

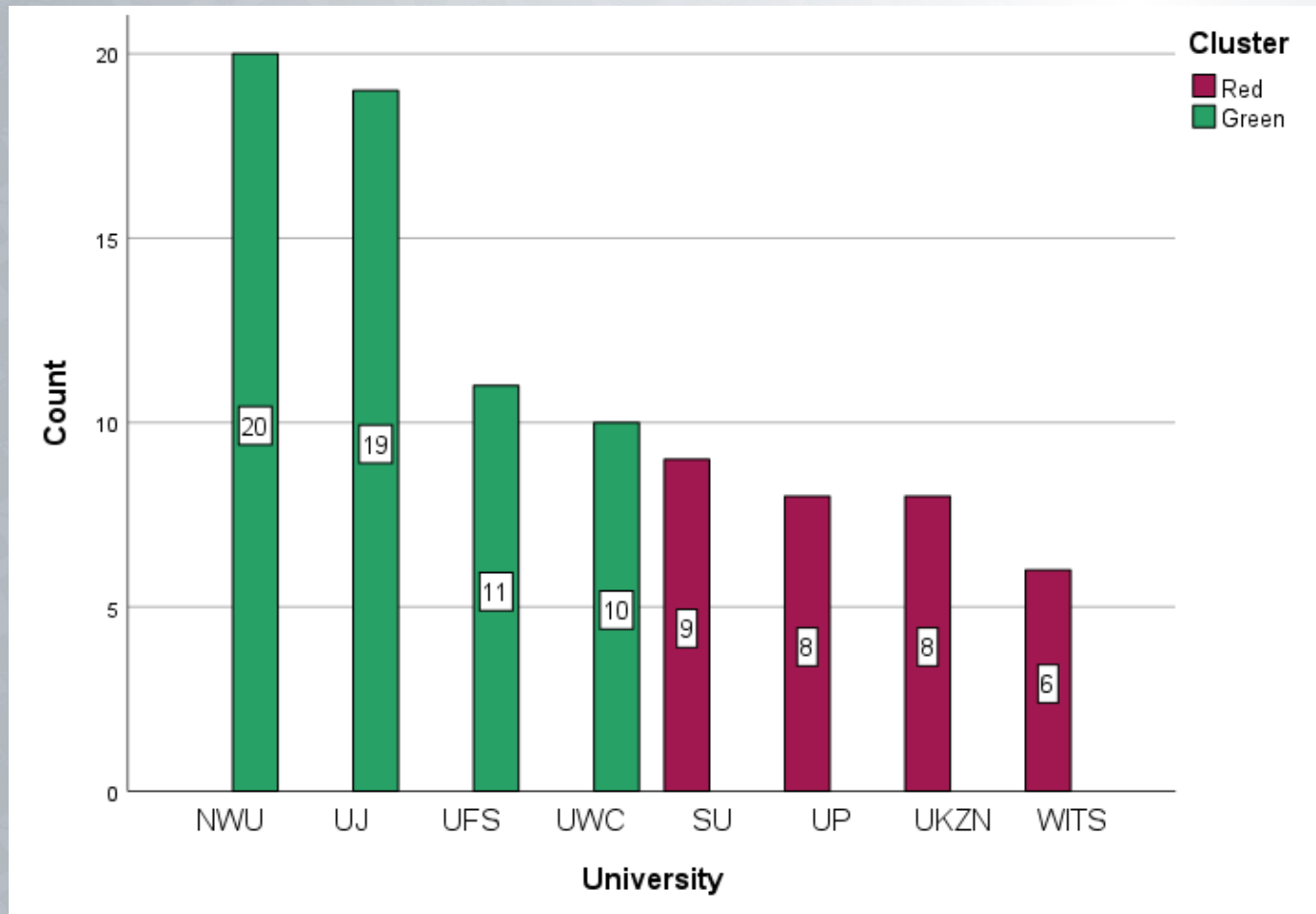


Emerging technologies and professional skills
improving service delivery in digital libraries

Neli Tshabalala

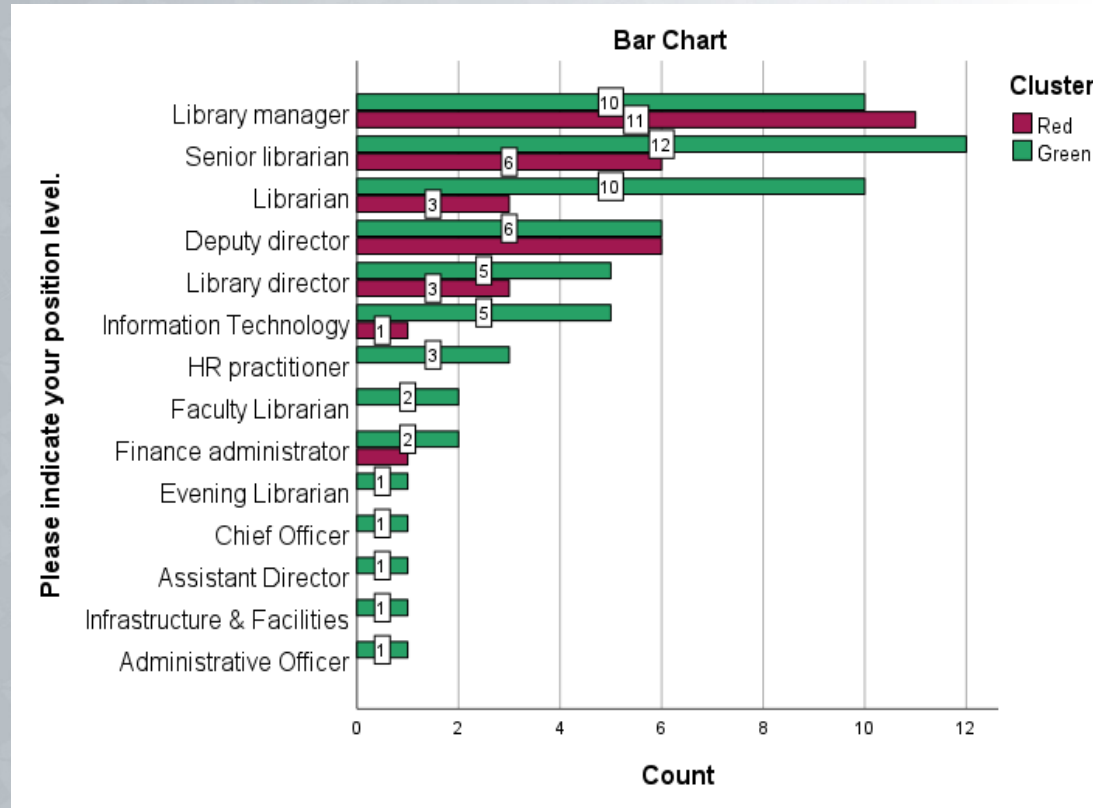
Director: Information Resources & Library Systems

Context: Selected SA universities



Demographics

Staff position level



Professional staff

Senior library managers (23%)

Senior librarians (19.8%)

Librarians (14.3%)

Deputy directors (13.2%)

Library directors (8.8%)

Purpose

Objectives

- To examine technologies, use of information communications technology (ICT) and professional skills that would deliver effective services in libraries.
- To investigate if academic library staff have the essential skills to render key service operations.

Problem statement

- Changing user needs and expectations – demand for 24/7 days access
- Advances in ICTs
- Inadequate relevant skills and competencies
- Limitations with suitable qualifications



Key drivers

- Digital transformation (Dx)
- Artificial Intelligence (AI)
- Transitions into digital spaces and hybrid work models
- Technological shifts and innovation
- Virtual technologies
- Trends
- Qualifications framework
- Policies



Applied Theory

Responsiveness & Resources-based view

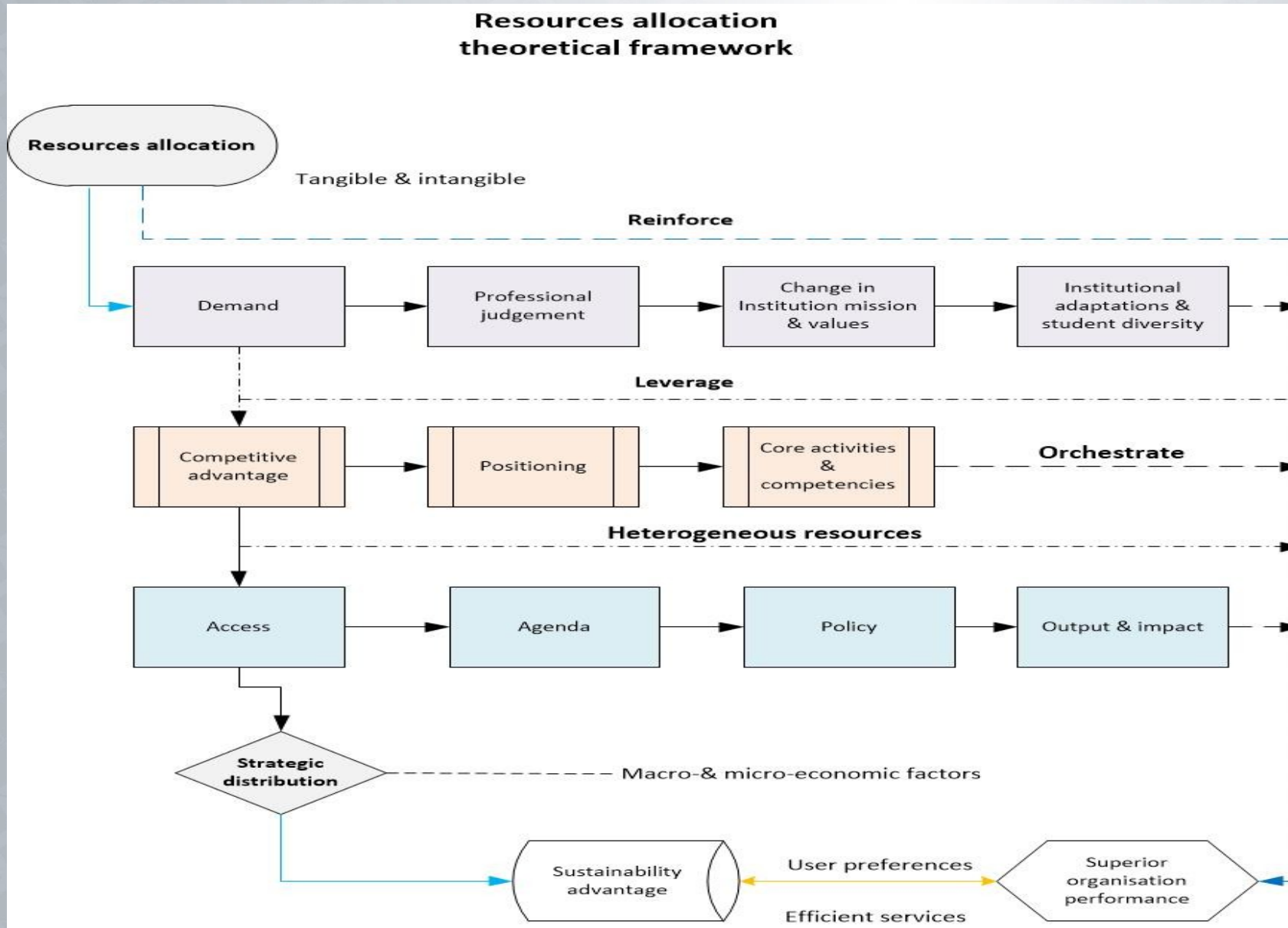
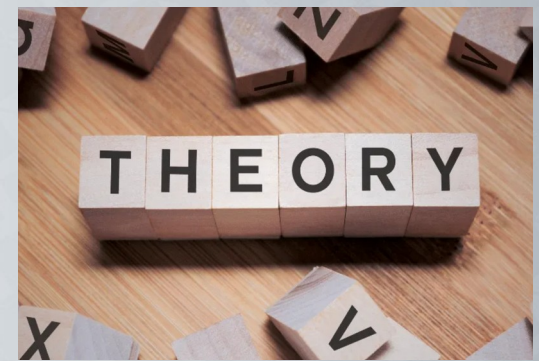
- Abraham Bookstein **Classic economic**, and the **Microeconomic models** provides fundamentals for scarce resources distribution and strategies for survival under unexpected economic conditions.
- Strategic positioning in response to external forces
- Interlinkages for growth and innovation
- Organisational **Responsiveness theory**: Demand for competencies and level of response to emerging technologies
- Based on consumer models, multiple user demands and preferences are required to improve service delivery

Resources-based view (RBV) theory

- Determines the organisations' core competencies and capabilities by positioning itself to deliver quality services with the right resources.
- Leveraging and reinforcing the organisations' core competencies and key activities would lead to either a competitive advantage or superior performance



Conceptual framework





Framework

- Librarians are required to hold a SAQA accredited LIS qualification (B.Bibl. Or Degree with a PGDip in LIS coupled with specific professional skills and attributes
- Advanced technology knowledge and skills in a 21st century academic library are fundamental skills.
- Library redesign: user centric services
- New virtual services vs changing staff roles
- Embedded librarianship
- Digital integrated learning environment
- Improved efficiency
- Portfolio revisions in 3 – 5 years



Human Resources

- 75% of libraries in South Africa have incorporated new roles in their staff complement.
- Professional skills and competencies
- Attracting well trained librarians with relevant skills set
- Interlinkages in the context of 4IR and the influence in future jobs
- Micro-economic impacts: Growth, constraints, developments in technology, practices and transformation
- Policy directives
- Adaptability and level of responsiveness
- Hybridization: multiskilling, integrating information technology
- Flexibility: Remote work and expanding learners capabilities



Emerging technologies

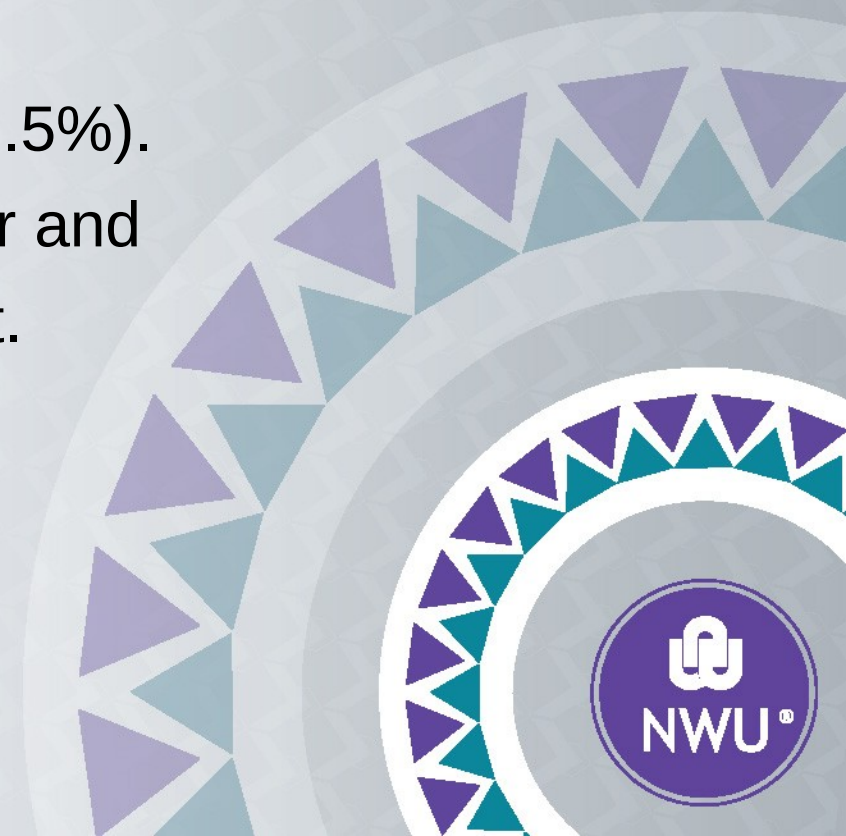
- Push towards digital transformation to create digital platforms and enhance user expectations
- Virtual Libraries - Providing platforms that offer a wide range of digital resources, including e-books, e-magazines, e-journals, and audiobooks, accessible remotely to patrons.
- Artificial Intelligence (AI) & Automation are revolutionizing library services, making operations more efficient and allowing librarians to focus on more strategic tasks.
- The adoption of RFID, robotics, chatbots, and the use of makerspaces are seen as transformative steps toward modernising operations and enhancing user experience
- Blockchain for Credentials and Verification: Security & Risk management
- Open resources (OERs, Data Stewardship)
- Collaborations and partnerships: Incorporate tools and platforms that promote engagement and inclusivity, Systems, applications & Ms Teams, Zoom
- Ethical use of AI



Findings: Trends delivering effective library services



- Uptake of trends is at 64% + in SA
- Off-campus access (Red: 90.3%; Green: 83.3%)
- E-learning resources (e.g., eBooks, database) (Red: 87.1%; Green: 86.7%)
- LibGuides (Red: 74.2%; Green: 73.3%), and
- Research information services (Red: 77.4%; Green: 69.5%).
- On the low: Social media 23.3% response - Red cluster and 16.7% in the Green cluster deemed it unimportant.



Findings: Professional skills

	N	Yes	No
Entrepreneurial skills	84	36 (43%)	48 (57%)
Data analytics	87	57 (66%)	30 (34%)
Accounting skills	85	62 (73%)	23 (27%)
Human resources skills	86	71 (83%)	15 (17%)
Data repository management	86	74 (86%)	12 (14%)
Financial management skills	87	75 (86%)	12 (14%)
Open publishing	86	75 (87%)	11 (13%)
Bibliometrics	86	79 (92%)	7 (8%)
<u>Numeracy skills</u>	<u>87</u>	<u>81 (93%)</u>	6 (7%)
Resources sharing	88	82 (93%)	6 (7%)
Licensing and purchasing of resources	86	82 (94%)	5 (6%)
Digital skills training	86	82 (95%)	4 (5%)
Scholarly communications	84	81 (96%)	3 (4%)
Metadata and the use of bibliographic management systems	86	83 (97%)	3 (3%)
Communications skills	88	86 (98%)	2 (2%)
Information literacy skills	88	87 (99%)	1 (1%)

Findings: Emerging technologies

	N	Minimum	Maximum	Mean
Gaming	86	1	5	3,57
Robotics	88	1	5	3,70
Coding clubs (use of game, animation & websites with coding languages such as HTML/Python)	85	1	5	3,78
Radio Frequency Identification (technology that uses radio waves to passively identify a tagged object)	85	1	5	3,93
Virtual reality (computer-generated simulation of an environment or 3-dimensional image where interaction seems real)	87	2	5	3,93
Dropbox	84	2	5	4,07
Skype	87	2	5	4,13
Other	15	1	5	4,13
Nextcloud	84	1	5	4,23
Chatbots	89	2	5	4,29
Makerspaces	89	1	5	4,40
Google Docs	89	2	5	4,42
Cloud-based technology	87	1	5	4,48
YouTube	88	3	5	4,52
OneDrive	88	3	5	4,53
Zoom	89	1	5	4,57
MS Teams	89	4	5	4,85

Perceived average scores

MS Teams (Red: 80.6%; Green: 87.9%)

Makerspaces (Red: 51.6%; Green: 62.1%) Zoom (Red: 71.0%; Green: 67.2%)

YouTube (65.5%), Cloud-based technology (64.9%), OneDrive (63.8%), Google Docs (60.3%), Chatbots (53.4%), and Next Cloud (50.9%)

Adopting AI this percentage is likely to increase from the lower ranking (15.8%) and gaming (14.3%).



Value of 4IR in libraries

Scores rating for value of technology resources

	N	Minimum	Maximum	Mean
Increase potential of solving real-world problems by actively engaging users	87	2	3	2,68
Integrate library resources in support of learning, research	89	1	3	2,71
Perform repetitive tasks that can improve operations	87	1	3	2,72
Integrate library services	88	2	3	2,74
Increase customer engagement	89	2	3	2,83
Provide availability of resources 24/7	87	1	3	2,86

Extent of technology resources

To a very high extent, technological support (Red: 64.5%; Green: 70.2%)

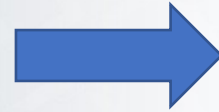
Knowledge sharing (Red: 73.3%; Green: 68.4%)

Technology proficiencies (Red: 56.7%; Green: 64.3%) were rated as highly useful by the majority of institutions in both the red and Green clusters.

Partnerships (56.1%), inventory lists (50.9%),

Infrastructure evaluation (55.4%), and the ability to solve problems (56.1%)

Digital library – Smart resources & Services (IoT)



Seamless integration (technology resources, services and staff competencies) in a digital library will blend learning context and result in personal learning experiences, engaged research & library support services

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Thank you



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