particularly, it is hoped that this paper illuminates the concept of SDSC and contribute to the understanding of the predictors of SDSC. The paper will help doctoral students to know some of the factors that enhance or retard their chances of being successful completers. Managers concerned with academic issues in Makerere University and perhaps other young universities would also be helped to review and improve their doctoral programs and create favourable environments at both micro and macro levels to help doctoral students emerge as successful completers.

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