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Sustainable development of a researcher's career trajectory

Abstract

The ongoing Covid-19 pandemic has taught everyone that long-term planning and execution, which have always been taken for granted, are not a given. In many contexts, stagnation was the initial outcome of hard lockdowns. As international travel ground to a halt, the lack of mobility seriously hampered scholarly personal interaction as an essential part of the career development of especially early-career researchers. While the focus of this paper is not on the current or future effects of the pandemic, the temporary inaction associated with Covid might be seen as a wake-up call for an active, rigorous effort towards sustainable development. Education faculties and their research entities have a duty towards both early-career and established researchers to develop strategies through which a steady development path can be maintained despite local, national and international disruptions. The notion of sustainable development of researchers' career trajectories implies a long-term approach to incessant growth, expansion and skills improvement, leading to maintained and increased productivity as well as higher-quality research outputs. This paper explores strategies that may be followed by authorities and individuals that focus on a positive career trajectory for both early-career and established researchers. The question to be answered is how continuous development can be facilitated. The answers lie, inter alia, in stimulating a lifelong interest in research during pre-graduate and doctoral students' introduction to research theory and practice, constantly building capacity through increased research skills levels. Mentorship offered by established researchers can also be seen as part of their own prolonged development. In addition, of equal importance is the development of the ability among individual researchers and project groups to take responsibility for their own career trajectory.

Keywords: *sustainable development, career trajectory, early-career researcher, capacity building, research productivity*

1. Introduction and background

Anything said about a researcher's career trajectory should be considered against the background of a transformed and ever-changing research environment. The industrial economy of the previous century has subsided to make way for a "global, digital, knowledge economy" (Levine & Van Pelt, 2021: par. 1). In order to serve such an economy, higher education has metamorphosed since the 20th century, with specific implications for the modern-day researcher: new rules for the game have emerged, and a new game

plan is required. The principle followed by the UK Concordat is that researchers should be empowered to be "adaptable and flexible in an increasingly diverse, mobile, global research environment" (Vitae, 2022: par. 3).

The current global economy already showed significant development at the turn of the millennium (Conlon, 2004: 779). Of special importance is the significant influence this economy has on workplace and career choices. This author points at the fact that early research on career development entailed amongst others personal characteristics, career decisions and assessment tools, and adds that these theories may no longer be of much value, given the current "emerging economic competitiveness in a global economy".

The above-mentioned changes in the global economy happened gradually over a number of decades, offering everyone time to adapt according to new needs and priorities that emerged. In most cases, strategies dependent upon long-term planning could be executed with good effect. The current and ongoing Covid-19 pandemic has taught everyone that such long-term planning and execution, which have always been taken for granted, are not a given. Sureties of a previous year can be taken away instantly, and during a pandemic of such severity, every human's adaptability is tested to the extreme. Within such an unstable environment, which includes their workplaces, researchers must find a way to make steady and sustained progress as scholars.

The central purpose of this paper is to explore possible strategies towards the optimal development of a researcher's career that will enable both early-career and more established researchers to be, and remain, highly effective and productive in this modern era. While this paper does not focus on current or future effects of the Covid-19 pandemic as such, following such strategies will enable them to stay in tune with the needs of the day, whether these are Covid-ridden or post-Covid. This paper also argues that the mere development of a career is not sufficient: a distinct element of sustainability will have to be part of the fibre of such a career trajectory to ensure success in the post-Covid years to come, where the threats of the pandemic have subsided, but the necessity of sustainable development has remained.

Sustainable development is not easy to achieve. As Bansal (2019: 1) notes, the development of technology and the changing nature of social institutions create "a perfect storm". In effect, sustainable development has become increasingly difficult to maintain. This statement was made pre-Covid-19, and it may be even more true in the new era that began with the start of this highly disruptive pandemic. Furthermore, Reunamo and Pipere (2011: 1) warn that, for effective enquiry into the multifaceted topic of sustainable development, scholars "need to be aware of their preferences and orientations". This examination of possible strategies towards sustainable development of researchers' careers therefore requires a careful approach and a thorough analysis of available research.

The paper identified well-contemplated strategies and initiatives that can be considered by individuals and authorities who focus on an upward career trajectory for both early-career and established researchers. A career trajectory is also referred to as a career life cycle (Gordon, 2005: 1), the researcher's career path (Health Research Board (HRB), 2016), or career pathway (University of Southampton, 2022: par. 4). The primary question to answer is how the employment of identified strategies can facilitate sustainable development of researchers' career trajectory. The notion of sustainable development of researchers' careers implies a long-term approach towards incessant growth, the expansion and improvement of skills, leading to maintained productivity as well as higher-quality research outputs to meet the increasing demands of a knowledge economy.

2. Methodology

In order to answer the research question on how sustainable development of a researcher's career trajectory can be strategised, this paper offers a systematic review of available literature on the topic. During a focused search for electronic versions of scholarly journals and books based on pre-defined criteria, publications on the nature and implementation of strategies were collected and reviewed. From this, a basic conceptual framework could be structured, including concepts such as the profile of an accomplished researcher, exactly what a strategy entails, and how the concept of sustainability is linked to researcher development.

This literature data were complemented by a search across higher education websites, because universities and other institutions of higher education are primarily the context within which researchers' careers start developing. On the respective websites some of these institutions provide guidance on career trajectories and other relevant publications that produce open-access programmes and strategies. This include documentation containing practical advice that is made available to early-career and more established researchers to assist them with plotting their own career trajectories. After collecting an adequate volume of such documentation, a critical analysis of the variety of sources was conducted. The data contained in these sources were subjected to thematic analysis – a method for "identifying, analysing, and reporting patterns (themes) within data" (Braun & Clarke, 2006: 6). During this analysis, the strategies for the sustainable development of a career trajectory, as reported in this paper, emerged. The themes that emerged during this analysis relate to the different phases of a researcher's career development, from novice to established researcher, where different strategies have to be applied, depending on the needs and exact position of a researcher in that specific phase of his or her career.

Following the technique of deep reading (Kilburn, Nind & Wiles, 2014), the sources gathered were analysed carefully and (intentionally) slowly by means of a process of reading and rereading. To get to the required depth on the matter at hand, it was essential to engage in higher-order critical thinking skills so that I could "distinguish fact from fiction; synthesize and evaluate information; and clearly communicate, solve problems and discover truths" (University of Connecticut, n.d.: par. 2).

Deep reading entails, amongst others, the use of cognitive skills like analysis, creating a synthesis, and problem-solving. New meaning is created from the text data by focusing on the underlying intention of the author (Hermida n.d.: par. 4). This approach enabled me to gain a deeper understanding of sustainable development and construct new meaning from the analysed sources.

3. Conceptualising a strategy

In the formulation of any strategy or strategic plan, one essential element stands clear: determining a clear goal. The Northern Ireland online channel for business advice, Nibusinessinfo (n.d.: par. 1), in its definition of strategic planning, points out that an ambition has to be formulated, followed by certain steps of how to achieve it. The purpose is to define the mission of the business, the vision that has to be achieved, and the plan in the form of action steps. In a strategy, or a set of strategies for a researcher's career trajectory, there must be clarity on the nature of such a scholarly "end product" or vision. In such a strategic plan for research development, there must be no uncertainty about what the characteristics of an accomplished researcher are. In terms of the abovementioned Nibusinessinfo guidelines,

there must be a clear mission and vision, which, in this case, is the profile of a researcher that has developed to what can be described as a consummate academic, scholar and researcher, as will be discussed next.

4. Profile of the accomplished researcher

The University of Southampton (2022: par. 1-3) describes the path towards the end product of a researcher's career as progressing from an early-career researcher to becoming a principal investigator (PI). Becoming a PI is the most senior position a researcher can hold; such a professor is regarded as an established researcher who acts as a mentor, supervisor, and the leader of projects.

Adding to formulating such a profile, Stefanadis (2006: 52) offers a set of characteristics of a successful researcher. He contends that successful researchers possess cutting-edge knowledge and skills, obtained by studying recent publications in their fields and interaction with peers. They are also resourceful team players and possess "uncontrolled unreasonableness" – the ability to think creatively outside the box. Stefanadis (2006: 53) contends that, in the development of young scientists, there is no certain method of mentorship, and that one crucial element that distinguishes good researchers from excellent ones is giftedness, which cannot be taught. What is important to note from the above discussion is that to be an accomplished researcher requires an above-average level of knowledge on a certain academic discipline, where such a person is regarded as a leader in his/her field. Secondly, and based on the above competencies, these researchers have the ability to engage in interdisciplinary projects where their specific expertise is merged with that of other scholars to achieve a common goal.

To complete the building of the profile, the University of Cape Town (hereafter UCT) Researcher Development Academy (RDA) is more specific regarding the activities and competencies of a successful researcher when they offer four key requirements such a senior scholar should meet: understanding context and planning research goals; pursuing and supervising a master's degree or a PhD; publishing and sharing research; identifying funding opportunities; and writing a winning grant proposal (UCT, 2022a). All these competencies can be demonstrated at a basic as well as at a higher level, with the distinguishing factor as to whether these capabilities have been demonstrated in a sustained way over a considerable period of time. That would determine whether the person can be regarded as an established researcher.

Against such a background, where a specific profile of an individual scholar is seen as the ultimate goal, a career trajectory should be plotted that would, despite disruptions and delays, result in full achievement of the goal that was formulated during the initial stages of a research career.

5. A researcher's upward or downward career trajectory

On completing PhDs, doctoral students must make decisions regarding their careers. Some may proceed to teaching as lecturers and reap the benefits of this higher qualification such as salary increases and promotion. In these cases, the limited development of their research capacity is to a certain extent due to the strong focus on and specialising in teaching. This may be the result of faculty priorities on how to deploy their available staff, or personal preference. Of specific concern to this paper, others may be interested in pursuing a career specialising as a researcher at either a university or another research institution.

The University of Southampton, in its guidance to their early-career researchers (hereafter ECRs), offers these academics the perspective that, up to obtaining the doctorate, they gain knowledge in their field of specialisation, and in some cases also an initial exposure to interdisciplinary work. Their advice is to develop and improve their proficiencies as professionals, but more importantly for this paper, to manage their careers with a greater sense of purpose and direction (University of Southampton, 2022: par. 1).

As part of plotting an ideal career trajectory, the University of Southampton points out two routes to becoming a PI: firstly, someone following the "funding/fellowship route", who specialises in research, where the major part of their time is spent on engaging in research projects; secondly, a scholar may opt to follow the human relations route, "taking on teaching and/or enterprise roles as well as research" (University of Southampton, 2022: par. 4). It is foreseeable that the second option may eventually not lead to becoming a PI, or may take significantly longer, compared to a scholar that is primarily focused on research.

Considering the advantages and disadvantages of opting for a research career, Inomics Team (2021: par. 1) states that, over and above engaging in further research, other career paths exist in, for example, business, education and journalism. Consequently, Inomics Team (2021: par. 3-8) offers specific guidance for those that stand before the career choice of becoming a researcher or not, and weighs up a number of advantages against the possible disadvantages.

Table 1: The advantages and disadvantages of a research career

	Advantages	**Disadvantages**
Travel and relocation Due to a limited number of positions, becoming a researcher most often has the implication of relocation to a new city or country.	Research offers a unique opportunity to travel to new places, experience life in different countries and cultures, meeting new people and gaining experience of jobs at a variety of institutions.	For some, it is hard to make new friends and create a social circle in a new city. Those with families are less mobile and may find relocation very demanding. Relocating can be stressful, causing some to slip into depression.
Independence and interest As compared to many other careers, researchers have relative freedom and can work with some independence.	One advantage of a career in research is how interesting the work is. Researchers can also organise their own working schedule and priorities, provided that adequate funding is available. Researchers can often choose the topics of research which are of the most pressing interest to them.	

	Advantages	Disadvantages
Security and career prospects One particularly challenging aspect of a research career is the lack of job security, especially in the initial stages. More PhDs and post-docs are working than there are professorships available.		Post-docs are typically employed on short-term contracts, whereafter they must find another position, and there is no guarantee of long-term stable employment. Progressing from a post-doctoral position to a professorship can be extremely competitive – the number of professor positions are being reduced due to budget cuts.
Transferable skills Researchers master certain valuable and widely applicable skills and expertise.	To alleviate the risks and uncertainties associated with the initial stages of a career as researcher, the skills and expertise one acquires, for example, critical thinking and writing expertise, can be transferred to many other fields and occupations.	

(Adapted from Inomics Team, 2021: par. 3-8.)

The weighing of the pros and cons by young researchers, as illustrated here, was an important matter in the context of career planning, which resulted in the UK Careers in Research Online Survey (CROS). The respondents were asked where they would like to see themselves in the following five years. The majority opted to stay in higher education, while 38% preferred to proceed with their career outside of higher education. Nineteen percent (19%) expressed an interest in a non-research career in business, industry or the public sector (Vitae, 2022: par. 19).

After careful consideration of the implications, and eventually opting for a career as a researcher, another decision for an ECR comes to the fore: the decision whether to proceed within a university (higher education) context or starting a career at another type of research institute. The decision whether to become a researcher, and at what type of institution, can be made early in a person's research career, but switching to another type of research environment can also happen later. Vitae (2022: par. 17) warns, however, that a researcher may detect some suspicion or even antagonism on the side of managers when they look for career opportunities outside of the academic world. Despite facing such resistance and possible reproach, researchers should feel free to make their career decisions independently (Vitae, 2022: par. 18). The decision will be influenced significantly by the availability of positions the specific individual qualifies for, combined with their mobility and willingness to relocate.

A scholar who has opted for a career as a researcher should follow certain strategies towards sustained development to ensure an upward research career trajectory. Finding strategies to maintain a predominantly upward career trajectory, or preventing stagnation and even a downward trajectory, is not applicable to ECRs only. It is a common phenomenon that competent and productive researchers are recruited for leadership or administrative positions, where they can act as mentors and advance an entity's research productivity based on their experience and managerial capabilities. This may result in not maintaining their scholarly productivity that in the first place earned them the promotion. Kawaguchi, Kondo and Keiji

(2016:1), in their survey conducted among Japanese researchers, found that a decrease in research time and outputs prevailed because of an increased administrative load. These authors recommend proper inducements and job designs for established researchers to prevent a decline in their research outputs. Career transitions from junior to senior ranks must be monitored and strategised carefully, both by the individual researchers themselves and the management of the institution, to ensure sustained high productivity.

During the thematic analysis of the literature, several strategies emerged which can be utilised jointly or separately towards the sustainable development of a researcher's career trajectory.

6. A phase-by-phase approach to sustainable career development strategies

Every phase in a researcher's career poses unique challenges and needs sustainable development. Strategising the development trajectory of any individual researcher needs to be done against the background of the researcher's level of development, as well as new needs and demands that arise when a new phase commences.

In the search for successful approaches and strategies towards career enhancement, the establishment of a well-structured, highly focused, capacity-building programme for an institution emerged as the most ideal strategy towards sustainable development. (UCT, 2022a; University of Southampton, 2022; Health Research Board (HRB), 2016). Instances do prevail where a highly motivated mentor with adequate experience and knowledge promotes a promising junior scholar's career significantly, based on an individualised process. Such a career enhancement process outside of a formal institutional structure might lead to significant short-term successes, but unfortunately it does not include the element of sustainability. It has been observed that, once one of these two parties moves out of the partnership, and in the absence of an existing structure, the necessary scaffolding might not be in place, to the detriment of the developing scholar. All indications are that established, well-funded and well-managed institutional programmes lead to increased skills levels, higher productivity and the advancement of individual researchers' career prospects. Moreover, these programmes ensure the maximum sustainability of career development and a prolonged upward career trajectory. As stated under methodology, this paper draws on strategies, inter alia, from published programmes of a selection of higher education institutions.

A number of distinct phases in researchers' career trajectory have been identified, as is discussed next, ranging from novice researchers to principal investigators, and eventually post-retirement associates.

6.1 Pre-doctoral introduction to research theory and practice

The management of higher education institutions devotes time, energy and funding to the development and advancement of their researchers. It therefore makes sense to focus on the development of younger or less experienced staff members to maximise the outcome of the investment. Kawaguchi *et al.* (2016: 3) underscore that "the trajectory of a whole life may be set in a person's youth". The UK Concordat concurs by stating that the structured development of a career should start early, "By encouraging your researcher to begin to consider their career goals early in their contract you can ensure they have sufficient time to develop the skills and experience to help them work towards those goals." (Vitae, 2022: par. 2).

In the criteria according to which intra-university bursaries and grants are allocated, the age of applicants is normally taken into account. Potential is often regarded as a more important criterion than proven expertise or established maturity. Based on this approach, preference is usually given to promising younger applicants who have a longer career path ahead of them. Funding agencies such as the South African National Research Foundation have specific sections for younger academics where they can apply for funding, eventually towards gaining a National Research Foundation (NRF) rating (NRF, 2021: 5).

The pre-doctoral phase of a scholar's career ranges from being a pre-graduate student, with an initial introduction and limited exposure to research activities, to the phase when a master's degree has been awarded with the prospect of enrolling for doctoral studies. Throughout this phase, promising scholars, often as part of a larger group, should be carefully guided, and an interest in research should be created, stimulated and secured.

Courses and modules specifically designed to expose pre-graduate students to the basics of research theory and practice have the potential to create enthusiasm among academics on the brink of pursuing one career or another. These modules are to a great extent theoretical by nature. As an example of such initial exposure to research, the pre-graduate BEd course at the Faculty of Education of the North-West University (NWU), South Africa, includes two modules particularly focused on research in education (NWU, 2020: iii). At the end of the first semester, fourth-year students must demonstrate their knowledge of the key concepts, principles and theories of social science research. This includes the ability to reflect critically on the theory related to their preferred research topic.

Upon completion of the second-semester module, students must prepare a research proposal without actually engaging in any empirical work. On completion of such a proposal, they should be able to demonstrate the following:

- integrated knowledge and understanding of scientific research principles;
- comprehensive knowledge of research methodology relevant to the research topic;
- ability to select, evaluate and apply a range of different research methodologies;
- capacity to reflect on values and ethical conduct appropriate to scientific research. (NWU, 2020: iii.)

Students enrolled in this programme are formally or informally recruited to consider advancing their studies at honours level. As part of their curriculum for the BEdHons degree, they have to complete a limited-scale research project with more or less the same outcomes as the pre-graduate module, also showing competence in generating and analysing data. During honours studies, and being part of a much smaller group, these students are carefully nurtured and recruited for their master's and eventually PhD studies, building on the enthusiasm and interest created in the earlier years of study. Of special importance in this phase, and as is discussed next, is to ensure a positive experience that will not discourage students with potential to keep up their interest in research. Central to this stands the relationship with the study supervisor.

6.2 Doctoral researchers' interests

Almost without exception, a career as a researcher becomes a serious consideration during and shortly after the completion of a PhD. If the completion of a PhD can be regarded as the first formal step towards a research career, specific attention should be given as to how

mentors and other leaders in the research context guide these researchers towards fulfilling their potential and ideals. Several studies on the experiences of doctoral students highlight that PhD studies have specific challenges and demands and that not everyone enrolling for a PhD follows through successfully. Of specific importance is the challenge not to relate primarily to the intellectual and cognitive level, but also to the interpersonal and emotional level. Sverdlik *et al.* (2018: 361) refer to concerns regarding mental and physical health, which sometimes lead to attrition among doctoral students. In their investigation into the positive and negative experiences related to doctoral study conditions, Corcelles *et al.* (2019: 1) found that, "during their doctoral studies, students undergo an emotionally and intellectually intensive process involving a wide range of positive and negative experiences". Clark *et al.* (2016: 4572) list several matters of importance for researchers, of which one is "understanding the coproduction relationships through which knowledge making and decision-making shape one another in social-environmental systems". Although this study was directed at developing researchers, the findings can rather be made applicable to supervisors, promoters, examiners and mentors, who have tremendous influence over the way doctoral students experience their early research endeavours.

Doctoral studies that include severely negative experiences on the part of doctoral students do not necessarily end in termination of the study. Experience shows that students also complete their studies, obtain their PhD, and then, because of such harmful or demoralising experiences, refuse to engage in any further research activities as part of their careers. In any strategy devised for ECRs, the social and interpersonal aspect should be fully factored in. A Spanish survey conducted by Corcelles *et al.* (2019: 1) confirms the importance of interpersonal relationships within the context of research endeavours. One of the main findings regarding negative challenges that were reported is the influence of the research community, and primarily that of the supervisor.

In their report, Corcelles *et al.* (2019: 1) provided several findings related to positive and negative occurrences that should be included in strategies designed to enhance doctoral students' experiences as ECRs:

- Opportunities for PhD students to communicate their scientific advances, receive expert feedback and interact with other researchers have a high positive influence on their doctoral journey;
- Funding difficulties, particularly for students in the social sciences, was one of the main negative challenges.
- Experiences related to research design, data collection and analysis were perceived either negatively or positively (Corcelles *et al.*, 2019: 1).

Corcelles *et al.* (2019: 1) recommend that these results may be used in doctoral programme policies to assist in ways to provide support. Clark *et al.* (2016: 4570) add the importance of specific support for young scholars who have recently completed their PhD, which might be a very positive, inspiring experience. However, "when scientists and engineers first venture out of the laboratory or library with the goal of linking their knowledge with action, the outcome has often been ineffectiveness and disillusionment". Kodama (2017: 255) argue that reality shock, which presents risks for career development, is characterised by an increase in unmet expectations and burnout, while work engagement decreases. As a valuable recommendation for improved strategic career planning and enhanced preparation of ECRs, Kodama (2017: 1) found that coping with changes and being optimistic about the future could prevent

the experience of reality shock. Although the possibility of reality shock cannot be totally eliminated, good social skills may prevent the experience of reality shock from inhibiting career development.

UCT introduced a support programme for staff members appointed without doctorates. The Emerging Researcher Programme (ERP) offers support in the form of workshops on PhD studies as well as preparation for postgraduate supervision (UCT, 2022b: par. 2). Based on individual discussions with senior academics, the programme prepares staff members for challenges as postgraduate students as well as being supervisors. It can be assumed that such staff members would work simultaneously under the mentorship of a promoter towards their own PhD and start supervising master's students. This programme is consistent with UCT's commitment "to transform the demographic profile of its academic staff and includes consultations, targeted seminars, workshops and modest research grants" (UCT, 2022c, par. 3). Based on merit and ongoing participation in this and other researcher development initiatives, upcoming researchers are encouraged to apply for development grants, depending on available funding.

On the grounds of its position in the overall Best Global Universities rankings, UCT as research-intensive institution is ranked number one in Africa. The evaluation is based on every institution's research outputs. In addition, members of the academic community around the world and in the region contribute to the eventual outcome (US News, 2022: 1).

UCT describes the nature and goal of its ERP as assistance to early-career scholars regarding the planning of their career trajectories in order to be prepared for the demands of a research-intensive university. The university specifically refers to support towards completing these staff members' doctoral studies, writing successful grant proposals, engaging in supervision and obtaining NRF rating (UCT, 2022b: par. 2).

6.3 Post-doctoral fellows' interests

As international travel ground to a halt during the initial phases of the Covid-19 pandemic, the lack of mobility seriously restricted scholarly personal interaction as an essential part of the career development of especially ECRs such as post-doctoral fellows (Schiffer & Walsh, 2020: par. 4). Postdoctoral fellows form a group of ECRs that is heavily dependent on well-designed strategies for career development. In these strategies, mobility should be factored in. In addition to pandemic-related challenges, particularly between 2020 and 2022, from every cohort of doctorandi, a relatively small percentage actually have the opportunity and privilege to embark on careers as postdoctoral or permanent researchers within a higher education environment. Postdoctoral fellows have made a clear-cut decision about their intention to follow research as a career, but they meet specific challenges. They must cope with relocation, adapt to a new environment, most often a new country (Cox *et al.*, 2008: 19), and must start building interpersonal relationships from zero (Cox *et al.*, 2008: 58). Within the academic context of a university faculty, postdoctoral fellows form an intergroup, no longer being students, but also not being regarded by all as staff members and colleagues yet. It has been observed that some have to cope with mentors that give little encouragement or pay inadequate attention to their endeavours and provide them with little development opportunities. While there is institutional pressure for researchers to get published (Rónay & Niemczyk, 2020: 241), this should be conducted in a controlled way. In extreme cases some mentors may regard postdoctoral fellows as publishing machines who are obliged to deliver regular publications, primarily for the benefit of the faculty. Clark *et al.* (2016: 4571) highlight

the importance of young researchers' sense of "producing usable knowledge", which starts at mentors with an encouraging, supportive approach and a process that is concluded with a successful publication after a rigorous peer-review process.

On the positive side, postdoctoral fellows are in a unique position to build their academic profiles rapidly, working in a structured, established environment under the supervision of a knowledgeable scholar and researcher. They normally have limited, if any, teaching or administrative duties, and for this passing period of their careers, they can fully engage in research only.

Referring to the fact that they have "the time, the energy and the ideas", the University of Southampton regards a postdoctoral fellowship as an opportunity to establish an academic career properly. In the light of the importance of a well-structured strategy towards maximum progress during a postdoctoral fellowship, this university cautions that this phase should be characterised by building a reputation as scholar by adopting a strategic approach towards their careers: "It is not enough to keep your head down, to keep working hard, and hoping for the best. You need to maximise your chances." (University of Southampton, 2022: par. 7). Important here is the scholar's active, planned involvement to ensure success.

The guidance they consequently offer is to adopt a three- to five-year career plan to find and work with a suitable mentor; to have a carefully devised networking strategy; to be sensitive to opportunities for professional development; and to get to know their strengths and areas of improvement. This university further accentuates the importance of postdoctoral fellows demonstrating the ability to secure research funding, to publish, and to add value to the institution or research entity. Leadership skills should also be actively developed in the light of possible "future roles as a PI or manager of research," for which certain competencies are needed (University of Southampton, 2022: par. 10).

Because of the relatively short duration of a postdoctoral fellowship, these researchers have an additional challenge: to get published. If they embark on a new project at the commencement of their fellowship period, the conceptualisation of such a project and obtaining ethical clearance before any empirical data can be generated also cut back on the time available for publication. The notoriously long turnaround time of some prestigious academic journals is due to the time-consuming review process in especially paper-based journals (Björk & Solomon, 2013: 1). According to Björk and Solomon, these obstructions hamper the dissemination of findings, but more seriously, within the context of career planning and advancement, these delays can add a significant hindrance to the upward trajectory in the academic careers of authors. In the present publishing system, it commonly happens that there are delays of over a year. "Journals are the gatekeepers of knowledge, defining when and where manuscripts get published and who can obtain access" (Sarabipour *et al.*, 2019: 2). Some publications may therefore only be scheduled for publication towards the end of a fellowship period. Despite their continuous effort, these scholars do not obtain the very necessary acknowledgement for their scholarly efforts at a time when it is needed the most.

Sarabipour *et al.* (2019: 1) provide one solution for the above-mentioned problem when they describe peer-reviewed journal publications as "the de facto currency for career progress" and point out the value of preprints for the ECR. This approach to being published offers an opportunity that could be included in a strategic plan for a post-doctoral fellow or any other ECR. These authors point out that preprints are online and open-access manuscripts "posted by authors on dedicated servers prior to peer review and publication in an academic journal"

(Sarabipour *et al.*, 2019: 2.) Submitted papers are only screened to ensure applicable content and disseminated immediately (Sarabipour *et al.*, 2019: 2).

From this definition, the benefits of pre-printing are clear: quick spreading of scholarly work, open-access, and timely feedback, together with the enhancement of such a researcher's network. Some scholars utilise pre-printing as the sole route to disseminate their findings. Two noteworthy pre-printing servers are arXiv (for the natural sciences) and bioRxiv (for the life sciences) (Sarabipour *et al.*, 2019: 6).

6.4 Mid-career researchers' interests

The ERP at UCT, as discussed earlier, includes workshops towards professional development which are also open to more established researchers on the staff. Notable characteristics of this strategic initiative, with a growth recorded of 45 academics involved in 2003 to 871 by the end of 2018, are the following:

- The amount and type of support depend on an individual's needs.
- Participants can take full advantage of the ERP's set of offerings over a number of years.
- Once a scholar attains an NRF rating or is promoted to associate professor, such a staff member has officially 'emerged' from the programme and no longer qualifies for ERP funding (UCT, 2022b).

The sustainability of this extended programme is made possible through the substantial, ongoing support from university funding and the involvement of national and international funding agencies.

Running parallel to the ERP as part of the bigger institutional initiative, the UCT Researcher Development Academy (RDA) (UCT, 2022a) advances research development in Africa by providing professional training and capacity-building programmes to researchers. By establishing partnerships and in collaboration with institutions on the African continent, seminars on most of the topics included in the ERP are also made available to upcoming researchers from African countries.

The University of Southampton encourages those staff members who have already developed beyond that of an ECR to prepare themselves for the demands of becoming a PI. They can become involved with "public engagement, policy, enterprise, contributing to education, supporting students or putting on conferences/events" (University of Southampton, 2022: par. 7).

At this stage of the researcher's career, they should step back for a while and plan for the stages to follow. Mid-career researchers need to establish themselves in a new role, characterised by collaborations with established researchers and then emerge from that as independent researchers. This might have the implication of moving out of one's comfort zone and relocating to another institution or even another country, depending on personal mobility and opportunities that may arise (Cox *et al.*, 2008: 26). Part of such strategic career planning is that the developing scholars should measure their progress against their initial ambitions. (University of Southampton, 2022: par. 9). Questions to ask include the following:

- Are you on the right career path? Are you ready for the next step?
- Why do you enjoy what you do? What are your strengths? What motivates you?
- Is your work-life balance as you want it to be? What needs to change to make it more the way you want? (University of Southampton, 2022: par. 21-23).

A thorough and honest assessment of the progress by utilising this set of questions can identify much-needed action steps to be taken.

6.5 Established researchers' interests

Once researchers have reached this point of being established researchers, they have a different set of questions to ask and answers to give regarding their future in research. Complacency can lead to stagnation, which, in turn, can result in a downward trajectory in the career path. A position of 'having arrived' is particularly troublesome when scholars, after a number of years of diligent and focused work by following a certain strategy to maintain an upward trajectory, find themselves in the bracket of being an established researcher already, with two decades or more to go to retirement. In such a case, new goals will have to be set in order to retain enthusiasm.

One potentially rewarding position is that of becoming a mentor and facilitator for upcoming researchers. Based on the model of the UCT the "researcher development cycle" (UCT, 2022d: par. 1), the researcher development trajectory can be illustrated as follows:

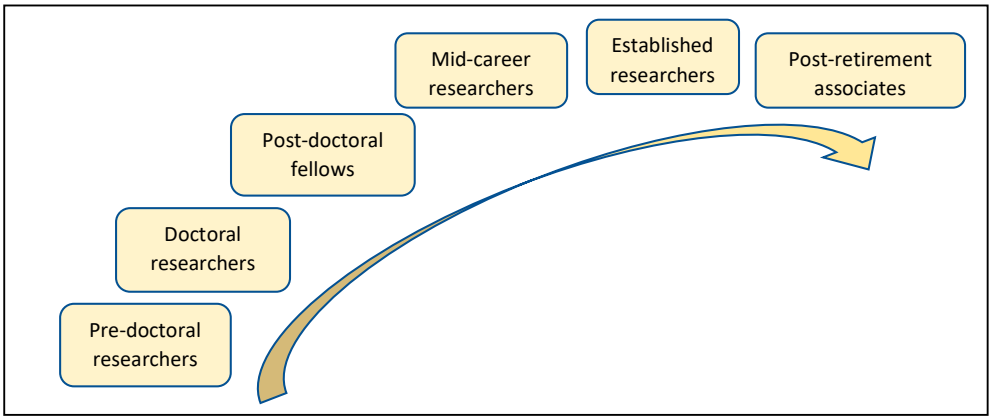

Figure 1: Researcher development trajectory

In countries and higher education systems where the system of mandatory retirement prevails, some researchers end their full-time employment career at the age of around 65. This, however, need not be the end of these senior academics' careers as researchers, as will be discussed next.

6.6 Post-retirement associates' interests

Post-retirement associates, based on their experience and extensive knowledge of research, can continue to make a significant difference in the research environment, through further publications and by acting as mentors for upcoming younger staff: UCT specifically refers to the engagement in seminars of retired academics with excellent research and supervision experience (UCT, 2022b: par. 3). Topics covered are, inter alia, research planning, getting published, research impact, optimising conference attendance, sabbatical planning, research ethics, reviewing a publication, examining a thesis, and grant proposal writing.

With a wealth of experience as a basis, post-retirement associates or research fellows who obtain short-term contracts may find this period of their careers as researcher rewarding, especially in those cases where they were in management positions towards the end of their official careers, which, as discussed, often bring about a decline in productivity as a researcher. Not being involved in such time-consuming faculty activities any longer gives them the opportunity to become a co-author or mentor for ECRs, which can be an enriching experience.

In the above sections, institution-based creation and facilitation of programmes were portrayed as essential to ensure the sustainable development of researchers' career trajectories. The final word on the successful process towards a sustained upward career trajectory has, however, not been spoken yet. No programme or strategic process, however well-designed, can succeed without the necessary self-motivation and sustained enthusiasm on the part of the individual researcher.

7. Taking responsibility for own development

The UK Concordat to Support the Career Development of Researchers (Vitae, 2022: par. 2) attaches significant importance to the career development of researchers, which includes the notion of the researcher taking responsibility for their own development. They formulated a set of principles towards career development and enhancement, most notably that upcoming researchers have to engage keenly in the development of their personal career trajectory. Although being dependent on the experience and encouragement by a mentor and institutional support, the final responsibility rests with the individual researcher.

The process of sustainable development of a researcher's career trajectory is excellently summed up as follows:

> Supporting career development involves encouraging researchers to give careful and informed consideration to their future career path and enabling them to gain the skills and experience that will allow them to work towards those goals (Vitae, 2022: par. 6).

8. Conclusion

In the quest of finding suitable, workable strategies for sustainable career development for researchers, it became clear in this analysis that higher education institutions see it as their task to provide the necessary support and guidance for staff members. A variety of structures and programmes for researchers in different phases have been put in place, and the possibility of development is created. The big test for such strategies is whether they will lead to sustainable development despite adverse circumstances that may arise. The most prominent prerequisite for sustainability that was found is the fact that researchers should ultimately take responsibility for their own development through every phase of their career.

To conclude, to be effective towards this goal of sustainable development, every strategy should have the type of long-term approach that will ensure continuous growth. During every phase of researchers' careers, they should be prepared for immediate challenges as well as challenges in the upcoming phase. The sustainable development of researchers' careers should result in increased or at least maintained productivity as well as higher-quality research outputs consistent with the increasing demands of a global knowledge economy.

References

Bansal, P. 2019. Academy of Management Discoveries 5(1). Guidepost normal. https://doi.org/10.5465/amd.2019.0001 [Accessed 21 February 2022].

Björk, B. & Solomon, D. 2013. The publishing delay in scholarly peer-reviewed journals. *Journal of Informetrics,* 7(4): 914-923. https://www.sciencedirect.com/science/article/abs/pii/S1751157713000734 [Accessed 21 February 2022]. https://doi.org/10.1016/j.joi.2013.09.001

Braun, V. & Clarke, V. 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2): 77-101. ISSN 1478-0887. https://www.tandfonline.com/doi/abs/10.1191/1478088706qp063oa [Accessed 21 March 2022].

Clark, W.C., Van Kerkhoff, L., Lebel, L. & Gallopin, G.C. 2016. Crafting usable knowledge for sustainable development. *SSRN Electronic Journal*, January. https://doi.org/10.1073/pnas.1601266113 [Accessed 23 February 2022].

Conlon, T.J. 2004. Career Development Challenges for the 21st Century Workplace: A Review of the Literature. Paper presented at the Academy of Human Resource Development International Conference (AHRD) (Austin, TX, Mar 3–7, 2004), p. 779-786 (Symp. 36-2). https://files.eric.ed.gov/fulltext/ED492367.pdf [Accessed 24 February 2022].

Corcelles, M., Cano, M., Liesa, E., Gonzalez-Ocampo, G. & Castello, M. 2019. Positive and negative experiences related to doctoral study conditions. *Higher Education Research & Development*, 38(5). https://doi.org/10.1080/07294360.2019.1602596 [Accessed 21 February 2022].

Cox, D., Flanagan, K., Kaloudis, A., Jones, B., Morrison, K., Nugroho, Y., Børing, P., Green, L., Von Tuzelmann, N. & Weckowska, D. 2008. Evidence on the main factors inhibiting mobility and career development of researchers. (DG Research). European Commission. https://doi.org/10.2777/5555 [Accessed 24 February 2022].

Gordon, G. 2005. The human dimensions of the research agenda: supporting the development throughout the career life cycle. *Higher Education Quarterly,* 59(1): 40-55. https://doi.org/10.1111/j.1468-2273.2005.00280.x [Accessed 22 February 2022].

Health Research Board (HRB). Research career path for academic researchers. Health Research Board (HRB). General Data Protection Regulation (EU) 2016. https://www.hrb.ie/funding/eu-funding-support/eu-funding-news/ [Accessed 19 February 2022].

Hermida, J. 2013. Strategies to Promote a Deep Approach to Reading. http://commons.trincoll.edu/ctl/files/2013/08/WEEK-2-Strategies-to-Promote-a-Deep-Approach-to-Reading.pdf [Accessed 21 February 2022].

Inomics Team 2021. The pros and cons of a career in research. 14 June. https://inomics.com/advice/the-pros-and-cons-of-a-career-in-research-283390 [Accessed 21 February 2022].

Kawaguchi, D., Kondo, A. & Keiji, S. 2016. Researchers' career transitions over the life cycle. http://dx.doi.org/10.1007/s11192-016-2131-y [Accessed 23 February 2022].

Kilburn, D., Nind, M. & Wiles, R. 2014. Learning as Researchers and Teachers: The Development of a Pedagogical Culture for Social Science Research Methods? *British Journal of Educational Studies*, 62(2): 191-207. https://doi.org/10.1080/00071005.2014.918576 [Accessed 25 February 2022].

Kodama, M. 2017. Functions of Career Resilience Against Reality Shock, Focusing on Full-time Employees During Their First Year of Work. 21 June. https://onlinelibrary.wiley.com/doi/full/10.1111/jpr.12161 [Accessed 19 February 2022].

Levine, A. & Van Pelt, S. 2021. Higher education should prepare for five new realities (opinion). https://www.insidehighered.com/views/2021/10/04/higher-education-should-prepare-five-new-realities-opinion [Accessed 13 February 2022].

National Research Foundation (NRF). 2021. NRF Call for Proposals for Funding in 2021 and 2022. General Application Guide. Available at https://www.nrf.ac.za/wp-content/uploads/2021/04/General-Application-Guide-2022-Final-Ver-5.1-31-March-2021.pdf [Accessed 2 December 2021].

Nibusinessinfo. n.d. Strategic planning for business growth. The purpose of strategic planning. https://www.nibusinessinfo.co.uk/content/purpose-strategic-planning [Accessed 21 February 2022].

North-West University (NWU). 2020. *Study Guide for Research Proposal: Planning and Designing a Research Proposal in the Education Context*. Faculty of Education Sciences.

Reunamo, J. & Pipere, A. 2011. Doing research on education for sustainable development. *International Journal of Sustainability in Higher Education*, 12(2): 110-124. Emerald Group Publishing Limited 1467-6370. DOI 10.1108/14676371111118183 [Accessed 23 February 2022].

Rónay, Z. & Niemczyk, E.K. 2020. Institutional and Individual Autonomy in Relation to Research Productivity in Hungarian and South African Higher Education Contexts. In N. Popov, C. Wolhuter, L. de Beer, G. Hilton, J. Ogunleye, E. Achinewhu-Nworgu, E. & E.K. Niemczyk (eds.), *Educational Reforms Worldwide*, 18: 240-247. Sofia, Bulgaria: Bulgarian Comparative Education Society (BCES). https://bces-conference.org/onewebmedia/2020.240-247.Zoltan.Ronay_Ewelina.Niemczyk.pdf [Accessed 20 July 2020].

Sarabipour, S., Debat, H.J., Emmott, E., Burgess, S.J., Schwessinger, B. & Hensel, Z. 2019 On the value of preprints: An early career researcher perspective. https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3000151 [Accessed 22 February 2022]. https://doi.org/10.7287/peerj.preprints.27400v1

Schiffer, P. & Walsh, J. 2020. Known Unknowns. *Inside Higher Ed*, October 13. https://www.insidehighered.com/views/2020/10/13/impact-social-distancing-processand-outcomes-university-research-opinion [Accessed 11 February 2021].

Stefanadis, C.I. (2006). Characteristics of the Good Researcher: Innate Talent or Acquired Skills? *Hellenic Journal of Cardiology*, 47: 52-53. https://www.hellenicjcardiol.org/archive/full_text /2006/1/2006_1_52.pdf [Accessed 24 April 2022].

Sverdlik, A., Hall, N. C., McAlpine, L. & Hubbard, K. (2018). Journeys of a PhD student and unaccompanied minors. *International Journal of Doctoral Studies*, 13: 361-388. https://doi.org/10.28945/4113 [Accessed 21 February 2022].

University of Connecticut. n.d. Critical thinking and other higher-order thinking skills. https://cetl.uconn.edu/resources/design-your-course/teaching-and-learning-techniques/critical-thinking-and-other-higher-order-thinking-skills/ [Accessed 21 February 2022].

University of Cape Town (UCT). 2022a. Researcher Development Academy (RDA). http://www.rda.uct.ac.za [Accessed 21 February 2022].

University of Cape Town (UCT). 2022b. The emerging researcher program. http://www.researchsupport.uct.ac.za/emerging-researcher-programme-erp [Accessed 21 February 2022].

University of Cape Town (UCT). 2022c. Targeted support for academics without doctorates. http://www.researchsupport.uct.ac.za/targeted-support-academics-without-doctorates [Accessed 28 February 2022].

University of Cape Town (UCT). 2022d. Targeted support for academics without doctorates. http://www.researchsupport.uct.ac.za/overview-29 [Accessed 28 February 2022].

University of Southampton. 2022. Your Career. https://www.southampton.ac.uk/waar/your-career/career-steps.page [Accessed 22 February 2022].

US News. 2022. Best Global Universities in Africa. https://www.usnews.com/education/best-global-universities/africa [Accessed 21 February 2022].

Vitae. 2022. Supporting researcher career development. https://www.vitae.ac.uk/doing-research/leadership-development-for-principal-investigators-pis/developing-individual-researchers/supporting-researcher-career-development [Accessed 21 February 2022].