

Universities Structures And Services For Meeting Postgraduate Students' Learning And Research Needs: A Desktop Study

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Abstract

The digital era has brought about paradigm shifts in postgraduate education delivery, causing serious challenges for students, especially where university services are ill-equipped to meet their learning and research needs. Following the narrow and broad literature review approach, this desktop study conducted a comprehensive review of literature focused on structures and support services that universities provide to meet postgraduate students' learning and research needs. The findings reveal different support structures and services that enable postgraduate students navigate their learning and research programmes with successes, namely: academic libraries, funding, Information and Communication Technology (ICT), and dedicated academic support services. However, as the learning and research environments become increasingly complex, universities need to improve their structures and support services to make them more relevant to postgraduate students learning and research needs for better academic experiences. This study provides critical information relevant for benchmarking any university's structures and services against similar best practices.

Keywords: Postgraduates, support services, university structures, research needs, learning needs

1.0 INTRODUCTION

In today's university education, the quest to create enabling conditions that foster students' positive engagements and overall success has become more crucial than ever. Institutions of Higher Education (IHEs) throughout the world are currently facing challenges and issues such as the quality of postgraduate training, the length of time taken by postgraduate students to complete their studies, the success rate of postgraduate students, and drop-out rate among postgraduate students (Reason 2003; Sondlo 2016). Universities and other Institutions of Higher Learning (IHLs) are expected to create knowledge, improve equity, respond to student needs, and to do so more efficiently (OECD 2003). Tertiary education has become the aspiration of many young people worldwide and a fundamental requirement for employment in the sectors and industries that drive development in every country (Murthi et al. 2021). This demand has particularly become crucial for postgraduate studies where students are expected to possess advanced knowledge and skills that would enable them to become solution providers in their various fields of expertise.

Postgraduate training and research are key functions of every university that sustainably provides and broadens the expert pool of highly skilled human resources, enabling new knowledge creation and innovations. It is now well understood that universities and other institutions of higher education need to adapt to a more complex environment in which expectations of higher education have changed drastically (Austrian Federal Ministry of Education, Science and Culture 2002). In the post COVID-19 era where markets and competition are increasingly shaping higher education, what does universities adaptation to a more complex environment mean for the existing university structure and support services available to ensure quality students training to meet the societal demand? Over the past two decades, many higher-education institutions have begun to address the question of how to provide support for their postgraduate research students and supervisors (Anderson et al. 2018). In the past, the methods used to promote student engagement in their research degrees and professional-development strategies have been somewhat makeshift in nature and application (McGagh et al. 2016).

The matter of the need to support postgraduate students and provision of professional development for research supervisors has, in some cases, received attention through developing support resources, programs and activities (Anderson et al. 2018). For example, recent research in the fields of postgraduate education and supervisor development has focused on the construction and provision of professional-development systems that support supervision of postgraduate students, also known as research-training frameworks (Carton and Kelly 2014; Luca

et al. 2013; Council of Deans and Directors of Graduate Research (DDOGs Australia) 2014; Taylor 2014). Furthermore, various resources have been developed to support the professional learning of postgraduate supervisors and postgraduate students (e.g., Willison 2010; Jackson and Taylor, 2007; Luca et al., 2013; Sisson and Crawford 2016).

[In their study on exploring the service and support needed by postgraduate education students in a Malaysian public university, Abiddin and Ismail (2014) observed that one of the crucial factors in postgraduate students' success is the need to create proper support and services. Evaluating service quality levels and understanding how various dimensions impact on overall service quality would enable tertiary institutions to efficiently design the service delivery processes (Abdullah 2006). In a qualitative study on Learner support services for postgraduate students in Ghana, Asamoah (2019) reported that the learner support for hybrid and web-based learning enshrined in the University of Ghana's e-learning policy includes financial aid, registration guide, career services, academic advising, provision of centre coordinators, adaptive service for the physically challenged, open computer laboratory, library facilities with enhanced capacities for e-library services and career placement assistance. Asamoah (2019) further stated that the university's e-learning policy includes provision of electronic periodicals and databases, electronic reserve materials, student access to books and articles through inter-library loan, and document services. According to Asamoah (2019), the e-learning initiative of the University of Ghana has been possible because the University has acquired infrastructural facilities for the Internet and other digital technologies and has also developed a maintenance culture and asset replacement policy to support learners of its blended learning education. In addition, it has digital training facilities for its faculty and students to prepare and motivate them to adopt and use ICT for teaching and learning.

According to Kim et al. (2006), no single view is comprehensive enough to account for the complicated set of factors that interact to influence student and institutional performance. Postgraduate students experience high levels of uncertainty as they try to balance academic and personal responsibilities, manage stress, and maintain mental health (Abetz 2019; Evans et al. 2018; Nicklin et al. 2019). This uncertainty is further heightened by the global COVID-19 pandemic, as universities are faced with potential budget cuts, course reduction factors, and limited access to physical spaces as well as resources that could impact graduate student finances, teaching opportunities, and research productivity (Kelsky 2020). As the job market has changed drastically due to the COVID-19 pandemic, there is continuous push to provide postgraduate students with skills that prepare them for careers outside of academia. At the postgraduate level, the major issue is: what are the institutional structures and support services available to support postgraduate students to realize their potential in the 21st century economy? To respond to this question, this desktop study reviewed literature on institutional structures and support services available to support students across different universities of the world, with specific focus on key areas such as the library, student finance, student welfare and accommodation, orientation and career guidance, and academic support service.

Tobbell and O'Donnel (2013) analyzed "the emergent identities of postgraduate students as they negotiate the multiple and interacting practices in their transition to study" (p. 123) in the UK context. They have acknowledged the paucity of research in postgraduate studies and viewed it as an indication of how much "the experience and practice of postgraduate study in higher education institutions has suffered" (p. 123). Specifically, Tobbell and O'Donnel focused their attention on students' transition into postgraduate studies to interrogate the seemingly assumption that there may be no new experiences in the transition from undergraduate studies to postgraduate studies. Citing Tobbell et al. 2010, Tobbell and O'Donnel (2013) argue that neglecting the needs of postgraduate students may contribute to "feelings of isolation in students and may undermine confidence and shape transition trajectories in particular ways" (p. 124). Other studies, such as Littleton and Whitelock (2005), Blount and McNeill (2011), and (Tobbell et al. 2010) (as cited in Tobbell and O'Donnellb 2013), listed a number of concerns among postgraduate students such as: incompetence to contribute to the community, fearing judgement of worthlessness, need for help with technology, and the need for private tutors. Cited in Tobbell and O'Donnell (2013), McCormack (2004) found a mismatch between postgraduate students' understanding and staff's understanding or expectations of their research work.

2.0 METHODOLOGY

This study adopted the thematic (qualitative) desktop review design using the narrow-or-broad approach (Synder 2019). This approach enabled us to read a wide range of literature, thoroughly analyze the published information, and sort it to identify the essential data relevant to the study problem (Lin 2009). Search engines such as Google Scholar, Microsoft Edge, Firefox, and MSN Search were used to search the literature using key words such as students' support, postgraduate students, postgraduate studies, postgraduate research, graduate student

associations, research assistantship, teaching assistantship and postgraduate experience. Unlike the other research methodologies which deal directly with the object of investigation, the desktop review design approach is significantly different in that it indirectly accesses the information from a variety sources of literature, which is referred to as "non-contact method" (Lin 2009). The gathered information was organized thematically through application of logical reasoning to explore the logical relations among the reviewed information.

2.1 Theoretical framework

This review adopted the model of Service Quality in Higher Education (SQHE) as described by Jusoh et al. (2004). The model (Figure 1) focuses on six dimensions of SQHE, namely; tangibles, competence, attitude, content, delivery, and reliability. According to Jusoh et al. (2004), the first dimension, tangibles, refers to facilities provided by the institution in serving good conditions to their customers (in our case, postgraduate students). This dimension of tangibles is applicable to personnel and condition of equipment available at the university to meet the learning and research needs of the postgraduate students. The second dimension, competences, refers to sufficiency of qualified academic staff, the program structure and capability to render good service to the clients. The third dimension, attitude, is concerned with communication, caring, individual attention, and understanding by the university to meet postgraduate students’ needs. The fourth dimension, content in the context of postgraduate education refers to the curriculum design and how it can develop and prepare the students for their potential job market. The fifth dimension, which is delivery, refers to the staff’s capability in giving lectures and presentations effectively; compliance of course works with the module, focusing on the learning outcome, providing useful information and proper channel for feedback and ideas. Lastly, reliability entails the degree to which the knowledge, information and skills learned are correct, accurate and up to date. Reliability is also concerned with keeping promises, handling complaints, making resolutions, and solving student problems (Jusoh et al. 2004).

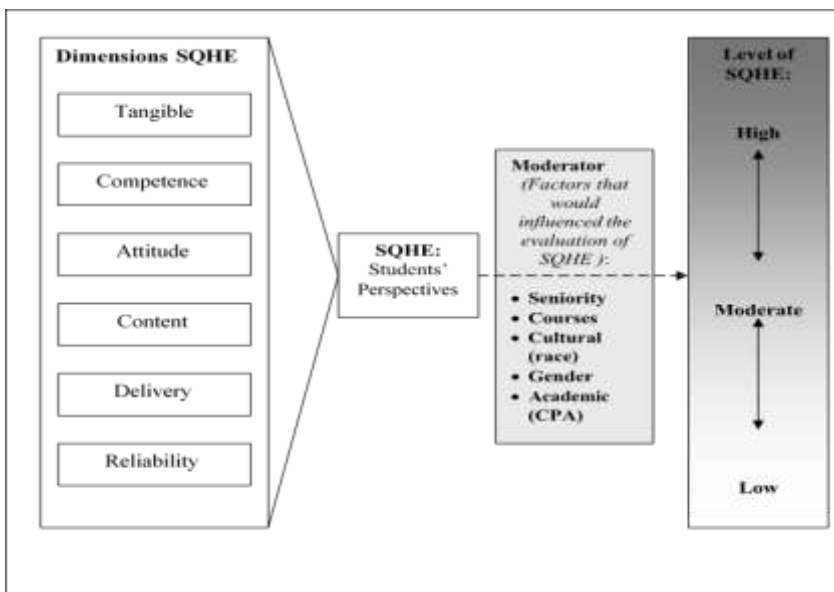


Figure 1: Model for Service Quality in Higher Education (SQHE) (Jusoh et al. 2004)

This model talks directly to our study focus because of our interest in the content of critical institutional structure and services to support postgraduate students’ learning and research needs, how tangible and accessible these services are to the students, and how reliable such service delivery is to the students. To a large extent, reliability services would be influenced by the program managers' competences and attitudes. According to Haggmann et al. (2002), a sound framework can help to guide complex interventions without prescribing pre-conceived strategies and methodologies. Abdullah (2006) noted that service quality has attracted considerable attention within the tertiary education sector, but despite this, little work has concentrated on identifying its determinants from the standpoint of students being the primary customers. Lagrosen et al. (2004) highlighted some weaknesses in the issue of quality of higher education whereby the adoption of quality control has been superficial and diluted by the exercise of academic freedom, bureaucracy, unfortunately hampered by lack of shared vision and a mismatch between quality management and educational processes. Haggmann et al. (2002) stress that service provision must follow the demand and supply chain, adding that both demand and supply systems need to

interface well to be effective. Thus, it is expected that the institutional structure and support services available to postgraduate students address the demand chain to enhance their learning and research experiences.

3.0 Findings

In the sections that follow, we present the findings of the study in the six categories proposed by Jusoh et al. (2004) above.

3.1 Tangible institutional structures

Postgraduate Library

Academic libraries have been rightly portrayed as the legitimate heart of the university and most scholars rely heavily on libraries' collections and services in their quest to develop new knowledge (Cook 2019). There is breadth of literature from the last decade that examines and reflects on the importance of academic libraries to support the wider university community (Kranich et al. 2020; Kranich et al 2014; Thacker et al. 2018). In the article titled "Research support for academic excellence", Finlayson and Mitha (n.d) note that an effective library strategy can be articulated and implemented in several ways. According to them, The Carnegie funded Research Libraries Consortium project in South Africa (2006), developed a comprehensive programme which incorporated the following:

- (1) creating a cohort of librarians skilled in research and research methodology;
- (2) creating a library space for postgraduates in the research commons; and
- (3) developing an online portal for seamless access to library resources.

A wider outlook at different universities' libraries today shows the availability of these important programmes which improve service delivery to meet the needs of postgraduate students and researchers, and so improve postgraduate experiences. Notably, there were 1) Plagiarism policy to promote academic integrity and awareness of plagiarism; 2) Institutional Repository (IR) policy for the establishment of a repository for the purpose of management, preservation, and retrieval of institutional research; 3) Information Resources policy for the acquisition of suitable materials; and 4) Information Services policy to guide the delivery of library services. Proper implementation of these policies could support and enhance the learning and research experiences of postgraduate students. Most importantly, the library provides training to promote research skills and information literacy to postgraduate students and researchers and develop their abilities in searching for information; keeping current in a particular subject field; managing referencing (EndNote software); and using citation data (Finlayson and Mitha n.d)).

The needs and preferences of postgraduate students are of particular interest to librarians and administrators around the world, and a considerable number of publications have examined the efforts to engage this user group both as a whole and within specific areas of an institution (Catalano 2013; Spezi 2016; Ince 2018). Researchers, from small private colleges to large high-research universities, have surveyed graduate students to assess overall awareness of and satisfaction with the library's existing support and determine additional needs (Ameen 2019; Delaney and Bates 2018; Kayongo and Helm 2010), reimagine physical and virtual spaces (Bangani et al. 2019; Beard and Bawden 2012; Rempel et al. 2011), and improve specific services, such as Interlibrary Loan (Posner 2018).

Case studies featured the challenges and successes of programs and workshop series of various lengths designed to orient Postgraduate students to the library and related support services (Budzise-Weaver and Anders 2016; Critz et al. 2012; Fong 2019; Fong et al. 2016; Hammons 2018; Peacemaker and Roseberry 2017; Smith et al. 2019). Other studies focused on the library's role in helping graduate students hone skills such as navigating the scholarly communication landscape (Gurman and Brunner 2015; McClellan et al. 2017), applying for research funding (Forbes et al. 2017), improving information and digital information, and increasing data literacy (Carlson et al. 2015). However, it is not certain to what extent the postgraduate students are making the best uses of library services to improve their learning and research experiences. For example, in their study, Gibbs et al. (2012) reported that data from focus groups of postgraduate students at Georgetown University revealed a lesser awareness of subject librarians in the social sciences compared to the humanities. Additionally, Brussel et al. (2020) reported that for the past two years, several librarians at Ohio State University have organized a graduate student workshop series to introduce the varieties of research support offered across disciplines and to highlight the teaching and writing support provided by various campus partners. However, attendance was low, and the authors were concerned that continuing the general series would not be worth the time spent organizing, preparing, and promoting each workshop. However, Brussel et al. (2020) note that the feedback from the workshop series clearly showed that the library support services for graduate students would benefit them for deeper understanding of their disciplinary differences. Moreover, attending such dedicated workshop provided

an important forum for networking among students and helping them to identify important follow-up actions, which may prove more advantageous to them in their studies in the long run and beyond the university walls.

3.2 Institutional structures for competency

ICT in postgraduate education

It is not an overstatement that the rapid development of Information and Communication Technology (ICT) across the globe today has changed the landscape of educational service delivery (Abass et al. 2021). This has made internationalization of university education possible and accessible to all willing people regardless of location via the deployment of Open Distance Learning (ODL) or what is simply known as an Online program. Different technology innovations have played crucial roles in organizing knowledge, both to enable storage, sharing, collaboration, categorizing and disseminating knowledge which can later be accessible and retrieved (Mathew 2009). However, effective flow of knowledge is only possible through putting the right people in place and using appropriate technology structure (Egan 2003; Geraint 1998). In postgraduate education where students are expected to take full responsibility for their own learning and research needs, providing the right ICT infrastructures will no doubt facilitate effective knowledge management in a manner that improve the learning and research experiences of students across disciplines. As depicted in Mathew's (2010) conceptual framework of knowledge management (Figure 2), effective ICT structure is a major driving force that can facilitate the capture, storage, transformation, and dissemination of knowledge. Thus, effective ICT structure is a critical component of the vigorous independent learning and research activities, and it guarantees access to robust data and up-to-date information necessary for the development of students' creative and innovative mind. One outstanding technological innovation in postgraduate education is the development of Electronic Learning (E-Learning) portal. This technology allows universities to create customized training and learning contents, as well as monitor progress and delivery of online classes from any location (Abass et al. 2021). Abass et al. (2021) outlined the interrelationship between the three components of knowledge management (Figure 3), which work hand-in-hand to deliver an enhanced content that meets the service needs of the stakeholders, in this case, postgraduate students, lecturers/supervisors, and the society. According to Collison and Parcell (2004), knowledge management is an ongoing process that must be viewed as a long-term business strategy and requires the constructive collaboration between these three components. Thus, the provision of robust and up-to-date ICT infrastructures, qualified supervisors, and support staff as well as committed students can make postgraduate training fun and attractive for research students.

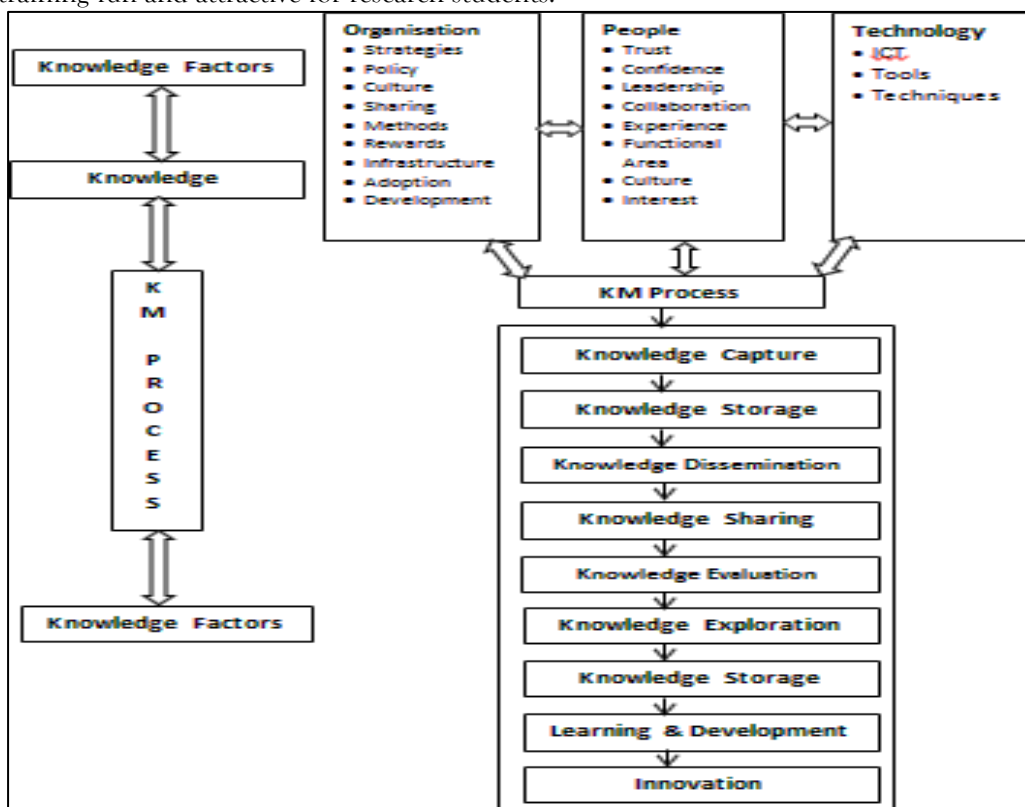


Figure 2: Conceptual Framework of Knowledge management (Mathew 2010)

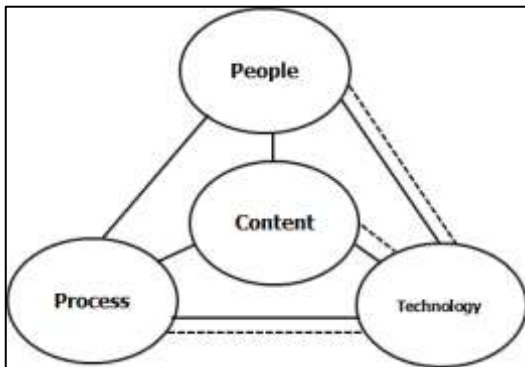


Figure 3: Relationship between knowledge management Components (Abass et al. 2021)

3.3 Attitude-wise institutional structures

Postgraduate Student Associations

It is common to see different universities that have developed postgraduate student centres to foster learning, democratization, and socialization opportunities for students. The Postgraduate student association (PGSA) is a key component of a university's structure aimed at creating and fostering a sense of identity and community for all postgraduate students. Just like their undergraduate counterparts, the PGSA is a body that provides an effective voice to promote academic, professional, and social interests of postgraduate students, and provide effective representation of their constituents in the general university administration. The socialization of postgraduate students and their involvement in university management can create better experiences for students while enhancing the students' overall development (Gansermer-Topf, Ross, and Johnson 2006). Without a legitimate PGSA guided by a clear vision, mission, goals and objectives, constitution, and bylaws to champion important professional and general interest of postgraduate students, it is possible for the university management to unintentionally overlook certain important developments that could improve the learning and research experiences of postgraduate students, and hence their overall success. Besides, Pontius and Harper (2006), submitted that institutions benefit from higher degree students' involvement in university affairs. According to Pontius and Harper (2006), positive gains and outcomes are associated with engaged students in cognitive and intellectual skill development, university adjustment, moral and ethical development, persistence, practical competence, psychosocial development, and positive images of self (Pontius and Harper 2006).

With only a few departments offering little opportunity for postgraduate students to interact outside of one's discipline (Brandes 2006), a formidable PGSA is particularly important for the learning and research needs of postgraduate students. This is more so as the PGSA becomes the family away from home to so many students where they can socialize and share their good and bad experiences outside the classroom. Besides, postgraduate students' high level of academic responsibility could lead to elevated levels of stress and health-related issues (Calicchia and Graham 2006). Student association participation was linked with greater-than-average increases in political liberalism, hedonism, artistic interests, and status needs, and greater-than-average satisfaction with student friendships (Astin 1985). Thus, the culture and spirit of an organization, such as the PGSA is just as critical to its overall success (Bolman and Deal 2008), and will help postgraduate students to cope with their learning and research needs for the overall success of their studies.

3.4 Content-rich institutional structures

Academic support services

Heussi (2012) identifies various difficulties experienced by students during the transition into postgraduate studies. In addition to finding the beginning of study courses challenging, other difficulties are poor support services, lack of guidance on academic writing. It is therefore recommended for universities to play their role in aiding students in their postgraduate transition. These challenges are even more draining when students are registered on a part-time/distance mode of study as compared to full-time students (Lessing and Schulze 2002; Lekhetho 2022). Wozniak, Mahony, Lever and Pizzica (2009) share a novel approach to orientation for postgraduate students. They argue that postgraduate students are at a disadvantage because they enter postgraduate studies with little or no orientation and yet are expected to 'hit the ground running' in terms of progress.

Considering the crucial role that postgraduate education plays in universities' vision to provide avenues for advanced knowledge creation and innovations that addressed societal needs, different universities across the world have developed dedicated academic services to help postgraduate students succeed in their studies. Some

of the commonest academic support services provided in many universities to support postgraduate learning and research needs include mentorship, library service, Information and Communication Technology (ICT), institutional funding or fellowship, disability support services, orientation and career guidance services, postgraduate Student Resource Centre (esp. academic writing services), postgraduate retreats, international student liaison services, information and advisory services, postgraduate students' association, student accommodation, social and health care among others.

Obuku et al. (2021) identified and evaluated support mechanisms for research generation and utilization for masters' students in health institutions of higher learning in Uganda. Their study findings showed that there are support mechanisms in place for research production by postgraduate students in universities across Uganda. One of the cited positive experiences is "easy access to supervisors and mentors during proposal development" (p. 8). However, they identified some areas that still needed improvement, for example, decision-making, communication, and awareness of intellectual property rights.

Tobbell and O'Donnell (2013) analyzed the emergent identities of students during- their transition to postgraduate study. From a socio-cultural perspective they engaged staff and students in a yearlong study to explore the micro processes which construct the proximal experience of such a transition. They strongly argue that research needs to pay close attention to issues around the concept of postgraduate transition because they have proven to be complex and challenging to students. In addition, they have observed that postgraduate students do not always receive the support they require for them to excel in their research studies.

Nielsen et al. (2017) found a strong relationship between instructor support and postgraduate students' well-being and recommended the need to strengthen such support especially for students who do not have strong family support during their studies. In many cases, staff treat postgraduate students as experts who will not need much guidance to go on with their studies and research activities. On the contrary, research has shown that postgraduate students need "support in building their confidence to enable effective learning identities and academic trajectories to emerge" (p. 125). The authors suggest that for us "to understand the complexity of the transition to postgraduate study", we must do extensive research to generate multi-level and evidence-based data on this topic. They further propose the use of Bronfenbrenner's (1979) ecological model as a useful tool in conceptualizing and theorizing research data on postgraduate studies. According to this model (see Figure 4), the individual is "the centre of interacting systems which range from the proximal to the distal in terms of the power of direct influence on development".

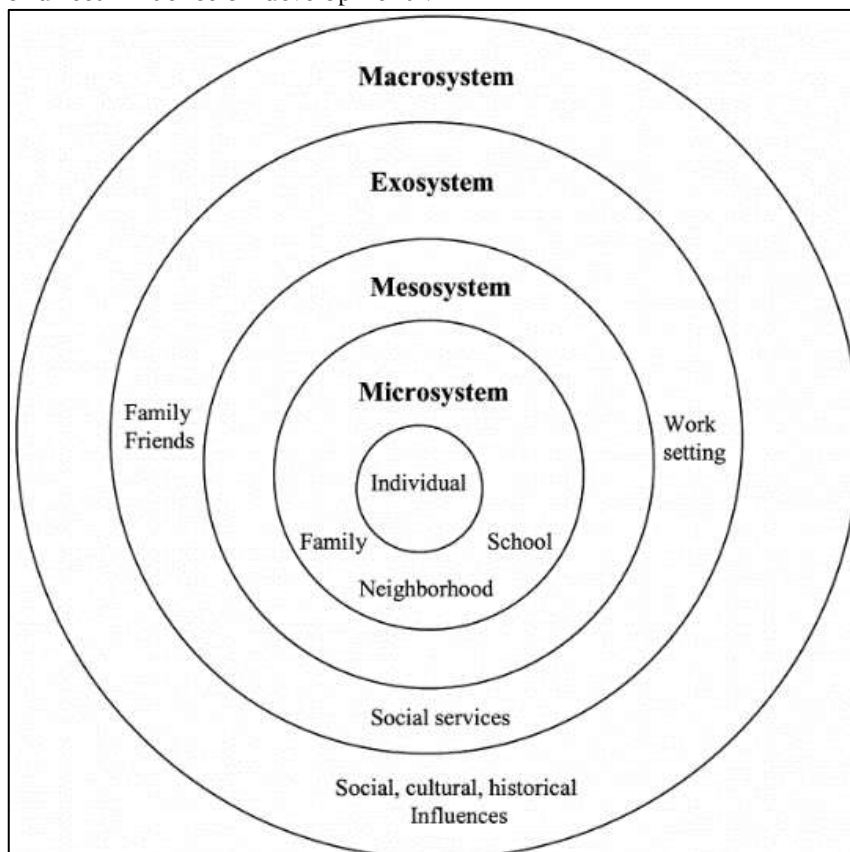


Figure 4: Bronfenbrenner's (1979) ecological model

Another model proposed by Nielsen et al. (2017), is Wenger’s model of Situated Learning, which explains learning as part of a community of practices in which an individual operates (see Figure 5). Using this model, the authors argue that instead of treating postgraduate students as “full participants in the academic community by virtue of their undergraduate success” we must view them as “legitimate peripheral participants (as per Lave and Wenger’s terminology 1991; cited in Tobbell and O’Donnell 2013 p. 127). They further advise that if we view postgraduate students with this lens, the interactions between postgraduate students and staff “becomes a reciprocal endeavour, where the new participant and the community work together and make mutual shifts and as a result both develop” (p. 127).



Figure 5: Wenger’s (1998) model of Situated Learning

The findings of Tobbell and O’Donnell’s (2013) study revealed that while many universities in the UK had well-established structures for guiding undergraduate students, such structures did not exist for Postgraduate students in most African universities. They also found that while Undergraduate students had access to several funding opportunities, most Postgraduate students had to work and study to finance their own studies. The participants expressed the need “for relationship with staff in terms of staff knowledge, staff presence and staff time” (p. 132).

Another finding revealed by the two authors is a mismatch between student and research supervisor, whereby, e.g., a student doing qualitative research would be allocated to a supervisor who specializes in quantitative research, or vice versa. Many postgraduate students also struggle with the transition and the rest of their studies because of little or no support from their families at home. The authors concluded that postgraduate students do “struggle with new practices and actively seek positive, participatory pathways which need to be supported by university staff and by wider social support systems” (p. 136). Because of this, they recommended further research focused on the context of postgraduate studies.

This is the same with the University of Namibia, where there are structures for ensuring the welfare of undergraduate students while the welfare of postgraduate students is not discussed. These are, for example, the Student Representative Council (SRC), the regular General Student Assemblies (GSA) and the student-Lecturer Forum that take place once every semester. Upon registering at university, undergraduate students go through an intense and information-rich student orientation, while postgraduate students do not receive any sort of orientation. Regarding student funding, it is not clear whether the National student funding body (NSFAF) caters for undergraduate and postgraduate students.

3.5 Institutional service delivery structures

Postgraduate students’ funding

The availability of funds has been cited as one of the key factors of students’ choices of postgraduate study courses and universities as well as their ability to publish (Bullen and Levee 2011). According to Tobbell and O’Donnell (2012), postgraduate funding can be both an enabler and a constraint to the success of postgraduate students’ research and career endeavors. Research has shown that at least half of postgraduate students fail to complete their studies, due to financial reasons (Strayhorn 2010). Even though scholarships for postgraduate studies are often available, they have some limits with respect to students’ age, country of study and institution affiliation. This forces students who do not meet funders’ requirements to take ownership of financial responsibilities

towards their postgraduate studies. Under normal circumstances, one would take a break from work to focus on full-time basis studies. However, with the addition of the effect of COVID-19 pandemic, employers have been reluctant to release staff for studies without additional funding.

Poverty amongst postgraduate students, especially on the African continent, “has been deepening, with the pressures of globalization and neo-liberalism resulting in widening the gap between the rich and the poor” (Machika and Johnson 2015, p. 167). Machika and Johnson add that even though studying at HIEs is an opportunity to change their personal, family, and societal economic status, “it is difficult for them to achieve this goal when the very economic conditions under which they live have an impact on their ability to succeed academically” (p. 167). It is therefore important for governments and IHEs to forge relationships geared towards funding tertiary education, including postgraduate studies.

Horta, Cataneo and Meoli (2016) have charged PhD funding as one of the determinants of postgraduate students’ research and career performance in such a way that “the younger the student is at the beginning of the PhD, the higher the possibility of receiving funding to support the doctorate; and this suggests that funding is usually given to those students who start (or seek to start) their PhD soon after the previous degree has been received” (p. 554). This is most challenging on the African continent because the maturity for such opportunities occurs at an older age as compared to the rest of the world. This is because immediately after undergraduate studies, graduates have to take some time off from further studies and take up family financial responsibilities. By the time they are financially and emotionally ready to engage in postgraduate studies, they have gone beyond the preferred age for most scholarship and research opportunities. This has deeper effects not only on personal success but also on the rate at which African scholars gradually transform to professorship levels.

Student’s involvement in teaching and research assistantships

According to Bent, Knapp and Robinson (2020), there is a large and growing body of research supporting the use of active-learning pedagogies to increase student learning, engagement, participation, attendance, social interdependence, and critical thinking. This conclusion finds support in Gordon, Henry and Dempster, (2013) who believe that Universities have long relied upon postgraduate teaching assistants. In their view, the traditional purpose of postgraduate teaching assistants has been threefold: to help staff with teaching introductory courses, to relieve faculty of grading and other administrative duties, and to provide postgraduate students with teaching experience. In the same vein, Hogan, Norcross, Cannon, and Karpiak (2007) describe the way that the University of Scranton, which was faced with the problem of understaffing in the department of Psychology created a program in which student assistants were used for tutoring and organization, management, record keeping, evaluation, and other teaching functions.

Despite the academic discipline that students may find themselves in, their involvement in teaching is as important as their participation in research assistantships. Lei and Chuang (2009) state that research assistantship is an important component of undergraduate education. Student involvement in research beyond a research methods course is a valuable experience, especially for students interested in postgraduate studies. Students’ involvement in research assistantship benefits both the student and research-based career, enhancing a variety of thinking skills, generating excitement and curiosity about the research process, preparing conference presentation in both oral and poster formats, as well as assisting in manuscript preparation, submission, and revision for publication (Lei and Chuang 2009).

From students’ perspectives, there are two major types of benefits for having a research assistantship: 1) technical skills and abilities, and 2) social and interpersonal skills. The first type of benefit involves research skills and abilities that are important for preparing the students for research-based careers immediately after university graduation. Lei and Chuang (2009) cite the ability to formulate research questions and hypotheses, to collect, analyze, and interpret data, as well as to prepare a manuscript for publication as some examples of these skills. Research assistants are learning technical skills and abilities that faculty mentors believe are important. The skills and abilities learned from undergraduate study have further translated to functional research skills and abilities after students have been employed or in postgraduate school for a few years.

The second type of benefits consists of social and interpersonal skills. Such skills include self-confidence, research self-efficacy, teamwork, leadership, time-management, and social relation skills. To become an excellent academic faculty member or a professional researcher in the long run, social and interpersonal skills are as important as research skills and abilities. (Lei and Chuang 2009). Thus, universities worldwide should strengthen this important support service by expanding access to student’s involvement in teaching and research assistantships to develop postgraduate students’ overall learning and research experiences.

3.6 Reliable institutional structures

Supervisory Support services for Postgraduate Students

Supervision is an activity undertaken by someone occupying a formal role within an organization that has (more or less) explicit expectations and accountability to both the person being supervised and the organization which provides the context for the supervisory relationship (Chiappetta-Swanson and Watt 2011). In the academic context, supervision is a process of guiding students to become independent professional researchers and scholars in their field, capable of adapting to various research arenas, whether university or industry-based (Chiappetta-Swanson and Watt 2011). According to Ngulube (2021), postgraduate education and supervision are central to the acquisition, assimilation, and sharing of knowledge, noting that supervisory practices are fundamental to the production of research in higher education. Knowledge production in particular is fundamental to the creation of a knowledge society, which is very crucial for the emancipation of knowledge-based economies (Fourie-Malherbe et al. 2016; Fullwood et al. 2019).

Chiappetta-Swanson and Watt (2011) are of the view that the relationship between a postgraduate student and an academic supervisor is critical to the success of the learning experience, sense of satisfaction of both participants, development of research skills, and shaping of successful career trajectories of both the student and the supervisor. In their study, Lessing and Schulze (2002), noted that students describe their experiences of encouragement and support from their research supervisors and the endorsement of independence and creativity as pleasing. The students were quoted saying "My supervisor was always encouraging, understanding, and helpful"; "Our relationship was a source of motivation"; and "To work with a supervisor that allowed me to, within limits, do my own thing was empowering". In the same study, other students perceived personal enrichment as a source of satisfaction, especially the cognitive development they underwent or the satisfaction of contributing to education. This included the development of knowledge, understanding, and critical thinking as well as the development of research skills (Lessing and Schulze 2002). In sharing a supervisory experience, a student wrote: "I was enabled to provide my perspectives of the research in order to make a profound contribution to education which is critical to ameliorating the miasma of education in South Africa at present" (Lessing and Schulze 2002). Considering the above, the students identified the following as most rewarding: (i) the supervisor's support and guidance; (ii) the development of their own cognitive skills; and (ii) the opportunity of contributing to the field of Education.

Towards improving the postgraduate supervisory services, most students, however, advocated for more contact between supervisors and students. This included "keeping regular contact with the students by arranging for progress meetings or reports and enquiring from students when nothing is heard from the students in a given period of time" (Lessing and Schulze 2002). In the same study, some students recommended that supervisors should be more supportive and show interest in the work of students without forcing their thinking into it, but constructively criticize the work of the students to avoid disappointment at the end of the study period. Ngulube (2021) submitted that supervisory practices are undertheorized and poorly understood, stressing that academia needs to understand and engage with supervisory pedagogies to reinforce their importance in knowledge production and the development of a knowledge society. As cited in Ngulube (2021), there are currently calls for postgraduate education to contribute to the knowledge society and knowledge-based economies in response to both global and local challenges (National Planning Commission 2011; Scott 2015; Thomson and Walker, 2010). However, Chiappetta-Swanson and Watt (2011) stressed that this is a huge challenge with the limited training of several faculty members, mismatched expectations, and few resources to support postgraduate students' learning and research success. Thus, every university must strive to improve this critical service of postgraduate supervision to make the learning and research experiences of postgraduate students relevant to 21st century development.

4.0 CONCLUSION

As Institutions of Higher Education (IHEs) throughout the world today face different challenges to meet the societal expectations, service quality has become the prime factor that attracts prospective students, researchers, and professors necessary for postgraduate education. This review study found that different universities have established critical structures and support services to enhance the learning and research experiences of their postgraduate students. While the context of service delivery may vary from one university to another, depending on the institutional resources and human capitals, support structures and services such as academic libraries, postgraduate student's finances, Information and Communication Technology, and academic support services have been used to help both new and old postgraduate students navigate their learning and research needs with greater success. However, as the learning and research environments become increasingly complex in the present

world, there is need for universities to constantly review their structures and support services to make them more relevant to the present day needs of the postgraduate students and improve their overall experiences. This will adequately prepare the students for the 21st century market where innovation and creativity have taken the center stage.

4.1 Practical recommendations

To promote democratization of postgraduate education, especially in African universities undergoing curriculum transformation to respond to the post Covid-19 and digital era, there is need to establish a legitimate Postgraduate Students Association as a structure guided by a clear vision, mission, goals and objectives, constitution, and bylaws to champion important professional and general interests of postgraduate students. This is important for creating an inclusive learning environment where legitimate concerns of student stakeholders are reflected in the management of postgraduate education for students' worthwhile experience and overall success.

Considering the complexity of student's transition to the high demanding learning and research nature of postgraduate education, there is need to carry out extensive institution-based research to identify critical issues around the concept of postgraduate transition which have proven to be complex and challenging to their students, and hence effecting their learning and research experiences. This will enable individual universities to plan institution-based approaches that could aid postgraduate students' transition and management of the times for effective learning and research adventure.

There is also the need to critically assess the existing structure and support services in many African universities with a view to improving them and making them more relevant to the learning and research needs of the 21st century postgraduate students and Industry 4.0. This is crucial for achieving a knowledge-based society and knowledge-based economy.

There is also the need to review the practice of imposing supervisors on postgraduate students to avoid possible mismatch between student and research supervisor, whereby, e.g., a student doing qualitative research would be allocated to a supervisor who specializes in quantitative research, or vice versa. This adversely affects the student's learning and research experiences, and hence professional growth.

There is need for African universities to establish a strong structure for postgraduate funding and fellowship to enable potential postgraduate students to benefit from such opportunities at a younger age when they are still fresh from undergraduate studies and can move around easily for quality research works. This has become crucial for African universities as the age limit factor has become a barrier to so many African scholars accessing many scholarship and research grant opportunities today because immediately after undergraduate studies, most students have no funding supports and must take some time off from further studies to search for jobs and prepare financially, coupled with family responsibilities. By the time they are financially and emotionally ready to engage in postgraduate studies, they have gone beyond the preferred age for most scholarship and research grant opportunities.

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