

Strengthening capacity building of local researchers in Papua New Guinea

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Abstract

Research expands knowledge and information for development. This paper is an informal survey assessing the state of institutional infrastructure that facilitates the advancement of Papua New Guinean researchers within PNG and discusses the challenges that limit opportunities for training and development. Some factors that could improve research capacity are; (1) Building a common view to support local researchers among in-country stakeholders, (2) Research and higher education leadership vested in creating opportunities for training from undergraduate to higher degree levels (3) Activate and expand funding schemes to provide assistance to student researchers and build institutional capacity and (4) Promote activities that strengthen research culture such as academic publishing which has declined. While international collaborations have assisted PNG greatly in developing research to current standards, a greater level of commitment and action is needed within PNG institutions to improve and maximize the development of local researchers.

Keywords: local researchers, research development and Papua New Guinea

Introduction

A country's conduct of its own science or research is as much a part of national integrity and independence as its right to make its own political decisions and preserve culture and traditions (Kesteven, 1983). The building and utilization of knowledge within a nation is closely linked to its growth and levels of poverty (Patrick, 2002). Countries that have invested in research and development have experienced greater national and economic growth than those that have not (Acharya & Pathak, 2019). Like other developing nations Papua New Guinea (PNG) faces typical issues of scarcity of funding, inadequate infrastructure and lack of human resources trained in various research fields (Cordova & Yaghi, 2019; Rooney & Papoutsaki, 2004; Vose & Cervellini, 1983). Collaborative research partnerships involving national and foreign participants address some of these barriers by providing funding, expertise and training opportunities. Local researchers engaged in these partnerships may have the opportunity to undertake further postgraduate studies and maximize the outcomes of their participation but due to the lack of support this is often not realized.

Various authors have commented on the significance and state of research development in PNG. Rooney and Papoutsaki (2004) questioned the intention for research in PNG. Garnaut and Namaliu (2010) pointed out in a review of PNG universities that research conducted by indigenous scholars culminating in a body of authoritative text on PNG issues is essential to national building. Novotny and Toko (2015) highlighted progress and challenges of PNG nationals trained in terrestrial ecology research. However, it is necessary to maintain this discourse considering the implications of supporting national or local researchers to attain higher degrees by research and to continue academic and scholarly work for PNG in this present time. While there is a multitude of significant progress that will be forthcoming three key areas of advancement can be broadly identified.

Firstly, the capacity building of local researchers contributes towards realization of PNG's national goals and directive principles, in particular integral human development, equality and participation and national sovereignty and self-reliance which are the premise for national development yet have been overlooked since PNG's independence (Kaiku, 2018). Secondly, this would supply the academic work force for PNG's growing number of higher education institutions which includes eight established universities and a ninth university in the early stages of formation (Post Courier, 2022b). The current output of doctoral degrees from national institutions and from aid scholarships are insufficient to meet future needs. Thirdly, current issues such as climate change and the COVID 19 pandemic are multi-faceted and have widespread societal impacts that can potentially exacerbate other existing social issues

requiring rapid and robust response mechanisms (Hukula, 2020). Active research networks gathering information across systems and sectors of society for higher level policy and evidence based decision making are needed (Hynes et al., 2020). Therefore equipping PNG with expertise to address complex problems that require a multi-disciplinary approach to formulate interventions (Avishek et al., 2012; Waltham et al., 2020) should be a priority. Consequently, the aim of this paper is to continue the dialogue on development and support for local researchers through an informal survey of the present situation, describe the challenges faced and discuss ways forward.

Research infrastructure in PNG and challenges for university led research

In Papua New Guinea established government research institutions support agriculture, health, forestry and public policy through the National Agricultural Research institute, PNG Institute of Medical Research, PNG Forest Research Institute and National Research Institute respectively, all having links to international partners. Independent research organizations are also established to support agricultural practices for oil palm, coconut and cocoa and coffee cash crop production. Non-Governmental organizations currently actively supporting and conducting research are the Piku Biodiversity Network focusing on conservation of endangered species and the New Guinea Binatang Research Centre which conducts research in terrestrial ecology focusing on insect plant relationships and other related research. Research functions are also embedded in public service roles of sector organizations, though at times organizational changes have led to the downsizing or removal of such functions (Kolkolo, 2005) which lead to ad-hoc approaches (Allison et al., 2019; Forsyth, 2015) often involving international collaborators when expertise are not found in PNG. While research institutions and organizations contribute significantly to progressing the creation of knowledge in their respective areas of work, the contribution of national universities which encompasses a broader scope of subject areas needs to improve.

PNG remains under-performing in research across broader areas of study (Baje et al., 2018; Dinnen, 2019; N'Drower, 2014). Therefore, research collaborations are opportunities for baseline country-specific information. Depending on the extent of data collection, "spin-off" projects can be developed alongside core project objectives (White et al., 2018). International support has enabled Papua New Guineans to undertake research studies abroad through scholarships and fellowship programs (<https://www.aciar.gov.au/scholarships/john-allwright-fellowship>), however, in cases where studies can be undertaken in PNG, mentoring and supervisory support from local universities is essential. Therefore, the collaboration between sector organizations, universities and or research institutions must be strengthened with a shared view on providing a framework to support capacity building of local researchers. Importantly this should include a quality control system of sourcing suitable research candidates when needed as this alleviates the human resource burden particularly on public sector organizations to recruit personnel as this can be a cumbersome process delaying project schedules or when further recruitment within an organization is not possible.

The call for indigenizing research in PNG has been discussed over the years (Brydon & Lawihin, 2016; Rooney & Papoutsaki, 2004). Local researchers bring forward Melanesian perspectives (Neuendorf, 2014) and are better placed to develop country specific tools, for example, an indigenous research methodology for the social sciences suited to the Papua New Guinean cultural setting (N'Drower, 2020). However, the focus of national higher education institutions has mainly been to provide teaching and learning environments and less knowledge building through research culminating in a lack of national research personnel and associated infrastructure (Rooney & Papoutsaki, 2004). At times large teaching loads of more than 200 students per course places considerable strain on academics leaving little room to focus on other roles (M.S. Wagambie pers com). With academic staff unable to fully engage in research this leads to greater separation of universities and external research institutions though this situation can be helped by stationing postgraduate students in research institutions and maintaining the involvement of guest lecturers from research institutions at universities (Novotny & Toko, 2015). Nevertheless, the development of research as a key performance indicator for academic staff is recognized (Satter et al., 2013) but training and funding deficiencies are faced by local universities to run postgraduate programs (Akanda et al., 2013). In addition a change in the attitude of

academic staff towards lifelong learning (Lahui-Ako, 2017) may improve affinity to research and supporting students as mentors and advisors. Due to these issues international expertise is often relied upon through collaborative projects to support research development.

Factors that strengthen research development

Research leadership

Progress to build the capacity and volume of national researchers is limited to where institutional leadership exists to support students. Consistent efforts to train local researchers builds national expertise that can take on research supervision roles in future provided trained personnel are absorbed into institutions through employment or engaged externally to mentor and advice students. For example, the New Guinea Binatang Research Centre (NGBRC) prioritizes the academic advancement of local research staff from undergraduate to post graduate levels in terrestrial ecology studies. The NGBRC links students with foreign expertise and enlists the supervisory support from local universities in degree programs where possible, staff are also supported to study overseas for higher degrees, where the Center has contributed to six PNG nationals enrolled as doctoral students at a foreign university (https://www.facebook.com/binatangresearch/?ref=page_internal). Conversely, where training opportunities are few or non-existent research collaborations risk becoming “parachute research” where local staff are used merely as collectors of data and may not be given recognition for their work or are overlooked for useful capacity building exercises such as involvement in the development of publications (Braun, 2021). There is awareness among visiting scientists to ensure appropriate in country regulations are followed and trust is built among collaborating parties (Chin et al., 2019). However equal attention to this issue is also needed from in-country stakeholders to safeguard the interests of local researchers.

Funding

Funding is a major enabler of research development including scholarships and expansion of physical infrastructure. In PNG national funding for specific research-oriented work is captured in the functions of sector organizations and institutions, however, this is limited and does not cater for progressive training and support for local researchers. Lack of research funding in the technological sector in PNG can also impede innovations (Wright, 2016). For a period prior to the formation of the Science and Technology Council Secretariat the Department of Higher Education Research Science and Technology (DHERST) formally known as the Office of Higher Education administered a competitive grant scheme totaling K500, 000 annually. The National Research Agenda developed by the Secretariat of Science and Technology aims to provide funding for in-country research projects in the future (Forsyth, 2016) and may be an avenue to source funds for common expenses such as tuition and stipend for local researchers. Recently the Secretariate has provided funding in excess of K100,000 for research projects at the University of Technology (Post Courier, 2021). Noting that international funding can limit national participation (Erondu et al., 2021) domestic funding schemes focused on national data and information needs become increasingly important and should be administered following successful models used in developed nations such as the Australian Research Council grant scheme where applications are open to all institutions and funds are awarded on merit by a panel of independent researchers (Novotny & Toko, 2015).

It is critical that the administration of funds should be without politization and corruption as these have had detrimental effects on research and development in PNG (Omuru & Kingwell, 2006). Sector organizations or government departments could also consider funding minor research projects at local universities that contribute information for their respective national functions. At times public sector organizations have invested funds into the data collection component of collaborative projects (Nicol et al., 2010), however, funding for post graduate qualifications of local researchers involved in these projects is overlooked. By allocating national funding support for local researchers’ additional gains to research deliverables can be achieved. Appropriation of funds for research could support diverse options such as joint or hybrid post graduate fellowships involving local and foreign universities where researchers would be based locally. This would strengthen the capacity of local university staff to play

a supervisory role, omit the difficulties faced by international students in foreign countries (Khanal & Gaulee, 2019) and avoid the post study issues of re-integration that confront returning scholars who have undertaken studies abroad (Langi, 2014).

Building research culture through peer-review scholarly publishing

A strong research culture is built on scholarly activities including peer-review and publishing of research findings. It can be argued that the representation of nationals as first or last author in publications is an indicator for research development (Mbaye et al., 2019). In many developing countries including PNG the publication process is led by foreign researchers and there is a need for greater exposure to the independent peer review process for local researchers (Singh, 2006). University twinning projects aim to address this skills gap in academic staff (Baird et al., 2015) and similar strategic training and mentorship programs tailored to research participants in the public service (Thomson et al., 2016) would also be beneficial. Successful research publication is a prerequisite for further postgraduate study which should be encouraged. However, avenues to publish research in country are limited as few scholarly journals administered by local universities are active. While new journals in the social sciences and education were recently launched (<https://www.unigoroka.ac.pg/index.php/news/81-first-journal-on-melanesian-perspective-launched-on-line>), scientific publication has fallen behind. The Science in New Guinea Journal and the Papua New Guinean Journal of Agriculture are examples of scientific periodicals that have ceased publication.

The Papua New Guinea Medical Journal published by the Papua New Guinea Medical Society is one of the few scientific journals still in publication although the publication is usually one to two years behind. The peer review process is very slow taking up to 12 months for reviewers to respond to authors causing authors who wish to publish in the PNG Medical Journal to opt for international medical journals. Recently, the Division of Basic Medical Sciences at the University of PNG School of Medicine and Health Sciences has launched the Pacific Journal of Medical Sciences aimed at publishing undergraduate and post graduate research conducted by students at the university. The absence of local publishing avenues limits the practice of academic writing and peer-review and contributes to the under representation of PNG in academic literature (Langer et al., 2004). Involvement in peer-review and publishing activities should ideally be taught and encouraged in undergraduate studies to build a strong foundation for future researchers. In addition, constraints to publishing internationally include high publication fees such as those charged by open access journals which can be addressed through funding schemes set up to support scholarly publication. Poor command of English at the university level may also be contributing to lack of interest in writing and publishing.

Taking ownership

International collaborative research partnerships have contributed positively to the upskilling of local researchers and have instituted relationships that remain potential opportunities for further growth (Turpin et al., 2008). These partnerships especially involving the public sector create an environment where research, practice and capacity building interact integrating entities that otherwise operate in a fragmented manner (Senge & Kim, 2013). Donor agencies and international research partners objectively support capacity building in the recipient country (Bartlett, 2018), however, national institutions and organizations must also take ownership of this to advance the development of Papua New Guineans (Lingam et al., 2014; MacDonald, 2008; Velho, 2002).

Universities can begin with leveraging the current relationships between PNG universities and universities abroad for further opportunities to train local researchers addressing critical data and information gaps for PNG. Existing links include the University of Papua New Guinea (UPNG) and the Australian National University through its Development Policy and other programs in the college of Asia and the Pacific Centre as well as UPNG's strong ties with the Cairns institute at James Cook University. In addition, six PNG universities are members of the Pacific Islands Universities Research Network (PIURN) where collaborations could also be fostered. Taking ownership may in the first

instance require national universities to revisit mission and vision statements and form progressive pathways to engage in research with in-country and external stakeholders (Baird & Kula-Semos, 2018).

Pathways Forward

While there is recognition of the importance of research development as a foundation for evidence-based decision making the challenges faced by national universities impede progress and need to be addressed as a high priority. Possible first steps given considerable funding constraints could involve identification of specific needs that could be addressed through relatively low-cost interventions, for example, establishing voluntary mentoring programs linking trained external researchers with university faculties that need additional support. Secondly, specific training of academics for research supervision and writing workshops to encourage scholarly writing and peer-review could be some measures within the capacity of universities to take in the short to medium term.

These approaches will require universities to have a paradigm shift moving away from a purely teaching role to having dual teaching-research roles. Such changes will require universities to make internal organizational structural changes such as ensuring academic staff have paid protected time allocated for research. Research output by universities could also be used by the government as a performance indicator for additional university funding. Other approaches to strengthen research development such as greater funding commitment from the government, policy directives and upgrading of research facilities as articulated in the recommendations by Garnaut and Namaliu (2010) will take more time and concerted effort from stakeholders.

Although important areas of progress must be also highlighted such as an increase in postgraduate enrollment at the university of Technology that has also allocated K1 million from the university's own budget to support research (Post Courier, 2022a). In addition, the National Higher Education and Technical Education Plan (NHETP) 2021-2030 produced by the Department of Higher Education Research Science and Technology (DHERST) includes a focus on fostering a productive culture of research and development throughout the higher education and technical education sector to support national social and economic development. In the same token the department is strengthening ties with the National Research Institute to meet the aims of the NHETP 2021-2030 through a memorandum of understanding (DHERST, 2022).

Pathways to strengthening research capacity and training have been realized in other countries. In Vietnam scientific research capacity was expanded through a global science approach fostering mentoring relationships between research-strong institutions and local emerging scholars (Cordova & Yaghi, 2019). An example from Malawi describes the establishment of a research support center to provide both individual and institutional support through a phased approach over four years (Gomo et al., 2011). Among low to middle income countries that have attempted to institutionalize and strengthen research, important factors for long term success were equitable partnerships, strong local leadership, higher education policies that support change, continued funding and incentivizing research (Vicente-Crespo et al., 2020). These experiences serve as models that PNG could employ or modify the application of such frameworks to suit local conditions.

Conclusion

While progress has been made towards the training and development of local researchers in PNG further progress is required as research and innovation form a cornerstone of a developing society (Post Courier, 2019). There are barriers to research though these are not insurmountable and existing institutional linkages and processes can be strengthened to address the many societal issues facing PNG at this present time. The effectiveness of efforts to improve research development in PNG can be measured using indicators one of which should be an increase in the quantity and quality of scholarly output by Papua New Guinean scholars in future. Ultimately, building the capacity of local researchers should be taken seriously as it is one way of achieving overarching national goals that remain a conceptual vision of prosperity until acted upon and institutionalized (Kaiku, 2020). The consequence

of inaction, however, is a gross lack of national expertise and country specific information fundamental to support national planning and development processes.

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