



ARTIFICIAL INTELLIGENCE AND THE TRANSFORMATION OF LIBRARY OPERATIONS IN ACADEMIC LIBRARIES IN RIVERS STATE

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ABSTRACT: *This study investigated the effectiveness of artificial intelligence (AI) Canva Magic Studio utilization in promoting transformation of library operations in academic libraries in Rivers State. Two research questions were raised alongside their hypotheses. The study adopted quasi-experimental research design. The population of the study was 88 first year students in the Department of Library and Information Science, University of Port Harcourt, Rivers State from which sample of 88 was derived. The data were derived primarily with the aid of Canva Magic Studio and the researchers' designed instrument entitled: AI-Students' Library Information Literacy Scale (AI-SLILS). The AI-SLILS was faced validated by experts in research. The instrument reliability tested was done using Cronbach Alpha coefficient which resulted to the estimate of 0.87, thus approving the AI-SLILS as highly reliable. The collated data were analyzed accordingly using mean and t-test. It was shown that Canva Magic Studio has significant contribution in the transformation of students' knowledge on research skills and referencing tools. Also, the results indicated that Canva Magic Studio has significant contribution in the promotion of students' knowledge on how to use library resources. It is concluded that this AI-powered platform known as Canva Magic Studio serve as effective instructional tools that offer real-time, highly comprehensible, and simplified illustrations that can enhance students' interest, self-regulated learning, and practical but processed skills on approaches to utilise academic library in the enhancement of research skills, accessing referencing tools as well as promoting the general knowledge and valuable skills requisite for optimised library information literacy. It is recommended that university management and corporate individuals should provide academic libraries with Canva Magic studio alongside other essential digital technology facilities to promote the transformation of library operations and usage in tertiary institutions.*

KEYWORDS: Artificial Intelligence, Canva Magic Studio, Library, User Information Literacy, Library Operation.



INTRODUCTION

An academic library is an intellectual hub that houses the educational brain of every higher institution. It is a coordinating point that advances innovative ideas and creates scientific procedures towards the advancement of innovative research and development. A quality academic library that is optimized in facilitating all its established functions serves as a nerve center for the emergence of lifelong innovations that improve not just the accessibility to quality educational resources, but also encourages students' proactive, self-regulated, and self-paced learning as well as provide emerging blueprints for modified researches. Many studies acknowledged the importance of quality academic libraries in enhancing students' academic engagements, academic performance, staff productivity, and the general institutional research outcome (Chigbundu & Ezenagbo 2025, Wine, et al., 2023, Tresha, 2025, Benson, 2019). This underscores the place of academic libraries in the assurance of education efficiency and effectiveness in institutions of learning.

Essentially, academic libraries were established to operate on remarkable blueprints of coordination of collections of acquisition and development, cataloging and classification, circulation services, referencing and information, digital and electronic resource management, user education, serial management and archiving and preservation. Others roles of academic libraries are the provision of technical services, and administration and management with emphasis on policy development, staff supervision, budget planning, and strategic planning. These operationalizations of academic libraries when optimized assist in the advancement of students, staff, research development, and the promotion of industrial products and services. The impact will equally translates to generational value sustainability. Unfortunately, these essential roles of academic libraries in different higher institutions in Rivers State seem not to meet minimum standards. Many studies admonished the insufficiency of emerging collections and seating capacity, poor maintenance culture, poor ICT infrastructure, and poor currency of library personnel in tune with the digitalization era of library operations (Sahabi & Otobo, 2021, Lasode, Yusuf, & Koiki, 2015, Uchechukwuka 2023, Udofot & Sambe, 2021, Abubakar, 2011). These challenges prominently undermined core value of academic libraries in empowering students with information literacy especially in the aspect of teaching students on how to use the library resources, training students and staff on research skills and referencing tools, as well as rendering quality orientation programs for students.

Studies had shown that the extent to which academic libraries delivered on their core mandate in Nigeria is significantly low (Umeozor & Ezeonye, 2023, Adetoro, 2018, Edem, et al., 2020). More worrisome, the percentage of students that actually understand the importance and protocols of libraries in the promotion of their research skills and information resources accessibility is relatively low (Beile, et al., 2020, Ekpang & Idhalama, 2024, Murphy, 2014). Situations that without doubt could be responsible for low-level utilization of some academic libraries in Nigeria (Ishola & Olurotimi, 2014, Odu & Agbor, 2018, Ejikeme, et al., 2021).

Published statistics and studies maintained that the extent of students' utilization of academic libraries in recent times is declining (Ebaye & Osim, 2014, Ejikeme, Uche, & Eze, 2021). Some studies attribute this unfortunate scenario to issues of poor funding, dilapidated infrastructure, epileptic power supply, and outdated, non-digital resources. Additional factors include inadequate ICT skills among staff/users, lack of awareness of resources, and limited



user education (Ebaye, et al., 2014; Idakwo, 2022). However, close observation of the academic libraries within Rivers State in particular could attribute it to insufficient time allotted to students' orientation on library usage. This may undermine thorough explanations of facts and illustrative demonstrations of examples, which in the long run hinder clear comprehensibility of facts, points, protocols, and functionality of the library among the students. Also, the issue of a high population of students and relatively low library staff strength could lead to an excessive workload which in turn hampers staff effectiveness in explaining facts, points, protocols, and functionalities of libraries to students. A situation that limits students' understanding, undermines their interest in the usage of the library, and in turn, could lead to poor educational outcomes. Meanwhile, issues relating to the nature of library operations which still utilize a manual approach may also limit the level of utilization of academic libraries (Odu & Edam-Agbor, 2018).

All the mentioned challenges of academic libraries in Nigeria ultimately constrain the students who should be versed in appropriate and innovative knowledge, skills, and values necessary to utilize the library optimally. This without doubt could be responsible for the recorded educational wastage in tertiary institutions in Nigeria (Oyetakin, & Odunayo, 2013; Okpala, & Omenyi, 2024), low level of employability among the graduates (Business, Day, 2024, LEAP Africa, 2021, Federal Ministry of Budget and Planning, 2024, Dumani, et al., 2021), and low/poor research base of some of the institutions (Victor, et al., 2024, Monday & Mallo, 2021). However, reversing this narrative requires intentional zeal of the institutions' management towards the transformation of library operations in academic libraries. This intentionality will assist in facilitating adequate funding of information users' literacy programs, encouraging staff innovative training, and majorly prompting intense education of the users. Transformation of library operation in the context of this study entails optimization of academic libraries programs, protocols, acts, and processes towards advancing/improving quality information resources' acceptability for valuable research skills acquisition among the students, and guarantees effective and innovative products and service delivery using technology-driven and user-centered approaches. It's equally refers to systematic restructuring and reconfiguration of manual library service operations towards improving service efficiency, information resource accessibility, and knowledge base values driven by technological and user-centered approaches. The emphasis of the aspect of the library operation under consideration in this study is users' information management literacy.

The concept of users' information management revolves around the training of the users on the utilization of library resources, protocols of acquisitions, storage, security, retrieval, and, as well, using information. Aghoghovwia (2014) considers it strategic process of equipping users with knowledge management strategies towards accessing different library quality services in order to improve communication, information resource use, and knowledge creation. Library user education plays significant roles of improving users' information awareness and retrieval skills, encourages social education, self-advocacy, or improved resource utilization (Seong-Kwan, 2021). It equally increases their access to information, strengthens the bond between users and the library, ensures that library resources are used to their fullest potential, improve the attractiveness of library information, and as well, promote the library in the community. This in a long run promote library use, enhances its reputation, and capabilities

The users' knowledge on library information management in Nigeria's higher institutions is low (Agboola, et al., 2011, Adebayo-Atchimi, et al., 2022, Ogu, et al., 2022,



Madu, et al., 2022). Some studies reported that students mostly utilized academic library to read only (Agboola, et al., 2011, Tommy, 2009, Madu, et al., 2022). These low level of utilisation of library resources among the students is greatly influenced by factors such as lack of awareness, poor information accessibility, and poor information on the organization of library (Ogundiran, et al., 2025, Abayomi, 2020, Aina, et al., 2019). However, changing this narrative and ensuring the core values of academic library is achieved, many advocated for the need to incorporate information technology. This study advanced to the assessment of artificial intelligence impact on the transformation of library user information literacy.

Fundamentally, artificial intelligence is provides adhoc training, and diverse platforms for the quality simulation of facts and effective management of information (Yu, et al., 2021; Zajko, 2022). These skill promotion stride of AI has proficiency in enhancing technical skills and transversal skills such as critical thinking, analytical skills, problem-solving skills as well as promoting self-conducts (World Economic Forum, 2020, Morandini, et al., 2023, Xiaome, et al., 2023). Whether these potentials in the case of Canva Magic Studio (AI) translate to the acquisition of skills among the students formed the basis of this study. It assists in provide realtime assistance and support, handling frequently asked questions and offering 24/7 support, enhancing library operations by forecasting user needs and optimizing resource allocation (Johnson and Lee, 2022), managing collections, track usage patterns, and predict future trends (Brown and O'Hara, 2023). Studies eulogized that utilisation of AI allows libraries to make informed decisions about acquisitions and resource management, improves the user experience by providing more accurate search results and personalized recommendations, as well as helping users find relevant resources more quickly and effectively (Nguyen and Richards 2021, Martin and Thompson, 2022).

Canva Magic Studio is a formidable graphic design AI platform with various tools for creating visual content, including storyboards. Built on drag and drop format with features including fonts, graphics, vectors, and templates, and free stock photo sites, Canva Studio provides users access to a diverse array of free photos in the program itself (Yuniawati, et al., 2024). It offers photo filters, images, free icons and shapes, as well as hundreds of fonts from where the users can select various available templates. For instance, the librarian or educator can employ diverse features in the Canva Magic Studio as collaboration feature, where students and educators can generate pictures or other graphic products together by accessing a specific link. If the students can access the link, they can compose graphic products or watched the already created graphic products.

Studies maintained that Canva Magic Studio encouraged the provision of learning material, improve the learning process, promotes effective sharing of what the librarians made in Canva documents with the students by just sharing the link or adding them as member as well as assists the librarians in reviewing programs with their students and providing feedback on the content, design, and overall presentation (Yuniawati, et al., 2024). The AI system (Canva studio) has the propensity to improve students' engagement, sustains attention spark curiosity, support brainstorming, sustains stimulation as well as build up students' communication, collaboration, creativity, and critical thinking skills (Yuniawati, et al., 2024).

As an AI-powered tool, Canva Magic can generate text, helping users draft outlines, paragraphs, and social media posts quickly. It drafts templates that make it easier to create content. These features of Canva Magic assist in the enhancement of students' learning



experiences, and as well, the enhancement of students' writing abilities (Fauziyah et al., 2022; Faqih et al., 2023; Friska et al., 2023; Nyoman, 2023; Pratiwi et al., 2024). It improved effectiveness in the organisation and classification of materials, as well as increased user's contentment (Thompson et al., 2023, Webb, 2019). Adducing from the potentials of Canva Magic Studio, it was assertive to examine the effect it could have on the students' acquisition of skills in academic libraries operations in Rivers State

Statement of the Problem

The rising level of non-utilisation of academic libraries in most of the higher institutions in Rivers State is alarming. This constitute severe implications not only to students' academic performance, but has ultimately contribute to the low institutional research values. One could without doubt associate the level of students' awareness on the operationalisation of academic libraries to issues of poor user's information literacy provided by the library system due to the rising population of students and the low personnel strength to effectively carried out explanatory sessions with the students. While efforts have been doubled by scholars, government and the institution's management to improve the students' library information literacy for profound research skills, it is believed that such library programmes and protocols can function effectively to the level of knowledge of the people about library operations. Many approaches had been utilized to inculcate students with the knowledge of library operations, but issues of underutilisation of the library for studies, and researches still persist. Thus, prompting the doubt that such programmes as packaged during freshers' orientation course were not appropriate in providing illustrative explanations and examples for the understanding of the students. However, whether this challenge can be surmounted by artificial intelligence formed the basis for this study.

Objective of the Study

The main purpose was to explore the effectiveness of artificial intelligence (AI) utilization in promoting transformation of library operations in academic libraries in Rivers State. Specific objectives were to:

- i. determine the difference between the pre and post test utilisation of artificial intelligence (AI)(Canva Magic Studio) for the transformation of students' knowledge on research skills and referencing tools.
- ii. determine the difference between the pre and post test utilisation of artificial intelligence (AI)(Canva Magic Studio) for the promotion of students' knowledge on how to use library resources.

Research Questions

The following research questions were raised for the study:

- i. what is the difference between the pre and post test utilisation of artificial intelligence (AI) (Canva Magic Studio) for the transformation of students' knowledge on research skills and referencing tools?



- ii. what is the difference between the pre and post test utilisation of artificial intelligence (AI)(Canva Magic Studio) for the promotion of students' knowledge on how to use library resources?

Research Hypotheses

The following null hypotheses were formulated for the study:

- i. There is no significant difference between the pre and post test utilisation of artificial intelligence (AI)(Canva Magic Studio) for the transformation of students' knowledge on research skills and referencing tools.
- ii. There is no significant difference between the pre and post test utilisation of artificial intelligence (AI)(Canva Magic Studio) for the promotion of students' knowledge on how to use library resources.

RESEARCH METHODS

The study adopted quasi-experimental research design because of the utilisation of intervention: Canva Magic Studio. The area of the study was Port Harcourt, Rivers State, Nigeria. This area is situated between latitude 4° 40' 55" North and longitude 6°58' 06" East in Rivers State.

The population of the study was 88 first year students in the Department of Library and Information Science, University of Port Harcourt, Rivers State. The choice of the department was because of its role in training the professionals in library and information science as well as the presence of projectors, computer labs and the virtual reality studio. The sample of 88 were used for the study derived from the population through census sampling technique.

The data were derived primarily with the aid of Canva Magic Studio and the researchers' designed instrument entitled: AI-Students' Library Information Literacy Scale (AI-SLILS). The Canva Magic Studio is a programmed artificial intelligence designed by Australian entrepreneur, Melanie Perkins in 2012 to teach students. The Canva Magic Studio was programmed by the researchers on library operations and used to teach students' strategies involves in the utilization of library resources to improve research skills and referencing tools, as well as the promotion of students' knowledge on how to use library resources. The prompting of Canva Magic Studio provided the students with illustrative examples and explanations of the strategies involves in the utilization of library for the improvement of research skills, accessing referencing tools, and the general utilization of library information resources. Detailed as contained in the lesson plan. The AI-SLILS has three clusters:

Cluster I: This had two items such as age and gender. The students' ages were structured into grades such as 18-30yrs, 31-40yrs, and 41yrs and above. Gender were categorized into male and female.

Cluster II: This consisted of 10 items designed on a closed end statements eliciting information from the students on how AI enhances illustrative explanation of utilization of



library resources to improve research skills and referencing tools. This cluster was rated with modified scale: very high extent, high extent, low extent, and very extent. The rating scale was coded as VHE=4, HE=3, LE=2, and VLE=1

Cluster III: This consisted of 10 items on how AI led to the promotion of knowledge on the general utilization of library information resources. This cluster was rated with modified scale: very high extent, high extent, low extent, and very extent. The rating scale was coded as VHE=4, HE=3, LE=2, and VLE=1

The research instrument (AI-SLILS) was face validated by three experts in research. The face validation method was employed. This assisted in the examination of words, relevance and appropriateness of the items in representing the study variables. This informed suitable modification, additions or removal of items not relevance for the final evolution of the valid research instrument. The informed consent of the experts and the respondents in the study as well as their confidentiality were sought officially using written request.

The instrument test of reliability was estimated using Cronbach Alpha coefficient which resulted to the estimate of 0.87, thus approving the AI-SLILS as highly reliable. Data collection lasted for two days through the assistance of a research expert and the Canva studio programmer employed by the researchers. At first, the students were briefed on the essence of the study. This was to intimate them that the study is mainly for research and academic purposes. Three days were used for the administration of the Canva Magic Studio while a day was used for the administration of AI-SLILS. The collated data were analyzed accordingly using mean and standard deviation linear regression.

RESULTS

Figure 1: Details of the Respondents

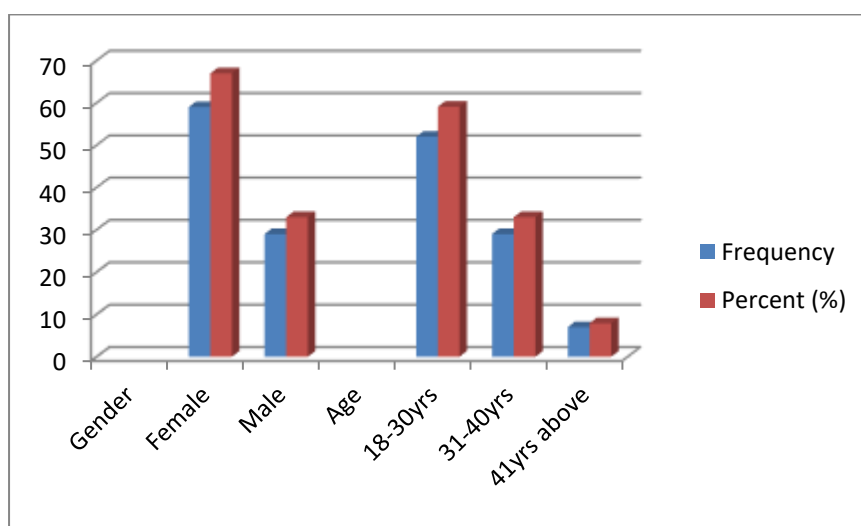


Figure 1 revealed that majority of the respondents were female (67.0%). In terms of age, majority of the respondents were those within ages 18-30yrs (59.1%).



Table 1: Summary of t-test statistical analysis of the difference between pre and post test means utilisation of artificial intelligence (AI)(Canva Magic Studio) for the transformation of students' knowledge on research skills and referencing tools

Tests	N	$\bar{X}$	SD	Df	p-value	t-cal	Decision
Pre-test	88	35.36	5.82	84	1.97	*10.27	H ₀ rejected
Post tests	88	48.71	10.72				

*Significant at $P \leq .05$, df. 174

Result in Table 1 showed that the pretest score for transformation of students' knowledge on research skills and referencing tools has a mean 35.36 while the post test score has a mean of 48.71. The result is that a mean difference of 13.35 (an increase of 27.42) is obtained showing a improvement in the transformation of students' knowledge on research skills and referencing tools using AI (Canva Magic). The t-calculated value of 10.27 is greater than the t-critical value of 1.97. Therefore the hypothesis of no significant difference is rejected. This means that there is significant difference between the pretest and post test means utilisation of artificial intelligence (AI)(Canva Magic Studio) for the transformation of students' knowledge on research skills and referencing tools. This shows there is an improvement in the intervention

Table 2: Summary of t-test statistical analysis of the difference between pre and post test means of utilisation of artificial intelligence (AI)(Canva Magic Studio) for the promotion of students' knowledge on how to use library resources.

Tests	N	$\bar{X}$	SD	Df	p-value	t-cal	Decision
Pre-test	88	9.89	2.89	16	1.96	*10.08	H ₀ rejected
Post tests	88	17.89	6.86				

*Df. 174t Critical t at $\alpha=0.05$ \alpha = 0.05 $\alpha=0.05 \approx \pm 1.96$, Since $|t| = 10.08 > 1.96$, the result is statistically significant @ p-value < 0.001

Result in Table 2 showed that the pretest score for the promotion of students' knowledge on how to use library resources has a mean 9.89 while the post test score has a mean of 17.89. The result is that a mean difference of .8 (an increase of 27.42%) is obtained showing an improvement in the level of the promotion of students' knowledge on how to use library resources when utilisation of artificial intelligence (AI)(Canva Magic Studio). The t-calculated value of 10.08 is greater than the t-critical value of 1.96. Therefore the hypothesis of no significant difference between pre and post test means is rejected. The finding revealed that there is significant difference between the pre and post test means of the promotion of students' knowledge on how to use library resources when utilising artificial intelligence (AI)(Canva Magic Studio). In other words, there is a significant improvement with the intervention.



DISCUSSION OF FINDINGS

The hypothesis one tested indicated that Canva Magic Studio utilisation has a significant contribution to the transformation of students' knowledge on research skills and referencing tools. The implication is that AI (Canva Magic Studio) assists in the promotion of illustrative explanation to students on how to access information for research skills development as well as understanding protocols for accessing referencing tools. This was perhaps achieved as Canva magic studio was able to sustain students' interest on the programme, sustain their concentration and provides explanatory examples for them as though in a real-time scenario. Arising from the constructivist theory, Canva magic studio promotes self-regulated learning, motivates students' interest, and also facilitates skills acquisition. The reason may not be unconnected with the ability of the platform to permit active and experiential learning where the learners control the pace and depth of learning as well as its ability to utilize real-life learning situations that are problem-solving centered with potentials to encourage exploration and discoveries. This implies that the Canva Magic Studio benefits to the transformation of students' knowledge on research skills and referencing tools may be due to its ability to promote students' interest in the study vis-a-vis their active curiosity in the learning process. This magic studio utilized pictorial online videos tutorials, and virtual simulations for students to learn how to source information for research skills development and referencing tools. This is possible through collaboration with others and personalized settings. The findings corroborated with the positions of Yu, et al., (2021), Zajko (2022) that AI provides ad hoc training, and diverse platforms for the quality simulation of facts related to the environmental health risks and effectiveness management . This skill promotion of Canva Magic studio have proficiency in enhancing research skills and transversal skills such as critical thinking, analytical skills, and problem-solving skills as well as promoting self-conduct (World Economic Forum, 2020, Morandini, et al., 2023, Xiaome, et al., 2023).

Hypothesis two revealed that Canva Studio has a significant contribution to the promotion of students' knowledge of how to use library resources. This may not be unconnected with Canva Magic Studio potency to create active real-life platforms for experiential learning that encourage exploration and discovery. The findings corroborate the positions of Yu et al., (2021), Zajko (2022) that AI provides platforms for training and quality simulation of facts, information gathering, and details management. This skill promotion stride of Canva Studio has proficiency in enhancing technical and transversal skills such as critical thinking, analytical skills, problem-solving skills as well as promoting knowledge and self-conduct (World Economic Forum, 2020, Morandini, et al., 2023, Xiaome, et al., 2023).

CONCLUSION

Within the understanding of the potency of the Canva Magic Studio, it is concluded that this AI-powered platform serves as an effective instructional tool that offers real-time, highly comprehensible, and simplified illustrations that can enhance students' interest, self-regulated learning, and practical but processed skills on approaches to utilize academic libraries in the enhancement of research skills, accessing referencing tools as well as promoting the general knowledge and valuable skills requisite for optimised library information literacy.



RECOMMENDATION

It is recommended that university management and corporate individuals provide academic libraries with Canva Magic studio alongside other essential digital technology facilities to promote the transformation of library operations and usage in tertiary institutions. This in the long run will enhance the transformation of students' knowledge on research skills and referencing tool and, as well, promote their knowledge on how to use library resources.

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Institutional Review Board Statement

Not applicable.

Transparency

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

Competing Interests

The authors declare that they have no competing interests.

Authors' Contributions

All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

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