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**Convergence or Divergence: Making a Choice between
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Convergence or Divergence: Making a Choice between Printed Media and Electronic Media as Academic Information Resources. A Case of the Tanzania Institute of Accountancy (TIA) Mbeya Campus and Mzumbe University Mbeya Campus

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Abstract

This study explored patterns in the use of print and electronic information resources among students and academic staff at the Tanzania Institute of Accountancy (TIA) Mbeya Campus and Mzumbe University Mbeya Campus. Anchored on Davis's Technology Acceptance Model (TAM) and Wilson's Model of Information Behaviour, the study investigates whether academic users' preferences demonstrate a structural convergence toward a hybrid model or a terminal divergence from conventional print media toward exclusive electronic dominance. During examination periods, severe print shortages force students onto web-based open-access platforms. This ambiguity raises fundamental empirical questions: Are user information preferences genuinely diverging toward digital platforms, or is there a functional convergence where print and electronic resources serve complementary academic needs? A mixed-methods research design was employed, with a planned sample of 241 respondents across both institutions using stratified random and purposive sampling techniques. Data collection involved questionnaires, semi-structured interviews, and a library observation checklist. Quantitative data were analyzed using SPSS version 26 through descriptive statistics, cross-tabulations, and a chi-square test of independence, while qualitative data underwent thematic and content analysis. Findings reveal a paradigm shift towards electronic information resources driven by perceived ease of search, 24/7 remote availability, and current timeliness. However, print media continue to hold strategic, non-replaceable importance for long-form reading, exam preparation, and core textbooks due to digital divide related issues such as bandwidth bottlenecks, digital fatigue, and cognitive retention needs. A Chi-Square test of independence ($\chi^2 = 0.6730$, $p = 0.7143$) confirms no statistically significant difference between the two campuses, demonstrating parallel evolutionary trajectories. The paper provides actionable recommendations, including campus bandwidth expansion, open-access institutional repository integration, curriculum-embedded digital literacy training, and physical library re-engineering.

Keywords: *Electronic Media, Printed Media, Technology Acceptance Model, Wilson's Information Behaviour Model, Hybrid Information Ecosystem, Convergence or Divergence*

1.0 Introduction

The global higher education landscape has undergone a radical transformation over the past two decades, largely catalyzed by advancements in Information and Communication Technologies (ICTs) (Ali et al., 2026 and Bilson & Markwei, 2019). Academic libraries, traditionally anchored in physical collection management, now operate at a critical crossroads where physical print materials (monographs, printed journals, bound archives) and electronic resources (e-journals, e-books, online databases, and institutional repositories) compete for user attention and institutional funding (Tenopir et al., 2019). In Sub-Saharan Africa, and specifically Tanzania, higher learning institutions are navigating the complex transition from print-dominant repositories to hybrid and electronic-first information ecosystems (Mwangkala, 2020; Muneja, 2018; Ndumbaro, 2018). The dilemma of choice between printed and electronic resources involves multifaceted behavioral, infrastructural, pedagogical, and cognitive considerations. Electronic resources offer non-rivalrous access, remote querying capabilities, real-time updates, and hyperlinked navigation, print resources offer tactile stability, ease of physical annotation, reduced visual eye strain, and complete immunity from network infrastructure vulnerabilities (Kaygısız, 2025; Makwetta & Mwamanga, 2021). Understanding how academic users navigate these choices is critical for information professionals, university administrators, and policymakers responsible for resource allocation.

In Tanzania, specialized higher education institutions such as the Tanzania Institute of Accountancy (TIA) Mbeya Campus and Mzumbe University Mbeya Campus present unique academic environments. TIA specializes in accountancy, finance, procurement, and business management disciplines demanding current regulatory frameworks, tax law updates, and computational texts (Bukuku, 2026). Conversely, Mzumbe University Mbeya Campus emphasizes administrative studies, law, and public administration, requiring extensive access to legal precedents, statutory enactments, and policy documentation (Shemahonge & Mtebe, 2018; Mwangkala, 2020). Examining user choices across these two distinct higher learning campuses provides crucial empirical insights into whether academic information seeking behavior is converging into a unified hybrid paradigm or diverging toward exclusive digital dominance.

1.2 Statement of the Problem

Despite substantial capital investments by Tanzanian public institutions into e-resource subscriptions primarily through consortium arrangements like the Consortium of Tanzania University and Research Libraries (COTUL) alongside traditional physical library acquisitions, information managers continue to observe sub-optimal electronic database utilization coupled with localized overcrowding in physical print collections. During examination periods, severe print shortages force students onto web-based open-access platforms. This ambiguity raises fundamental empirical questions: Are user information preferences genuinely diverging toward digital platforms, or is there a functional convergence where print and electronic resources serve complementary academic needs? Without empirical baseline studies comparing business-oriented and administrative campuses like Tanzania Institute of Accountancy – Mbeya campus and Mzumbe University – Mbeya campus, institutional resource allocation risks misalignment with actual user information-seeking behavior and learning habits.

1.3 Research Objectives

- i. To assess the current status of utilization of library printed information resources versus online electronic information resources by students and staff members

- ii. To identify the key operational and behavioral drivers influencing user preferences for printed or electronic formats
- iii. To determine the major infrastructural, financial, and pedagogical challenges impeding effective access to online information resources across both campuses

1.4 Research Questions and Hypothesis

- i. To address the research problem, this study was guided by the following research questions:
- ii. What is the current status of utilization of library printed information resources versus online electronic information resources by students and staff members?
- iii. What are the key operational and behavioral drivers influencing user preferences for printed or electronic formats?
- iv. What major infrastructural, financial, and pedagogical challenges are impeding effective access to online information resources across both campuses?

2.0 Literature Review

2.1 Critical Theoretical Review

To provide a robust analytical foundation, this study critically synthesizes two prominent models in technology adoption and user behavior, namely: Davis's (1989) Technology Acceptance Model (TAM) and Wilson's (1999) Model of Information Behaviour.

2.1.1 Technology Acceptance Model (TAM)

TAM posits that the adoption and actual usage of an information system are primarily determined by two core cognitive constructs: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) (Davis, 1989). PU is defined as the degree to which a user believes that using a specific resource format (such as an e-journal database or e-book) will enhance their academic or research performance (Lavidas, Komis, & Achriani, 2022). PEOU refers to the degree at which a user believes that searching, retrieving, and reading information from a given format requires minimal physical and cognitive effort (Maishanu, Abdulkadir, & Zanna, 2024). In the context of TIA and Mzumbe Mbeya, TAM explains how features such as keyword searchability, remote access, hyperlinking, and immediate downloads drive user acceptance of electronic databases over traditional card catalogs and physical library stacks.

2.1.2 Wilson's Model of Information Behaviour

While TAM explains digital acceptance, Wilson's (1999) Model of Information Behaviour provides a holistic lens for understanding the broader environmental and interpersonal context. Wilson conceptualizes information-seeking behavior as a problem-solving process triggered by an individual's context-specific needs (Wilson, 2000; Spink & Cole, 2006). The model highlights 'activating mechanisms' and 'intervening variables'—including physiological factors (e.g., eye fatigue), psychological factors (e.g., stress during exam periods), environmental factors (e.g., Wi-Fi bandwidth, power outages), and source characteristics (e.g., resource authority, length of text) (Case & Given, 2016). Wilson's framework helps explain why, despite high digital acceptance (TAM), academic users frequently revert to print media during high-stakes study contexts.

2.2 Empirical Literature Review

2.2.1 Status of Utilization of Printed and Electronic Information Resources

Reading behavior for printed and electronic information resources. Despite the global shift toward digital education, many university students have continued to report a preference for printed academic materials. Studies have also reported stronger comprehension outcomes when students read printed texts (Almansour et al., 2026; Kaygısız, 2025). Comparisons of print and digital information use have been reported by (Jeong & Gweon, 2021; Li & Yan, 2024; Ali et al., 2026). In terms of visual patterns, readers exhibited a shorter fixation and a higher fixation count during print reading than during screen reading, and in terms of attitude readers reported higher levels of perceived understanding, perceived confidence and perceived immersion and a lower level of perceived fatigue for reading printed text than from a device screen (Jeong & Gweon, 2021). Li and Yan (2024) found no significant overall difference in reading comprehension between digital reading and paper reading. Digital and paper reading have advantages and disadvantages and they complement each other while the findings in the study conducted by (Ali et al., 2026) demonstrated that print reading mode was significantly preferred by Turkish students for better comprehension ($M = 3.75$) compared to digital mode ($M=3.38$, $p= .007$). Pakistan students showed balanced pattern, with neither reading mode showing a statistically significant distinction. Adoption and use of information communication technology in academic libraries is another aspect which influence usage of electronic education resources in academic institutions as indicated in works by (Muneja, 2018; Bilson & Markwei, 2019; Makwetta, & Mwamanga, 2021; Igbo, Ibegbulam, Asogwa & Imo, 2022). These findings reveal that students typically leverage electronic journals and databases for coursework, assignments and literature reviews. Common hurdles include unstable internet connectivity, limited computer lab access, and the need for stronger digital literacy skills (Muneja, 2018). Despite the tremendous changes brought about by ICT to Ghanaian libraries, they are still faced with a lot of challenges that need to be addressed to enable these libraries to operate efficiently to provide the required information resources to its users (Bilson & Markwei, 2019). Other issues facing automation are listed as upgrading physical book repositories to automated networks featuring electronic resource management systems, overcoming significant digital literacy hurdles and severe budgetary constraints (Makwetta, & Mwamanga, 2021). It was also found that access to digital information resources in libraries is low due to lack of library management software, professionals' limited skills, and lack of relevant formal institutional digital information provision policies (Igbo, Ibegbulam, Asogwa & Imo, 2022).

2.2.2 Operational and Behavioral Drivers Influencing Format Preference

Perceived usefulness, perceived ease of use, and user acceptance of information technology in e-learning systems in higher education have been widely examined by (Davis, 1989; Venkatesh, & Bala, 2008; Binyamin, Rutter, & Smith, 2019; Abbad, 2021; Tawafak et al., 2023; and Bayaga, & du Plessis, 2024). Davis (1989) developed and validated new scales for two specific variables, perceived usefulness and perceived ease of use, which are hypothesized to be fundamental determinants of user acceptance. Definitions for these two variables were used to develop scale items that were pretested for content validity and then tested for reliability and construct validity in two studies involving a total of 152 users and four application programs. The measures were refined and streamlined, resulting in two six-item scales with reliabilities of 0.98 for usefulness and 0.94 for ease of use. The scales exhibited high convergent, discriminant, and factorial validity. In another study by Binyamin, Rutter, and Smith (2019), using Partial Least Squares Structural

Equation Modeling (PLS-SEM), the results revealed that perceived ease of use is affected by six factors (content quality, system navigation, ease of access, system interactivity, instructional assessment and system learnability). The findings confirmed that perceived usefulness has five determinants (content quality, learning support, system interactivity, instructional assessment and perceived ease of use). According to the UTAUT model, several factors such as performance expectancy (PE), effort expectancy (EE), attitude toward using technology (ATT), social influence (SF), self-efficacy (SE), anxiety (ANX), and facilitating conditions (FC) influence behavioral intention (BI). However, the results obtained through path coefficient bootstrapping, using 10,000 subsamples, revealed that the intention to use LMS was explained by only three latent constructs: facilitating conditions (FC→ BI), performance expectancy (PE→ BI), and social-influence (SI→ BI) (Bayaga, & du Plessis, 2024). Abbad, (2021) findings indicated that performance expectancy and effort expectancy affected behavioural intentions to use Moodle whereas social influence did not. In addition, the results confirmed the direct impact of behavioural intentions and facilitating conditions on students' use of Moodle. UTAUT thus provides a valuable tool that enables university decision makers, faculty members, and designers to understand the factors driving e-learning system acceptance and thus facilitate the adoption of the system by students.

Venkatesh, & Bala, (2008) combined the factors of the Technology Acceptance Model (TAM) and Expectation–Confirmation Theory (ECT) to examine the acceptance and use of e-learning systems by students in Omani HEIs. The results showed that perceived usefulness and ease of use were significant predictors of students' intention to use e-learning systems, and behavioral intention had a direct effect on the actual use of e-learning systems. From an organizational point of view, however, the more important issue is how managers make informed decisions about interventions that can lead to greater acceptance and effective utilization of IT. There is a need to understand how various interventions can influence the known determinants of IT adoption and use. **Factors influencing college students digital academic reading behavior** can be found in the works done by Fagan, (2019); and Chang et al., (2023). Multi-stage sampling technique was used to collect representative samples from universities in Nanjing. 239 respondents participated in the questionnaire, with 189 providing valid data. Results: Effort expectancy (EE), social influence (SI), price value (PV), perceived risk (PR) and habit (BH) have a significant impact on behavioral intention (BI), and behavioral intention (BI) and habit (BH) have a significant impact on use behavior (B). However, performance expectancy (PE) and facilitating conditions (FC) have no significant influence on behavioral intention (BI) (Chang et al., 2023). In another study the unified theory of acceptance and use of technology (UTAUT) was extended to include hedonic motivation, operationalized as enjoyment, as well as social influence in a field study involving the adoption of iPad mobile devices. Survey data were collected from 171 college students and analyzed using partial least squares structural equation modeling (PLS-SEM). The results indicated that enjoyment and performance expectations were important factors influencing the acceptance of mobile learning in this context. For those engaged in the mobile learning pilot project upon which this study was based, the use of the UTAUT and the results provided a theory-based empirical approach to support an assessment that the pilot project goals were achieved. Overall, students perceived iPads to be useful and enjoyable tools for accomplishing educational tasks and improving learning outcomes (Fagan, 2019). **Human information behavior** is highly examined in the works conducted by Wilson, 1999; Wilson, (2000); Spink, & Cole, (2006); Case, & Given, (2016); and Lavidas, Komis, & Achriani, (2022). Wilson, (1999) paper presents an outline of models of information seeking and other aspects of information behaviour, showing the relationship between communication and information behaviour in general with information

seeking and information searching in information retrieval systems. In other words, investigations into information requirements were concerned almost entirely with how a user navigated a given system and what he or she could do with the data (rather than information) made available by information systems. We can add consumer behavior research, marketing, psychology, health communication research, and a number of other disciplines that take the user as the focus of interest, rather than the system. In this paper, four terms are used: information behavior, information seeking behavior, information searching behavior and information use behavior. They are defined as follows: Information Behavior is the totality of human behavior in relation to sources and channels of information, including both active and passive information seeking, and information use. Information Seeking Behavior is the purposive seeking for information as a consequence of a need to satisfy some goal. In the course of seeking, the individual may interact with manual information systems (such as a newspaper or a library), or with computer-based systems (such as the World Wide Web). Information Searching Behavior is the ‘micro-level’ of behavior employed by the searcher in interacting with information systems of all kinds (Wilson, 2000). Spink, & Cole, (2006), examine the current three interdisciplinary approaches to conceptualizing how humans have sought information including (a) the everyday life information seeking–sense-making approach, (b) the information foraging approach, and (c) the problem–solution perspective on information seeking approach. Present a comprehensive review of over a century of research on information behavior (IB), (Case, & Given, 2016). Attitudes toward use, perceived usefulness, perceived ease of use, technological complexity, perceived self-efficacy, and subjective norm are the main determinants of faculty members’ behavioral intention to use LMS (Lavidas, Komis, & Achriani, 2022)

2.2.3 Infrastructural, Financial, and Pedagogical Challenges to Online Access

Infrastructural limitations: Unreliable power supply and slow internet bandwidth hinder smooth access to online legal databases. High subscription costs: Commercial legal databases are expensive, leading to “insufficient infrastructure, inadequate digitization, and the high cost of legal materials.” Information literacy gaps: Many students lack the technical skills needed to search and retrieve relevant case law or statutes effectively. Resource scarcity: Physical law libraries often lack updated local legislation, law reports, and supplementary international texts (Mwangkala, 2020). Learning effectiveness was operationalized through comprehension, participation, confidence, and academic performance (Bukuku, 2026). The findings indicated that lecturers generally perceive mobile devices as easy to use, particularly for accessing instructional materials and managing course content, with an overall mean score of 4.00. The study also revealed that lecturers find mobile devices useful for collaborative teaching, accessing resources, and evaluating student progress, with a total mean score of 4.12. However, there were some concerns regarding the ease of contacting students via mobile devices, which scored a lower mean of 3.80 (Maishanu, Abdulkadir, & Zanna, 2024).

Likewise, studies by Maishanu, Abdulkadir, & Zanna, 2024 and Shemahonge, & Mtebe, (2018), found that the majority of instructors indicated that the system enabled them to provide prompt and effective technical and pedagogical support to learners. Moreover, instructors found the system was a useful tool for tracking students’ progress and conducting formative assessment through reading and responding to students’ reflections for each module. This research extends our knowledge on how mobile technology can be used to support students in a number of blended distance courses offered by several universities in.

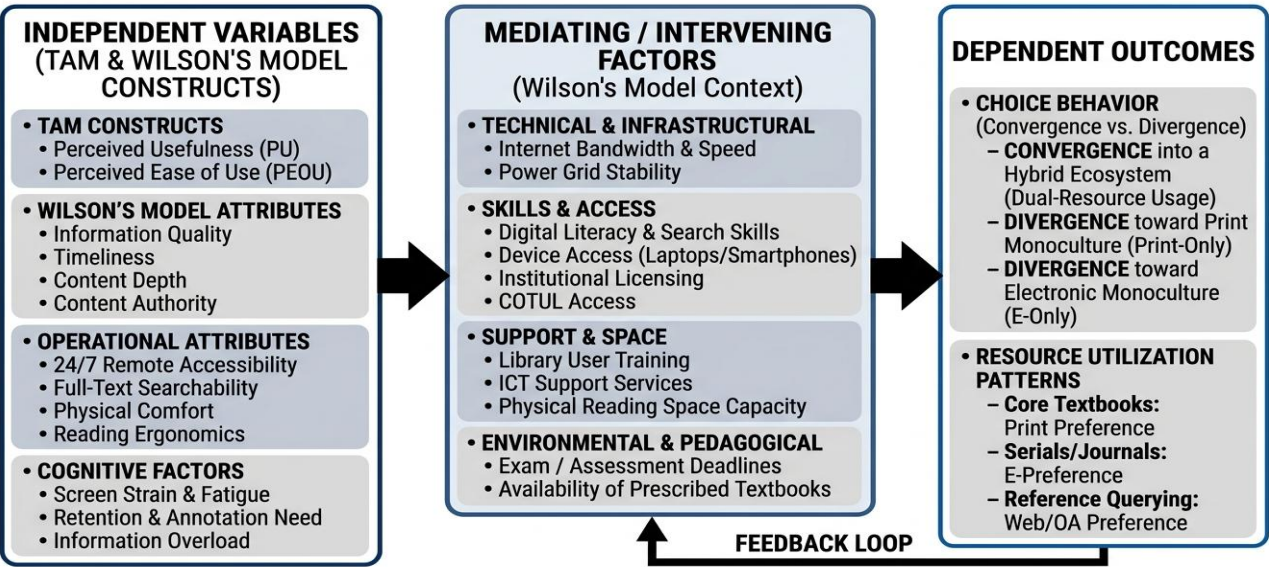
The study asserts that there are financial hurdles and opportunities for academic libraries transitioning to electronic resource models. In addition, the study addresses the complexities of balancing traditional print expenses with digital subscription costs under varying institutional priorities (Matus, 2021). The respondents cited the lack of staff, dedicated physical space, and inadequate equipment and funding as barriers to implementing a digitization program. Most of the respondents' digitization initiatives began in response to external triggers rather than as a part of a comprehensive strategy to provide digital library services. The project-based approach to these activities affects the sustainability of digitization programs. Lagas and Isip (2023).

It was evident from the findings that the majority of both the policy makers and researchers were aware of open access. However, most of the researchers accessed free online content more (62%) than they disseminated their scholarly content (20%) through open access (Dulle, 2011). Facilitating conditions and behavioural intentions were determined to be salient factors that positively influence the actual usage of Canvas by the students. The results from the data obtained partially support the UTAUT's ability to explain the factors responsible for the acceptance of educational technology in developing countries, in Nigeria specifically (Yakubu & Dasuki, 2019).

2.3 Conceptual Framework

Integrating TAM and Wilson's model yields a conceptual framework wherein independent variables (PU, PEOU, information quality, timeliness, and accessibility) interact with intervening infrastructural and behavioral factors (bandwidth stability, digital literacy skills, power reliability, and physical library seating) to shape the dependent outcome: Choice Behavior (Convergence into a Hybrid Ecosystem vs. Divergence toward Print or Electronic Monoculture).

FIGURE 2.3: INTEGRATED CONCEPTUAL FRAMEWORK (TAM + WILSON)



3.0 Methodology

3.1 Research Design and Study Areas

The study adopted a pragmatic research philosophy and a mixed-methods design. Due to the scope of the study positivism philosophy was adopted to handle objective themes obtained from

questionnaires and interpretivism philosophy of research was applied to deal with subjective themes which were dealt with by using the interviews and direct observations. This approach allowed for statistical description and comparison of resource usage patterns while capturing deep contextual nuances surrounding user information behavior. The study was conducted at both the Tanzania Institute of Accountancy (TIA) and Mzumbe University Mbeya campuses. Both are prominent public higher learning institutions located in Mbeya urban academic corridor in southwestern Tanzania. Due to triangulation methodology the longitudinal sequential approach was used during data collection.

3.2 Target Population and Sample Size

The target population comprised undergraduate and postgraduate students, academic staff members and library personnel across both institutions ($N \approx 3,200$). Yamane’s (1967) simplified formula for finite populations was utilized to determine a statistically representative sample size:

$n = N / [1 + N(e)^2]$ where $N = 3,200$ (total target population) and $e = 0.062$ (margin of error at 95% confidence level), yielding a calculated sample size of $n = 241$. To ensure adequate representation across academic strata and institutional contexts, the sample was stratified across institutional categories as detailed in Table 1.

Table 1: Stratified Sample Distribution across Study Sites

Respondent Category	TIA Mbeya Campus	Mzumbe Mbeya Campus	Total Sample (n)
Undergraduate Students	90	85	175
Postgraduate Students	15	20	35
Academic Staff	11	12	23
Library Personnel	4	4	8
Total	120	121	241

3.3 Data Collection Instruments and Protocol

Data collection used three complementary instruments: (1) Self-administered questionnaires distributed to students and faculty, featuring 5-point Likert scale items measuring TAM constructs (PU, PEOU) and format usage frequency. (2) Semi-structured interviews to 6 key informants were conducted. The six (6) key informants included two heads of libraries, two heads of departments and two deans of students to gather qualitative insights on licensing, bandwidth, collection policies and general information resources searching behavior; and (3) Physical library observation checklists utilized during peak and off-peak hours to assess seating capacity, printed media circulation, Internet terminal usage, and power access.

3.4 Data Processing and Analysis

Quantitative data were cleaned, coded, and analyzed using SPSS version 26. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were calculated by using central tendencies. For inferential analysis, a Pearson chi-square (χ^2) test of independence was conducted to examine differences in format preferences across the two campuses. Qualitative

interview data were analyzed using thematic and content analysis, following Braun and Clarke's six-phase framework, and integrated directly into the empirical narrative to contextualize statistical results.

4.0 Results and Findings

4.1 Response Rate and Demographic Profile

Out of 241 administered questionnaires, 228 fully completed questionnaires were retrieved, representing a response rate of 95.0% (115 from TIA Mbeya and 113 from Mzumbe Mbeya). The mean age of student respondents was 22.4 ± 3.1 years. Females accounted for 51.3% (n = 117) and males 48.7% (n = 111). All academic staff respondents (n = 21) possessed at least a Master's degree, ensuring high familiarity with academic literature searching.

4.2 Results from Questionnaires

4.2.1 Comparative Resource Preference and Usage Analysis

The findings indicate a strong preference for electronic information resources, alongside persistent reliance on core printed format books. Table 2 illustrates the comparative usage preference rates for print and electronic resource types across TIA and Mzumbe University Mbeya campuses.

Table 2: Comparative Resource Preference Rates across Resource Types

Resource Type / Category	TIA Mbeya (% Preference)	Mzumbe Mbeya (% Preference)	Combined Mean (%)
Print Physical Books	35.0%	40.0%	37.5%
Print Academic Journals	25.0%	30.0%	27.5%
E-Journals (Subscription/COTUL)	75.0%	82.0%	78.5%
E-Books (Online & PDF Copies/COTUL)	80.0%	85.0%	82.5%
Institutional Repositories (Theses/Dissertations)	65.0%	70.0%	67.5%
Web Search Engines & Open Access (Google Scholar)	90.0%	92.0%	91.0%

As shown in Table 2, web search engines and open-access portals recorded the highest usage preference across both TIA (90.0%) and Mzumbe (92.0%), followed closely by e-books (82.5% combined mean) and e-journals (78.5% combined mean). Conversely, print journals recorded the lowest preference (25.0% TIA, 30.0% Mzumbe), indicating substantially lower preference for print journals than for digital scholarly resources. However, physical print books retained a substantial baseline preference (37.5% combined mean), particularly during intensive revision periods.

4.2.2 Drivers of Information Format Selection

To identify key underlying behavioral motivators, respondents rated five core operational attributes on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). Table 3 provides the descriptive mean scores and standard deviations.

Table 3: Mean Rating Scores of Key Operational Drivers

Operational Driver / Attribute	TIA Mean (SD)	Mbeya Mean (SD)	Mzumbe Mean (SD)	Mbeya Mean (SD)	Overall Mean
24/7 Remote Accessibility	4.60 (0.52)		4.70 (0.48)		4.65
Ease of Searching & Navigation (Full-Text)	4.80 (0.41)		4.90 (0.32)		4.85
Currency / Timeliness of Information	4.50 (0.58)		4.60 (0.55)		4.55
Physical Ergonomics & Reduced Eye Strain	3.20 (0.85)		3.40 (0.81)		3.30
Depth, Authority & Statutory Comprehensiveness	3.80 (0.72)		4.00 (0.68)		3.90

The data in Table 3 indicate that 'Ease of Searching' (Overall Mean = 4.85) and '24/7 Remote Accessibility' (Overall Mean = 4.65) were the highest-rated drivers of electronic resource use, strongly aligning with TAM's Perceived Ease of Use construct. Conversely, 'Physical Ergonomics/Reduced Eye Strain' scored lowest for digital media (Overall Mean = 3.30), suggesting that digital reading fatigue remains an important barrier to complete digital migration.

4.2.3 Statistical Hypothesis Testing: Chi-Square Test of Independence

To evaluate whether institutional affiliation (TIA vs. Mzumbe) significantly influenced overall information source format choice (Print Dominant, E-Resource Dominant, or Hybrid Preference), a Chi-Square test of independence was executed. Table 4 presents the cross-tabulation and test results.

Table 4: Cross-Tabulation and Chi-Square Test on Resource Preference by Institution

Institution		Print Dominant	E-Resource Dominant	Hybrid Preference	Total Respondents
TIA Campus	Mbeya	18 (15.7%)	54 (47.0%)	43 (37.3%)	115 (100.0%)
Mzumbe Campus	Mbeya	14 (12.4%)	58 (51.3%)	41 (36.3%)	113 (100.0%)
Total Sample		32 (14.0%)	112 (49.1%)	84 (36.8%)	228 (100.0%)

The Pearson Chi-Square statistical test yielded $\chi^2 = 0.6730$, $p = 0.7143$. Because the p-value is well above the standard significance level of $\alpha = 0.05$, This indicates no statistically significant difference in format preference between TIA Mbeya Campus and Mzumbe University Mbeya Campus College. Academic users across both institutions exhibit highly parallel behavioral trends and resource selection patterns.

4.3 Findings from Semi-structured Interviews and Direct Observations

4.3.1 Current status of utilization of library printed information resources versus online electronic information resources by students and staff members

Heads of libraries in both institutions informed that highest peak of printed resources utilization is during exam seasons. “During exam seasons we normally experience influx trend of students attending to the library in search of reference services, reading and book borrowing compared to other days”. Also, it was reported that electronic format resources subscribed from the Consortium of Tanzania University and Research Libraries (COTUL), as well as open access information materials from web searches are highly accessed and utilized during other days of the study semester specifically for self reading, answering assignments and doing research works. Obviously, it was found that the changes on information search behavior are mainly influenced by tasks and seasons.

4.3.2 Operational and behavioral drivers influencing user preferences for printed or electronic formats

Through observation and interview it showed that electronic resources were favoured by students due to factors such as 24/7 remote accessibility, ease of searching & navigation (full-text), currency or timeliness of information while physical ergonomics and reduced eye strain, depth, authority and statutory comprehensiveness were found as the factors behind preference of printed resources to e-resources. Other factors included easy of handling and use, no need of devices such as phones and recharge bundles.

4.3.3 Infrastructural, financial, and pedagogical challenges impeding effective access to online information resources across both campuses

By observation and interview method the findings indicated inadequacy in terms of Infrastructures, finance, and pedagogical matters impeded effective provision and access to online information resources across both campuses

5.0 Discussion

5.1 Convergence versus Divergence

5.1.1 The Divergence Narrative

A superficial inspection of the preference statistics suggests a narrative of technological divergence, a one-way transition toward exclusive digital reliance. Students and academic staff increasingly bypass physical library stacks in favor of mobile browsing, PDF e-books, and open-access repositories. Key operational drivers—instant keyword searchability, remote 24/7 access, and real-time updates for legal and accounting codes—align strongly with TAM's Perceived Usefulness and Ease of Use constructs. Modern academic workflows heavily favor digital discovery.

5.1.2 The Convergence Reality: Functional Division of Labor

However, deep qualitative analysis and observational data reveal a far more nuanced pattern of functional convergence. Academic users do not abandon print media; rather, they assign specialized, complementary functional roles to each format based on learning contexts:

- i. Electronic Sources: Utilized primarily for rapid literature discovery, preliminary research screening, downloading empirical articles, accessing current legislation updates, and verifying accounting standards.
- ii. Print Resources: Retained for deep, sustained reading, complex conceptual learning, legal case synthesis, and intensive exam preparation where deep cognitive retention, physical annotation, and freedom from screen fatigue are critical.

This functional division of labor demonstrates that higher education in Tanzania is experiencing systemic resource convergence, a structural state where print and electronic resources coexist as an interdependent, dual-engine information ecosystem.

5.2 Institutional and Infrastructural Challenges

Despite the benefits of a hybrid environment, several critical barriers impede optimal resource utilization across both campuses:

- i. Bandwidth Volatility and Network Bottlenecks: Intermittent campus Wi-Fi connectivity and slow download speeds during peak hours severely disrupt access to heavy subscription databases and institutional repositories.
- ii. Information Literacy Deficits: A significant proportion 91.0% of undergraduate students possess superficial digital searching skills (relying primarily on generic Google searches) and lack advanced Boolean query formulation skills for scholarly databases.
- iii. Physical Print Scarcity and Shortages: Core prescribed textbooks in law, taxation, and auditing face high demand and insufficient physical volume counts, leading to severe library overcrowding during examination cycles.
- iv. Power Grid Instability: Frequent electrical power outages interrupt library computer laboratory operations and deactivate local network routers, temporarily paralyzing access to digital systems.

6.0 Conclusion and Recommendations

6.1 Conclusion

This comparative study evaluated whether academic information seeking at TIA Mbeya Campus and Mzumbe University Mbeya Campus College is undergoing divergence toward digital exclusivity or convergence toward a hybrid model. The empirical evidence indicates that while electronic resources have secured primacy for speed, currency, and remote convenience, print media remain important in cognitive study practices and core textbook reading. The dynamic is not a zero-sum substitution, but rather a functional convergence into an integrated hybrid ecosystem. Institutional policies must evolve to nurture and support both formats simultaneously. The study concludes that higher education in Tanzania is experiencing structural convergence toward an interdependent dual-resource ecosystem.

6.2 Recommendations

To optimize this hybrid information paradigm, the study offers the following actionable recommendations:

- i. Infrastructure Hardening & Bandwidth Expansion: University management must upgrade campus internet bandwidth allocation, deploy high-density wireless access points, and invest in off-grid solar power backup systems and local caching servers to guarantee uninterrupted database access.
- ii. Curriculum-Embedded Digital Literacy Instruction: Transform standalone library orientation into mandatory, credit-bearing information literacy modules integrated into first-year curricula. Training should cover advanced database querying, reference management software (e.g., Mendeley, Zotero), and critical evaluation of scholarly sources.
- iii. Smart Hybrid Collection Development Policies: Library acquisition committees should adopt a targeted dual-format policy: procure core undergraduate textbooks in multiple print copies alongside multi-user e-book licenses, while transitioning journal subscriptions and archival research entirely to electronic platforms.
- iv. Physical Library Space Re-Engineering: Redesign physical library layouts into flexible, multi-functional spaces combining quiet individual study zones for deep print reading with collaborative learning commons equipped with power charging ports and high-speed network access.

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