

# **Open Access vs. Subscription-Based Publications: Evaluating Research Impact and Visibility, and Assessing the Impact of Publishing Models on IR Content at BUAN**

**Presenter**

**Lebogang Seleka-Gopolang**

**Botswana University of Agriculture and Natural Resources (BUAN)**

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+267 365 0 100



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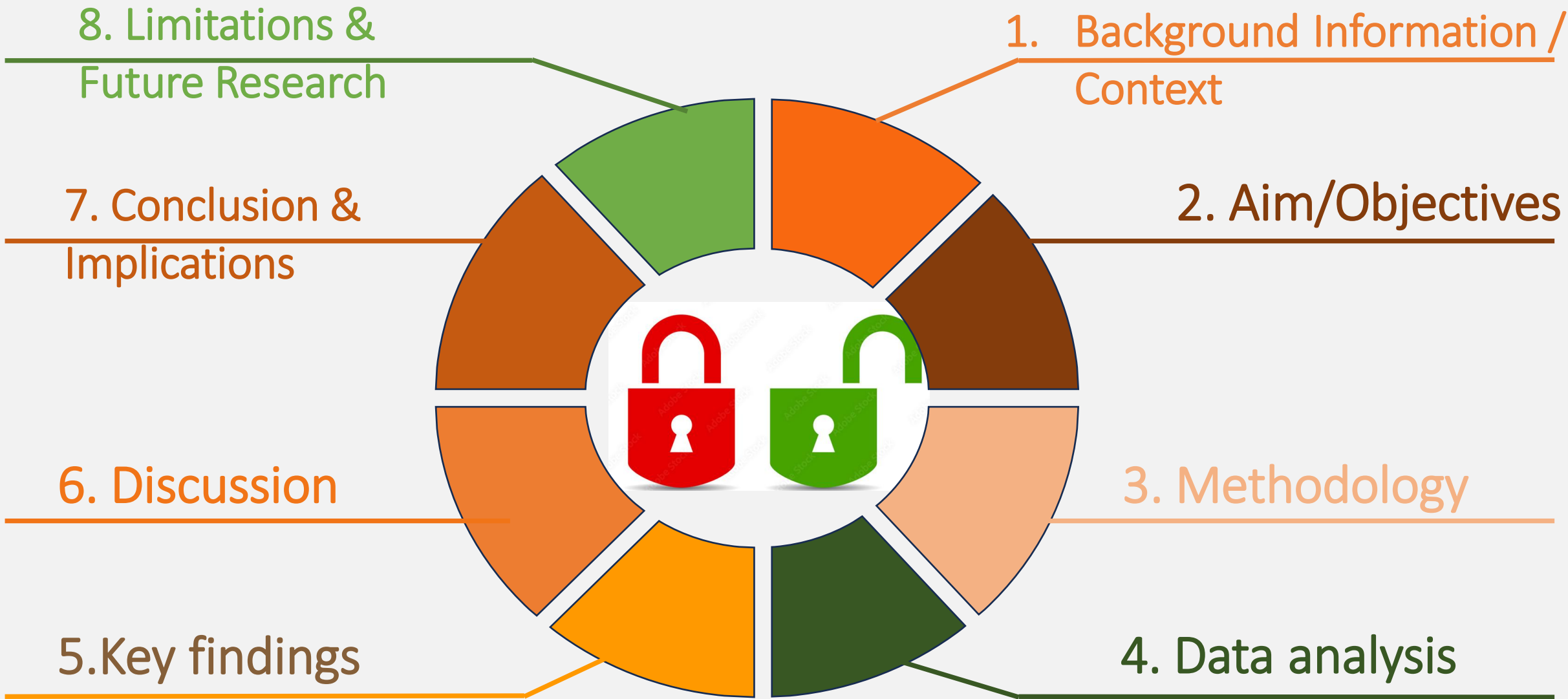


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info@buan.ac.bw





# Background Information / Context

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- **Open Science:** making scientific processes and findings freely available to all (Moher & Cobey, 2021)

“Open science aims at making scientific knowledge openly available, accessible, and reusable” (UNESCO)

- **The Open Science movement** seeks to make scientific research, data, and dissemination accessible to all levels of society, professionals, and the public

- Uphold the **FAIR** (Findable, Accessible, Interoperable, and Reusable) and the **CARE** (Collective benefit, Authority to control, Responsibility, and Ethics) principles, which are designed to complement the FAIR principles in enabling access to knowledge and research (Wilkinson, 2016)

# Background Information / Context

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- OS can be classified into major discussion topics or tenets such as Open Access (OA) publishing, Open Data sharing, open reproducible research, open infrastructures, open engagement

## **Open Access Publishing**

Making peer-reviewed research freely available to readers

## **Open Data Sharing**

Providing raw research data for transparency and reuse

## **Open Reproducible Research Research**

Enabling verification and validation validation of scientific findings

## **Open Infrastructures**

Building accessible platforms and tools for scientific scientific collaboration

## **Open Engagement**

Involving diverse stakeholders in the scientific process

# Background Information / Context

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- **Open Access:** universal **free access to information** and **unrestricted use of electronic resources** for everyone (UNESCO)
- Free availability of scholarly output on the public Internet domain for different lawful usage, without financial, legal, or technical barriers (Budapest Open Access Initiative, 2012).
- OA movement can be traced to the 2000s
  - Advocates for the provision of free and full access to research output to the public at large through encouraging publishing in open-access journals and uploading research output onto open-access institutional repositories
  - **Budapest Open Access Initiative (2002)**, the **Bethesda Statement (2003)**, and the **Berlin Declaration (2003)**
- Open Access Publishing
  - Breaks the barriers imposed by subscription-based journals and pay walls
  - High impact factor in terms of citations
  - Publications reach a wider audience – no access costs
- OA challenges
  - High Article Processing Charges (APC) associated with some OA publishing models,
  - Finding a balance between the publishers' needs for revenue and the demands from researchers, libraries, and funders for equitable open access
  - The evaluation of the true impact of OA publishing on research visibility and institutional reputation.

# Background Information / Context

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- Publishing models: Open Access vs Subscription-based models
- **Open Access:** differentiated by who pays, where the articles are hosted, and the licensing agreements
  - Gold – APC, published article is made freely available immediately
  - Green – may be made available immediately or after an embargo period (determined by the publisher)
  - Hybrid – subscription-based with selected articles on OA. Double-dipping, publishers earn double from subscriptions and APCs
  - Diamond – no APCs, focus on promoting accessibility
- **Subscription-based**
  - Articles behind paywalls
  - Pay subscription fees to access the publications (readers or institutions/libraries)

# Background Information / Context

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**Institutional Repositories** - web-based searchable database of scholarly materials that aims to collect, preserve, and make accessible the institutional intellectual output, e.g., published articles, technical reports, theses and dissertations, data sets, conference proceedings...



Copyright and licensing - necessary when sharing scholarly output to ensure that permission to use one's work is clear

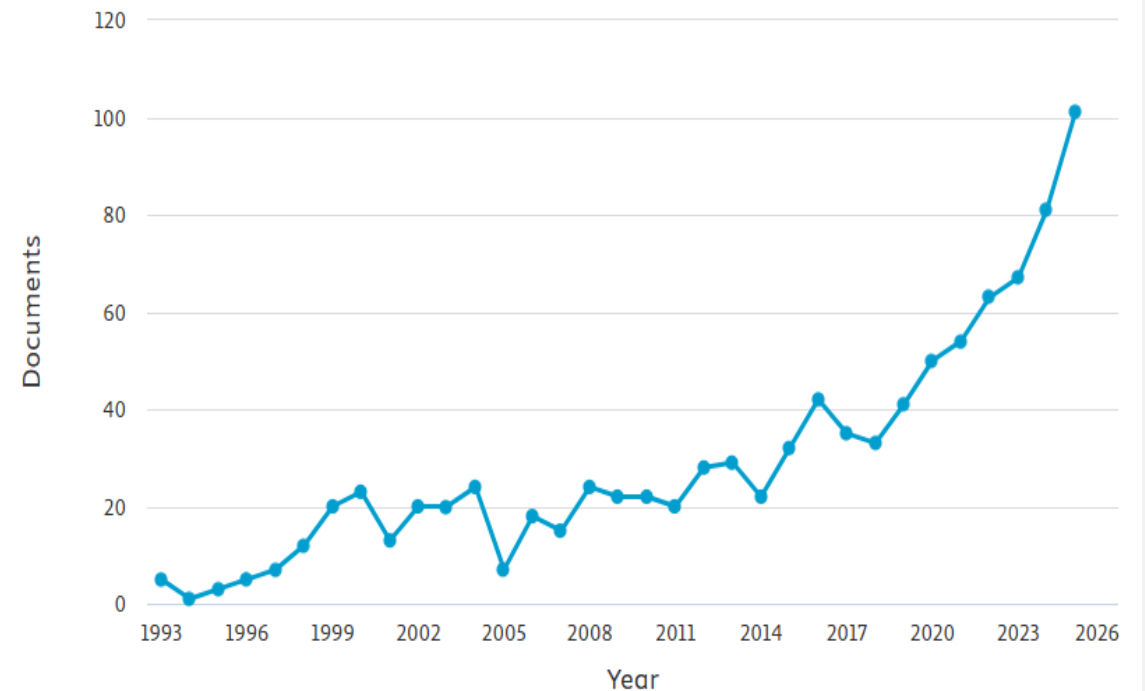


Creative Commons (CC) licenses – offer standardized way for all creators to allow the public permission to use their creative work under copyright law. e.g., CC BY, CC BY-SA, CC BY-NC, CC-BY-NC-SA, CC BY-ND, CC BY-NC-ND

# Background Information/Context

- BUAN, an agricultural University focusing on agriculture and natural resources
  - Mandate – teaching, learning & research
- BUAN ResearchHub (<https://researchhub.buan.ac.bw/>)
  - Running on DSpace
  - Journal article, book chapters, thesis & dissertations
  - Aims to provide open access to the university's research outputs, particularly publications authored by BUAN members of the faculty and researchers
  - To date, a total of 734 publications uploaded across different communities
- Research publishing environment
  - Publishing model – OA & Subscription-based
- Guiding principles
  - Open Access Policy & Publications Policy

Documents by year



# Aim/Objectives

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The study primarily aims to evaluate BUAN's publishing patterns, research impact, and the role of OA in enhancing the visibility of BUAN's scholarly output

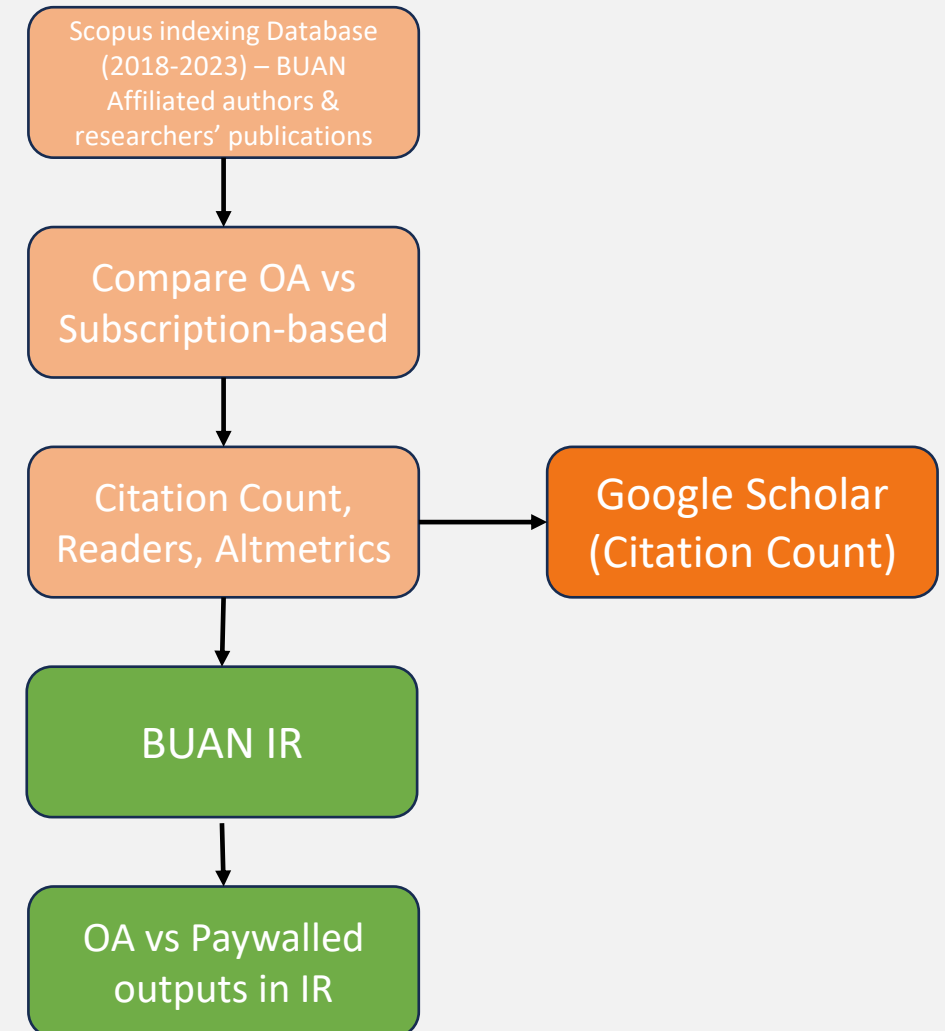
1. To **evaluate and compare the research impact of Open Access (OA) publications versus Subscription-Based publications** produced by BUAN researchers.
2. To assess **the contribution of different publishing models** to the content and development of BUAN's Institutional Repository (IR) and its effectiveness in promoting research visibility.



# Methodology

- Quantitative desktop study
- **Scopus Indexing Database** - Primary research data
- Evaluate BUAN's research outputs using data sourced from the Scopus database covering the period from 2018 to 2023
  - BUAN-affiliated authors
  - Focus on comparing OA and subscription-based publications.
  - Articles and reviews
  - Citation count, Readers, and Altmetrics
- **Google Scholar**
  - Citation count
- **BUAN Institutional Repository Data**
  - Analyze the number of publications freely available compared to those behind paywalls

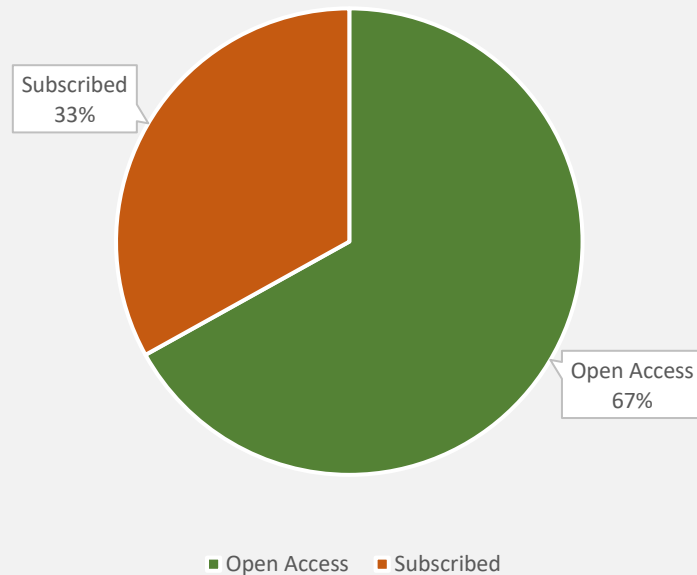
## Evaluating BUAN research output (2018-2023)



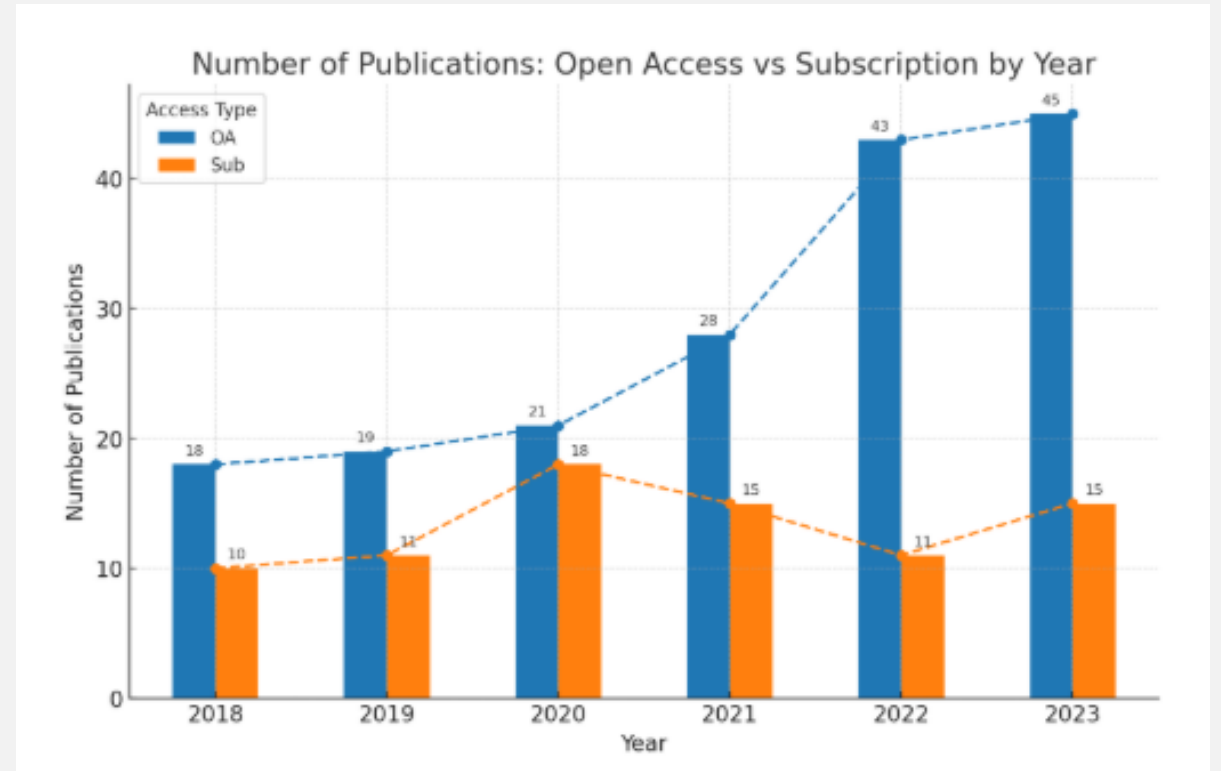
# Data Analysis

## BUAN OA vs Subscription based publications

Proportion of OA vs Subscription publications in BUAN



## Number of publications OA vs subscription by year



# Data Analysis – Descriptive statistics

## OA

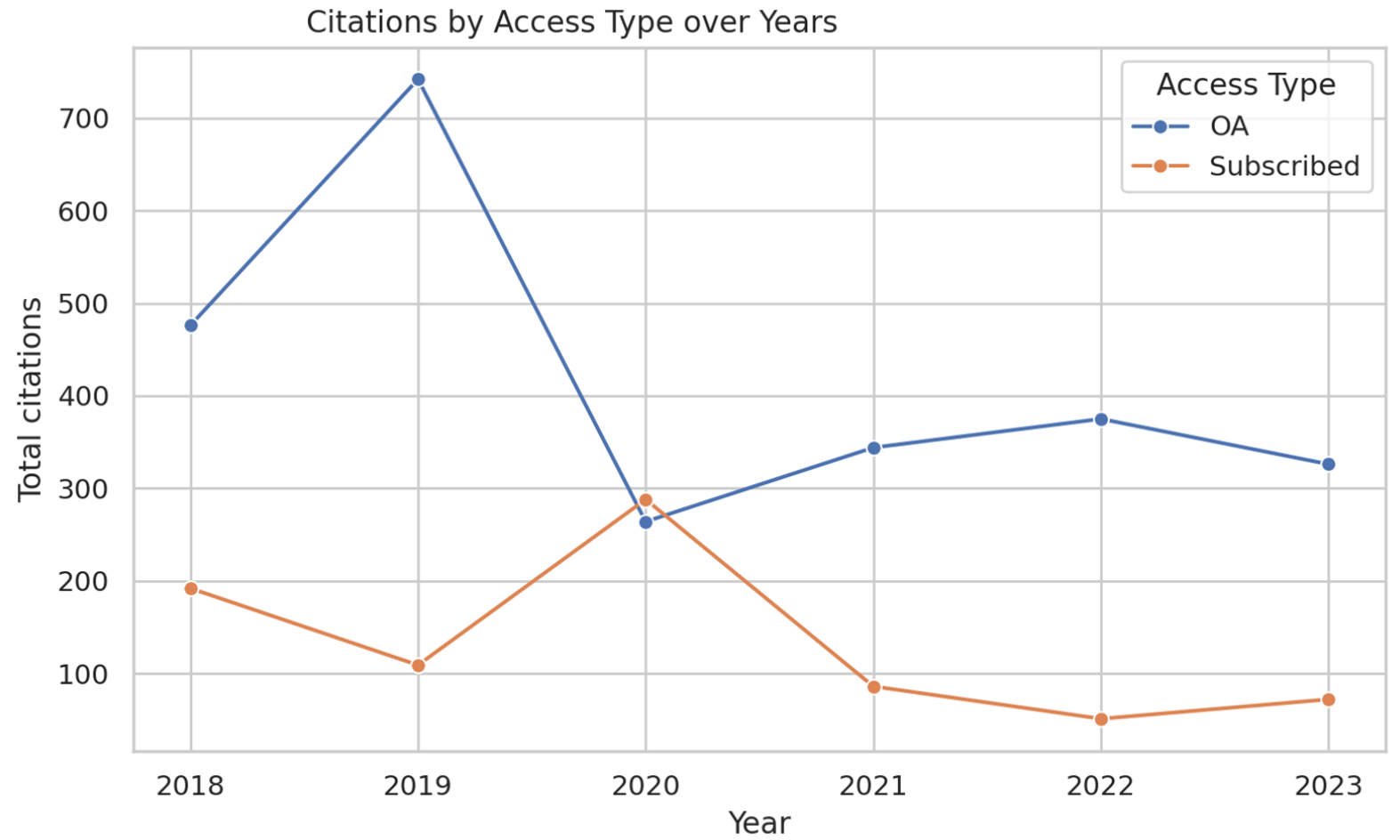
DESCRIPTIVE STATISTICS - OPEN ACCESS PUBLICATIONS				
	Citation Count_Scopus	Citation Count_Google Scholar	Readers	Mentions, Shares, Likes, Views & Comments
MEAN	11.75294118	18.81764706	47.75882	15.84705882
STANDARD ERROR	1.390330382	2.236327504	4.494964	7.798796893
MEDIAN	6	10	29	0
MODE	2	0	8	0
COUNT	170	170	170	170

## Subscribed Publications

DESCRIPTIVE STATISTICS - SUBSCRIBED PUBLICATIONS				
	Citation Count_Scopus	Citation Count_Google Scholar	Readers	Mentions, Shares, Likes, Views & Comments
MEAN	10.63095238	15.21428571	35.28571	6.202380952
STANDARD ERROR	2.570451927	3.416241095	5.470506	4.684197251
MEDIAN	4	7	21.5	0
MODE	1	3	7	0
COUNT	84	84	84	84

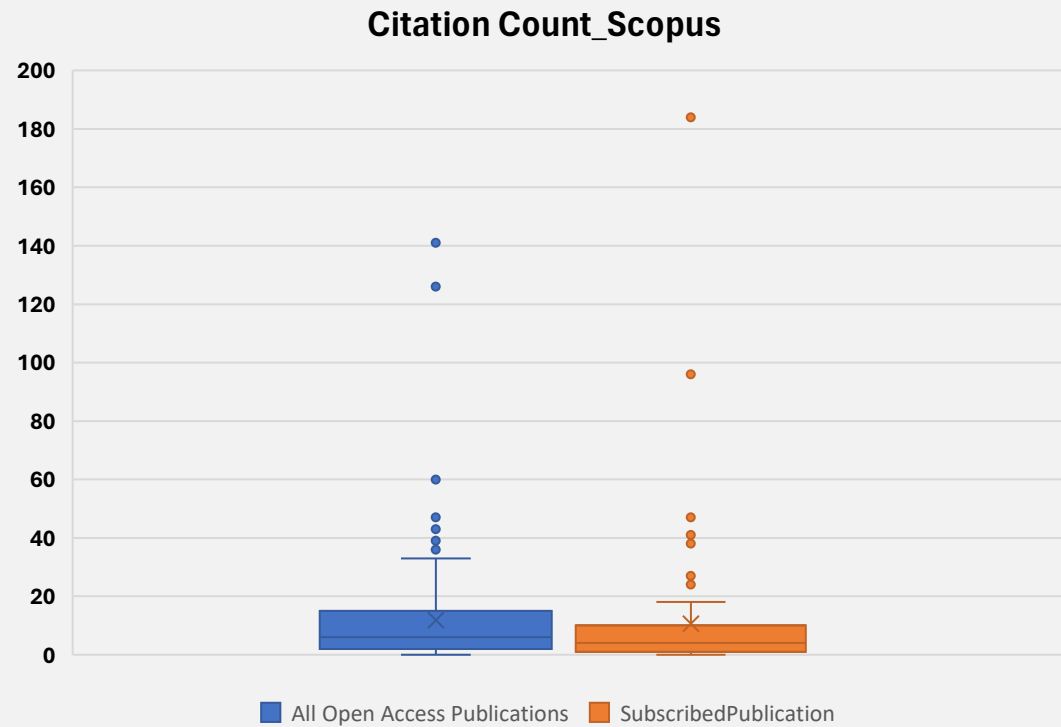
# Data Analysis

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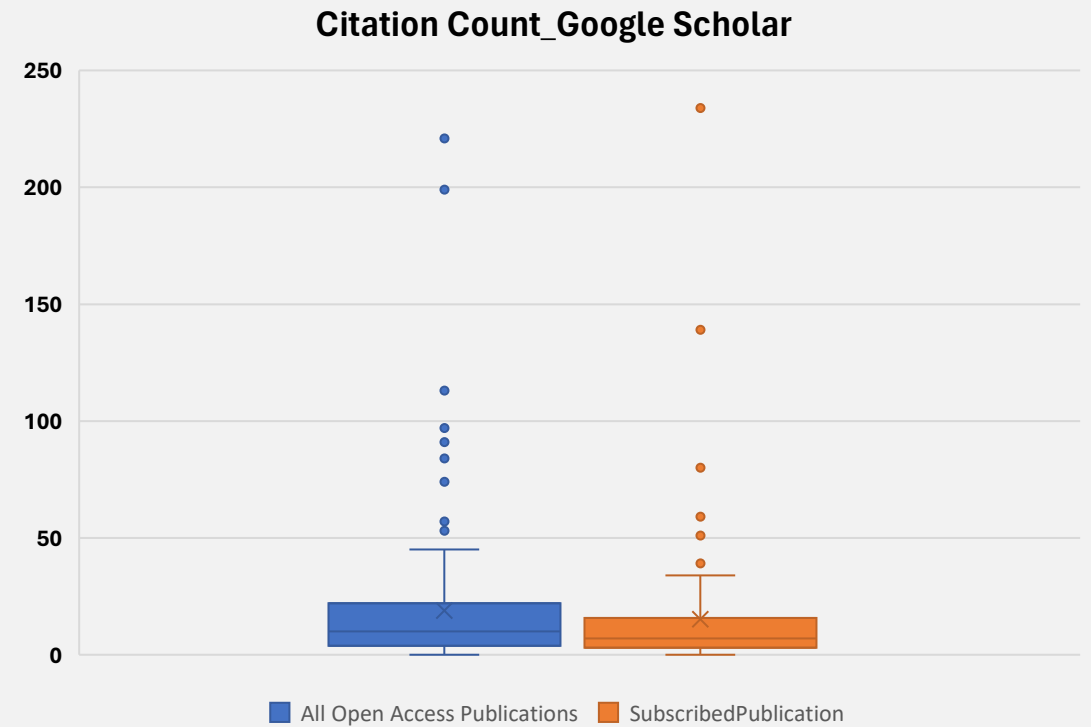


# Data Analysis

## Citation count\_Scopus



## Citation count\_Google Scholar



# Data Analysis

## OA Publications Correlation

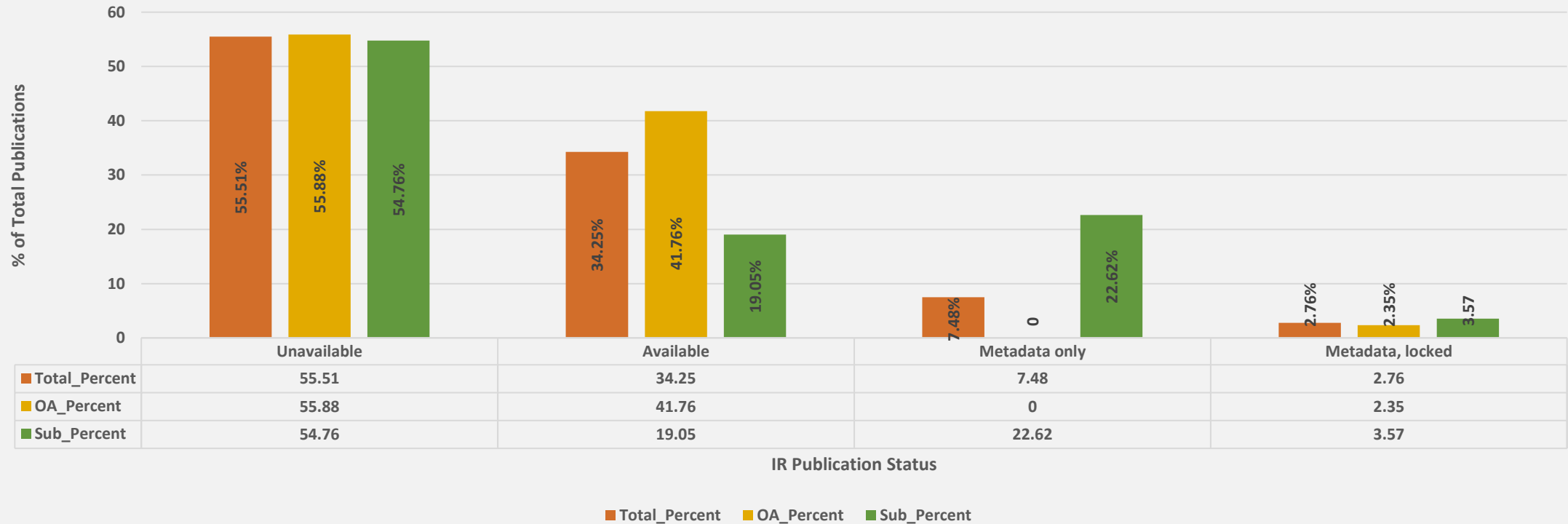
	Citation Count_Google Scholar	Readers	Mentions, Shares, Likes, Views & Comments
Citation Count_Google Scholar	1		
Readers	0.854534212	1	
Mentions, Shares, Likes, Views & Comments	-0.010922103	-0.015586	1
Citation Count_Scopus	1		
Readers	0.847523312	1	
Mentions, Shares, Likes, Views & Comments	-0.025877987	-0.015586	1

## Subscribed Publication Correlation

	Citation Count_Scopus	Readers	Mentions, Shares, Likes, Views & Comments
Citation Count_Scopus	1		
Readers	0.847523312	1	
Mentions, Shares, Likes, Views & Comments	-0.025877987	-0.0156	1
Citation Count_Google Scholar	1		
Readers	0.854534212	1	
Mentions, Shares, Likes, Views & Comments	-0.010922103	-0.01559	1

# Data Analysis - IR Content Analyses

Publication by IR status and access type



# Discussion

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## **Objective 1: Compare the research impact of Open Access (OA) publications versus Subscription-Based publications**

- **OA advantage:** Open Access (OA) consistently attracts more citations than subscription-based publications
- **Impact patterns:** OA generally outperforms subscriptions in citation impact but shows greater variability
- **High-impact exceptions:** Subscription-based journals can still yield highly influential individual works
- **Citations vs. readership:** Strong correlation indicates readership is a good predictor of academic impact
- **Social media disconnect:** Mentions, likes, and shares show little correlation with either citations or readership. Public and academic visibility reflect different dimensions. The publication's popularity doesn't guarantee scholarly impact, and scholarly impact doesn't guarantee public popularity!

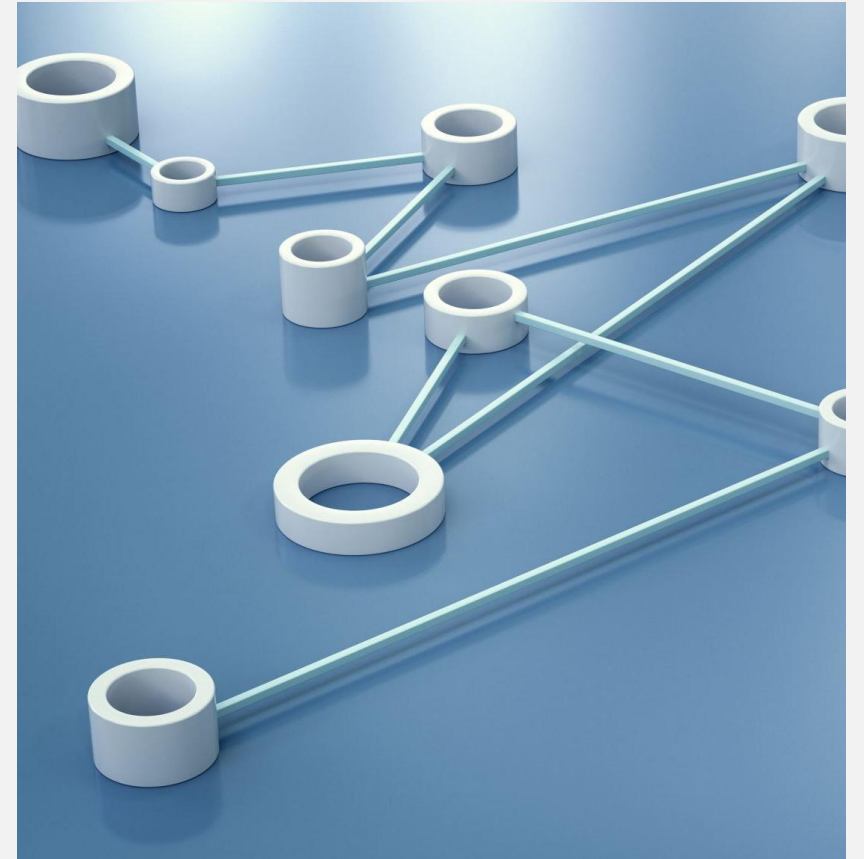
## **Objective 2: Assess institutional repository coverage and accessibility**

- **Repository coverage:** About **one-third** of Scopus-indexed publications are fully available in the institutional repository, showing room for improvement in accessibility and research visibility

# Discussion

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- Why OA might outperform subscription (accessibility, global reach)
  - Enhanced Accessibility-no paywalls. OA articles have a broader reach and greater visibility, potentially enhancing scholarly communication (Yi et al., 2024)
  - Greater global reach and accessibility
    - Transformative Agreements (TAs) rapidly increase OA uptake across regions, increased reach and share of scientific knowledge (Springer Nature, 2024; Huang, 2024)
  - Equitable access to scientific knowledge



# Conclusion & Implications

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**Open Access (OA)** improves research visibility, accessibility, and global reach by removing financial and institutional barriers

**Subscription models** maintain prestige but limit engagement, especially in developing regions like Botswana

At **BUAN**, OA strengthens the **Institutional Repository (IR)** and advances the university's mission to share agricultural knowledge

**Strong OA policies, self-archiving, and partnerships** with reputable platforms will boost BUAN's research impact and global discoverability

Promoting OA supports **equitable, sustainable knowledge sharing** and positions BUAN as a key contributor to **Open Science in Africa**

Insights from this evaluation can **guide future publishing strategies, resource allocation, and institutional support** for OA initiatives

# Recommendations

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## Strategies to Enhance Open Access at BUAN



### Encouraging Open Access (OA) Publishing

Promote OA publishing where possible to increase research visibility and impact



### Transformative Agreements

Negotiate with publishers for transformative or read-and-publish agreements to reduce OA costs



### Strengthen Institutional Repository (IR) Policies

Mandate deposit of all BUAN publications in the IR within 3 months of acceptance



### Promote Self-Archiving

Support researchers in self-archiving and adopt strong institutional OA policies.



### Monitoring and Tracking

Develop tools to monitor BUAN publications and measure visibility, citations, and OA uptake

# Limitations and Future Research

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- Investigate the cost implications of OA Publishing
  - Compare the cost associated with OA publications (i.e., Article Processing Charges [APC]) with the subscription/access costs associated with subscribed publications to determine if investment in OA publishing yields a beneficial return in terms of visibility, citations, and institutional recognition



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# Thank you!

‘Information is power, but it’s only power if it’s available to all.’ (Aaron Swartz)

## Comments & Questions



[Lebogang Seleka-Gopolang](#)

[lgopolang@buan.ac.bw](mailto:lgopolang@buan.ac.bw) or [lebseleka@gmail.com](mailto:lebseleka@gmail.com)



+267 365 0 100



@BuanOfficial



BUANbw



BuanWorld



Buanlive



info@buan.ac.bw

