Digital Resource Utilization by Users in Academic Libraries in Uganda: A case of Makerere University Library

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Abstract

This study investigates digital resource utilization at Makerere University Library in Uganda. The objectives were to identify digital resources utilized, examine how social influence and resource acquisition affect utilisation, determine awareness levels' influence, and examine challenges faced. Using an explanatory research design with a quantitative approach, data were collected via questionnaires from 129 respondents (32 library staff and 97 users). Findings show varying awareness levels of digital resources, with electronic books and working papers having highest awareness and microfilms the lowest. Regression analysis indicated social influence, resource acquisition, and awareness levels had a significant, moderately positive relationship with digital resource utilisation. However, under utilisation was evident, with 64% of users rarely or never using digital resources, and 70% never logging into the library system. Challenges included limited publicity, inadequate ICT skills, infrastructural constraints, and administrative barriers. The study recommends implementing digital literacy training, awareness campaigns, infrastructure upgrades, clear policies, and user feedback assessments to enhance digital resource utilisation.

Keywords: Digital Resource Utilization, Library Users, Academic Libraries

1. Introduction

Digitizing academic libraries has become crucial, as evidenced by efforts at the Makerere University Library (Bawack, 2019; Nakata, 2015). This initiative aims to enhance access to digital resources across communities. Makerere University Library has digitised its collection, starting with newspaper microfilms, improving accessibility (Magara & Mayega, n.d.). This effort has served as a model for other libraries, accelerated by COVID-19 (Landoy & Faerevaag, 2020; Mehta & Wang, 2020; Nzeyimana et al., 2022). The library's digitisation began in 2003 with its first website. In 2013, it adopted social media platforms and introduced an online teaching platform, requiring enhanced e-resource provision. By 2014, demand for online library services increased due to e-resource accessibility. Users benefit from self-serving kiosks with 24/7 access, automated transactions, and computer keyword search

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across the catalogue and digital repository. Research (Nakaziba & Ngulube, 2024) showed increased library utilisation by students and scholars. Namaganda (2021) noted that digitalization enhances information accessibility and operational effectiveness. Makerere University Library uses an RFID-based Library Management System with components including staff workstations, self-check stations, and access control. This study aimed to assess digital resource utilisation at Makerere University Library, exploring user patterns, challenges, and opportunities associated with their use.

The utilisation patterns and preferences of users in academic libraries have changed rapidly towards digital resources all over the world, but there is still a lack of understanding of these trends. Despite the growing presence of digital resources in academic libraries, there is a gap in the understanding of the factors influencing their utilisation among users, particularly in the context of the Makerere University Library in Uganda. While the implementation of digital resources has the potential to enhance research and learning experiences, the extent to which users embrace and integrate these resources into their academic pursuits remains unclear. This study aims to investigate digital resource utilisation behavior among users of the Makerere University Library, drawing upon the Unified Theory of Acceptance and Use of Technology (UTAUT) framework to identify key determinants and predictors influencing adoption and usage patterns. This research aims to investigate the utilisation of digital resources by users of academic libraries using the case of the Makerere University Library.

Objectives

a) To examine the extent to which social influence contributes to the utilisation of digital resources in Makerere University Library
b) To examine the influence of resource acquisition on the utilisation of digital resources in Makerere University Library
c) To determine the degree to which awareness levels among users influence the utilisation of digital resources in Makerere University Library

Research Questions

a) To what extent does social influence contribute to the utilisation of digital resources in Makerere University Library?
b) What is the influence of resource acquisition on the utilisation of digital resources in Makerere University Library?
c) To what degree do awareness levels among users influence the utilisation of digital resources in Makerere University Library?

2. Literature Review

Digital resource use in academic libraries is influenced by technology, policies, and behaviors (Acanit et al., 2024). Social influence shapes digital resource adoption and attitudes (Changalima et al., 2024). Tshabalala & Dube (2024) note individuals conform to group norms, adopting digital resources. Students use resources recommended by peers or instructors (Deja et al., 2021). Researches (Babalola & Adeyeye, 2022; Muhammad & Makinde, 2025) shows social influence significantly affects library system acceptance. Social learning and collaboration enhance digital resource use. Group projects and

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research require digital resources. Social learning environments promote digital resource use (Fasola & Abimbola, 2023). Students view digital resource use as normative, driven by academic expectations (Getenet et al., 2024). Libraries use social influence via marketing, workshops, and initiatives to promote digital resources. Promoting information-sharing improves accessibility and impact, suggesting social factors influence digital resource use at Makerere University.

Digital technologies have made digital resources central to academic libraries' mission (Raja et al., 2024). Bawden & Robinson (2020) noted that e-books, e-journals, databases, and multimedia content meet users' evolving digital needs. Libraries acquire these resources through licensing agreements and subscriptions from publishers. However, complex licensing terms and budget constraints pose challenges. George (2024) noted that academic libraries support open access initiatives, promoting equitable access to digital scholarly resources.

Digital resource utilisation in libraries depends on availability and users' awareness of their existence and functionality. According to Bawa et al. (2018), users' information behavior influences their awareness and utilisation of digital resources in academic libraries. Users' information-seeking habits and awareness shape their interactions with digital library services. Odung & Agungi (2023) emphasise the importance of promotion strategies to increase users' awareness of digital resources. Nayana (2019) highlighted promotional activities and library instruction sessions in raising awareness of digital resources. A study (Ashaver et al., 2024) showed a correlation between awareness and utilisation. Francis (2023) found students aware of digital resources were more likely to use them for research than those with limited awareness, depicting a direct relationship between awareness levels and resource utilisation patterns.

3. Methodology

This study used an explanatory research design with a quantitative approach. Data were obtained from 129 respondents comprising 32 library staff and 97 weekly library users from the Makerere University library. The sample for each category was determined using the Krejcie and Morgan table (1970). Library staff received online questionnaires via Google forms with closed-ended questions, while users received printed questionnaires to complete at their convenience. Questions used scale queries with prewritten responses measured on a 3-point Likert scale (disagree, not aware, and agree). Data from questionnaires were cleaned, coded statistically, and captured in MS excel for analysis and presentation as charts. All numerical data were analyzed quantitatively using descriptive and inferential statistics. The data are presented as frequencies, measures of central tendency (mean, median, and mode), and graphs, including pie charts and bar charts.

4. Findings

Digital resources and services are critical to modern academic libraries, enabling access to information and supporting research activities. Social influence shapes individuals' attitudes toward digital resource adoption at Makerere University Library. Peer encouragement, academic community expectations, and recommendations from lecturers and librarians affect users' engagement with digital information systems.

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Table 1: Social Influence and digital resource utilization (Field data, 2024)

Summary Output

Regression Statistics	
Multiple R	0.444742
R Square	0.197796
Adjusted R Square	0.193459
Standard Error	0.324203
Observations	187

ANOVA

	df	SS	MS	F	Significance F
Regression	1	4.794427	4.794427	45.61452	1.81E-10
Residual	185	19.44488	0.105107		
Total	186	24.23931			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	1.594397	0.085407	18.66816	2.05E-44	1.425899	1.762895
Social Influence	0.223577	0.033104	6.753852	1.81E-10	0.158268	0.288886

Table 1 shows regression statistics indicating a moderate positive correlation between social influence and digital resource utilisation in Makerere University library. The R Square (0.198) indicates 19.8% variance explanation, while adjusted R Square (0.193) confirms the predictor's meaningful contribution. The model's prediction error (0.324) measures accuracy around the regression line, showing moderate explanatory power.

The ANOVA results show a statistically significant relationship between variables. The regression model has 1 degree of freedom, residual 185, totaling 186. The regression explains 4.79 of total variances (24.24) with residual variance at 19.44. The mean square for regression (4.794) exceeds residuals (0.105), indicating robust explanatory power. An F-value of 45.61 and p-value (1.81E-10) below 0.05 confirm the predictor significantly explains variance in the response variable. The coefficient table shows a baseline value of 1.594 when the predictor is zero, with significant t-statistic (18.67) and p-value (2.05E-44). The predictor's positive coefficient (0.224) indicates response variable increase per unit increase in predictor, with statistical significance ($t = 6.75$, $p = 1.81E-10$). Confidence intervals (95%) for intercept (1.426 to 1.763) and predictor (0.158 to 0.289) reinforce their significance. Resource acquisition shapes how digital resources are utilized in academic libraries. At Makerere University Library, acquiring and organizing digital materials influences user engagement and service quality.

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Table 2: Influence of Resource Acquisition on the Utilisation of Digital Resources

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.468102
R Square	0.219119
Adjusted R Square	0.214898
Standard Error	0.319865
Observations	187

ANOVA

	df	SS	MS	F	Significance F
Regression	1	5.3113	5.3113	51.91198	1.42E-11
Residual	185	18.92801	0.102314		
Total	186	24.23931			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	1.717454	0.064243	26.73353	1.89E-65	1.59071	1.844198
Resource Acquisition	0.217588	0.0302	7.204997	1.42E-11	0.158008	0.277167

(Field data, 2024)

The regression summary shows a moderate positive correlation (multiple R=0.468) between variables, with R Square (0.219119) explaining 21.9% of response variance. The adjusted R Square (0.215) and Standard Error (0.320) indicate reasonable model accuracy, showing the predictor meaningfully contributes to explaining outcome variability. The ANOVA results demonstrate statistical significance with 1 degree of freedom for regression and 185 for residuals. The model explains 5.31 of total variances (24.24), with residual variance of 18.93. The mean square for regression (5.311) exceeds residuals (0.102), indicating substantial explanatory power. The high F-value (51.91) and low p-value (1.42E-11) confirm the model's significance and predictor's effect. The regression coefficients show statistical significance for both intercept and resource acquisition. The intercept (1.717) has a high t-statistic (26.73) and low p-value (1.89E-65). Resource acquisition shows a positive effect (0.218) with significant t-statistic (7.20) and p-value (1.42E-11). Confidence intervals (1.591 to 1.844; 0.158 to 0.277) validate these findings, confirming resource acquisition's significant positive effect on digital resource utilization at Makerere University Library.

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Table 3: Awareness levels and utilisation of digital resources

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.519421
R Square	0.269798
Adjusted R Square	0.265851
Standard Error	0.309311
Observations	187

ANOVA

	df	Sum of Squares	MS	F	Significance F
Regression	1	6.539723	6.539723	68.35463	2.6E-14
Residual	185	17.69959	0.095673		
Total	186	24.23931			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	1.439422	0.088704	16.22724	2.1E-37	1.264421	1.614424
Awareness Levels	0.296994	0.035922	8.267686	2.6E-14	0.226124	0.367865

(Field data, 2024)

From Table 3, the regression statistics show a moderate positive correlation (multiple R=0.519) between awareness levels and digital resource utilisation at Makerere University. The R Square (0.270) indicates 27% of resource utilisation variance is explained by awareness levels, while the adjusted R Square (0.266) confirms the predictor's significance. The standard error (0.309) shows reasonable prediction accuracy around the regression line, indicating a statistically significant but not exhaustive influence from awareness levels. The ANOVA results demonstrate the regression model's statistical significance in explaining digital resource utilisation variance. With 1 degree of freedom and 185 residuals, the regression sum of squares (6.54) shows explained variance while residual sum (17.70) represents unexplained variance. The mean square for regression (6.540) exceeds residuals (0.096), and the high F-value (68.35) with extremely low p-value (2.6E-14) confirms the predictor significantly explains variance in digital resource utilisation at Makerere University.

5. Discussion of the Study Findings

The findings reveal a moderate relationship between social influence and digital resource utilization at Makerere University Library. The R Square of 0.198 indicates social influence explains 19.8% of variance in utilization, suggesting other unaccounted factors. This aligns with Venkatesh et al. (2003) on UTAUT, which found social influence significant but one of several contributors to technology adoption. The ANOVA results show model robustness ($F=45.61$, $p<0.05$), with the difference between regression and residual mean squares (4.794 vs. 0.105) emphasizing social influence's explanatory strength. The predictor's positive coefficient (0.224) suggests increased social influence raises digital resource utilization, supporting findings from multiple studies (Batra et al., 2024; Yue et al., 2024). The significant intercept and non-zero confidence intervals reinforce model reliability. While social

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influence is meaningful, the modest R Square suggests exploring additional factors like ease of access and digital literacy.

The regression analysis shows a moderate positive relationship between resource acquisition and digital resource utilization, with R Square (0.219) indicating resource acquisition explains 21.9% of variance. These align with Venkatesh et al. (2003) on technology acceptance. ANOVA results ($F=51.91$, $p<0.05$) confirm the model's significance, while the regression coefficient (0.218) suggests improved resource availability increases utilization. Mutuma et al. (2024) support this, noting accessible resources drive engagement in academic settings. While resource acquisition is crucial, additional variables should be explored to explain usage patterns.

The regression analysis shows a moderate positive correlation between user awareness and digital resource utilization at Makerere University Library with a multiple R of 0.519 and R Square of 0.270, indicating awareness explains 27% of usage variance. This aligns with Rogers (2003), suggesting awareness is key in technology adoption. The unexplained variance indicates other factors like ease of access may influence utilization as per the Technology Acceptance Model (Davis, 1989). The ANOVA results support the model's significance with an F-value of 68.35, confirming awareness levels predict digital resource utilization. The difference between regression mean square (6.540) and residual mean square (0.096) shows the model's explanatory strength.

6. Conclusion

The findings show significant influence of social factors, resource acquisition, and awareness on digital resource utilization at Makerere University Library. Despite diverse digital offerings, underutilization persists due to awareness gaps, ICT skills, and infrastructural challenges. The study indicates the need for digital literacy training, improved infrastructure, and promotional initiatives to enhance resource utilization and academic productivity at the university.

7. Recommendations

Makerere University Library should implement digital literacy training sessions to equip users with skills for accessing digital resources through workshops and tutorials on navigating online systems and databases. The library should conduct awareness campaigns through resource guides, online tutorials, and informational events to increase visibility. Digital resource usage should be incorporated into academic syllabi to encourage adoption. The library should upgrade digital infrastructure by investing in reliable internet access, expanding wireless points, and increasing bandwidth. Collaboration with ICT departments can enhance technical support and improve user experiences. To address device access barriers, the university should increase provision of computers within the library and create device loan programs to ensure equitable access to digital content. The university should establish policies on digital resource management covering copyright, funding, and sustainability to support resource acquisition while ensuring compliance. Regular user feedback collection and needs assessments can help the library adapt services, identify gaps in resources, and improve offerings to meet user expectations.

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