RESEARCH ARTICLE

Enhancing Research Practices at the University of Limpopo: A Benchmarking Study against Peer Institutions

Mabila TE [1]
Sepadi MD [2]
Legodi LT [3]
Banda S [4]
Senyatsi INK [5]
Ntho T [6]

[1] Director - Research Administration and Development, University of Limpopo
ORCID: 0000-0003-1435-5219
[2] Senior Lecturer: Department of Educational Studies, University of Limpopo
ORCID: 0000-0002-7537-5566
[3] Senior Lecturer: Department of Cultural and Political Studies, University of Limpopo
ORCID: 0000-0002-5310-5493
[4] Senior Lecturer: Accountancy, University of Limpopo
ORCID: 0000-0001-5494-7740
[5] Lecturer: Department of Physiology and Environmental Science, University of Limpopo
ORCID: 0000-0002-2237-8114
[6] Lecturer: Department of Nursing Science, University of Limpopo
ORCID: 0000-0001-7088-8357

Abstract

This article presents a benchmarking analysis of the University of Limpopo (UL) against peer institutions, including the University of Pretoria (UP), the University of the Witwatersrand (Wits), the University of Johannesburg (UJ), and Rhodes University. To be specific, the focus for this benchmarking was extensively on research outputs, citation impact, financial transparency, and stakeholder engagement amongst others. This was done so as to identify areas where UL can improve its research practices and align itself with leading research-intensive institutions in South Africa.

The aim of this article is to provide strategic recommendations for enhancing UL's global visibility, research output, and financial accountability, ultimately contributing to its role in addressing both local and global challenges. Comparative benchmarking methodology, drawing on Comparative Institutional Analysis (CIA) and Benchmarking Theory was utilised. In addition, AI-assisted tools and manual reviews were used to identify key performance indicators (KPIs) across the selected institutions. The results indicate that UL excels in addressing local societal issues, particularly in healthcare, agriculture, and rural development, but lags behind in global research visibility, citation impact, and financial transparency compared to institutions like UP and Wits. While UL's community engagement is robust, its limited industry partnerships and lack of advanced data visualization tools hinder its ability to commercialize research and attract external funding. The analysis also reveals that UL's research outputs, though locally relevant, are not sufficiently published in high-impact international journals, limiting its global academic influence.

The implications of this study suggest that UL can improve its global visibility and academic standing by increasing international collaborations, adopting best practices in financial transparency, enhancing its data visualization capabilities, and fostering stronger industry partnerships. These strategies will not only enhance UL's research outputs and citation impact but also align its practices with global standards, ultimately strengthening its contributions to both local and international academic communities.

Keywords: *Benchmarking, University of Limpopo, Research Outputs, Global Visibility, Financial Transparency, Stakeholder Engagement, Research Impact*

Introduction

The importance of research excellence in higher education cannot be overstated, as it forms a critical part of an institution's contribution to societal development, innovation, and academic reputation. For Historically Disadvantaged Institutions (HDI) like the University of Limpopo (UL), aligning with global research standards is crucial for increasing visibility and competitiveness. This article examines the results of a benchmarking study aimed at evaluating UL's research practices against peer institutions in South Africa, identifying opportunities for growth, and recommending strategies for improvement.

The primary objective of this benchmarking exercise is to evaluate the quality and structure of the University of Limpopo's research report in comparison to leading research-intensive institutions in South Africa (SA) whose focus areas closely align with those of UL. The University of Limpopo primarily focuses on rural development and sustainability-related research. The specific objectives of this exercise are (i) to identify the strengths of the University of Limpopo's research report (ii) Identify best practices that can be adopted by the University of Limpopo (iii) Highlight areas of improvement in UL's research reporting and output and to (iv) Recommend a standardized template that can be used at both faculty and university levels to enhance research disclosures and practices. By achieving these objectives, the analysis will guide the enhancement of research practices and disclosures at the University of Limpopo to align it with peer institutions (Elliot, Hawley & Rock 2024).

Suffice to say, the importance of research outputs as an indicator of academic excellence has been extensively studied. According to Altbach & De Wit (2020), universities in the Global South often face challenges related to limited visibility due to lower access to global research networks. Admittedly, Leydesdorff et al. (2018) argue that international collaborations can increase a university's visibility by improving citation indices and global reach. When making sense of the importance of citations as indicators of the reach and influence of academic work, Adams (2013) highlights that universities with extensive international collaborations tend to have higher citation rates (Wahan, Asfahani & Funi 2023). This is especially true for institutions like Wits and UP, where participation in global consortia enhances citation impact. Harzing (2016) points out the role of open-access publishing in increasing citation rates for institutions with limited resources.

Another key aspect that was taken into consideration in this article is financial transparency in higher education. There is no gainsaying that the latter is critical for attracting external funding and maintaining trust among stakeholders. Eisner (2017) emphasizes that detailed financial reporting enhances an institution's credibility and helps attract international grants. Institutions like UJ and UP lead the way by providing transparent financial reports. Smith and Adams (2019) argue that transparency fosters a culture of accountability, essential for maintaining high ethical standards in research.

Similarly, advanced data visualization tools improve stakeholder engagement and accessibility to research findings. Kirk (2016) points out that visual storytelling in research reports can significantly enhance the way information is communicated. Institutions like Wits and UJ use interactive dashboards to make research data more accessible. According to Few (2019), infographics and dashboards can simplify complex data, making it easier for both academic and non-academic audiences to interpret research results. Lastly, engagement with stakeholders, including industry, government, and the community, is essential for translating research into societal impact. Etzkowitz & Zhou (2017) argue that universities need to foster industry collaborations to bridge the gap between academic research and its practical application. Institutions like UJ have demonstrated the benefits of such partnerships through commercialization of research outputs. McCarthy (2018) emphasizes the importance of community-based research in addressing local societal needs, particularly in rural and under-resourced areas.

The authors of this article employed Comparative Institutional Analysis (CIA) as a theoretical framework as it allows for the examination of institutional differences across contexts. According to Hall & Soskice (2001), CIA provides a structured way of analyzing how institutions develop strategies in response to local and global challenges. In this article, CIA helps explain the differences in research practices between UL and institutions like Wits, UCT, and UP, whose research niches and resources differ but offer valuable lessons for improvement.

Furthermore, the usage of Benchmarking Theory emphasizes the use of comparative data to identify best practices and areas for improvement. Camp (1989) defines it as the process of measuring one's performance against industry leaders. In this context, the theory serves as a foundation for comparing UL's research outputs, citation impact, financial transparency, and stakeholder engagement with high-performing universities.

Methodology

The benchmarking approach was designed to compare UL's research outputs and practices with those of leading research-intensive institutions in South Africa, including the University of Pretoria (UP), the University of the Witwatersrand (Wits), the University of Johannesburg (UJ), and Rhodes University. The benchmarking methodology focused on identifying best practices in research disclosure and performance from these institutions and applying them as comparative benchmarks for UL. The benchmarking criteria were identified using a combination of artificial intelligence (AI) tools and a comprehensive review of the annual research reports from the selected sample institutions (Rawas 2024). The process involved AI-Assisted Criteria Identification wherein AI was used to scan and analyze the research reports from the sample institutions to identify common themes and metrics that constitute best practices in research reporting. The AI reviewed aspects such as research outputs, citation impact, financial transparency, stakeholder engagement, and international collaborations. Secondly, Manual Review of Disclosures in conjunction with the AI analysis of sampled universities was conducted. This step ensured that AI-identified criteria were aligned with best practices found in high-performing institutions, allowing for the development of robust benchmarking criteria.

In terms of the university selection criteria, issues such as Reputation as Research-Intensive Institutions for institutions chosen (UP, Wits, UJ, Rhodes University) who are recognized for their research excellence and alignment with national and international research priorities was noted. Their inclusion in the benchmarking study provides a reliable comparison for evaluating UL's performance. Also, the selected universities share a focus on sustainability, rural development, and addressing societal challenges, making them appropriate benchmarks for UL, which has similar research priorities.

Results

Using Comparative Institutional Analysis (CIA), we observe that UL's research outputs reflect its focus on addressing local societal challenges, particularly in healthcare, agriculture, and rural development. This aligns with its mission as a rural-based institution. However, when applying Benchmarking Theory, UL falls short in comparison to institutions like the University of the Witwatersrand (Wits) and the University of Pretoria (UP), which demonstrate significantly higher research output and publication in high-impact journals. Wits, for instance, has a stronger focus on publishing in globally recognized journals, which is reflected in its higher output of 3241 publications. This gap suggests a need for UL to adopt the research output strategies employed by its peers to increase its global visibility. CIA provides insight into how institutional priorities, such as UL's emphasis on rural development, shape research outputs. However, Benchmarking Theory highlights that, despite UL's strong local relevance, adopting best practices in international collaboration and high-impact publishing could significantly improve its global research footprint (Chiu 2024).

In terms of citation impact, CIA indicates that UL's lower citation impact is partially due to its focus on local and regional issues, which naturally attract fewer citations from the global academic community compared to peers with more globally focused research agendas, such as UP and Wits. Benchmarking Theory shows that these institutions have succeeded in increasing their citation impact by engaging in global research networks and publishing in widely cited journals. The application of Benchmarking Theory here suggests that UL needs to emulate the practices of institutions like Wits and UP by increasing international collaboration and targeting publications in journals with broader international audiences. This would enhance UL's research visibility and citation impact, aligning it with global standards while maintaining its local relevance.

When unpacking UL's research impact, it is safe to say the institutions' contribution to local and national development, especially in rural health and sustainable agriculture, is well-documented through CIA. This approach confirms that UL's strengths lie in addressing societal challenges within its immediate context. However, Benchmarking Theory reveals that UL lags its peers in terms of global research impact. Peer institutions, such as Rhodes University, have successfully aligned their research with global challenges, such as environmental sustainability, allowing them to achieve both local and international impact. CIA helps explain the divergence in research focus between UL and its peers, but Benchmarking Theory suggests that UL could broaden its impact by aligning some of its research initiatives with global challenges. By doing so, it can retain its local focus while increasing its relevance in the international academic community.

It is also worth mentioning that the Benchmarking Theory highlights that UL's financial transparency is moderate compared to its peers. Institutions like UJ and UP provide detailed breakdowns of financial allocations, which enhance stakeholder trust and attract external funding. According to CIA, the institutional context at UL, which includes financial limitations and a historical lack of resources, plays a significant role in its lower levels of financial transparency. To enhance financial transparency, Benchmarking Theory suggests that UL adopt best

practices from UJ and UP by providing more granular financial reports. This could improve UL's accountability and attract more external funding, thereby increasing its capacity for research growth.

Regarding data presentation and visualization, the theory employed indicates that the use of advanced data visualization tools, such as interactive dashboards and infographics, is a best practice among institutions like Wits and UJ. These tools make research data more accessible and engaging for both academic and non-academic audiences. CIA shows that UL, with its more traditional reporting practices, could benefit from adopting these advanced visualization methods to improve stakeholder engagement. Applying Benchmarking Theory, UL should invest in modern data visualization tools to enhance its reports' accessibility and comprehensibility. This would not only align UL's reporting practices with those of its peers but also increase the impact of its research findings by making them more digestible to a broader audience.

The CIA reveals that UL excels in community engagement, particularly in rural areas, reflecting its institutional mission to address local societal needs. However, Benchmarking Theory shows that peer institutions like UJ have gone a step further by developing strong industry partnerships, which UL currently lacks. These partnerships have allowed institutions like UJ to commercialize their research and secure additional funding streams. To enhance stakeholder engagement, Benchmarking Theory suggests that UL adopt best practices from its peers by actively pursuing industry collaborations. By doing so, UL can increase its applied research outputs and attract more external funding, further strengthening its position as a leader in community-engaged research.

Discussion

The findings from this benchmarking study reveal several key insights into the research practices of the University of Limpopo (UL) when compared to its peer institutions. By applying Comparative Institutional Analysis (CIA) and Benchmarking Theory, the differences in institutional strategies, challenges, and opportunities become evident, providing a framework for understanding where UL excels and where it needs to improve (Bouwer, Koster & Van den Bergh 2023). Through Comparative Institutional Analysis (CIA), it is clear that UL's research focus is heavily shaped by its mission to address local and regional challenges. This mission leads to significant contributions in areas such as healthcare, agriculture, and rural development. However, in comparison to institutions like the University of the Witwatersrand (Wits) and the University of Pretoria (UP), UL produces fewer research outputs, particularly in high-impact journals. CIA shows that UL's institutional context, including its geographic focus and available resources, shapes its research outputs. This local focus limits its citation impact, as research on regional issues is less likely to be cited by the global academic community.

Benchmarking Theory reveals that peer institutions like Wits and UP have adopted best practices that significantly enhance their research visibility. These institutions participate in international research collaborations and target high-impact journals, leading to higher research outputs and citation metrics. The theory suggests that UL can adopt similar practices, without deviating from its mission, by increasing its involvement in international research networks and broadening the reach of its publications. These steps would enhance both UL's research output and citation impact while still aligning with its local objectives.

Financial transparency is critical for institutional credibility and attracting external funding, as demonstrated by Benchmarking Theory. Institutions like UP and the University of Johannesburg (UJ) excel in providing detailed financial disclosures, which foster trust among stakeholders and increase opportunities for research funding. UL's current financial reporting practices are moderate, with less detail provided compared to its peers. CIA helps to explain this difference by considering UL's historical financial limitations and its context as a historically disadvantaged institution. The limited resources and historical inequities contribute to its challenges in adopting the same level of transparency as its peers.

However, Benchmarking Theory suggests that UL can improve its financial transparency by adopting best practices from institutions like UP and UJ. By providing more detailed reports that break down research funding sources and expenditures, UL can increase its accountability and attract more external funding. This improvement would not only help UL align with the financial transparency standards of leading institutions but also enhance its ability to secure grants and partnerships, further boosting its research capacity.

The study shows that UL's data presentation, primarily through basic tables and charts, is less sophisticated than that of its peer institutions, such as Wits and UJ, which use advanced data visualization tools. Benchmarking Theory indicates that the use of interactive dashboards, infographics, and other visual storytelling techniques significantly enhances stakeholder engagement. Institutions that adopt these practices make their research data more accessible, not only to academic audiences but also to policymakers and industry stakeholders.

CIA provides insight into why UL may have adopted a more traditional approach to data presentation. As a rural-based institution with fewer resources, UL may have limited access to the advanced tools and training required for more modern visualization techniques. Nevertheless, Benchmarking Theory suggests that UL can

enhance its data presentation by investing in these tools. By doing so, UL can increase the visibility of its research, make its findings more digestible to a wider audience, and improve stakeholder engagement, particularly in terms of community and industry partnerships.

UL's strength in community engagement is a direct result of its institutional mission, which emphasizes rural development and societal impact, as highlighted by CIA. The university has successfully built strong relationships with rural communities, addressing local societal needs through research in health and agriculture. However, Benchmarking Theory reveals that peer institutions like UJ and Rhodes University have gone beyond community engagement by establishing strong industry partnerships. These collaborations have led to the commercialization of research and the acquisition of additional funding, areas where UL currently lags.

Benchmarking Theory suggests that UL could adopt similar practices by expanding its stakeholder engagement strategy to include industry partners. This would not detract from UL's community-based focus but would enhance its research impact by allowing for the commercialization of findings and the development of applied research projects that attract industry funding. By building stronger industry partnerships, UL can diversify its funding streams, increase its research outputs, and further contribute to regional and national development.

Way forward

Through Comparative Institutional Analysis (CIA), it becomes clear that UL is heavily focused on local and regional issues, which makes it distinct from some of its peers that have a more global research focus. This local relevance is a strength, but Benchmarking Theory suggests that adopting best practices from institutions like Wits, UP, and UJ can help UL align more closely with global research standards without compromising its local mission. UL can maintain its emphasis on addressing local challenges while increasing its participation in international research networks, enhancing financial transparency, improving data presentation, and building industry collaborations. These changes, guided by Benchmarking Theory, would allow UL to improve its global visibility, increase its citation impact, and expand its funding opportunities.

Study limitations

The study focused on benchmarking UL against a select group of South African universities, including the University of Pretoria (UP), University of the Witwatersrand (Wits), University of Johannesburg (UJ), and Rhodes University. While these institutions are relevant comparators, the exclusion of international universities or those from other regions limits the generalizability of the findings. By focusing solely on South African institutions, the study may overlook global best practices that could be relevant for enhancing UL's research visibility and impact on a wider scale.

The study relied on publicly available research reports and financial disclosures from the benchmarking institutions. The availability and depth of data varied among the institutions, with some providing more detailed reporting than others. This lack of standardization in reporting practices across institutions could lead to inconsistencies in the comparison of research outputs, citation impacts, and financial transparency. As a result, some areas of comparison might not fully capture the nuances of each institution's research practices.

The benchmarking criteria focused primarily on quantitative metrics, such as the number of research outputs, citation impact, and financial transparency. While these metrics provide useful indicators of research performance, they do not capture qualitative aspects, such as the societal impact of research, the quality of research collaborations, or the effectiveness of stakeholder engagement. These qualitative factors could provide a more holistic understanding of UL's research contributions and areas for improvement. While artificial intelligence (AI) tools were used to identify benchmarking criteria, the AI's ability to fully interpret and analyze contextual differences between institutions is limited. Although AI-assisted analysis helped identify common trends and best practices, it may not have captured the subtleties of institutional cultures, resource constraints, or strategic priorities, particularly in a historically disadvantaged institution like UL.

The study does not fully account for external factors that influence research performance, such as the availability of external funding, institutional support for research, and government policies. These factors may play a significant role in shaping research outputs and citation impact but were not directly examined in this study. As a result, the study may oversimplify the challenges UL faces in improving its research practices. The data used in this study was collected from the most recent annual research reports (2023) and financial disclosures available at the time of analysis. However, research practices and outputs can evolve rapidly, and the data may not reflect the most current developments at each institution. As a result, the findings of this study may become outdated if significant changes occur in the research landscape of the benchmarking institutions.

Through the lens of Comparative Institutional Analysis (CIA) and Benchmarking Theory, this benchmarking study highlights key areas where the University of Limpopo can improve its research practices. While UL excels in

addressing local societal challenges, it must adopt best practices from its peers to enhance its global visibility, research output, financial transparency, and stakeholder engagement.

By increasing international collaborations, improving financial reporting, adopting advanced data visualization techniques, and fostering industry partnerships, UL can align more closely with the research practices of leading institutions in South Africa. These improvements will not only enhance UL's research outputs and citation impact but also strengthen its position as a leader in both local and global academic communities.

Conclusion

The Comparative Institutional Analysis (CIA) and Benchmarking Theory applied in this study provide a comprehensive framework for understanding how UL's research practices compare to those of its peer institutions. While UL excels in local societal impact, it must adopt best practices from its peers to enhance its global visibility, research output, financial transparency, and stakeholder engagement.

By increasing international collaborations, improving financial reporting, adopting advanced data visualization techniques, and fostering industry partnerships, UL can align more closely with the research practices of leading institutions in South Africa. These improvements will not only enhance UL's research outputs and citation impact but also strengthen its position as a leader in both local and global academic communities.

References

Adams, J. (2013). The fourth age of research. *Nature*, *497*(7451), 557-560.

Bouwer, R., Koster, M., & Van den Bergh, H. (2023). Benchmark rating procedure, best of both worlds? Comparing procedures to rate text quality in a reliable and valid manner. *Assessment in Education: Principles, Policy & Practice*, *30*(3-4), 302-319.

Chiu, T. K. (2024). Future research recommendations for transforming higher education with generative AI. *Computers and Education: Artificial Intelligence*, *6*, 100197.

de Wit, H., & Altbach, P. G. (2023). International higher education for the future: Major crises and post-pandemic challenges. *Change: The Magazine of Higher Learning*, *55*(1), 17-23. Camp, R. C. (1989). Benchmarking: The search for industry best practices that lead to superior performance. *Quality Press*.

Almagtome, A., Shaker, A., Al-Fatlawi, Q., & Bekheet, H. (2019). The integration between financial sustainability and accountability in higher education institutions: an exploratory case study. *Integration*, *8*(2), 202-221.

Elliott, D. R., Hawley, Z. B., & Rork, J. C. (2024). Rethinking racial diversity benchmarks in higher education. *Journal of Diversity in Higher Education*, *17*(3), 297.

Etzkowitz, H. (2017). The triple helix: University–industry–government innovation and entrepreneurship. Few, S. (2019). Information dashboard design. *Analytics Press*.

Soskice, D. (2004). Varieties of capitalism: the institutional foundations of comparative advantage. *Sociologický časopis/Czech Sociological Review*, *40*(6).

Harzing, A.-W. (2016). Publish or perish: The impact of open access journals on citation counts. *Scientometrics*.

Kirk, A. (2019). Data visualisation: A handbook for data driven design. Leydesdorff, L., Wagner, C., & Bornmann, L. (2018). The field-specific institutionalization of research. *Journal of Informetrics*.

McCarthy, M. (2018). Engaging communities through academic research. *Journal of Community Engagement and Scholarship*.

Rawas, S. (2024). ChatGPT: Empowering lifelong learning in the digital age of higher education. *Education and Information Technologies*, *29*(6), 6895-6908.

Smith, L. M., & Adams, R. (2019). Enhancing accountability in academic institutions. *Higher Education Review*.

Waham, J. J., Asfahani, A., & Ulfa, R. A. (2023). International Collaboration in Higher Education: Challenges and Opportunities in a Globalized World. *EDUJAVARE: International Journal of Educational Research*, *1*(1), 49-60.