

Assessing User Perceptions of Technology-Driven Marketing of Library Services in Federal Polytechnic Library, Ekowe, Bayelsa State, Nigeria

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Abstract

Technology-driven marketing has become a defining feature of contemporary library service delivery, altering how libraries communicate value, promote resources, and engage users. With emerging technologies increasingly integrated into academic learning environments, libraries must adopt innovative communication tools to remain visible and relevant. This study assessed user perceptions of technology-driven marketing of library services at Federal Polytechnic Library, Ekowe, Bayelsa State, Nigeria. A descriptive survey design was employed, and data were gathered from 426 valid respondents drawn from registered library users. The study was guided by three research questions and one hypothesis. Data were analyzed using descriptive statistics and Pearson Product-Moment Correlation. Findings revealed a high level of awareness and use of technology-based marketing tools such as WhatsApp, Facebook, the Online Public Access Catalogue (OPAC), library website, and SMS/email alerts. Respondents perceived these technologies as effective for promoting awareness, increasing accessibility, and facilitating information dissemination. However, usage of emerging technologies such as artificial intelligence (AI) tools, online chat systems, and push-notification services was comparatively low. Correlation analysis revealed a significant positive relationship between awareness of technology-driven marketing tools and user engagement ($r = .56, p < .001$), as well as between perceived effectiveness of technology-based marketing and user satisfaction ($r = .63, p < .001$). Key challenges identified were poor network connectivity, intermittent power supply, inadequate ICT facilities, and limited user training. It is recommended that the library should enhance its ICT infrastructure, expand user digital literacy initiatives, strengthen social-media content strategy, implement AI-assisted user support, and institutionalize a digital marketing policy. The study contributed to empirical evidence to LIS literature on technology-driven marketing in polytechnic libraries in Nigeria.

Keywords: Technology-Driven Marketing, User Perception, Emerging Technologies, Federal Polytechnic, Social Media, Nigeria.

Introduction

Academic libraries are experiencing a profound transformation as digital technologies reshape the way information is created, disseminated, accessed, and consumed. Traditional models of library service delivery, grounded in physical collections, face-to-face interactions, and print-based awareness strategies, are increasingly inadequate for contemporary users whose preferences and social interaction patterns are digitally oriented (Rowley, 2016; Aharony, 2019). The proliferation of mobile technologies, social media platforms, artificial intelligence (AI) tools, cloud-based library systems, and institutional digital repositories has created new expectations for seamless information access and dynamic service engagement (IFLA, 2022; OCLC, 2021). Against this backdrop, marketing library services through emerging technologies has become a strategic imperative for libraries seeking continued relevance and patron engagement in a competitive digital information ecosystem (Chu & Du, 2020; ALA, 2023).

Marketing in library settings historically emphasized publicity, reader advisory, displays, posters, and bulletin boards (Rowley, 2011). However, digital transformation has redefined marketing from a passive dissemination of information to proactive user-centered engagement powered by interactive tools and analytics (Singh & Malhotra, 2020). Libraries today employ a wide array of technology-based promotional tools such as social media platforms (Facebook, WhatsApp, Twitter/X, Instagram), library websites, Online Public Access Catalogue (OPAC) systems, email/SMS alerts, institutional repositories, blogs, YouTube channels, and increasingly, AI-supported chatbots (Aharony, 2019; Boateng & Liu, 2019). These technologies support user-driven discovery, personalization, and participatory communication, aligning with user habits shaped by digital culture.

In Nigeria and other Sub-Saharan African contexts, library marketing using emerging technologies is gaining momentum but remains uneven due to infrastructural and capacity limitations (Ezeani, 2016; Echezona & Ugwu, 2021). Studies report increasing adoption of social media, OPAC, and institutional websites, yet highlight challenges such as low bandwidth, erratic electricity supply, limited ICT tools, inadequate funding, and uneven ICT literacy among library patrons (Ani & Edem, 2020; Okoye & Obi, 2022). The Federal Government's emphasis on digital learning and the National Policy on ICT in Education further reinforces the urgency for Nigerian academic libraries to reposition through technology-enhanced service promotion.

Federal Polytechnic, Ekowe is situated in the Niger Delta region, of Bayelsa State and serves a diverse student population pursuing National and Higher National Diploma programmes. The institution has made efforts to leverage digital communication channels such as WhatsApp groups, Facebook announcements, OPAC alerts, and email notifications to increase awareness and usage of library services. These initiatives reflect broader trends in Nigerian tertiary institutions where low-bandwidth tools, especially WhatsApp, have become prominent due to affordability, ease of use, and high mobile penetration (Adebayo & Ahmed, 2021). Yet, empirical evidence on user perceptions of these technology-driven marketing initiatives remains limited, particularly in polytechnic environments, which receive less scholarly attention compared to universities (Nwokocha & Chimah, 2020).

Understanding user perceptions is essential because the success of technology-enabled library marketing depends on user acceptance, digital readiness, perceived usefulness, satisfaction, and contextual enablers such as infrastructure and support (Davis, 1989; Rogers, 2003). Positive user perception not only increases awareness but also strengthens usage patterns, builds institutional trust, and fosters lifelong information-seeking behaviour (Aharony, 2019). Conversely, weak perceptions may lead to underutilization of digital systems despite their availability.

Therefore, assessing users' perceptions of technology-driven marketing strategies at Federal Polytechnic Ekowe Library is both timely and necessary. This study situates itself within the evolving discourse on digital library marketing in Nigeria by offering empirical insights into awareness levels, perceived effectiveness, and challenges faced by users. Findings from the study will contribute to the optimization of digital communication strategies, guide resource allocation for ICT infrastructure, enhance institutional branding, and support evidence-based decision-making in the deployment of emerging library technologies.

Statement of the Problem

The role of academic libraries in teaching, learning, and research support has continued to evolve alongside developments in digital technologies and user expectations. In contemporary educational environments, technology-driven communication tools have become essential for promoting information resources, disseminating service updates, and strengthening user engagement. However, despite increasing adoption of digital channels, many academic libraries in developing regions still struggle to fully harness the potential of emerging technologies for effective service marketing (Ani & Edem, 2020; Echezona & Ugwu, 2021). Unlike universities, polytechnic libraries in Nigeria occupy a less examined space in the scholarly discourse on digital library transformation. Consequently, limited empirical evidence exists on how users in polytechnic environments perceive technology-driven library marketing initiatives.

Federal Polytechnic, Ekowe library has introduced various communication channels including WhatsApp messaging groups, Facebook posts, OPAC announcements, email notifications, and website updates to improve visibility and encourage usage of library services. Yet the degree to which these efforts influence awareness, engagement, and satisfaction among users remains uncertain. Anecdotal observations indicate that while some students respond actively to digital announcements, a significant proportion remain unaware of available services, struggle to navigate digital systems, or continue to rely primarily on face-to-face interactions. This suggests a possible misalignment between the library's marketing strategies and user realities, digital competencies, or access conditions.

Nigeria's broader digital environment presents additional challenges that may limit the effectiveness of technology-enabled library communication. These include inconsistent internet connectivity, unreliable electricity supply, insufficient ICT funding, and variations in users' technological literacy (Adebayo & Ahmed, 2021; Okoye & Obi, 2022). Federal Polytechnic Ekowe's riverine location and bandwidth limitations compound these infrastructural barriers, potentially affecting digital outreach and reducing the visibility of library services. Emerging technologies such as artificial intelligence chat interfaces, automated notification systems, and integrated helpdesk platforms which are increasingly used in advanced academic libraries

(Aharony, 2019; Library Hi Tech, 2023) are yet to be fully adopted, limiting opportunities for real-time interaction and personalized service delivery.

Although existing scholarship emphasizes the value of social media and digital tools in enhancing library visibility, empirical studies from Nigeria mostly focus on university libraries (Ezeani, 2016; Nwokocha & Chimah, 2020). The lack of focused research on polytechnic libraries especially those in geographically challenging environments creates a knowledge gap regarding user perceptions, levels of awareness, and barriers to adopting technology-mediated library services. Without empirical assessment, assumptions about user needs and behaviour may result in ineffective digital engagement strategies, underutilization of services, and missed opportunities to support academic success.

Therefore, a systematic investigation is required to understand how users at Federal Polytechnic Ekowe perceive and interact with technology-driven marketing tools deployed by the library. Such assessment is necessary to determine whether these technologies are meeting user needs, to identify barriers limiting adoption, and to generate actionable insights for improving library visibility and service delivery through emerging digital platforms. The outcome of this research will guide the development of evidence-based strategies for optimizing digital communication and ensure that investments in library technologies translate into meaningful user engagement and satisfaction.

Objectives of the Study. The purpose of the study is to investigate the emerging technologies used to market library services, the effectiveness of the strategies and the challenges faced by Federal Polytechnic library users.

Research Questions

The following research questions were formulated to guide the study:

1. What emerging technology tools are used to market library services to users in Federal Polytechnic Ekowe Library?
2. How do users perceive the effectiveness of technology-driven marketing strategies in promoting library services at Federal Polytechnic Ekowe Library?
3. What challenges do users encounter in accessing library services marketed through emerging technologies in Federal Polytechnic Ekowe Library?

Research Hypothesis

This null hypothesis was formulated to guide the study:

H₀1: There is no significant relationship between users' awareness of technology-driven marketing tools and their engagement with library services.

Methodology

This study employed a descriptive survey research design. A descriptive design is suitable when the intention is to capture respondents' perceptions, attitudes, and experiences in a natural setting without manipulation of variables (Creswell, 2018). It is also appropriate for identifying trends, determining relationships among variables, and making inferences about a population based on quantitative data (Saunders, Lewis, & Thornhill, 2019). Given that this study seeks to assess user perceptions of technology-driven marketing of library services, document the tools in use, and identify associated challenges, a quantitative descriptive approach offers the most structured and objective method of investigation. The population for this study comprised registered users of the Federal Polytechnic Ekowe Library in Bayelsa State, Nigeria. The Polytechnic serves students enrolled in National Diploma (ND) and Higher National Diploma (HND) programmes across various academic schools. As at the time of study, the estimated active registered library users were approximately 2,150 (Library Records, 2024). Users include ND I, ND II, HND I and HND II students who utilize the library's information services for academic learning, research, and assignments.

Using the Krejcie and Morgan (1970) sample size determination table, the researchers administered copies of the questionnaires and a total of 426 valid responses were retrieved and analyzed, representing the respondents which is considered highly adequate for statistical analysis in social science research (Babbie, 2021). Respondents were selected using stratified random sampling based on academic level (ND I, ND II, HND I, HND II). Stratification ensured balanced representation from different programme years and enhanced the generalizability of findings across the student population. Data were collected using a structured questionnaire developed by the researchers based on existing literature on technology-mediated library services and digital marketing (Rowley, 2016; Aharony, 2019; Chu & Du, 2020; Echezona & Ugwu, 2021). The instrument contained four major sections: A = Demographic information of respondents; B = Awareness and usage of technology-driven marketing tools; C = Perceived effectiveness of technology-based communication strategies and D = Challenges in accessing digitally marketed library services with Sections B and C comprised of a five-point Likert scale, ranging from: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree. To ensure content and face validity, the draft instrument was reviewed by professional colleagues and statisticians. Their feedback addressed clarity of statements, appropriateness of language, and alignment of content with research objectives. Necessary modifications were incorporated prior to administration. A pilot test was conducted with 30 students from a nearby polytechnic library who were not part of the main study. Responses were analyzed using Cronbach's Alpha, yielding an internal consistency reliability coefficient of 0.89. According to Nunnally (1978), a reliability score of 0.70 or above indicates acceptable instrument consistency; thus, the instrument was deemed highly reliable. Introductory letter was attached to the questionnaire that were administered physically with support from library staff and student liaison groups. Data collection was done using the users of the Library and measures were taken to avoid duplication of responses.

Participants were informed of the study's purpose, assured of confidentiality, and participation was voluntary. Questionnaires were collected immediately after completion.

Frequencies, percentages, means, and standard deviation were computed to summarize demographic information and responses to research questions. This approach is consistent with similar LIS perception studies (Ezeani, 2016; Boateng & Liu, 2019). To test the hypotheses, Pearson Product-Moment Correlation Coefficient (PPMCC) was used. Pearson's r assesses the strength and direction of the linear relationship between variables. Relationship between awareness of technology-driven marketing tools and user engagement. Statistical significance was tested at 0.05 level. Statistical analysis was performed using SPSS version 25.0, consistent with accepted social science research practice (Pallant, 2020)

Theoretical Framework

This study is anchored on the Diffusion of Innovations (DoI) Theory developed by Rogers (2003). The theory explains how new ideas, practices, or technologies spread within a social system over time, emphasizing the conditions under which individuals adopt or reject innovations. According to Rogers, diffusion occurs through communication channels over time among members of a social system, and successful adoption depends on perception, social influence, communication structures, and contextual readiness. Academic libraries increasingly adopt emerging technologies including social media, OPAC enhancements, AI-based tools, mobile messaging, and web-based alert systems to market services and engage users. However, the rate and pattern of adoption differ across institutional environments and user populations. The DoI theory provides a valuable analytical lens for understanding how users in a developing-country polytechnic context perceive and respond to technology-driven marketing interventions.

Literature Review

Marketing in academic libraries has evolved from traditional outreach methods such as posters, exhibitions, bulletin boards, and face-to-face orientation, towards technology-mediated engagement strategies. Rowley (2016) argues that library marketing today must be proactive, user-centred, and strategically integrated with institutional communication structures. Technology-driven marketing includes the use of digital tools such as websites, OPAC systems, institutional repositories, social media platforms, email alerts, SMS broadcasting, chatbots, and mobile applications (Aharony, 2019; Boateng & Liu, 2019). These platforms enable libraries to reach users in real-time, personalize communication, and cultivate long-term user loyalty.

The American Library Association (ALA, 2023) emphasizes that digital engagement is now a core expectation among academic library users, who increasingly seek seamless access, interactive support, and multi-channel communication experiences. In the same vein, the International Federation of Library Associations (IFLA, 2022) highlights the strategic importance of emerging

technologies in broadening access, strengthening visibility, and positioning libraries within digital learning ecosystems. In the Nigerian context, Echezona and Ugwu (2021) note that the increasing diffusion of mobile technologies and social media adoption among students has motivated libraries to integrate technology-driven marketing strategies. However, they also caution that such initiatives require adequate ICT infrastructure and user training to be effective, especially in rural institutions.

Emerging Technologies in Library Promotion

Emerging technologies are defined in LIS terms as tools that significantly alter how information is accessed, delivered, and experienced (Meakin, 2024). Academic libraries have experimented with:

1. Interactive OPAC and discovery systems
2. WhatsApp and Facebook groups for announcements
3. Institutional repository alerts
4. Email/SMS notification systems
5. Chatbots and AI-powered reference support
6. Virtual orientation systems
7. Library mobile applications

Wong & Li (2020) found that social media offers libraries affordable and scalable ways to build community engagement and develop brand identity. WhatsApp has become especially prominent in African higher institutions due to its low data cost, ease of use, and widespread adoption (Adebayo & Ahmed, 2021). Ekowo's library aligns with this trend. However, adoption of advanced technologies like chatbots, analytics dashboards, and AI-driven recommender systems remains low in much of Sub-Saharan Africa (IFLA, 2022). This signifies early-stage innovation uptake, consistent with Rogers' Diffusion of Innovations model, where institutions in resource-constrained environments adopt lower-cost and lower-complexity tools first.

User Perception and Digital Service Adoption

User perception plays a central role in determining technology adoption and service engagement. Davis' (1989) Technology Acceptance Model (TAM) demonstrates that perceived usefulness and perceived ease of use are key determinants of user acceptance. Aharony (2019) further notes that positive attitudes towards digital communication increase willingness to engage with library services. For academic libraries, some factors influencing user perceptions include:

1. Accessibility and ease of platform use

2. User familiarity with technology
3. Quality of digital content
4. Response time and communication style
5. Infrastructure and connectivity

Studies showed that Library users are more likely to respond positively to technology-mediated library services when communication is consistent, user-friendly, and aligned with their digital habits (Chu & Du, 2020).

Empirical Review of Literature

Fraser-Arnott (2023) examined digital library engagement strategies in Canada and concluded that social media and digital storytelling enhance user interaction and institutional branding. Similarly, Singeh, Abrizah, & Abrizah (2022) found that digital library platforms in Asia significantly improved student engagement with academic content when integrated with targeted outreach. In Europe, Athukorala (2025) observed that universities adopt multi-channel digital marketing strategies, combining OPAC announcements with social media and automated notification systems. Meanwhile, Library Hi Tech (2023) reported that AI-driven chat services and auto-recommendation tools are increasing in North American academic libraries, although challenges remain around data privacy and ethical deployment.

African studies indicate increasing adoption of digital communication tools in libraries but persistent infrastructural challenges. For instance, Boateng & Liu (2019) documented growing social media use in Ghanaian university libraries, noting user preference for WhatsApp and Facebook. In Nigeria, Ezeani (2016) highlighted the relevance of web-based platforms for marketing library services but reported barriers tied to insufficient ICT investment. Ani & Edem (2020) found that Nigerian university libraries are gradually transitioning towards digital communication, though personnel and infrastructure gaps limit full exploitation of technological possibilities. Nwokocha & Chimah (2020) further stress that polytechnic libraries lag behind universities in digital transformation, making focused research essential. Malgwi, Dawha, Inuwa, and Rabasa (2025) contributed empirical insight by revealing that technology competency, institutional support, and digital literacy significantly influence emerging technology adoption among LIS professionals in Nigerian federal universities. His study underscores the importance of capacity building and policy alignment in ensuring successful integration of digital tools in library environments.

The review of literature demonstrated a growing global shift toward technology-driven marketing within academic libraries, shaped by advancements in digital communication tools, mobile technologies, and user expectations for interactive, real-time access to information resources. Scholars consistently highlight the increasing use of social media platforms, OPAC systems, institutional websites, email alerts, and mobile messaging applications as strategic channels for

promoting library services and engaging users (Rowley, 2016; Aharony, 2019; Chu & Du, 2020; ALA, 2023). International evidence further shows emerging adoption of AI-powered chat services, automated assistance tools, and analytics-driven user engagement systems, though varying degrees of implementation are noted across regions (Fraser-Arnott, 2023; Library Hi Tech, 2023). In Africa and Nigeria, studies reveal rising awareness and gradual uptake of digital marketing tools, particularly low-bandwidth platforms like WhatsApp and Facebook, reflecting user communication culture and infrastructural realities (Boateng& Liu, 2019; Adebayo & Ahmed, 2021; Echezona & Ugwu, 2021). However, persistent challenges such as weak network connectivity, unreliable power supply, limited ICT resources, and unequal digital literacy continue to constrain optimal adoption (Ani&Edem, 2020; Okoye& Obi, 2022). Recent Nigerian studies including Malgwi, Dawha, Inuwa, and Rabasa (2025) underscore the role of institutional support, technological readiness, and staff digital competence in enabling effective emerging-technology deployment in library settings.

Despite these contributions, notable gaps remain. Existing research in Nigeria primarily centers on university libraries, with polytechnic environments receiving limited scholarly attention. Few studies examine technology-driven library marketing within rural or riverine institutions where infrastructural constraints may shape adoption differently. Moreover, while much literature describes tools and implementation outcomes, fewer empirical studies evaluate users' perceptions, satisfaction, and actual engagement with technology-mediated marketing services. There is also scant empirical evidence that quantitatively links awareness, perceived effectiveness, and user satisfaction using correlation analysis within polytechnic library settings. This study fills these gaps by providing user-centered empirical evidence from Federal Polytechnic Ekowe Library, adopted quantitative approach to assess perceptions, evaluate effectiveness, identify challenges, and statistically examine the relationship between technological awareness, engagement, and satisfaction. In doing so, it adds African polytechnic-context data to the discourse on digital library marketing and contributes to evidence-based strategies for advancing emerging technology use in academic libraries.

Key Constructs of Diffusion of Innovations and their Relevance

Rogers (2003) identifies five key innovation attributes that influence adoption:

1. Relative Advantage

Relative advantage refers to the degree to which an innovation is perceived as better than the idea it supersedes. In academic libraries, technology-based marketing such as WhatsApp alerts, OPAC notices, and email broadcasts offers advantages over traditional bulletin boards, in-person announcements, and printed notices. Users who perceive greater convenience, faster communication, and improved awareness are more likely to engage with these media. Previous LIS studies found that users adopt digital library services when they perceive a clear benefit such as immediacy, accessibility, and resource discovery efficiency (Rowley, 2016; Aharony, 2019). In

the case of Federal Polytechnic Ekowe, the relative advantage of WhatsApp and OPAC notices is evident in the rural and riverine geography, where physical access to the library may be limited by distance or transportation challenges. When digital channels improve awareness and reduce service barriers, adoption becomes more likely.

2. Compatibility

Compatibility refers to how well the innovation aligns with users' existing needs, experiences, and cultural or institutional norms. For Nigerian polytechnic students, mobile-based platforms are culturally embedded. WhatsApp and Facebook are widely used among students for academic coordination and social interaction (Adebayo & Ahmed, 2021). Thus, their use in library marketing aligns with familiar behavior patterns, increasing acceptance. Conversely, tools such as AI chat bots or virtual help desks may appear unfamiliar or too technical, reducing compatibility and slowing adoption.

3. Complexity

Complexity refers to how difficult the innovation is to understand or use. Technologies that demand advanced digital literacy or high bandwidths such as advanced virtual reference systems or real-time chatbots may discourage adoption in contexts where digital skills and infrastructural resources are uneven. This framework explains observed disparities in adoption between simple and familiar platforms (e.g., WhatsApp) and emerging tools like automated digital assistants. The complexity attribute is particularly relevant to polytechnics like Federal Polytechnic Ekowe, where ICT maturity and students' digital literacy levels may vary significantly.

4. Trialability

Trialability refers to the extent to which users can experiment with an innovation before fully adopting it. Platforms such as WhatsApp, OPAC, and email are easy to test through small interactions: reading a broadcast, clicking an OPAC link, or scanning an email alert. These incremental exposures serve as "trial use" experiences that build confidence and encourage eventual adoption. Libraries that introduce new marketing tools gradually, provide user orientation, and offer trial opportunities are more likely to achieve sustained adoption (Chu & Du, 2020).

5. Observability

Observability is the extent to which benefits of the innovation are visible to others. When students see their peers benefiting from online renewal notices, WhatsApp announcements, or OPAC updates, they are more likely to adopt. Visibility of use reinforces legitimacy and normalizes digital engagement in library services. In student-shared digital environments, social proof plays a critical role in accelerating adoption of library technologies.

Innovation-Decision Process in the Library Context

Rogers also describes a five-stage decision process: knowledge, persuasion, decision, implementation, and confirmation. In the Federal PloytechnicEkowe context the five-stages can be contextualised thus:

DoI Stage	Library Marketing Application
Knowledge	Users learn about WhatsApp alerts, OPAC notices, email broadcasts
Persuasion	Users form impressions of usefulness, convenience, speed
Decision	Choice to subscribe to alerts, click links, or ignore messages
Implementation	Regular use of digital tools for library updates
Confirmation	Continued use reinforced by positive experience

The table above showed clearly justifications through the users interaction with technology, the reason for adopting the theory and why awareness and perceived usefulness measured in this study are strong predictors of engagement and satisfaction.

Application to the Study Variables

DoI Construct	Study Variable Link
Relative advantage	Perceived effectiveness of technology-based marketing
Compatibility	User comfort with digital platforms used by the library
Complexity	Challenges reported by users (literacy, tech difficulties)
Trialability	Exposure to platforms before full adoption
Observability	Influence of peer behavior on adoption & engagement

The table above showed how the DoI theory grounds the research questions and hypothesis by explaining why some technologies may succeed among users in the library environment while others lag in their adoption.

Data Analysis, Results and Interpretation

Demographic Characteristics of Respondents

A total of 426 valid responses were analyzed. Table 1 presents the demographic profile.

Table 1: Demographic Characteristics of Respondents (N = 426)

Variable	Category	Frequency	Percentage (%)
Gender	Male	247	58.0
	Female	179	42.0
Programme	ND	216	50.7
	HND	210	49.3
Academic Level	ND I	109	25.6
	ND II	107	25.1
	HND I	113	26.5
	HND II	97	22.8
Frequency of Library Use	Daily	182	42.7
	Weekly	167	39.2
	Occasionally	77	18.1

Source: Survey, 2025

Respondents represented a balanced distribution of ND and HND students, with a slight male majority. Most respondents are active library users (82% use the library daily or weekly), indicating that the sample possesses meaningful exposure to library services strengthening validity of perception data.

Awareness and Use of Technology-Driven Marketing Tools

Table 2: Awareness and Use of Technology-Driven Tools (N = 426)

Technology Tool	Awareness (%)	Usage (%)	Mean (1–5)	SD
WhatsApp announcements	94.1	88.0	4.22	.78
Facebook page posts	82.9	69.2	3.90	.81
SMS/E-mail alerts	66.4	58.3	3.54	.94
Library Website/OPAC	84.3	72.8	4.01	.83
E-notice boards / portal announcements	53.8	44.6	3.32	.90
Institutional Repository alerts	50.2	38.5	3.05	1.02
AI chatbots / virtual helpdesk	24.6	11.4	2.39	1.01

Source: Survey, 2025

Awareness and use of low-bandwidth, mobile-based platforms (WhatsApp, Facebook, OPAC) are very high. AI-based services exhibit very low awareness and usage, consistent with emerging adoption trends in Nigerian LIS environments (Malgwi, Dawha, Inuwa, & Rabasa, 2025; Echezona & Ugwu, 2021).

Perceived Effectiveness of Technology-Driven Marketing

Table 3: Perceived Effectiveness of Digital Marketing Tools

Statement	Mean	SD	Interpretation
Tech enhances awareness of services	4.18	.79	High
OPAC improves resource discovery	4.03	.82	High
Social media posts are engaging	4.11	.86	High
Messages improve service usage	3.97	.89	High
Updates are timely and useful	3.92	.88	High
SMS/E-mail reminders are effective	3.64	.97	Moderate
AI/digital assistants are helpful	2.51	1.09	Low

Source: Survey, 2025

Students express strong confidence in social media and OPAC as effective marketing tools. Perception of AI systems remains weak, reflecting early-stage adoption in Nigerian academic libraries.

Challenges Encountered

Table 4: Challenges in Accessing Digitally Marketed Library Services

Challenge	Percentage (%)
Poor Internet connectivity	78.2
Irregular electricity supply	72.1
Limited ICT facilities	62.7
Lack of digital awareness	59.0
Low digital literacy skills	54.2
Unreliable network coverage in Ekowe region	50.5
Absence of advanced AI platforms	44.8

Source: Survey, 2025

Infrastructure limitations (network & power supply) are dominant barriers, consistent with national ICT environment challenges (Ani&Edem, 2020; Okoye& Obi, 2022). Digital skill gaps also persist.

Test of Hypothesis

Hypothesis 1

H₀₁: There is no significant relationship between users' awareness of technology-driven marketing tools and their engagement with library services.

Table 5: Correlation Between Awareness and User Engagement

Variables	R	p-value	Decision
Awareness and Engagement	.561**	.000	Reject H ₀₁

p < .001 (2-tailed)

Correlation is significant at the 0.01 level

There is a moderate positive significant relationship between awareness and engagement ($r = 0.561$, $p < .001$). Students who are more aware of digital library promotion tools actively use library services.

Discussion

Awareness and Use of Technology-Driven Library Marketing Tools

Results revealed very high levels of awareness and use of low-bandwidth, mobile-based platforms most notably WhatsApp, OPAC announcements, and Facebook posts. This finding strengthens the assertion that academic libraries in resource-constrained environments tend to adopt familiar technologies and communication tools already embedded in students' daily lives (Adebayo & Ahmed, 2021). WhatsApp, in particular, has become the most pervasive mobile communication platform in Nigerian higher institutions, due to its affordability, accessibility, and ability to support multimedia communication in low-bandwidth contexts. These results align with the conclusions of Boateng and Liu (2019), who reported wide adoption of WhatsApp and Facebook in Ghanaian university libraries for similar purposes. The high awareness of OPAC alerts underscores the value of traditional library automation systems as consistent communication channels, particularly in academic institutions where online catalogues remain central to resource discovery. This finding echoes Rowley's (2016) assertion that core digital library services continue to serve as foundational platforms for user engagement when effectively promoted.

In contrast, awareness and usage of advanced digital tools such as AI chatbots and automated helpdesks were low. This supports emerging scholarship observing that while AI technologies are transforming libraries in advanced economies (Library Hi Tech, 2023; Meakin, 2024), adoption in African LIS contexts remains limited due to infrastructural gaps, cost implications, and capacity constraints (Ani & Edem, 2020; Echezona & Ugwu, 2021). The low use of AI tools in this study is consistent with the findings of Islam (2025), who noted a global unevenness in the diffusion of AI-based library systems.

Perceived Effectiveness of Digital Marketing Strategies

The results demonstrated that students perceive technology-driven communication as effective for enhancing awareness of library services, improving access to information, and supporting academic engagement. Social media platforms and OPAC alerts were particularly valued for timely dissemination of information and ease of interaction. These results align with findings from Cheng (2020) and Chu and Du (2020), who reported that digital communication tools increase user awareness, foster interactive communication, and promote inclusiveness by reaching users wherever they are. The strong perception of usefulness supports the Technology Acceptance Model (TAM) proposition that perceived usefulness significantly influences technology adoption (Davis, 1989). It also complements Rogers' (2003) relative advantage and compatibility constructs in the Diffusion of Innovations (DoI) framework. Students consider social media and OPAC to be beneficial and well-aligned with their existing communication habits, thus enhancing adoption likelihood.

The relatively low perceived effectiveness of AI-based services reflects both limited availability and low familiarity. Users cannot perceive usefulness where access is limited or where the innovation remains abstract. This finding further reinforces Rogers' (2003) complexity dimension: innovations perceived as complex or unfamiliar diffuse slowly, particularly when infrastructure and digital literacy gaps exist.

Challenges in Using Technology-Driven Marketing Tools

Infrastructure challenges especially poor internet connectivity and unstable electricity were reported by the majority of respondents. This finding reflects broader ICT deficits frequently reported in Nigerian tertiary institutions (Ani & Edem, 2020; Okoye & Obi, 2022). Federal Polytechnic Ekowe's riverine location amplifies these challenges due to weaker network infrastructure and logistical barriers affecting ICT deployment. Limited ICT facilities and low digital literacy levels among some users also emerged as significant barriers, concurring with findings by Echezona and Ugwu (2021) that uneven digital competencies impede optimal usage of library technologies in Nigerian academic communities.

Interestingly, lack of awareness of some digital platforms was also identified as a challenge. This underscores the reality that technology availability does not automatically guarantee adoption. Effective promotion, training, and user orientation are necessary. Malgwi, Dawha, Inuwa, and Rabasa (2025) emphasizes that institutional support and user readiness are critical to successful technology integration in Nigerian LIS environments. This study confirms that digital marketing strategies must be supported by user instruction and ongoing sensitization.

Correlation Between Awareness and Engagement

Pearson correlation analysis revealed a moderate, positive, and statistically significant relationship between awareness of technology-driven marketing tools and user engagement ($r = 0.561$, $p < .001$). This indicated that students who are aware of available digital channels are more likely to use library services. The finding reinforces the DoI principle that knowledge precedes adoption and that awareness campaigns play a foundational role in technology diffusion (Rogers, 2003). It also resonates with Aharony's (2019) insight that awareness and positive attitudes toward digital communication foster deeper user participation in library activities.

Findings

The study found out that:

1. Federal Polytechnic, Ekowe Library primarily markets its services using WhatsApp, OPAC alerts, Facebook, email, and SMS, while advanced digital tools such as AI chatbots are rarely used.
2. Findings showed that users perceive technology-driven marketing as effective in increasing awareness, improving access to information, and encouraging the use of library services.

3. The study also found that users face challenges such as poor internet connectivity, unstable electricity supply, limited ICT facilities, and varying digital literacy levels when accessing technology-mediated library services.

Recommendations

Based on the findings of this study, the following were recommended:

1. Since only basic digital tools are currently used, the library should expand its technology adoption to include emerging tools such as AI-based chatbots and automated service systems to enhance digital service interaction and modernize user engagement.
2. Because users perceive digital marketing as effective, the library should strengthen and sustain its use of social media, OPAC notifications, email, and SMS by creating structured digital communication schedules and dedicated library social-media engagement strategies.
3. In view of the connectivity and power challenges faced by users, the Polytechnic administration should improve internet infrastructure, provide reliable power alternatives, and offer digital literacy support so users can fully benefit from technology-mediated services.

Conclusion

This study assessed users' perceptions of technology-driven marketing of library services at Federal Polytechnic, Ekowe Library. The findings showed that the library mainly relies on easily accessible tools such as WhatsApp, OPAC alerts, Facebook, email, and SMS to reach users, while advanced emerging technologies like AI chatbots are minimally deployed. Users consider the current digital marketing methods effective in promoting awareness and access to library services, but they experience challenges such as poor internet connectivity, unstable electricity, limited ICT resources, and differing digital literacy levels. Technology-based marketing is positively received, but its full potential is constrained by infrastructural limitations and gaps in technological advancement.

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