

Enhancing research visibility and SDG alignment through metadata and AI: a case study from the University of Pretoria

Marguerite Nel

28 August 2025

Make today matter



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA



Context and motivation

- Importance of universities in achieving SDGs
- The challenge: lack of structured documentation and discoverability of SDG-related research
- Libraries as enablers of information access and sustainability



Project Overview

- **Objective:** Link institutional research output to SDGs and develop a platform that facilitates the discoverability and retrieval of UP's evidence on the SDGs:
 - 2022 - Pilot project
 - Jotello F Soga Library (Faculty of Veterinary Science)
 - 2024 – registered as DLS Flagship project
- **Platform:** UPSpace (DSpace-based institutional repository) and LibGuide (SpringShare)

2022-2023
VET

Pilot project

2023+
All faculties

Metadata for other
faculties

March 2024

New Subject
guide

May 2024

Faculty pages

November
2024+

Launch and
marketing

Marketing
Roadshows
Events

Key Strategy:

Enhance discoverability of UP research under the 17 Sustainable Development Goals (SDG) categories

Key priority:

- To create a pathway for the discoverability of UP's evidence and contribution to the Sustainable Development Goals (SDGs)

Key Actions:

1. Update metadata on the institutional repository to link research output (articles, theses) and activities to the SDGs
 - *Retrospective editing of items: 2015 – 2022*
 - *From 2023 – part of the workflow in the item submission process*
2. Enrich and complement keywords to strengthen alignment with SDGs and to improve reporting
3. Create a subject guide to host the links to the SDG links, and to serve as a platform for the sharing of SDG-related information
4. Create awareness of the university's role in the implementation of the SDGs and promote the alignment of research to the SDGs

Role of metadata specialists

- Metadata as the backbone of discoverability
- Skills applied: classification, controlled vocabularies, metadata tagging
- Library platforms and tools (Institutional repository, LibGuides, cataloguing tools, etc.)
- Relationships with Faculties



Workflow for metadata tagging

- Understanding SDGs and relevant keywords
- Reviewing and organising content (2015–2022)
- Tagging articles, theses, and Faculty activities
- Use of Dublin Core schema and “dc.subject.other” field for SDG tags
- Updated keywords (Scopus)
- Publishing links via LibGuide

dc.subject.other		
	Engineering, built environment and information technology articles SDG-04	
	SDG-04: Quality education	
	Engineering, built environment and information technology articles SDG-09	
	SDG-09: Industry, innovation and infrastructure	

Browse by subject



[ETD Self Submission](#)

[Communities & Collections](#)

[Browse USpace](#) ▾

[Home](#) / [Browse by Subject](#)

Browsing by Subject, starting with "sdg"

Search the repository

[Browse](#)

Filter results by typing the first few letters

[← All browse results](#)

Now showing 1 - 20 of 21



[SDG indicator data](#) 1

[SDG-01: No poverty](#) 627

[SDG-02: Zero hunger](#) 767

[SDG-03: Good health and well-being](#) 4110

[SDG-04: Quality Education](#) 68

[SDG-04: Quality education](#) 2764

[SDG-05: Gender equality](#) 695

[SDG-06: Clean water and sanitation](#) 289

[SDG-07: Affordable and clean energy](#) 730

[SDG-08: Decent work and economic growth](#) 974



Link to SDG Subject guide (LibGuide)

The screenshot displays the Department of Library Services website. The top navigation bar includes links for 'Visit', 'Hours', and 'My Library Account', along with a search bar. Below this, a secondary navigation bar contains 'Home', 'Libraries', 'Units', 'Services', 'Search', 'News & Events', 'Find Help', 'Contact Us', and 'About'. The 'Search' dropdown menu is open, listing various resources. The 'Sustainable Development Goals @ UP' option is highlighted with a red box, and a red arrow points to it from the 'Search' menu header. Below the navigation, there are tabs for 'EVERYTHING', 'BOOKS', and 'JOURNALS', and a search input field with the placeholder text 'Find books, articles, music and more...'. An 'Advanced Search' link is also visible.

Department of Library Services

Visit Hours My Library Account Search for...

Home Libraries Units Services Search News & Events Find Help Contact Us About

- > WorldCat Discovery (Catalogue)
- > Accredited Journals
- > Databases
- > e-Book Collections
- > e-Dictionaries
- > e-Journals
- > e-Newspapers
- > e-Reference Books
- > Google Scholar
- > Past exam papers
- > Sustainable Development Goals @ UP
- > Subject guides
- > UP Journals
- > UP Research Data Repository (Figshare)
- > UPSpace (Institutional Repository)

EVERYTHING BOOKS JOURNALS

Find books, articles, music and more....

Advanced Search

SUSTAINABLE DEVELOPMENT GOALS @



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA



Sustainable Development Goals

The Sustainable Development Goals (SDG's) are a universal call to action to end poverty, protect the planet and improve the lives and prospects of everyone, everywhere. The 17 Goals were adopted by all UN Member States in 2015 and are intended to be achieved by the year 2030.

The 2030 Agenda for Sustainable Development provides a global blueprint for dignity, peace and prosperity for people and the planet, now and in the future.

Information About the 17 SDG's



Core Information Resources about the SDGs

- Sustainable Development Goals Knowledge Platform
- Official SDGs and Indicators (United Nations)
- United Nations SDG website
- Sustainable Development Goals (UN Development Programme)
- SDGs | WHO
- UNICEF and the Sustainable Development Goals
- World Health Statistics 2020 visual summary
- SDG Guide
- SDG Global Database
- South African SDG Hub
- SDG Related Research at UP



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

SDG Related Research at UP

Click on each image to see all UP research about the relevant SDG.





SDG Related Research @ the UP Faculty of Engineering, Built Environment and Information Technology (EBIT)



End poverty in all its forms everywhere: Text text text

EBIT articles (Open access)
EBIT theses (Open access)
EBIT activities



End hunger, achieve food security and improved nutrition and promote sustainable agriculture: Text text text

EBIT articles (Open access)
EBIT theses (Open access)
EBIT activities



Ensuring healthy lives and promoting well-being at all ages: Text text text

EBIT articles (Open access)
EBIT theses (Open access)
EBIT activities



Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all: Text text text

EBIT articles (Open access)
EBIT theses (Open access)
EBIT activities



Browsing by Subject "Engineering, built environment and information technology articles SDG-03"

Search the repository

 Browse

Filter results by typing the first few letters

← All browse results

Now showing 1 - 20 of 52



ABS performance evaluation taking braking, stability and steerability into account

(Inderscience, 2017) Hamersma, Herman Adendorff; Els, Pieter Schalk; herman.hamersma@up.ac.za

Extensive research on the design and development of antilock brake systems has been done in the past. ABS has been developed not to reduce stopping distance, but rather to stop as quickly as possible whilst maintaining some directional stability and steering control during hard braking. There is however not a single, quantifiable, scientific method in which

▼ Show more



Achieving sustainable development goals two and three : role of academic libraries

(University of Nebraska-Lincoln Libraries, 2020-08) Mbagwu, Francisca Chinyeaka; Lyaka, Martha; Kiwelu, Jackline E;

PURPOSE : This study investigated the role academic libraries play in the achievement of sustainable development goals 2 and 3 DESIGN/METHODOLOGY/APPROACH : An exploratory approach through an extensive review of related literature and case study was adopted for this study. Discussion on the efforts made by academic libraries in Federal University of

▼ Show more



An appraisal of air quality, thermal comfort, acoustic, and health risk of household kitchens in a developing country

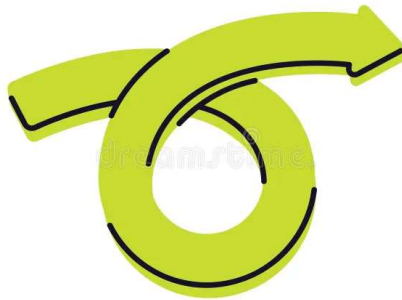
(Springer, 2022-04) Giwa, Solomon O.; Nwaokocho, Collins N.; Sharifpur, Mohsen; mohsen.sharifpur@up.ac.za

Please read abstract in the article.

Challenge

May 2025:

- Upgraded from DSpace 6.4 to DSpace 7.6
- New “look and feel”
- “dc.description.sdq” field
- Dropdown menu to select relevant SDGs (Item submission)



← Back to Results

Developing a COVID-19 impact assessment model for the education sector



Files

[Machingura_Developing_2025.pdf \(458.12 KB\)](#)

Date

2025-03

Authors

[Machingura, Tinotenda](#)
[Muyavu, Ashleigh Tatenda](#)

Publisher

Emerald

Abstract

PURPOSE : This study aims to develop an impact assessment model that can be used by educational institutions to investigate the effect of Covid-19 on the performance of students and educators.
DESIGN/METHODOLOGY/APPROACH : A systematic literature review was used to identify the models used to assess the impact of Covid-19 in the education sector. Most of these models used structural equation modelling (SEM), and hence, the developed conceptual model was based on SEM. The model was validated through a pilot study conducted in Zimbabwe's education system. Questionnaires were sent to different educational institutions, and 69 responses were obtained, and they were analysed utilising SMART PLS 4.
FINDINGS : The models in the literature are all different and hence create confusion in finding the best model to use. The authors developed a standard measurement model with lockdown, curfew, online learning and performance latent variables. The pilot study results indicated that curfew, lockdown and online learning affect performance.
RESEARCH LIMITATIONS/IMPLICATIONS : The study focused on developing a measurement model for the education sector; however, this model cannot be used for other industries, such as manufacturing and agriculture, without further research.
ORIGINALITY/VALUE : The models in the literature concentrated more on online learning. This study included lockdown and curfew, as they cannot be left out when examining the effects of Covid-19. This allows educational institutions to fully examine the impacts of Covid-19 on the performance of students and educators.

Keywords

COVID-19 pandemic, Coronavirus disease 2019 (COVID-19), Conceptual model, Education system, Online learning, Lockdown curfew, Structural equation modelling (SEM)

Sustainable Development Goals

SDG-04: Quality Education
SDG-03: Good health and well-being

Citation

Machingura, T. and Muyavu, A.T. (2025), "Developing a COVID-19 impact assessment model for the education sector", Quality Education for All, Vol. 2 No. 1, pp. 245-264. <https://doi.org/10.1108/QEA-08-2024-0075>.

URI

<http://hdl.handle.net/2263/103106>



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Item submission

..

Dissertation/Thesis/Mini Dissertation

***Department ***

Select the department that this thesis / dissertation is linked to

***Faculty ***

Select the Faculty this theses / dissertation is linked to

***Availability ***

Select whether the item is restricted/unrestricted.

***Sustainable Development Goals (SDGs) ***

Clear selection

- SDG-01: No poverty**
- SDG-02: Zero Hunger
- SDG-03: Good health and well-being
- SDG-04: Quality Education
- SDG-05: Gender equality
- SDG-06: Clean water and sanitation

Integration of AI Tools

- AI-assisted keyword and SDG identification
- Tools used: AI models for semantic analysis and keyword extraction
 - ChatGPT, MS 365 Copilot, Gemini, Perplexity AI
- Benefits: improved accuracy, reduced manual workload, scalability



Provide relevant SDGs covered in this study: Smulders, S, Stiglingh, M, Franzsen, R & Fletcher, L 2016, 'Determinants of internal tax compliance costs : evidence from South Africa', Journal of Economic and Financial Sciences, vol. 9, no. 3, pp. 714-729.

URI

<http://hdl.handle.net/2263/58520>

For the study by **Smulders et al. (2016)** on *Determinants of internal tax compliance costs: evidence from South Africa*, the most relevant **Sustainable Development Goals (SDGs)** would be:

Relevant SDG	Reason for Inclusion
SDG 8: Decent Work and Economic Growth	Understanding and reducing internal tax compliance costs can improve the ease of doing business, encourage entrepreneurship, and support sustainable economic growth.
SDG 10: Reduced Inequalities	Insights into tax compliance costs can inform fairer tax policy and administration, reducing disproportionate burdens on smaller businesses or disadvantaged groups.
SDG 16: Peace, Justice and Strong Institutions	Research contributes to more efficient, transparent, and accountable tax systems, strengthening public institutions and governance.

If you need a concise sentence for a report:

This study supports SDG 8 (Decent Work and Economic Growth) by addressing factors that influence the ease of doing business, SDG 10 (Reduced Inequalities) by highlighting potential disparities in tax compliance burdens, and SDG 16 (Peace, Justice and Strong Institutions) by contributing to the development of fair and efficient tax systems.

Do you also want me to **map the keywords from the article** to these SDGs for a metadata tagging example? That would align with your earlier SDG-tagging work.

Structured mapping (AI assisted)

SDG Mapping Table

Study Determinant	Relevant SDG(s)	Rationale
Turnover (Business Size)	SDG 8: Decent Work & Economic Growth	Insights into the tax burden on small businesses support economic growth, entrepreneurship, and job creation.
Sector	SDG 9: Industry, Innovation & Infrastructure; SDG 8	Understanding sector-specific burdens helps tailor policy and infrastructure support for sustainable industrial growth.
Legal Form (e.g., sole proprietor)	SDG 10: Reduced Inequalities	Highlights how business structure impacts tax burdens—informing policies to level the playing field for smaller or informal businesses.
Age of Business	SDG 8; SDG 10	Young businesses may face disproportionate burdens—addressing this helps ensure inclusive economic opportunities.
Education & Accounting Knowledge	SDG 4: Quality Education	Strong link between knowledge/education and tax compliance, supporting lifelong learning and capacity-building.
External Service Provider Usage	SDG 16: Peace, Justice & Strong Institutions	Reliance on intermediaries may reduce transparency. Streamlining compliance strengthens institutional efficiency and fairness.
Accounting System Type	SDG 9; SDG 16	Enhancements in digital systems can improve infrastructure and institutional functioning.
Overall Tax Burden on Small Business Sector	SDG 8; SDG 10; SDG 16	Reducing compliance burdens fosters inclusive growth, equity, and stronger governance.

Suggested Metadata Tagging (Dublin Core “dc.subject.other” Field)

You can tag the study with SDG-relevant keywords in your metadata like this:

php-template

Copy Edit

```
<dc:subject.other>SDG 4 – Education and Capacity Building</dc:subject.other>
<dc:subject.other>SDG 8 – Decent Work and Economic Growth</dc:subject.other>
<dc:subject.other>SDG 9 – Industry, Innovation, and Infrastructure</dc:subject.other>
<dc:subject.other>SDG 10 – Reduced Inequalities</dc:subject.other>
<dc:subject.other>SDG 16 – Peace, Justice and Strong Institutions</dc:subject.other>
```

Optionally, each tag can include more specificity:

php-template

Copy Edit

```
<dc:subject.other>SDG 4: Education – accounting knowledge</dc:subject.other>
<dc:subject.other>SDG 8: Economic Growth – small business turnover</dc:subject.other>
...
```

This approach enhances discoverability not just by SDG number but also by thematic detail.

Impact and feedback

- Faculty response: positive reception and increased engagement
- Benefits: enhanced visibility, reporting, and research planning
- Identification of research gaps and opportunities



Conclusion and future directions



- Libraries and metadata specialists as SDG enablers
- AI as a catalyst for innovation in academic libraries
- Acknowledgement of team members and institutional support
- Continuous updates and AI refinement
- Collaboration with other SDGs–related initiatives

More information

Nel, MA & Breytenbach, A 2023. 'Linking veterinary science faculty research and activities to the UNESCO sustainable development goals: the role of the library', presented at the 18th International Open Repositories Conference (OR2023), 12-15 June, Lord Charles Hotel, Somerset West, Cape Town. [<http://hdl.handle.net/2263/91275>]

Moreana, M, Maritz, M & Makhera, P 2023, 'When metadata management meets UN SDGs: highlighting the role of the University of Pretoria libraries', presented at the LIASA 2023 Annual Conference held at the Lord Charles Hotel, Somerset West from 10 – 13 October 2023. [<http://hdl.handle.net/2263/92975>]

Nel, M.A., Makhera, P., Moreana, M.M. and Maritz, M. (2024), "Linking faculty research output and activities to sustainable development goals: opportunities for metadata specialists", Digital Library Perspectives, Vol. 40 No. 3, pp. 392-403. <https://doi.org/10.1108/DLP-01-2024-0015>

Thank you!



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA