
**DIGITALIZATION AND BOOK PUBLISHING
TRANSFORMATION AT THE UNIVERSITY OF CALABAR
PRINTING PRESS**

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Abstract

Book publishing had faced numerous challenges since the emergence of electronic books, which had disrupted traditional publishing practices. This study examined how digitalisation had affected book publishing at the University of Calabar Printing Press. The study adopted a descriptive survey research design and used oral interviews to obtain data from the management of the University of Calabar and staff of the University of Calabar Printing Press. The population of the study comprised 12 staff of the printing press, and a census approach was used to cover the entire population. Purposive sampling technique was also used to select the management personnel and staff who were considered knowledgeable about the operations and digital transformation of the printing press. The study was anchored on the Technological Determinism Theory, which posited that technology shaped how individuals thought, behaved and interacted within society. Findings revealed that

Globally, digitalisation has manifested in various forms, ranging from e-governance and online learning to digital finance and cloud-based healthcare systems. In developed countries, it has redefined how people live and work, enhancing efficiency and accessibility to services. For example, Scandinavian countries such as Sweden and Norway have almost completely integrated digital public service systems (European Commission, 2023). In Asia, countries like South Korea and Singapore have leveraged digital technologies to develop smart cities and optimise urban governance. These advanced forms of digitalisation include the use of machine learning for public health monitoring, blockchain for secure transactions, and digital platforms for educational content delivery.

In Nigeria, while making noticeable strides, is still classified among developing nations with **emerging digital economies**. According to the 2022 report of the Global System for Mobile Communications, Nigeria ranks among Sub-Saharan African countries with a growing digital penetration rate, with internet access reaching approximately **55.4%** of the population by 2022. However, digital infrastructure is unevenly distributed, and digital literacy remains a challenge in rural and underdeveloped areas. The Nigerian government has recognised this gap and initiated policies such as the National Digital Economy Policy and Strategy (2020–2030) to foster digital inclusion and innovation. Digitalisation has had profound impacts on the overall well-being of society. It has improved access to healthcare through telemedicine, enhanced education through e-learning platforms, facilitated governance through digital identity systems, and transformed the economy through fintech and digital marketplaces. Some critical areas where digitalisation has made significant inroads include the following: With the integration of Learning Management Systems (LMS) and virtual classrooms, educational institutions are now able to offer remote and blended learning models, expanding access to quality education. Digital banking platforms, mobile money services, and cryptocurrency systems have enhanced financial

digital transformation at the printing press had become more pronounced during the administration of Prof. Florence Obi. Her administration restructured the printing system and introduced Computer-to-Plate (CTP) technology, which enhanced production speed and reduced dependence on manual labour. This innovation marked a significant shift in the operations of the press and aligned its activities with developments in the global publishing industry. The study concluded that the University of Calabar Printing Press had experienced significant digitalisation, which had improved the quality and efficiency of its printing productions. The study recommended that the University should institute strict financial policies to curb debt accumulation, particularly from internal users such as lecturers, by enforcing timely payment for printing services. It further recommended that the University management should provide consistent institutional and financial support through the establishment of a dedicated funding mechanism for the printing press. Such support should include greater financial autonomy for the press to reduce bureaucratic delays in accessing operational funds. Improved financial flexibility would enhance cash flow, facilitate reinvestment in technological upgrades and support routine maintenance. These measures would strengthen the sustainability of the printing press, reduce its reliance on external loans and enable it to remain competitive in the digital publishing era.

Keywords: Book publishing, digitalisation, transformation, printing press, University of Calabar

Introduction

Digitalisation has become one of the most defining phenomena of the 21st century, shaping societies, economies, education systems, and communication methods across the globe. At its core, digitalisation refers to the process of converting information and processes into a digital format, enabling them to be stored, processed, and transmitted electronically (Brennen & Kreiss, 2016). This transformation often involves the adoption of digital technologies such as computers, mobile devices, cloud computing, artificial intelligence, and other data-driven systems. Digitalisation differs from digitisation, which merely converts analogue content into digital format by extending into systemic changes in how organisations operate and interact with their environments (Tilson et al., 2010). The contemporary digital age is therefore characterised not just by electronic tools, but also by structural changes in industry, governance, education, and social interaction.

inclusion and revolutionised how transactions are carried out. Innovations such as electronic health records, teleconsultations, and health tracking apps have made healthcare more accessible and responsive. Precision farming, mobile-based advisory services, and market information systems are helping farmers make data-driven decisions. The transition from print to digital media has changed how information is produced and consumed, making it faster and more interactive.

The University of Calabar printing press provides a critical case for examining this transformation. Although the university was founded in 1975, the printing press was only established in the 1990s. Earlier book publishing relied largely on conventional printing processes, while the emergence of digital technologies introduced new methods of preparing and producing printed materials. Technologies such as Computer-to-Plate (CTP) and Direct Imaging (DI) have enabled printing operations to move from several conventional pre-press stages towards more computer-based production. In Nigeria, Kalilu and Abiodun (2023) found that CTP and DI technologies improved printing quality but faced challenges including high start-up costs, inadequate access to spare parts and shortages of skilled technicians. Digitalisation has also influenced academic publishing in Nigerian higher institutions.

The Tertiary Education Trust Fund (TETFund, 2020) identified the need to strengthen academic publishing through modern facilities, improved production capacity and the integration of print and electronic publishing. The agency's Higher Education Book Development Project also recognised university printing presses as important centres for producing and circulating academic books and journals. More recently, TETFund reported the publication of 82 academic textbooks under its Higher Education Book Development Intervention Project, demonstrating the continuing relevance of institutional capacity for academic book production (TETFund, 2026).

Initially, it depended on analogue printing techniques such as the use of cord machines, manual typesetting, and photolithography. These methods posed considerable operational challenges, including delays, high costs, and quality inconsistencies (Ekanem, 2018). Over the years, especially with the advancement of digital technologies, efforts have been made to modernise the press. The introduction of Direct Image Machines and computerised printing software has offered opportunities for improvement in efficiency and output quality. This study therefore seeks to investigate the digital transformation of the University of Calabar Printing Press from its analogue origins in the 1990s to its current state.

Objective of the study

The research focuses on to:

- i. identifying the impact of digitalisation on traditional book publishing practices at the University of Calabar Printing Press,
- ii. investigate the challenges faced by the University of Calabar Printing Press in adapting to contemporary digital publishing technologies and
- iii. Recommend strategies for enhancing digital publishing operations at the University of Calabar Printing Press.

Research Questions

- i. What impact has digitalization on traditional book publishing practices at University of Calabar Printing Press?
- ii. What are the challenges faced by the University of Calabar Printing Press in adapting to contemporary digital publishing technologies?
- iii. What strategies can be recommended to enhance digital publishing operations at the University of Calabar Printing Press?

Statement of the Problem

Academic publishing remains a vital component of knowledge dissemination and institutional advancement in Nigerian universities. However, traditional publishing systems are increasingly inadequate in meeting current demands due to outdated practices and inefficient operations. At the University of Calabar, the institutional printing press established in the 1990s has relied largely on analogue machines such as cord machines and manual typesetting, which are slow, labour-intensive, and prone to frequent faults. As the need for faster, high-quality, and cost-effective academic publishing has grown, the press has struggled to keep pace, forcing many departments to outsource their printing needs. This study is therefore undertaken to investigate the extent of digital transformation at the University of Calabar Printing Press, identify the key operational challenges, and assess how digitalisation can be better implemented to improve academic publishing within the institution.

Review of Related Literature

The concept of Digitalisation

Ifeduba (2020) noted that digitalisation extends beyond merely converting analogue information into digital formats; it represents a profound socio-technical transformation that reconfigures how societies operate across economic, cultural, institutional, and everyday dimensions. Digitalisation is a long-term historical process involving the integration of digital technologies into all facets of social activity, fundamentally altering how people interact, produce, and communicate. Van Dijk (2020) emphasises that while digitalisation offers many benefits, it also amplifies existing social inequalities due to disparities in access, digital literacy, and the ability to leverage digital tools effectively, a phenomenon often described as the “digital divide.”. Several key drivers have accelerated the process of digitalisation in recent years. Rowley & Hartley (2017) observed that technological advancements such as artificial intelligence, the Internet of

Things (IoT), big data analytics, blockchain, and cloud computing have created complex digital ecosystems that permeate all sectors, including education, governance, and commerce, digital technologies enable university presses to significantly reduce production costs and lead times, while expanding their reach to global audiences via digital repositories and e-books. This transition not only democratizes access to academic materials but also aligns with the open access movement, which promotes the free dissemination of scholarly work. Moreso, Rowley & Hartley (2017), noted that digitalisation facilitates customisation and interactivity, allowing presses to integrate multimedia elements and interactive content within digital publications. This innovation enhances reader engagement and knowledge retention, thereby improving the overall impact of academic resources.

However, Thompson (2018), highlight challenges related to digitalisation, including the initial capital investment, the need for technical expertise, and the preservation of digital archives. Additionally, Graham. & Parker. (2019) observe that issues of copyright management and digital rights require careful consideration to protect intellectual property while maximising accessibility. Environmental sustainability is another important factor discussed in recent literature. Anderson (2021), digital printing reduces paper waste and the carbon footprint of traditional presses, supporting university sustainability goals. This aligns with broader institutional commitments to environmentally responsible practices.

Book Publishing in University Printing Print.

In Nigeria, book publishing maintains a dual character: while digital readiness improves, the traditional print sector remains dominant. Ifeduba (2020), notes that authors and consumers are comparatively digitally ready, but digital adoption by libraries, schools, and bookshops lags, signalling uneven digital transformation across the value chain. According to JoshuaThompson, university presses are distinguished by their commitment

to academic quality, often prioritizing scholarly contribution over commercial gain. This mission-driven focus ensures the publication of specialized and niche academic works that might otherwise be overlooked by commercial publishers. However, the pressures of financial sustainability are intensifying, prompting presses to innovate operationally and strategically.

Digital innovation is transforming book publishing workflows within university presses. The integration of print-on-demand, e-books, and open access platforms has expanded dissemination capabilities while reducing inventory costs (Sherman, 2023). These technologies enhance accessibility and readership, supporting the university's broader educational and public service goals. Simultaneously, Fyfe, et al (2017), highlight challenges related to intellectual property management, peer review processes, and adapting to rapidly changing reader expectations. Presses must also grapple with balancing tradition and innovation, maintaining scholarly integrity while embracing new formats and business models. Maxwell (2015) observes that environmental sustainability is increasingly integrated into university press operations, with a growing emphasis on eco-friendly printing practices and digital distribution to reduce carbon footprints. This reflects wider institutional commitments to sustainability and social responsibility.

Theoretical Framework: Technological Determinism Theory

Technological Determinism is a theory that explains how technological innovation is the principal driver of societal change. This theory was first systematically developed by Thorstein Veblen in 1904, but it was later popularised by Marshall McLuhan and Melvin Kranzberg in the mid-20th century. The central claim of the theory is that technology is the fundamental force shaping society's structure, culture, and values often independently of human intention or social conditions. Technological Determinism provides a compelling lens to understand the transformation occurring at the University of Calabar Printing Press through digitalisation.

According to the theory, the adoption of digital printing technology, electronic publishing tools, and digital distribution channels are not just auxiliary upgrades but transformative forces that reshape the institution's operations, business model, and service delivery. The introduction of digital tools determines how books are designed, produced, stored, and disseminated replacing older, analogue methods with faster, more efficient digital systems.

Methodology

This study adopted the descriptive survey method, which is appropriate for exploring, analysing, and describing the ongoing transformation brought about by digitalisation in the University of Calabar Printing Press. The method enabled the researcher to gain detailed insights into the operational changes and managerial perceptions associated with the digital shift. Data collection was carried out through oral interviews through a purposive sampling technique, allowing for in-depth, qualitative responses from participants directly involved in the printing and publishing process. A census population was adopted and only 26 staff worked in the printing press. The data collected from the field were analysed thematically.

Data Presentation and Analysis

Theme One: Digital Transformation of Traditional Publishing Practices

The first theme centres on the transformation of the University of Calabar Printing Press from a largely traditional and labour-intensive printing operation to a more digitally driven publishing organisation. The interview findings showed that the transformation occurred gradually through successive administrative interventions. Before the major technological upgrades, the printing press was described by a respondent as **“almost dead”**, with outdated machines, low productivity and delays in completing printing jobs. The administration of Prof. James Ekpoke introduced mechanical improvements, including CORD machines capable

of printing on A3 and A2 papers. Although these machines improved production capacity, their operation still depended heavily on human labour and technical expertise.

A more substantial transition occurred during the administration of Prof. Florence Obi. Respondents indicated that the introduction of Computer-to-Plate (CTP) technology substantially changed the production process by increasing printing speed and reducing dependence on manual processes. The acquisition of Direct Imaging Machines also improved the press's ability to handle urgent and large-volume printing assignments. Thus, the interviews indicate that digitalisation affected not only the equipment used by the press but also the speed, workflow and organisation of publishing activities.

The respondents further indicated that the new technologies contributed to the broader institutional transformation of the printing press. Digital equipment enabled the integration of security features into some university publications, particularly examination materials, thereby making unauthorised reproduction more difficult. The technological changes were therefore associated with improvements in production, security and the overall status of the printing press, which evolved from a struggling internal unit into a registered limited liability company serving both local and international clients.

Theme Two: Challenges of Adapting to Digital Publishing Technologies

The second theme concerns the challenges encountered in adopting and sustaining digital publishing technologies. A major issue identified by respondents was the frequent breakdown of modern printing equipment and the difficulty of obtaining timely technical assistance. According to the interview responses, qualified technicians capable of repairing some of the machines were not readily available in Calabar but were based in Lagos. Consequently, machine breakdowns could result in prolonged delays and

substantial maintenance expenses.

Financial constraints constituted another major challenge. The respondents explained that the printing press largely operates without direct and consistent financial support from the university or its affiliated schools. Instead, it sometimes depends on loans to finance its activities. These loans can create additional financial pressure because the amount eventually repaid may be considerably higher than the amount initially obtained. The respondents also explained that access to bank loans depends partly on the backing of the Vice Chancellor, demonstrating the importance of institutional support to the press's financial operations.

The interview findings further revealed operational and administrative difficulties. One respondent referred to the existence of a **“profit account”** within the university system, but access to the funds requires the explicit permission of the Vice Chancellor. This procedure can delay urgent financial decisions, including those relating to equipment maintenance and technological upgrades. The respondents also identified unpaid printing jobs by lecturers as a financial problem, particularly where users assume that the university printing press is fully subsidised. Another challenge concerns intellectual property protection in the digital environment. Respondents expressed concern about protecting authors' works from unauthorised reproduction and preserving digital rights. In addition, competition from privately owned digital printing companies was identified as a growing pressure. Although the University of Calabar Printing Press has aspirations of attracting international printing jobs, respondents noted that outdated equipment and limited technical expertise could restrict its ability to compete in terms of quality and production speed. **Theme Three: Strategies for Improving Digital Publishing Operations**

The third theme focuses on the measures proposed by respondents for improving the digital publishing operations of the University of Calabar

Printing Press. The first major recommendation was continuous staff training. Respondents maintained that staff should be adequately trained to operate and maintain modern digital printing equipment. They also suggested that having skilled technicians available within the press would reduce dependence on external repairers, minimise equipment downtime and reduce maintenance costs.

The respondents also recommended stronger financial discipline among users of the printing press. In particular, they advocated measures to prevent the accumulation of debts from unpaid printing jobs. They suggested that users, including lecturers, should make payments promptly, possibly through upfront payment arrangements or clearly defined payment deadlines. According to the interview findings, improving payment compliance would strengthen the press's cash flow and reduce its dependence on expensive loans.

Institutional financial support was another prominent recommendation. Respondents argued that the university management should recognise the printing press as an important academic service and provide consistent financial assistance. They specifically recommended that the Vice Chancellor establish a dedicated fund for the acquisition of modern digital equipment, staff training and timely maintenance of existing machines. Finally, respondents recommended greater financial autonomy for the printing press. They suggested that the procedure for accessing the **“profit account”** should be streamlined so that the press could respond more quickly to urgent operational needs and make timely investments in new technologies. Overall, the interview data show that respondents considered staff capacity, financial support, debt control and greater administrative flexibility necessary for sustaining the digital transformation of the press.

Findings and Discussion:

Research Question One: To what extent has digitalisation impacted

The finding is also consistent with **Ani and Ogboh (2018)**, who investigated the adaptation of electronic book publishing technology among educational publishers in Southeast Nigeria. Their study found that digital technology improved several aspects of publishing, including editing, reformatting, redesign, printing, book design and production quality. They also reported that publishers were increasingly using print-on-demand and other digital formats. The similarity between their findings and the present study is particularly important because both studies demonstrate that digitalisation is not simply an addition to existing publishing practices but changes the way publishing work is organised and executed. However, while Ani and Ogboh found that the overall rate of adaptation among educational publishers remained relatively low, the University of Calabar Printing Press appeared to have experienced a more pronounced technological transformation through the introduction of CTP and DIM.

Similarly, **Emmanuel and Anele (2017)** found that ICT had reduced the number of processes involved in printing and had contributed to savings in time and cost and improvements in output quality. Their discussion of CTP technology is particularly relevant to the present finding because CTP eliminates intermediate film-making processes by transferring images directly from the computer to the printing plate. The present study therefore provides empirical evidence from the University of Calabar Printing Press that corresponds with the broader Nigerian evidence on the efficiency-enhancing effects of digital printing technology. However, Emmanuel and Anele also argued that traditional and digital printing could remain complementary rather than one completely replacing the other. This provides a useful qualification to the present finding: the digital transformation observed at the University of Calabar Printing Press should be understood as a transformation of traditional publishing practices rather than necessarily the complete disappearance of traditional print publishing.

traditional book publishing practices at the University of Calabar Printing Press?

The findings revealed that digitalisation had substantially transformed traditional book publishing practices at the University of Calabar Printing Press. The transformation was reflected in the movement from labour-intensive and mechanically driven production processes towards more automated digital operations. The acquisition of Computer-to-Plate (CTP) technology reduced dependence on manual processes, increased production speed and improved the efficiency of the printing process. Similarly, the introduction of Direct Imaging Machines (DIM) enabled the press to respond more rapidly to urgent and high-volume printing demands. The respondents further indicated that digital technologies improved production quality and facilitated the integration of security features into sensitive university publications. These developments changed the operational structure of the press and contributed to its transition from a struggling university printing unit to a more commercially oriented organisation with local and international clientele.

This finding is supported by **Ifeduba (2020)**, whose empirical study of 109 Nigerian publishing firms found evidence of the adoption of digital publishing innovations in the Nigerian print book market. The study established that digital technologies were being incorporated into book production and promotion and that the adoption of digital publishing was associated with the readiness of authors, consumers and libraries. The present finding extends Ifeduba's observation by demonstrating how digital technology operates not only at the level of book publishing generally but also within the production processes of a university-based printing press. While Ifeduba examined the broader Nigerian publishing market, the present study provides an institutional case showing the specific organisational changes associated with technologies such as CTP and DIM.

The finding further corresponds with **Ikwuta, Nongo and Onoja (2025)**, who studied printing technology among 200 printing practitioners in Benue State. Their study reported high awareness and adoption of digital and large-format printing technologies and found that printing technology contributed to improved market competitiveness and economic activity. However, their finding that more advanced technologies such as CTP and 3D printing had comparatively lower adoption demonstrates that technological transformation can occur unevenly. The University of Calabar Printing Press provides a contrasting institutional example because CTP had already become an important part of its production system.

The evidence indicates that the transformation observed at the University of Calabar Printing Press is consistent with the wider Nigerian experience in which digital technologies have altered pre-press, production, quality control and distribution processes. The finding therefore provides empirical support for **Technological Determinism Theory**, since the introduction of new technologies was accompanied by changes in workflows, labour requirements, production capacity and organisational operations. At the same time, the evidence from Emmanuel and Anele (2017) suggests that digitalisation should not necessarily be interpreted as the total replacement of traditional printing, but rather as a technological restructuring in which digital and traditional processes may continue to coexist.

Research Question Two: What are the major challenges faced by the University of Calabar Printing Press in adapting to digital publishing technologies?

The findings revealed that the adaptation of digital publishing technologies at the University of Calabar Printing Press was constrained by machine breakdowns, high maintenance costs, inadequate access to qualified technicians, financial difficulties, bureaucratic procedures, accumulated debts from users, intellectual property concerns and competition from private

printing companies. Respondents explained that technical personnel capable of repairing the machines were often located outside Calabar, particularly in Lagos, thereby increasing repair costs and prolonging equipment downtime. Financial constraints also limited the ability of the press to acquire, maintain and upgrade digital equipment. In addition, bureaucratic restrictions surrounding access to the press's profit account affected its ability to respond quickly to operational needs. Difficulties in protecting authors' works in a digital environment and competition from private printing companies further complicated the adaptation process.

These findings are strongly supported by **Ani and Ogboh (2018)**. Their study identified high equipment costs, incessant electricity problems, the cost of alternative power supply and inadequate protection of intellectual property as major obstacles to digital publishing adaptation among educational publishers in Southeast Nigeria. Their respondents also identified the difficulty of learning new computer-related skills as a challenge. The present study therefore confirms that technological adoption in Nigerian publishing organisations is constrained not merely by the availability of technology but by the financial, infrastructural, human and regulatory conditions surrounding its use.

The intellectual property problem identified in the present study is particularly consistent with Ani and Ogboh's findings. Their research reported that 80% of the publishers studied regarded cyber copyright and piracy as a problem affecting electronic publishing. In the University of Calabar case, respondents similarly expressed concern about protecting authors' works in the digital environment. The agreement between the two studies indicates that digitalisation creates a new dimension of intellectual property management because digital materials can be reproduced and distributed more easily than conventional printed materials. The financial and infrastructural challenges identified in this study are also consistent with

Ikwuta et al. (2025). Their study of 200 printing practitioners identified the high cost of modern printing equipment, poor electricity supply, lack of technical training and difficulty accessing finance as major challenges to printing technology adoption. Although the University of Calabar Printing Press is an institutional printing organisation rather than a collection of private printing businesses, the similarity in findings is notable. Both studies show that possessing or acquiring digital equipment does not automatically guarantee effective technological adoption. Financial capacity, technical expertise and supporting infrastructure are necessary for the technology to remain functional.

The present finding concerning inadequate technical expertise is also supported by the Nigerian printing literature. **Afolabi and Jimoh (2019)** examined digital disruption and workforce development in Nigeria's printing industry and argued that technological change was transforming the industry's business models and creating new workforce requirements. Their emphasis on workforce development supports the present respondents' concern that the availability of suitably trained personnel is necessary for organisations to benefit fully from digital technologies. However, the present finding differs somewhat from **Ifeduba (2020)**, whose study placed considerable emphasis on the readiness of authors, consumers and libraries as determinants of digital publishing adoption. In the University of Calabar Printing Press, the major difficulties identified by respondents were more strongly organisational and operational, particularly finance, equipment maintenance, bureaucracy, technical personnel and intellectual property. This difference may be explained by the different units of analysis. Ifeduba studied the Nigerian print book market and its stakeholders, whereas the present study examined a specific institutional printing press. The two studies therefore complement each other by showing that challenges to digitalisation can occur both within publishing organisations and within the wider publishing ecosystem. The findings consequently demonstrate that the

challenges confronting the University of Calabar Printing Press are not isolated institutional problems. They correspond with empirical evidence from other Nigerian printing and publishing environments. The consistency is particularly strong regarding equipment costs, technical skills, finance, infrastructure and intellectual property. The distinctive contribution of the present study is its identification of institutional bureaucracy and dependence on external technicians as additional challenges affecting digital technology utilisation within a university printing environment.

Research Question Three: What strategies can enhance digital publishing operations at the University of Calabar Printing Press?

The findings indicated that improved staff training, stronger financial discipline, increased institutional support and greater financial autonomy were important strategies for enhancing digital publishing operations at the University of Calabar Printing Press. Respondents specifically recommended training staff to operate and maintain modern printing equipment so that the press could reduce its dependence on technicians outside Calabar. They also recommended measures to prevent the accumulation of debts by users of the press, particularly lecturers. In addition, respondents called for dedicated financial support from university management for equipment acquisition, maintenance and staff training. They further recommended reducing bureaucratic restrictions surrounding access to the press's profit account so that urgent operational and technological decisions could be taken more efficiently.

The recommendation concerning staff training is supported by **Ani and Ogboh (2018)**. Their study found that publishers in Southeast Nigeria employed on-the-job training and in-service courses as strategies for developing skills required for electronic publishing. Specifically, 73% of the publishers reported on-the-job training while 67% reported in-service training. This corresponds directly with the present finding that staff training

should be prioritised at the University of Calabar Printing Press. The agreement suggests that technological investment needs to be accompanied by human-capital development if digital equipment is to be effectively utilised. The training recommendation is further supported by **Afolabi and Jimoh (2025)**, who identified workforce development as an important component of sustainable digital transformation in Nigeria's printing sector. Their work highlights the continuing skills gap within the industry and the need for appropriate educational and training structures to prepare printing professionals for technological changes. This reinforces the present respondents' recommendation that the University of Calabar Printing Press should develop internal technical capacity rather than depend heavily on technicians from outside Calabar.

The recommendation for stronger financial support is similarly supported by **Ikwuta et al. (2025)**. Their study recommended targeted financial support and capacity-building programmes to address the high cost of modern printing technologies and other constraints to technological adoption. This agrees with the present respondents' call for dedicated financial support from university management. The difference, however, is in the source of the proposed financial intervention. Ikwuta et al. discussed broader institutional and policy interventions for printing practitioners, whereas the present respondents specifically identified university management and the Vice Chancellor as the appropriate institutional source of financial support for the University of Calabar Printing Press. The recommendation for greater financial autonomy also has relevance to the broader evidence on digital transformation. **Fujii (2022)**, examining digital transformation from the perspective of small and medium-sized enterprises in the printing industry, emphasised that digital transformation involves organisational and managerial changes rather than technology acquisition alone. This supports the present finding that improving the press's ability to make timely financial and operational decisions is part of technological

adaptation. Digital equipment may be available, but organisational structures must allow the institution to maintain, upgrade and deploy that equipment effectively. The recommendation concerning debt management is less directly represented in the empirical literature reviewed. This therefore constitutes one of the more institution-specific findings of the present study. While existing studies have established the importance of finance in technology adoption, the present research goes further by identifying unpaid printing jobs and accumulated debts from internal users as a specific mechanism through which financial constraints are reproduced within a university printing press. This finding is important because it suggests that financial sustainability cannot depend entirely on external funding; internal revenue collection and payment procedures also influence the press's capacity to maintain and upgrade its digital infrastructure. Taken together, the findings demonstrate that enhancing digital publishing at the University of Calabar Printing Press requires more than purchasing sophisticated machines. The empirical evidence suggests the need for continuous technical training, sustainable financing, institutional support, effective revenue management, intellectual property protection and organisational flexibility. The present study therefore agrees with previous research that successful digital transformation depends on the interaction between technology, human resources, finance and organisational structures rather than technology alone.

Conclusion

The findings of this study clearly demonstrate that digitalisation has profoundly transformed the traditional book publishing practices at the University of Calabar Printing Press, shifting it from a slow, labour-intensive operation to a more efficient, technologically driven institution with increased productivity and broader recognition. However, this transformation has not been without significant challenges. The press faces

persistent technical difficulties such as frequent machine breakdowns compounded by limited local maintenance expertise, financial constraints marked by a lack of direct funding and reliance on costly loans, and operational inefficiencies tied to bureaucratic controls and outstanding debts from internal clients. The press grapples with safeguarding intellectual property in a digital environment, competition from private digital publishers, and a shortage of personnel skilled in modern digital publishing technologies. These challenges highlight the complex interplay between technology, organisational capacity, and social factors, affirming the core principles of technological Determinism that technology drives institutional change, but its successful adoption depends on the surrounding economic, social, and policy environment. Based on the respondents' insights and the issues raised, this study recommends that the school management focus on investing in training and capacity building to develop skilled personnel capable of operating and maintaining digital publishing technologies. Having on-site expertise would reduce machine downtime, minimize maintenance costs, and improve overall operational efficiency.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. The University of Calabar Printing Press should establish regular training and retraining programmes for its staff on the operation, maintenance and application of modern digital publishing technologies. The press should also develop in-house technical capacity by training or employing qualified technicians who can handle routine maintenance and minor repairs. This would reduce dependence on technicians from outside Calabar, minimise equipment downtime and improve the efficiency of digital publishing operations.

2. The University management should provide sustainable financial support for the Printing Press through a dedicated fund for the acquisition, upgrading and maintenance of digital publishing equipment. The Press should also strengthen its revenue collection system by requiring users to settle printing bills promptly and by discouraging the accumulation of debts. These measures would improve the financial stability of the Press and reduce its dependence on costly loans for routine operations and technological upgrades.
3. The management of the University of Calabar Printing Press should streamline the procedures for accessing funds required for urgent maintenance, equipment replacement and other operational needs. At the same time, the Press should strengthen its digital rights and intellectual property protection mechanisms to safeguard authors' works from unauthorised reproduction. Greater operational flexibility, combined with stronger protection of published materials, would enable the Press to respond more quickly to technological changes, improve its competitiveness and sustain its digital publishing operations.

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