Reflections on Research and Research Intelligence in a Private Higher Education in South Africa: A Collaborative Autoethnographic Study

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Abstract : Globally, higher education remains a highly competitive environment, where striving towards good institutional reputation, as well as academic and research stature is high on the agendas. As such, research intelligence is fast becoming a topic of discussion. Measuring progress and success is a strategic and data-driven process. This paper reports on a collaborative autoethnographic study on a research capacity development project. It further explores the importance of the management of research towards creating, managing and utilising data-driven research intelligence in a private higher education institution in South Africa. Reflecting on this project, stretching over a five-year period, the study aims to shed light on further implementations by exploring how available data could translate into research intelligence. The study considers the role of research intelligence by comparing it to the strategic value of strategic and business intelligence. It explores how reliable research intelligence could inform and support strategies in developing a maturing academic environment, and how current and potential solutions could be applied for strategic decision making. The study adds knowledge to an under-researched area in higher education in South Africa. It offers recommendation for more effective management of research data and research intelligence.

Keywords: Private higher education, Research culture, Research intelligence, Maturity models, Data analysis, Collaborative autoethnography

1. Introduction and Background

Higher education remains a highly competitive environment (Engelbrecht, Van Greunen & Ramgovind, 2023), where striving towards academic stature and reputation is high on the agendas. As such, research intelligence (RI) is fast becoming a topic of discussion. Measuring progress and success is a strategic and data-driven process. Albeit the subject of much debate and criticism (Iping et al, 2022; McKenna, 2023), research metrics and university rankings are at the core of this competition. Despite the prevailing opinions, it is significant that private higher education institutions (PHEIs) in South Africa are currently ranking significantly lower than their public counter parts on most ranking systems (Van Wyk & Mostert, 2014). Historically, private higher education in South Africa do not have the same research intensity and research competitiveness as compared to the research- and comprehensive public universities (Deacon, 2014; Sithole, 2024).

For PHEIs in South Africa, this competition has escalated with the recent changes to the Higher Education Act (Act 101 of 97, as amended), as it opened the possibility for PHEIs to attain university status, and to use their research output to their competitive advantage. In 2024 the Department of Higher Education and Training (DHET) issued a Draft Policy on the requirements to qualify. The report states:

> *"A University: must undertake research and produce knowledge contributing to the national development needs and international scholarship and demonstrate a culture of sustained scholarship evidenced in peer reviewed academic publications which inform teaching and learning in all its academic fields". (DHET, 2024: 36)*

This invariably requires a higher research and research output profile, with evidenced data on research trends to inform policies and strategies. It begs PHEIs to do forecasting and strategic planning, beyond traditional research administration and information management.

2. Contextualising This Study

In 2019 the PHEI in this study launched a project to develop its research capacity and research culture to drive research output. The two researchers were both involved in the planning and roll-out of this project. Using research output towards competitive advantage is not yet an established culture among PHEIs, but the recent changes in legislation created the impetus for further research and initiatives.

2.1 Review of Literature

PHEI in South Africa's core business is that of teaching and learning through which income is generated (Engelbrecht *et al.,* 2023) given the increase in student numbers due to the lack of capacity within public higher education institutions (Pramjeeth, Engelbrecht, Mooney & Ramgovind, 2022). As noted earlier by Van Wyk and Mostert (2014) limited research has been produced by PHEI, however since the possibility of being called a university, the largest PHEI are driving research initiatives to ensure they meet the DHET's criteria of a university. Considering the increasing competitive landscape of the PHEI landscape in South Africa, it's essential for PHEI to understand the importance and relevance of research to elevate the institutional strategic imperatives and meet required standards and targets as determined by the DHET.

2.2 Background to Business Intelligence and Research Intelligence

In a corporate environment, business intelligence (BI) is generally explained as the use of technologies, applications, and practices for the collection, integration, analysis, and presentation of business information to advise strategy (Cordosa & Su, 2022). It involves the gathering and processing of data from various sources within and outside an organization. Equating RI to BI can be useful, but also complex, yet comparable. Research output and scholarly communication generated in higher education institutions (HEIs) are seen as valuable knowledge capital and must be managed for a return on investment. Moreover, research is essential to add knew knowledge for further innovation for the greater good and the development of society.

There is a difference between research administration and RI. Research administration manages the research processes, and research data management looks at past inputs, while RI uses various sources of information to predict and plan for the future. Invariably this is a data-driven process involving the systematic collection of reliable data, analysis, and application of information to support decision-making, strategic planning towards achieving a competitive advantage. RI relies on the availability of purpose-driven data analytics and technologies that can be obtained from systems such as research management systems and research repositories.

Data that will inform HEI research progress include publication counts and research output quality measurement, citation counts, altmetrics, indexes and impact factors. Finding or developing information systems capable of addressing all these areas can be challenging and costly (Stivilia, Lee and Han, 2020). Actionable insights on the BI could assist strategic decision making, support and drive research output (Cordosa & Su, 2022), not only in public universities, but also in PHEIs. This information can aid funding and budgeting and could potentially improve research impact.

Ultimately, the aim of using BI and RI is to reach a state of institutional maturity (Duarte & Martins, 2013; Cordosa & Su, 2022). There are several frameworks to explain institutional maturity, of which Gartner's model are well-suited for an academic environment. Maturity models are applied across industries, and it interrogates the strength and weaknesses of initiatives taken to increase competitiveness and measure intelligence by analysing available data (Cordosa & Su 2022). It considers organisational maturity across multiple dimensions. Maturity models are established means to measure the strengths and weaknesses of an organisation as well as its intelligence analytics and initiatives (Belghith et al, 2021).

2.3 Research Information Management

Information and data on intelligence are obtained from several sources, including the relevant automated systems to manage information. Stivilia, Lee and Han (2020) state that systems to manage research are critically important for collecting and analysing research information for strategic decisions related to accreditation, identifying research strengths towards institutional reputation. A Research Management System (RIMS) is a comprehensive software platform designed to support the administrative, financial, and collaborative aspects of research activities within institutions such as universities, research organizations, and funding agencies. These systems could be rather costly and requires expertise. Effective RIMS is essential for research institutions, enabling them to manage their research portfolios efficiently, ensure compliance, enhance collaboration, and make informed strategic decisions. As well as creating networking opportunities for further collaboration.

2.4 Research Analytics and Impact Assessment as a Source for Research Intelligence

Iping et al (2022) remind that research impact assessment is a well-established practice, and bibliometric indicators use quantitative approaches to citation impact analysis for benchmarking purposes. The Science Citation Index was introduced in in the early 1960s, resulting in the use of metrics to measure scholarly communication and evaluate research output quality. However, Wolf, Hall and Robertshaw (2021) warn that despite these early developments, HEIs' research management and analysis of research output is still in its

infancy. Matkovic, Pavlicevic, and Tumbas (2017) concurred in their studies and confirmed that HEIs lag in the practical application of process management. They explain that Gartner's Maturity and Adoption Model at the hand of six phases of organisational maturity, each phase explaining where an organisation is at any given time towards business process maturation and excellence:

- Phase 1 – Acknowledge Operational Inefficiencies
- Phase 2 – Become Process-Aware
- Phase 3 – Establish Intraprocess Automation and Control
- Phase 4 – Establish Interprocess Automation and Control
- Phase 5 – Establish Enterprise Valuation Control
- Phase 6 – Create an Agile Business Structure (Matkovic, Pavlicevic, & Tumbas, 2017, 6895)

It is mainly governments and funding agencies using these intelligence and indicators, which leaves a strategic information gap of institutional RI within universities.

3. Research Design

The research design for this study is collaborative autoethnography (CAE). Miyahara and Fukao (2022) hail CAE for its transformative qualities, creating a community of advance scholarship, and become empowered within a social context. CAE has its roots in two long-standing approaches to inquiry and meaning making: namely autobiography and ethnography (Ellis, Adams & Bochner, 2011). Edwards (2021) posits a deep emergence in self-experience and reflection. Roy and Uekusa (2020:386) argue that collaborative autoethnography as a qualitative method can be used to gain insight and a rigorous understanding of experiences.

The authors used reflection and dialogue to explore experiences pertaining to RI practices. This design enables researchers to explore the topic of RI. Narrative analysis was used to interpret and meaning of the rich data collected. Narrative research is a technique or research method that uses accounts and discussion activities as instruments of inquiry. It examines the ways in which people construct meaning through their narratives, emphasizing the content, structure, and context of these stories (Poerwandari, 2021). Miyahara and Fukao (2022) share that reflexive researchers are aware of their own role during the research process when they bring their own previous experiences, personal perspectives, theoretical knowledge, and aspirations that may impact the research results.

This study followed a concurrent or sequential systematic approach, combining the perspectives, experiences, findings, towards making sense of RI towards improved decision making and strategies. Using this design, qualitative data were collected through several sessions of online as well as face-to-face collaborative dialogues and included pre- and post-dialogue reflective writings.

4. Paricipant Profiles

As part of the Research and Postgraduate Department at a PHEI in South Africa, the two participants were involved in developing a research culture.

5. Data Collection and Analysis

Data for the current study have been collected over an approximate period of 4 years, starting from 2019 to early 2024, making this a longitudinal study. From the collected data themes were identified. Audio recordings assisted participants to recap and further reflect on data, whereafter post-dialogue reflective writing commenced.

6. Findings and Discussions

Leading up to the exploration of the status, value and necessity of RI, the two participants had to engage and reflect critically on research in PHEIs.

6.1 The Status of Research in Private Higher Education in South Africa

Research within the PHEI sector is new in the sense that pre-2019 most individuals within the PHEI conducted research and participate in activities for own interest. PHEIs in South Africa are not subject to government subsidy based of research outputs. As the PHEI is maturing as an organisation and as more postgraduate programmes are offered, a renewed focus on research output emerged with the first doctoral programme being accredited in 2019. This, coupled with the amendments of the Higher education Act (Act 101 of 1997) which emphasises research activities begged for a strategic revision of research management. Part of the research

capacity building plan to stimulate research output, was allowing for research incentives. PHEIs do not get any monetary incentives for research output like their public counterparts. It remains critical that any institution conducting research must do so with the aim of producing new knowledge and contributing to the existing disciplines as the main objective over and beyond the monetary invectives provide by institutions or government for public HEI.

6.2 Developing a Research Culture

The capacity development initiatives established by the institution was developed and implemented by the core research project team managed by the Dean of Research and Postgraduate Studies and a group of research managers across the institution driving and promoting the research imperatives of the institution. As a rule, PHEIs in South Africa focus more on teaching and learning, and this study could explain the lack of understanding and importance of research within the PHEI under investigation. Over the past years, there has been a deliberate attempt to promote, develop and support emerging and established researchers. The understanding and importance of research is not yet fully understood by the PHEI management and leadership. Therefore, challenges in terms of time, capacity, and outputs are not at all times a priority in operations. However, the leadership did approve the research development project which clearly stated research output targets for the PHEI. This was a strategic move to work towards meeting the requirements for university status. The PHEI therefore appointed key research incumbents between 2019 and 2021 distributed strategically throughout the organisation to establish, promote and advance the research culture as set out in the project plan.

6.3 Supporting Research Creation Activities

The competitive driver for the PHEI is to be the first private university and to offer incentives for increased research outputs in a strategic plan aimed at developing research capacity through various institutional activities. The PHEI does not get any government funding.

Research initiatives included monthly research workshops aimed at unpacking and the technical research methodological matters for staff was implemented; monthly research coffee chats; mentor and mentee programmes; monthly scholarly seminar series, writing clinics, writing retreats, peer review of research manuscripts prior to submission for publication, establishing research projects with novice researchers, postgraduate study support and development, eSymposiums, and the annual teaching and learning symposium. All these initiatives are aimed at the development and enhancement of the academic's research skills and competencies to enable successful publications.

The PHEI has a very lucrative and competitive research incentive programme based on a point system for its academics. The institution started with a R15 000 (no-taxable) research incentive for every 1 research point accumulated that subsequently increased to R25 000 in 2024. This was further substituted by a R20 000 (taxable) cash incentive for those who published 1 research output point per academic year. In addition to these incentives the institution is carrying all publication, language editing and statistician analysis fees for researchers within the institution. In addition, research and postgraduate study leave opportunities are offered, with the sabbatical leave proposal being accepted at Senate in 2022, for a maximum of 6 months. The effectiveness of this programme is yet to be determined and outputs obtained from researchers needs to be carefully analysed.

As the project progressed new needs were identified. It was evident that research literacies and research statistical skills and programmes, academic writing workshops, research methods training, drafting of synthesised and well-argued literature reviews and promoting collaborative research publications aimed at trans-and intra disciplinary areas. What is lacking from a capacity development perspective is the needs for more statistical support, academic writing workshops, methodological training, drafting of a synthesised and well-argued literature review and promoting collaborative research publications aimed at trans-and intra disciplinary areas.

6.4 Initial Analysis: Strengths and Weaknesses

Initial data analysis on the progress of the project was done manually. The initial Research and Scholarship Capacity Building Plan (RSCBP) that was setup in 2019 were extremely ambitious with a 0.2 research output target per academic in year one, with an increase of 0.2 year-on-year until 1.0 point is achieved per academic in 2024. It soon became evident that capacity of academics, emphasis on teaching and learning and academic operations, institutional challenges with a new student system and overall energy levels during the 2021 – 2022 academic years that these ambitious goals will not be achieved. The team responsible for leading out the research imperatives across the institution embarked on a realistic and capacity focused research output plan

that informed the change in policy to retain 0.2 outputs per academic until 2023 where after it will increase to 0.4 in 2024; 0.6 in 2025; 0.8 in 2026 and 1.0 in 2027.

A critical assessment of the past 3 years revealed that the researchers are motivated by the incentives more than the active contribution towards the discipline field and delivering impactful, constructive, and developmental research outputs. A key finding from this reflection is that researchers are not concerned about their research output impact, rather how incentives can be generated to promote personal activities of travelling to internationally well-known destinations. This is not unique to the PHEI as the public higher education institutions as noted at the CHE's Annual Conference in 2024 discussed the nuance of publish for incentives versus the publication of outputs that contributes significantly to the discipline in question. Incentive based research programmes are therefore placing a question on the volume and quality of research outputs published within the South African higher education sector.

One of the challenges that emerged from the project was the need for technology and systems to manage all research data management, with the computational capability to derive actionable reports for strategic decision making. Initial priorities were not for costly research management systems, but rather developing the human capital of emerging researchers. As a result, initial systems included manual processes.

6.5 Creating Competitive Strategies and Policies

The first research policy was drafted and approved in 2019. The policy is informed by the DHET Research Outputs Policy (2015) and DHET Policy on the evaluation of creative outputs and innovations produced by public higher education institutions (2017; 2021). It allowed for a developmental approach, where emerging researchers received recognition for research output that would traditionally be considered as non-accredited research output. It also encouraged further upskilling of academic staff to complete doctoral qualifications. It has since been adjusted as the research profile has improved. Annual reviews of the research incentive policy indicates that the continuous reflection on best practices, additional support and financial assistance for research is considered to promote an active research culture. An unexpected result of incentivising research output has been that the researchers are more motivated by the monetary incentives than the contribution of new evidenced knowledge in their disciplines.

The RSCBP was approved by Senate in 2019. The aim of the policy is to formalise the planned research outputs targets, research capacity initiatives, areas for institutional development, main institutional focus areas, institutional research SWOT analysis, and targets for the promotion of academics to obtain their Doctoral degrees. In 2022 the RSCBP was changed with an emphasis on establishing a proactive, engaged and supportive research culture that is not secondary to the rest of the institutional activities. The promotion of research is further enhanced through the establishment of a Post-

6.6 Bench Marking and Analysis of Available Data

Annual reviews of the research incentive policy indicates that the continuous reflection on best practices, additional support and financial assistance for research is considered to promote an active research culture.

The institutional targets are informed by the DHET Research Outputs Report (2021) where the lowest ranking public higher education institution obtained a 0.21 research output per capita for the 2019 academic year. The institution under investigation obtained research output points of 0.06 equating into 19 publications in (2020); 0.07 with 59 publications (2021); 0.09 totalling 81 publications (2022); 0.19 a significant 143 publications (2023). As the institution establishes its research culture and relevance, research output increased annually with a significant increase of 0.10 points between 2022 and 2023. The minor increase in research outputs between 2020 and 2022 is possibly attributed to the COVID-19 pandemic that focused academic's attention on online teaching.

The project succeeded in shifting the focus from research incentives for non-accredited scholarship activities to an increase of publishing in journals and conference proceedings considered to be of a better academic quality equating accredited research output. This is partially due to the institution actively driving research through the appointment of research associates, research capacity development programmes, research incentive programme and aspirations to become the first private university in South Africa.

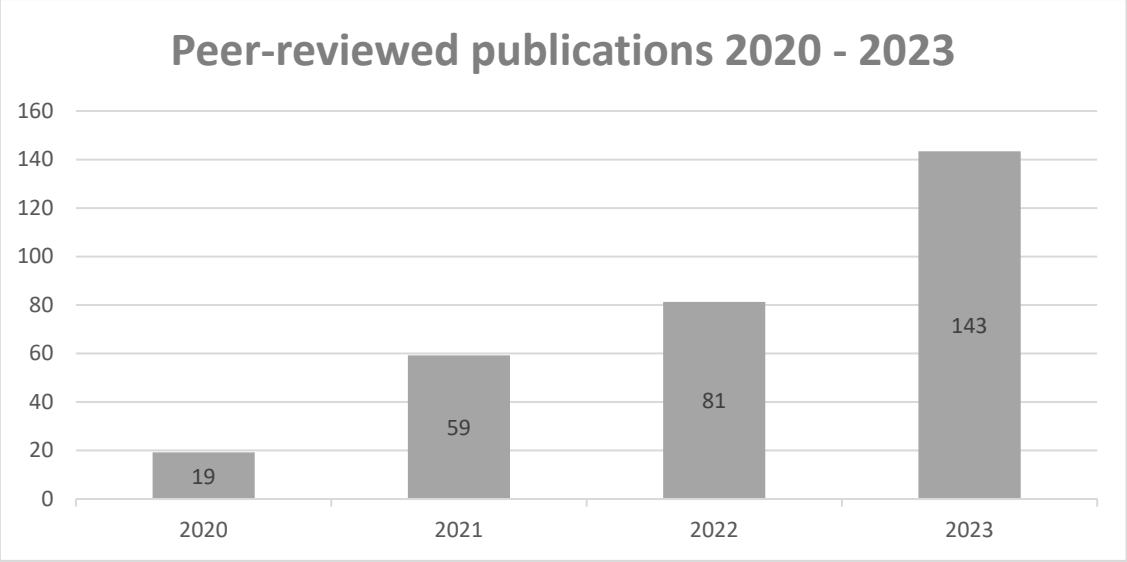

Figure 1: Peer-reviewed publications 2020 -2023

Figure 2 shows that the initial expenses claimed for research activities by researchers were few in 2021, predominantly due to the COVID-19 restrictions on travel. However, for 2022 and 2023 it is evident that the researchers are utilising their research incentives for research activities more so than three years ago.

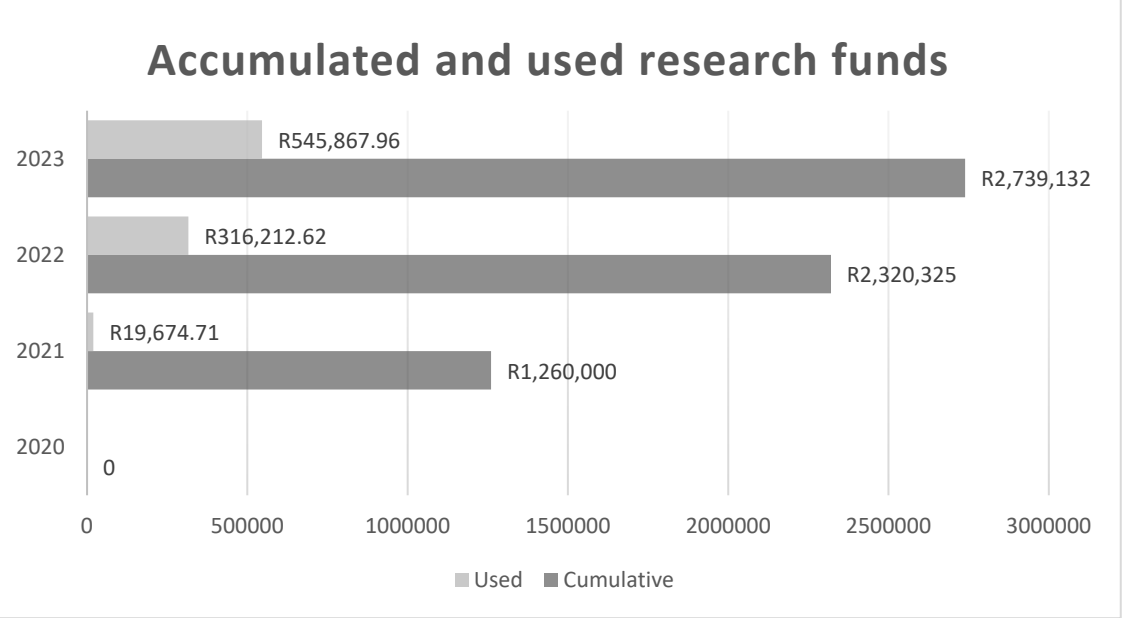

Figure 2: Accumulated and used research funds 2020 – 2023

* The institution has its own research tracking and research incentive platform designed to monitor publication points and research incentive allocations.

With the expenses in mind, it is important that PHEI are mostly concerned about costs incurred and wanting to establish the return on investment on such cost. Annually the research budget is contested and debated as huge amounts for research incentives and support is requested to enable the emerging and experienced researchers to establish a research profile for the institution.

The project resulted in availing an adequate research budget. The current research costs are less compared to public higher education institutions. What has been evident and also explained to the leadership is that research expenses are similar to the marketing budget of any organisation, the return-on-investment (ROI) is not immediate, but with time the reputation is established and that's when the ROI is significant, but only over time 5 – 10 years at least with regards to research.

Over the past years it was established that there are four main elements that underpin the management of research, which will form a source for RI of the PHEI under study.

6.7 Towards Improved Research Intelligence and Data Analytics

The concept of research analysis was not at first fully comprehended. The value and importance came to the fore when reliable data were needed to convince the leadership of the requirements to succeed in developing and sustaining a research culture. Duarte and Martins (2013) posit that HEIs are mostly autonomous organisations, but complex. The project used Microsoft SharePoint to store and organise folders and information on research profiles and output. As a beginning, this platform had sufficient data analytics capabilities. Although the velocity of initial research data could be managed in the beginning of the project, research production is a cumulative process and analysis will become more intricate over time. As Duarte and Martins (2013) warned, difficulties in procedure systematisation in this study was achieved, but the growing workflow analysis, evaluation, and optimisation will invariably be seen in information systems designs. The need for data and data management systems to evaluate the effectiveness of these steps soon became apparent, and with this the need to relook available systems and tools to derive the requisite RI. Workflow optimisation would also require attention.

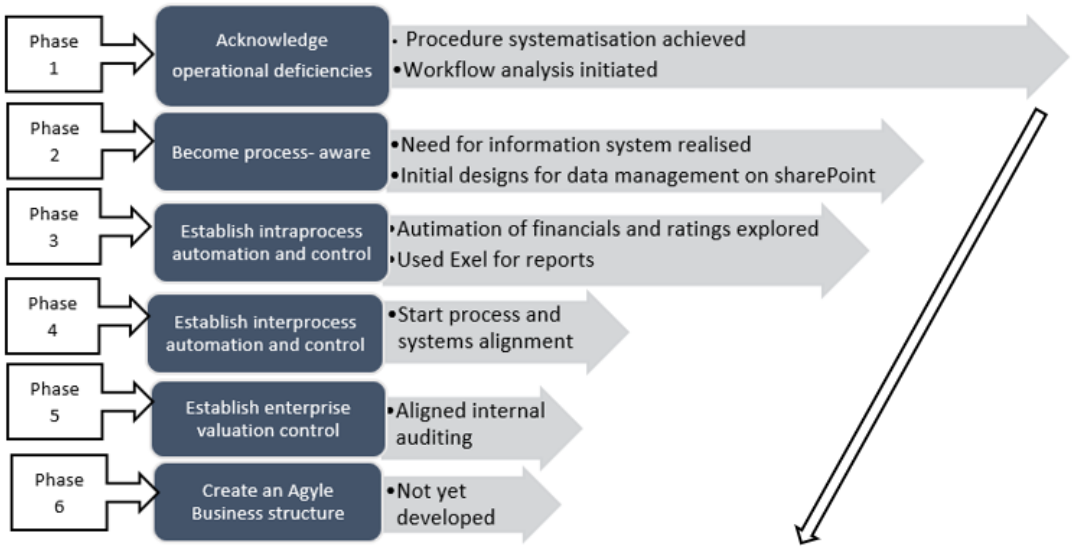

Figure 3: Mapping of Research Process Management Maturity based of Gartner's Six Phase (Adapted from Matkovic, Pavlicevic, & Tumbas (2017)

In figure 1 the findings of this study are mapped according to Gartner's six phases for success in business process management towards maturity. The processes of managing research management processes, and associated data are not yet optimised or sophisticated.

The SharePoint platform is not the only source of research related data. The PHEI also implemented an open access research repository in 2015, using the DSpace open-source platform. Furthermore, the PHEI is the publisher of a DHET accredit journal, requiring journal impact and metric analysis. Revisiting the definition of business intelligence, this study has seen the value of obtaining and analysing data from different sources for informed decision making and workflow optimisation.

The findings of this study concur with the study of Wolf, Hall and Robertshaw (2021) stating that much needs to be learnt about RI and the value of maturity models. A key finding was that a sociotechnical approach to build on the initial the success of the project, where the concepts of institutional maturity and RI are clearly understood and utilised for competitive advantage in expanding the research function of the PHEI to transition from an institution of higher learning to having full university status, as defined in the Higher Education Act (Act 101 of 1997, as amended). Although the findings of CAE studies cannot readily be generalised, it is believed that HEIs, and in particular PHEIs could benefit from experiences shared in this study. Looking at research output as capital, and managing as knowledge assets will align with business models of PHEIs.

7. Recommendation

The recommendations of the two participants who were responsible for this project is that there should be a further investment in understanding and implementing analytic frameworks and maturity models, in ensuring longevity and sustainable growth of the research capacity development initiative of this PHEI. The model in Figure 1 by Wolf, Hall and Robertshaw (2021) encapsulates the areas that the project should focus on in progressing from phase 2 to phase 3 of maturity phases as explained by Matkovic, Pavlicevic, and Tumbas (2017, 6895). With the knowledge and understanding of maturity models further roadmaps can be planned towards improving practices vital for using RI to the advantage of the PHEI and its competitive strategies. Maturity levels guide the evolution of an organisation from a state in which practices are poorly defined and incoherent to a level of innovation and continuous optimisation. A further recommendation is that an understanding and awareness of the metrics of research impact for both the PHEI and the individual academics must be realised.

Figure 4: An example of an analytics framework towards research intelligence (Wolf, Hall & Robertshaw 2021)

8. Conclusion

This study reports on the initial implementation of a research department in a PHEI in South Africa. Through a period of self-reflection, planning and observations, the two participants gathered data collaboratively on the nature and importance of RI, and its role in developing a research culture in the PHEI. The challenges and opportunities in establishing an understanding of all the components of RI are shared. The value of analysing available date to inform strategic decision making is underpinned. The value of this study lies in creating a road map for HEIs to fully understand the complexities as well the importance of understanding RI and making this the foundation of research management. There is a paucity in reported literature on the nature of RI and its importance in HEI governance. This study will add to this body of knowledge.

Not only are universities reliant on sound research process systems, but Donner (2023) furthermore warns that publicly funded HEIs are increasingly required to make use of credible research data management systems (RDMs), to manage data produced by individual research studies. This is a further development that the PHEI understudy has not yet considered, and requires further research. The study concluded that RI plays a pivotal role in research support and constructive research capacity development.

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