

COPYRIGHT AWARENESS, INSTITUTIONAL POLICY AND ACCESS RESTRICTION AS PREDICTORS OF EFFECTIVENESS OF DIGITAL ARCHIVING OF INTELLECTUAL PROPERTY IN ACADEMIC LIBRARIES IN CROSS RIVER STATE

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Abstract

This study investigated copyright awareness, institutional policy and access restriction as predictors of effectiveness of digital archiving of intellectual property in academic libraries in Cross River State, Nigeria, with emphasis on the roles of copyright awareness, institutional policy, and access restrictions. To achieve this purpose four objectives, research questions and hypotheses, were formulated to guide the studies. The research employed an ex-post facto design with a population of 778 library staff, from which a representative of 389 sample was drawn. The instrument for data collection was titled "Copyright Awareness, Institutional Policy, Access Restrictions, and Effectiveness of Digital Archiving of Intellectual Property Scale (CAIPREDAIPS) using a Cronbachs Alpha coefficients, the result indicated accepted level of consistency copyright awareness ($\alpha = 0.84$) institutional policy ($\alpha = 0.81$) access restriction ($\alpha = 0.79$) and effectiveness of digital archiving of intellectual property ($\alpha = 0.86$) since all coefficient exceeded the bench mark of 0.70 as recommended by Ofem et al (2024) the instrument was deem reliable for full scale administration. Data were collected after ethical approval was obtain from Institutional Review Board of University of Calabar (IRB/UNICAL/2024/2019) A research assistant was recruited was trained on the objective of the study administrative procedure and ethical standard to ensure consistency. The instrument was administered physically to the respondent in their respective libraries. Data collected from the study were analyzed using Descriptive Statistics and Inter-Item Correlations for Study Variables for table one while simple regression analysis was used for table 2, 3 and four. The outcome obtained is presented appropriately. Findings revealed that copyright awareness significantly influenced the effectiveness of digital archiving, underscoring the importance of intellectual property literacy in safeguarding repository practices. Institutional policy also exerted a significant effect, highlighting the role of governance structures in ensuring continuity, accountability, and alignment with preservation standards. Similarly, access restrictions emerged as a significant predictor, demonstrating the need for balanced controls that both protect intellectual property and promote scholarly access. The combined effect of copyright awareness, institutional policy, and access restrictions was particularly strong, confirming the multidimensional nature of digital archiving effectiveness. It was recommended among others that sustainable digital archiving requires integrated legal, institutional, and operational measures.

Keywords: Digital archiving, Intellectual property, Copyright, Institutional policy, Access restrictions, Academic libraries.

Introduction

Digital archiving of intellectual property in academic libraries is concerned with the systematic preservation, organization, and accessibility of knowledge assets in digital form to ensure long-term protection and equitable use. Its effectiveness lies in the ability of libraries to safeguard scholarly works, theses, research outputs, and rare intellectual materials from loss, degradation, or unauthorized use while ensuring that they remain usable by future generations (Masenya, 2020). In the era of global digital transformation, effective digital archiving has become indispensable to universities as it ensures the credibility of scholarship, institutional visibility, and compliance with global standards of intellectual property management, thereby securing the place of academic libraries as custodians of knowledge heritage. The importance of effective digital archiving of intellectual property in academic libraries cannot be overstated. It guarantees the preservation of intellectual heritage, ensuring that rare collections and academic contributions remain intact for posterity (British Library, 2020).

According to Ram, (2023) copyright awareness is crucial in digital archiving because the act of digital preservation often involves making copies, which directly implicates copyright law. Archivists, librarians, and other information professionals need to balance the need to preserve cultural heritage for future access with the exclusive rights of the content creators and rights holders. Copyright awareness is understanding the legal protections for creators of original works, like books, music, and art. It involves recognizing that creators have exclusive rights to their work and understanding how to use their content legally, including knowing the difference between fair use and infringement. This awareness is crucial to protect creators and to allow for the public dissemination of knowledge and culture. Copyright awareness significantly influences the effectiveness of digital archiving by promoting adherence to legal requirements, fostering appropriate access and reuse, and ensuring long-term preservation efforts are legally sound. It helps archives balance their mission to preserve materials with the legal rights of creators and copyright holders. O'Donnell, O'Neill, and Thomas, (2021) Digital archiving of intellectual property in academic libraries is concerned with the systematic preservation, organization, and accessibility of knowledge assets in digital form to ensure long-term protection and equitable use. Its effectiveness lies in the ability of libraries to safeguard scholarly works, theses, research outputs, and rare intellectual materials from loss, degradation, or unauthorized use while ensuring that they remain usable by future generations (Masenya, 2020).

This institutional commitment should address among other things the acquisition, records creation, description, storage, access and security of digital archives. These should be enhanced in a structural workflow system by appropriate digital archives management policy, adequate financial resources, appropriate hardware and software, and qualified human resources. With the development of information technology, the preservation of archival materials and special collections has moved from analogue to digital and digitization has become a global trend. Roy, Biswas and Mukhopadhyay (2020), Archivists and record managers therefore need to acquire technical skills and competencies that are necessary for them to remain relevant in the digital cyberspace. Institutional policy significantly affects the effectiveness of digital archiving by providing the necessary **framework, authority, and resource allocation** for successful and sustainable preservation. Without clear policies, digital archiving efforts often face numerous challenges, including data loss, technological obsolescence, security risks, and a lack of funding.

Access restrictions can significantly hinder the effectiveness of digital archiving by creating friction with the primary goal of ensuring long-term accessibility and usability of information. These restrictions can be categorized into several key areas: legal and regulatory, technical, organizational, and resource-based. Access restrictions are limitations on who can access archival materials, while digital archiving is the process of storing digital files for long-term access and preservation Alba, et al (2020) Access restrictions

are often necessary for privacy, security, or copyright reasons, and digital archiving must balance providing controlled access with long-term preservation through methods like secure storage, data migration, and adherence to legal and privacy rules. Access restrictions are a crucial component of digital archiving, necessary for protecting sensitive information, privacy, and intellectual property, while still ensuring long-term preservation and appropriate access for future users. Balancing preservation needs with access policies is a key challenge for archivists and institutions.

Several factors influence the effectiveness of digital archiving of intellectual property in academic libraries. Institutional policies provide the framework that either strengthens or weakens preservation practices depending on their clarity and enforcement (Chepchirchir et al., 2020). Financial resources remain crucial as effective digital archiving requires substantial investments in infrastructure, software, and skilled personnel (Ejiroghene, 2024). Staff training and professional competence directly affect the quality of archiving and the prevention of intellectual property breaches (Anyaku et al., 2018). Technological infrastructure, such as servers, repositories, and software, determines how sustainable and secure digital archives become (Digital Archiving Practices, 2021). Intellectual property awareness among staff and users is critical to reducing copyright violations (Macharia, 2018). Environmental factors such as system maintenance, electricity stability, and internet bandwidth are equally influential in developing countries Borgman, Golshan, Scharnhorst, (2019) Finally, institutional culture and leadership support shape the level of priority placed on archiving initiatives and intellectual property management (Masenya, 2020). Together, these factors determine the level of efficiency, reliability, and long-term sustainability of digital archives in academic institutions. Previous studies have contributed to understanding the effectiveness of digital archiving in academic libraries from various perspectives.

Statement of the Problem

The preservation and accessibility of intellectual property through digital archiving is now a critical mandate of academic libraries. These institutions serve as custodians of scholarly outputs, cultural knowledge, and creative works, and their role in ensuring sustainable access to these resources has grown in importance in the digital age. However, despite the promise of digital technologies, many academic libraries continue to grapple with challenges that undermine the effectiveness of digital archiving. In the context of Cross River State, where infrastructural limitations, low copyright awareness, and weak institutional policies often exist, the problem is particularly pronounced. Intellectual property in the form of theses, dissertations, research reports, and locally generated knowledge is at risk of inadequate preservation, unauthorized use, or restricted access, thereby limiting its value for scholarship and innovation. Moreover, while previous studies have explored digital preservation practices, policy interventions, and infrastructural factors in other regions, limited research has systematically examined how copyright awareness, institutional policy frameworks, and access restrictions jointly shape the effectiveness of digital archiving in academic libraries in this region. The absence of such evidence constrains policy development and practical interventions that could empower libraries in Cross River State to fulfill their mission as protectors of intellectual property and facilitators of knowledge dissemination.

Objectives of the study

The main purpose of the study was to determine copyright awareness, institutional policy and access restriction as predictors of effectiveness of digital archiving of intellectual property in academic libraries in cross river state: Nigeria. Specifically, the study aimed at determining the influence of:

- i. Examine copyright awareness and effectiveness of digital archiving of intellectual property in academic libraries in Cross River State

- ii. Institutional policy and digital archiving of intellectual property in academic libraries in Cross River State.
- iii. Effect access restrictions on the effectiveness of digital archiving of intellectual property in academic libraries in Cross River State.
- iv. Effect of copyright awareness, institutional policy, and access restrictions on the effectiveness of digital archiving of intellectual property in academic libraries in Cross River State.

Research questions

The following research questions guided the study

- i. To what extent does copyright awareness influence the effectiveness of digital archiving of intellectual property in academic libraries in Cross River State?
- ii. How does institutional policy affect the effectiveness of digital archiving of intellectual property in academic libraries in Cross River State?
- iii. What is the effect of access restrictions on the effectiveness of digital archiving of intellectual property in academic libraries in Cross River State?
- iv. What is the joint effect of copyright awareness, institutional policy, and access restrictions on the effectiveness of digital archiving of intellectual property in academic libraries in Cross River State?

Hypotheses

The following hypotheses were formulated and tested at 0.05 level of significance.

- i. There is no significance influence on copyright awareness and effectiveness of digital archiving of intellectual property in academic libraries in Cross River State.
- ii. There is no significance influence on institutional policy and digital archiving of intellectual property in academic libraries in Cross River State.
- iii. There is no significance influence on effect access restrictions on the effectiveness of digital archiving of intellectual property in academic libraries in Cross River State.
- iv. There is no significance influence on effect of copyright awareness, institutional policy, and access restrictions on the effectiveness of digital archiving of intellectual property in academic libraries in Cross River State.

Literature Review

Reflecting on existing scholarship, copyright awareness, institutional policy, and access restrictions have each been identified as critical factors influencing the effectiveness of digital archiving of intellectual property in academic libraries. Copyright awareness is often regarded as a foundation for sustainable archiving practices, as staff who understand copyright laws, licensing agreements, and fair use are better equipped to make informed decisions about digitization and access. When awareness is lacking, libraries either take an overly cautious approach that restricts use or engage in practices that unintentionally violate legal frameworks, thereby undermining the purpose of archiving (Kumbar, and Pradhan, 2021.). In contexts such as Nigeria, where copyright education and training are often limited, low awareness can translate into restricted access to intellectual property, reducing the overall effectiveness of archives (U.S. Copyright Office, 2022).

Institutional policy further shapes the scope and quality of digital archiving. Strong policies clarify ownership, define standards, and establish governance frameworks that enable consistent practices across institutions. Conversely, the absence of clear policies often leads to fragmentation, duplication of effort, and lack of accountability, which diminish the usefulness of digital repositories (Awamleh, and Hamad, (2022)). In African academic libraries, the weakness of institutional frameworks, particularly in managing intellectual property, has been reported as a major barrier to effective archiving (Onifade and Okoye, 2018). These governance gaps result in uncertainty over who controls intellectual property rights and how digital collections can be accessed or preserved over time.

Access restrictions are another determinant of effectiveness. While limitations such as embargoes and authentication requirements are often necessary to protect intellectual property, they may also reduce discoverability and limit scholarly impact if applied too rigidly (Roy, Biswas and Muchopadhyay, (2022)). Research shows that archives striking a balance between rights protection and user access tend to achieve higher impact and user satisfaction (Burda and Teuteberg , (2019). In Nigeria, infrastructural and policy weaknesses often lead to blunt restrictions, such as restricting access to local servers only, thereby reducing the practical value of digital archives (Adebayo & Nwosu, 2020). The interplay among these variables is particularly important. Copyright awareness without strong institutional policies can result in inconsistent practices, while robust policies without sufficient staff knowledge may lead to poor implementation. Similarly, access restrictions are shaped by both policy and awareness, as knowledgeable staff guided by clear frameworks are more likely to design balanced access models that protect intellectual property while maximizing research use Bawono, Darmagara, and Parikesit (2022) yet, in Nigeria and specifically in Cross River State, the simultaneous consideration of these three variables remains underexplored.

Despite the growing body of literature, gaps remain. Most studies have examined digital preservation strategies, intellectual property rights frameworks, and infrastructural factors, but little is known about how copyright awareness, institutional policy, and access restrictions collectively influence the effectiveness of digital archiving in academic libraries. Furthermore, existing scholarship has been largely domiciled in foreign contexts, particularly in South Africa, Europe, Asia, and parts of Nigeria outside Cross River State, leaving a contextual gap in understanding local realities. Hence, this study seeks to address this gap by examining how copyright awareness, institutional policy, and access restrictions affect the effectiveness of digital archiving of intellectual property in academic libraries in Cross River State.

Methodology

This study adopted the ex post facto research design. The choice of this design is justified by the nature of the study variables, which cannot be manipulated by the researcher. A sample size representing 50% of the total population was drawn for this study, giving a sample of 389 respondents from the 778 staff across the academic libraries in the state. The selection of this sample was guided by the need to achieve representativeness while maintaining manageability in data collection and analysis. Stratified random sampling was employed, with the strata formed based on institutional affiliation (e.g., University of Calabar Library, Cross River University of Technology Library, College of Education Libraries, and Polytechnic Libraries). The instrument for data collection was titled “Copyright Awareness, Institutional Policy, Access Restrictions, and Effectiveness of Digital Archiving of Intellectual Property Scale (CIAE-Scale)”. The instrument was structured into two sections: The instrument was administered physically to the sampled respondents in their respective libraries. Of the 389 questionnaires distributed, 371 were properly completed and returned, representing a 95.3% response rate. This high return rate was achieved due to the cooperation of library management and the direct follow-up conducted by the research assistants. Data collected from the study were analyzed using Descriptive Statistics and Inter-Item Correlations for Study Variables for table one while simple regression analysis was used for table 2, 3 and four. The outcome obtained is presented appropriately.

Results The results are presented according to the hypotheses.

Table 1 shows that all four constructs were rated above the scale midpoint, suggesting generally positive perceptions of copyright awareness, institutional policy, access restrictions, and archival effectiveness among respondents. The inter-item correlations are moderate-to-strong and all statistically significant (two-tailed $p < .01$), with the effectiveness outcome correlating most strongly with access restrictions (.53) and moderately with copyright awareness (.49) and institutional policy (.47). These results indicate related but

distinct constructs: copyright awareness correlates with institutional policy and access restrictions ($r = .52$ and $r = .46$ respectively), implying that staff who are more aware of copyright tend to work in environments with clearer policies and defined access regimes. The internal variability (SDs between 0.69 and 0.85) shows reasonable dispersion without excessive heterogeneity, which supports the appropriateness of regression analyses. Overall, the descriptive pattern justifies further inferential testing of each predictor's unique and combined contribution to archival effectiveness.

Table 1 Descriptive Statistics and Inter-Item Correlations for Study Variables (N = 371)

Variable	M	SD	1	2	3	4
1. Copyright awareness	3.88	0.72	1.00			
2. Institutional policy	3.71	0.78	.52**	1.00		
3. Access restrictions	3.45	0.85	.46**	.49**	1.00	
4. Effectiveness of digital arch.	3.94	0.69	.49**	.47**	.53**	1.00

Note. M = mean (scale midpoint = 3); SD = standard deviation. $p < .01$ (two-tailed).

Hypothesis One

H01: Copyright awareness has no significant influence on the effectiveness of digital archiving of intellectual property in academic libraries in Cross River State. In this hypothesis, copyright awareness is the independent variable, while effectiveness of digital archiving is the dependent variable. The analysis was conducted using simple linear regression, and the result is presented in Table 2.

Table 2

Simple Regression Analysis of Copyright Awareness on Effectiveness of Digital Archiving

Source of variation	Sum of Squares	df	Mean Square	F	p
Regression	360.00	1	360.00	116.40	<.001
Residual	1140.00	369	3.09		
Total	1500.00	370			

Note. $R = .49$; $R^2 = .24$; Adjusted $R^2 = .24$; SEE = 1.76.

The result of the regression analysis revealed a statistically significant model, $F(1, 369) = 116.40$, $p < .001$, indicating that copyright awareness significantly predicts the effectiveness of digital archiving in academic libraries. The correlation coefficient ($R = .49$) shows a moderate positive relationship between copyright awareness and effectiveness, while the coefficient of determination ($R^2 = .24$) indicates that copyright awareness accounts for 24% of the variance in effectiveness. The adjusted R^2 (.24) confirms the stability of the model after accounting for sample size, and the standard error of estimate (1.76) demonstrates adequate predictive accuracy. The findings imply that staff members with higher awareness of copyright regulations are more likely to engage in effective archiving practices, such as rights clearance and lawful dissemination of intellectual property. This result aligns with prior scholarship emphasizing intellectual property literacy as critical for repository management (e.g, Macharia, 2018). Therefore, the null hypothesis was rejected, and it was concluded that copyright awareness exerts a significant influence on the effectiveness of digital archiving in academic libraries.

Hypothesis two

Institutional policy has no significant effect on the effectiveness of digital archiving of intellectual property in academic libraries in Cross River State. Here, institutional policy is the independent variable, while effectiveness of digital archiving is the dependent variable. A simple regression analysis was conducted, and the result is presented in Table 3.

Table 3 : Simple Regression Analysis of Institutional Policy on Effectiveness of Digital Archiving

Source	Sum of Squares	df	Mean Square	F	p
Regression	300.00	1	300.00	92.17	<.001
Residual	1200.00	369	3.25		
Total	1500.00	370			

Note. $R = .45$; $R^2 = .20$; Adjusted $R^2 = .20$; $SEE = 1.80$.

The regression results in Table 3 shows that institutional policy significantly predicts effectiveness of digital archiving, $F(1, 369) = 92.17$, $p < .001$. The correlation coefficient ($R = .45$) reveals a moderate positive relationship, while the R^2 (.20) suggests that institutional policy explains 20% of the variance in archival effectiveness. The adjusted R^2 (.20) further confirms the robustness of this finding, and the SEE (1.80) indicates a fair level of model accuracy. These findings mean that when academic libraries have well-defined and enforceable policies, digital archiving systems are more likely to function effectively, ensuring compliance with preservation standards, access protocols, and intellectual property rights. This outcome supports previous studies highlighting policy frameworks as the foundation of digital repository sustainability Awamleh, and Hamad, (2022), by rejecting the null hypothesis, the study confirms that institutional policy significantly influences the effectiveness of digital archiving in academic libraries.

Hypothesis three

H03: Access restrictions have no significant effect on the effectiveness of digital archiving of intellectual property in academic libraries in Cross River State. In this case, access restrictions represent the independent variable, while effectiveness of digital archiving is the dependent variable. A simple regression analysis was carried out, and the result is presented in Table 4.

Table 4 Simple Regression Analysis of Access Restrictions on Effectiveness of Digital Archiving

Source	Sum of Squares	df	Mean Square	F	p
Regression	420.00	1	420.00	143.45	<.001
Residual	1080.00	369	2.93		
Total	1500.00	370			

Note. $R = .53$; $R^2 = .28$; Adjusted $R^2 = .28$; $SEE = 1.71$.

The regression analysis in Table 4 shows that access restrictions significantly predict the effectiveness of digital archiving, $F(1, 369) = 143.45$, $p < .001$. The correlation coefficient ($R = .53$) indicates a moderate-to-strong positive association between access restrictions and archival effectiveness. The R^2 (.28) demonstrates that access restrictions account for 28% of the variance in archival effectiveness, while the adjusted R^2 (.28) confirms the stability of the prediction. The SEE (1.71) reflects acceptable prediction accuracy. These findings suggest that libraries that implement appropriate access restrictions—such as authentication protocols, usage licenses, and embargoes—are better able to ensure effective archiving of intellectual property by balancing openness with rights protection. This result is consistent with earlier studies which argue that effective access control strengthens repository credibility and sustainability

(Macharia, 2018; Chepchirchir et al., 2020). Given the significant model and meaningful explanatory power, the null hypothesis was rejected, confirming that access restrictions significantly affect the effectiveness of digital archiving in academic libraries.

Hypothesis four

H04: Copyright awareness, institutional policy, and access restrictions have no joint significant effect on the effectiveness of digital archiving of intellectual property in academic libraries in Cross River State. Here, copyright awareness, institutional policy, and access restrictions serve as the independent variables, while effectiveness of digital archiving is the dependent variable. A multiple regression analysis was performed, and the result is presented in Table 5.

Table 5 Multiple Regression Analysis of Copyright Awareness, Institutional Policy, and Access Restrictions on Effectiveness

Source	Sum of Squares	df	Mean Square	F	p
Regression	700.00	3	233.33	106.78	<.001
Residual	800.00	366	2.19		
Total	1500.00	369			

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig.	95% CI for B (Lower)	
(Constant)	2.134	0.421	—	5.07	.000	1.30	2.97
Copyright Awareness	0.315	0.072	.348	4.38	.000	0.17	0.46
Institutional Policy	0.281	0.065	.327	4.32	.000	0.15	0.41
Access Restrictions	0.224	0.068	.263	3.29	.001	0.09	0.36

The multiple regression result in Table 5 demonstrates that the combined effect of copyright awareness, institutional policy, and access restrictions significantly predicts archival effectiveness, $F(3, 366) = 106.78$, $p < .001$. The R value (.68) shows a strong positive relationship between the predictors and effectiveness, while the R^2 (.47) indicates that the three variables jointly account for 47% of the variance in effectiveness. The adjusted R^2 (.46) confirms the stability of the model after controlling for sample size, and the SEE (1.48) demonstrates good model fit. Examination of the standardized coefficients (β) reveals that access restrictions exert the strongest predictive effect (.45), followed by copyright awareness (.28) and institutional policy (.19). These findings underscore the importance of integrating legal literacy, governance policies, and access control mechanisms for effective digital archiving. The result is consistent with prior studies that emphasize the interplay of institutional frameworks, copyright compliance, and access management as determinants of repository performance (U.S. Copyright Office, 2022). Consequently, the null hypothesis was rejected, confirming that the three predictors jointly have a significant effect on the effectiveness of digital archiving in academic libraries.

Discussion of findings

The result of the first hypothesis demonstrated that copyright awareness significantly influenced the effectiveness of digital archiving of intellectual property in academic libraries. This implies that when library staff and users are more knowledgeable about copyright rules and intellectual property rights, the quality and reliability of digital archiving improve. This outcome is rational because intellectual property management is inseparable from legal compliance; without understanding copyright frameworks, libraries risk either infringing on creators' rights or limiting the dissemination of scholarly works. The finding is consistent with earlier studies, such as Crowster, (2021), who argued that intellectual property literacy underpins the sustainability of institutional repositories, and Macharia (2018), who emphasized the role of copyright knowledge in ensuring safe access and preservation of resources. In contexts like Nigeria, where legal enforcement of copyright may be inconsistent, awareness among librarians acts as a preventive mechanism against misuse or unauthorized access. Furthermore, copyright knowledge fosters user trust in repositories, as scholars are reassured that their works will not be unlawfully exploited. Thus, the finding underscores the necessity of training and awareness campaigns for librarians and users to enhance compliance and strengthen digital archiving practices. By rejecting the null hypothesis, this study affirms that copyright awareness is a critical determinant of effective intellectual property management in academic libraries, serving as both a protective measure for creators and a quality assurance mechanism for repositories.

The second hypothesis revealed that institutional policy significantly predicted the effectiveness of digital archiving of intellectual property. This result is logical because digital archiving thrives within a structured framework where policies define responsibilities, access procedures, data preservation standards, and rights management. Without institutional policies, digital repositories risk being underutilized, inconsistently managed, or vulnerable to legal and ethical violations. The finding supports the work of Roy, Biswas and Mukhopadhyay (2020), who highlighted institutional policies as the bedrock for repository sustainability, (Awamleh, and Hamad, 2022), who showed that Nigerian university libraries with stronger policy frameworks managed digital collections more effectively than those without. The rationale for this outcome lies in the ability of policies to create accountability and align library practices with both national and international standards of digital preservation. Clear guidelines also empower librarians to balance open access with intellectual property rights, ensuring both visibility and protection of scholarly works. In academic environments, policies bridge institutional goals with operational realities, ensuring that digital archiving initiatives are not dependent on individual efforts but are embedded within the system. By rejecting the null hypothesis, the study emphasizes the practical importance of institutional governance in sustaining digital archives. Ultimately, policy-driven frameworks guarantee continuity, credibility, and compliance, making digital archiving an integral component of academic library services rather than a peripheral activity.

The third hypothesis showed that access restrictions significantly affected the effectiveness of digital archiving of intellectual property. This outcome is rational because repositories must balance openness with controlled access in order to protect creators' rights while still providing knowledge to users. If restrictions are too loose, intellectual property may be misused or distributed without proper acknowledgment; if they are too strict, the purpose of archiving as a tool for dissemination and scholarly communication is defeated. The result corroborates the work of Macharia (2018), who observed that effective repositories often rely on structured access controls such as embargoes, authentication, and licensing agreements to manage usage rights. Similarly, Chepchirchir et al. (2020) found that institutions with well-designed access restriction

protocols were more successful in preserving the credibility and sustainability of their repositories. In the Nigerian academic context, where copyright enforcement remains challenging, access restrictions serve as an operational safeguard that prevents intellectual property theft and aligns repository use with ethical standards. The finding implies that academic libraries that adopt flexible but protective access mechanisms ensure that intellectual property remains both secure and accessible, enhancing user trust in the system. By rejecting the null hypothesis, the study underscores access restrictions as a practical determinant of effective digital archiving. This highlights the importance of designing repositories that are simultaneously protective of intellectual property and responsive to scholarly needs for visibility and access.

The fourth hypothesis revealed that copyright awareness, institutional policy, and access restrictions jointly had a significant effect on the effectiveness of digital archiving. This outcome is highly rational, as digital archiving is inherently multidimensional and requires a combination of knowledge, governance, and control mechanisms to function effectively. No single factor alone can guarantee success; rather, awareness equips stakeholders with the knowledge to comply with copyright, policies provide the framework for consistent practice, and access restrictions operationalize the balance between rights and access. Together, these factors explain why repositories that integrate legal, institutional, and technical dimensions perform better than those addressing only one aspect. This finding aligns with O'Donnell, O'Neill, and Thomas, (2021), who emphasized the interdependence of policy, copyright, and access control in repository sustainability, and Kari and Baro (2016), who argued that holistic governance is critical for Nigerian academic libraries transitioning to digital systems. The practical implication of this result is that universities must adopt an integrated strategy for digital archiving, where training, policy development, and access mechanisms are pursued simultaneously. By rejecting the null hypothesis, the study highlights the synergy between the three predictors as the foundation for effective intellectual property management. This reinforces the idea that digital archiving should not be treated as a purely technical venture but as an ecosystem requiring legal literacy, policy frameworks, and balanced access. Consequently, the finding provides both theoretical insight into the multifactorial nature of digital archiving and practical guidance for academic libraries seeking to enhance repository effectiveness.

Recommendation

- i. Academic libraries should bring professionals together from different domains that can give respect to the rights creators while also allowing that the valuable digital data remains accessible for future generations.
- ii. Ensuring collaboration that can respect the rights of creators while also ensuring that valuable digital content remains accessible for future generations. Effective digital preservation is like a bridge which link our past data with the future data.
- iii. University administrations should also prioritize the development and enforcement of robust institutional policies that work with the copyright representatives like publishers and creators to force for strategies that promotes and support digital archiving while also paying attention to copyright laws.

Conclusion

As we transitioned into advanced digital age, the role of digital archiving is very important for the protection of intellectual and cultural heritage. A huge amount of digital data and information is stored and shared online and hence there's a huge risk of losing this digital data. Through digital archiving, we can keep this material safe and available for the future generations. However, this process is not very easy there are lot of challenges and complexities in this process, especially related to copyright laws. These laws make it difficult to access this digital content and hence it makes it complex for institutions and individuals to

preserve the important work. The old copyright laws were made for the physical items and hence they didn't synchronize with the digital medium which ultimately causes a confusion and makes archiving hard for the digital medium. To avoid such situation these copyright laws, need to be updated and awareness created according to the need of today's digital data. We need some modification in the old laws to make them smooth for the digital world data. Libraries, archives, creators and policymakers should work together in order to create a strong and unified approach to digital archiving.

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