Barriers and Opportunities in Adopting E-Libraries and E-Textbooks in Myanmar: A Comprehensive Survey of Educational Institutions

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

E-libraries and e-textbooks are essential tools for modern educational development, offering enhanced access to knowledge, flexibility in learning, and the ability to integrate interactive and multimedia resources. E-libraries and e-textbooks are essential tools for modern educational development, offering enhanced access to knowledge, flexibility in learning, and the ability to integrate interactive and multimedia resources. These digital platforms have the potential to bridge gaps in education, particularly in regions where physical resources are limited. This study explores the integration of e-libraries and e-textbooks within Myanmar's higher education system, identifying key barriers and opportunities for digital adoption. The primary hypothesis of this study posits that inadequate technological infrastructure, financial constraints, and cultural resistance significantly

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hinder the adoption and usage of e-libraries and e-textbooks in Myanmar's educational institutions. A survey of 310 students and teachers from two universities and five colleges revealed high awareness of these digital resources, but actual usage remains low due to inadequate technological infrastructure, financial constraints, and cultural preferences for traditional learning methods. Quantitative data were collected through structured questionnaires, and the results were analysed using descriptive and inferential statistics to identify patterns and correlations among various demographic groups. In rural areas, unreliable internet access and frequent power outages present significant challenges, while the high cost of digital devices and internet subscriptions further restricts access. Additionally, older teachers expressed a lack of familiarity with digital tools, contributing to a preference for traditional teaching methods. The study emphasizes the need for targeted investments in digital learning infrastructure, financial assistance for technology acquisition, and comprehensive training programs to build digital literacy among both younger and older teachers. These findings contribute to understanding the unique challenges faced by Myanmar in integrating digital tools into education and suggest actionable strategies to increase digital equity and educational effectiveness across the country. Addressing these barriers can help Myanmar's education system fully benefit from the advantages of digital resources, ultimately improving accessibility, inclusivity, and the overall quality of education.

1. INTRODUCTION

The rapid advancement of digital technologies has transformed various sectors worldwide, with education being one of the most significantly impacted. Globally, the integration of e-libraries and e-textbooks has emerged as a practical solution to the growing need for accessible, cost-effective, and flexible educational resources [1]. However, despite its potential, many developing countries face significant challenges in adopting and integrating these digital tools into their educational systems [2]. Myanmar, in particular, lags in the adoption of digital resources like e-libraries and e-textbooks, largely due to infrastructural challenges, financial constraints, and a lack of comprehensive policy support [3].

1.1 Background

The global shift towards digital education has been profound in recent years, with e-libraries and e-textbooks playing a critical role in making education more accessible and cost-effective [4]. In many countries, particularly in developed regions, these tools have been integrated successfully into national education systems, providing students and teachers with a broad range of digital resources that improve both the quality and accessibility of education [5]. For instance, countries like Singapore and Malaysia have made significant strides in integrating e-libraries and e-textbooks, driven by government policies that emphasize digital literacy and innovation in education [4].

In contrast, Myanmar's journey toward the integration of digital educational resources has been much slower. Despite the evident benefits, such as reducing the need for physical textbooks and improving access to a broader range of resources, Myanmar faces several challenges [3]. The country has yet to establish a comprehensive digital infrastructure that supports widespread e-library and e-textbook use. The primary issues include limited internet access, especially in rural areas, high costs associated with digital devices, and a strong cultural preference for traditional teaching methods [2]. This paper investigates these challenges, explores current adoption rates, and proposes solutions to facilitate the digital transformation of Myanmar's education system.

In Myanmar, the adoption of digital educational resources, such as e-libraries and e-textbooks, has been slow and inconsistent, despite their potential to enhance access to educational materials, especially in under-resourced and rural areas. Key barriers include inadequate technological infrastructure, such as unreliable internet connectivity and outdated systems, as well as financial constraints that limit both institutional investment in digital resources and students' ability to afford necessary technology. Additionally, the absence of cohesive government policies to support the integration of these digital tools into the academic curriculum further hinders progress. As a result, students and educators in Myanmar are left with limited access to modern educational resources, exacerbating disparities in education quality.

This paper aims to address these challenges by identifying and proposing solutions to bridge the gap between the potential and current adoption levels of e-libraries and e-textbooks, contributing to the broader modernization of Myanmar's education system.

1.2 Objectives

The objectives of this study are:

1. To investigate the effectiveness and accessibility of e-libraries and e-textbooks for students and teachers, considering factors such as ease of use, availability of necessary infrastructure, and user satisfaction.
2. To identify the key challenges and barriers to the successful adoption of e-library and e-textbook systems, including technological, financial, and educational hurdles.
3. To determine the potential impact of e-libraries and e-textbooks on educational outcomes, student engagement, and overall learning experience.

1.3 Scope and Justification

This study focuses on the analysis of educational policies and strategic plans related to the adoption and integration of e-libraries and e-textbooks in Myanmar's higher education institutions, specifically 2 universities and 5 colleges in Myanmar. These institutions are critical to shaping the country's future educational landscape. The study examines key aspects such as accessibility, infrastructure and policy impact.

The justification for this research stems from the pressing need to address Myanmar's educational challenges, particularly the infrastructural and cultural barriers that hinder the adoption of modern technologies. By exploring the potential of e-libraries and e-textbooks, the study aims to provide valuable insights into how these digital tools can help bridge educational gaps, create a more inclusive learning environment, and enhance the overall efficiency and accessibility of Myanmar's education system.

1.4 Limitation of the Study

The validity of this study is reinforced by the use of complete random sampling, which enhances the generalizability of the findings by ensuring that participants are representative of the broader population of students and educators across diverse universities and colleges in Myanmar, including regions like Yangon, Nay Pyi Taw, Mandalay, Taunggyi, Myitkyina, Ayeyarwady, and Bago. While this methodological approach allows for a more accurate reflection of the barriers and opportunities related to the adoption of e-libraries and e-textbooks, the findings may still be limited to these specific regions and institutions, potentially overlooking the experiences of rural states such as Chin, Kayin, and Rakhine. Additionally, the rapid pace of technological change and any alterations in policies during the research period could affect the relevance and applicability of some recommendations, highlighting the need for continued research in this evolving landscape.

2. LITERATURE REVIEW

The rapid advancement of digital technology has profoundly impacted various sectors, including education. In recent years, e-libraries and e-textbooks have emerged as pivotal tools in modernizing educational practices, offering a range of benefits such as enhanced accessibility, cost-effectiveness, and the ability to incorporate interactive content [1]. As educational institutions worldwide increasingly adopt digital learning tools, it becomes essential to explore the underlying theoretical frameworks and practical implications of these resources.

2.1 The Global Shift Towards Digital Education

The rapid advancement of digital technology has significantly influenced educational practices, leading to the widespread adoption of digital tools such as e-libraries and e-textbooks [2]. These resources provide enhanced access to knowledge, flexibility in learning, and integration of interactive content, making them essential components of modern education [3]. Countries like Singapore and Malaysia have successfully integrated e-libraries and e-textbooks through supportive national policies that prioritize digital literacy and equal access to technology [4]. Singapore's "Smart Nation" initiative, for instance, emphasizes the importance of digital innovation in education, which has contributed to the successful implementation of digital learning tools across its educational institutions [5].

Furthermore, the evolution of educational technology over the past 25 years has transformed teaching practices, enabling educators to leverage various digital resources to enhance student engagement and learning outcomes [4]. Dron and Anderson (2021) highlight how social media and crowdsourcing have impacted education, allowing for collaborative learning experiences that extend beyond traditional classroom settings [6]. Despite these advancements, developing nations like Myanmar face considerable challenges in adopting these technologies due to infrastructural deficiencies, financial constraints, and limited policy support [7].

2.2 Capability Approach to Digital Resource Integration

The Capability Approach, developed by Amartya Sen and expanded by Martha Nussbaum, provides a robust framework for evaluating the integration of digital resources in education [8]. This approach emphasizes expanding individuals' opportunities and access to digital tools, ensuring that students and teachers can achieve their full potential. In the context of digital education, this approach highlights the importance of not only providing technology but also enhancing digital literacy and ensuring stable internet access [9]. In Myanmar, inadequate infrastructure and financial constraints limit students' and educators' ability to utilize digital resources effectively [10]. Addressing these issues requires a holistic strategy that encompasses the provision of digital tools, ongoing training, and policy reforms to enhance digital literacy and bridge the technology gap.

2.3 Challenges to Digital Resource Adoption in Developing Countries

The adoption of e-libraries and e-textbooks in developing countries is significantly hindered by various barriers, including inadequate infrastructure, financial limitations, and cultural resistance [11]. Limited access to technology and reliable internet connectivity are prominent challenges, particularly in rural regions where digital infrastructure is less developed [12]. Financial constraints at both the institutional and individual levels further limit access to digital tools, making it difficult for students and educators to engage with e-libraries and e-textbooks effectively [13]. Cultural preferences for traditional learning methods also play a role,

as many teachers and students, especially in Myanmar, prefer printed materials and face-to-face instruction over digital tools due to familiarity and perceived effectiveness [14].

2.4 Adoption in Myanmar

The digital divide in Myanmar presents a formidable barrier to educational progress, particularly in the integration of e-libraries and e-textbooks. While some urban institutions have made strides in adopting digital resources, rural regions face severe infrastructural limitations, including unreliable internet connectivity and a lack of access to digital devices such as laptops and tablets [7].

Although the Ministry of Education has introduced various digital initiatives aimed at enhancing digital literacy and resource accessibility, the absence of a comprehensive national strategy has hindered the large-scale implementation of these e-resources, resulting in fragmented efforts that lack sustainable support [10].

This disparity underscores the urgent need for targeted investments and policy reforms to build necessary infrastructure, including reliable internet access and financial assistance programs for digital devices. Malaysia's strategic initiatives, particularly the Malaysian Education Blueprint 2013–2025, serve as a valuable model for Myanmar by emphasizing ICT integration in education and aiming to reduce the digital divide through coherent policy frameworks that enhance educational quality and accessibility [15]. By learning from Malaysia's experience and addressing systemic barriers, Myanmar can create a more equitable educational landscape that fully embraces the potential of digital tools.

2.5 Comparison of E-Library and E-Textbook Adoption Between Myanmar and Other Southeast Asian Countries

The adoption of e-libraries and e-textbooks across Southeast Asia reflects a diverse range of approaches influenced by each country's unique socio-economic context, governmental priorities, and levels of technological development.

Singapore has emerged as a leader in digital education within Southeast Asia, driven by its government's strategic focus on technology as a cornerstone of national development. The

country's Smart Nation initiative, launched in 2014, has been a key driver in the adoption of digital resources in education. The initiative emphasizes the integration of Information and Communication Technology (ICT) across various sectors, including education [16]. As part of this initiative, Singapore has heavily invested in developing e-libraries and e-textbooks, making these resources widely available to students and teachers. The success of digital resource adoption in Singapore can be attributed to several factors, including strong governmental support, comprehensive ICT infrastructure, and a commitment to digital literacy. Singapore's approach demonstrates the importance of a coordinated strategy that involves significant investment in both technology and human capital, ensuring that teachers and students are equipped to make the most of digital tools [5].

Malaysia has also made significant progress in the adoption of e-libraries and e-textbooks, driven by strategic government initiatives such as the Malaysian Education Blueprint 2013-2025. This blueprint emphasizes the integration of ICT in education as a means to improve educational outcomes and reduce the digital divide [15]. Under this initiative, Malaysian schools and universities have been provided with access to e-libraries that connect to international databases, offering students a wealth of resources that were previously unavailable in physical form. Additionally, the Malaysian government has implemented policies to ensure that even students in rural areas have access to digital resources, though challenges remain in fully bridging the urban-rural divide [11].

In stark contrast to Singapore and Malaysia, Myanmar's adoption of e-libraries and e-textbooks is still in its nascent stages. The country faces significant barriers that have slowed the integration of these digital tools into its education system. One of the primary challenges is the lack of adequate digital infrastructure. Many regions in Myanmar, particularly rural areas, suffer from limited internet access and outdated technological infrastructure, making it difficult for students and teachers to utilize e-libraries and e-textbooks effectively. The adoption of e-textbooks in Myanmar is similarly underdeveloped. E-textbooks are not widely available, and where they are introduced, they are typically limited in scope and functionality compared to those in more developed Southeast Asian countries. Additionally, the lack of training for teachers in

using digital tools further exacerbates the problem, as many teachers are not equipped to integrate e-textbooks into their teaching effectively [7].

2.6 Theoretical Framework

The conceptual framework for this study integrates several theoretical perspectives and empirical findings to provide a comprehensive model for analysing the adoption of e-libraries and e-textbooks at the University of Education in Myanmar. The framework is grounded in the Technology Acceptance Model (TAM), the Diffusion of Innovations Theory, and the Capability Approach, which together offer a robust theoretical foundation for understanding the factors that influence the adoption of digital resources in educational [17]. The framework considers technological factors, such as the availability and reliability of digital infrastructure, as well as individual factors, including digital literacy and perceived usefulness. Institutional factors, such as the presence of supportive educational policies and financial resources, are also integrated into the model. This multi-dimensional approach allows 26 for a nuanced analysis of the specific challenges and opportunities present in the Myanmar context, with a focus on identifying actionable strategies for improving the adoption and effectiveness of e-libraries and e-textbooks in higher education. By applying this conceptual framework, the study aims to contribute to the broader discourse on digital education in developing countries, offering insights that can inform policy-making and educational practice in Myanmar and similar contexts.

3. MATERIALS AND METHODS

The research methodology employed in this study offers an in-depth exploration of the current state of e-library and e-textbook adoption within Myanmar's education system, revealing both the significant potential of these digital resources and the substantial barriers that hinder their widespread implementation.

3.1 Research Design

This study utilized a quantitative survey approach to explore the use of e-libraries and e-textbooks in Myanmar. To capture a comprehensive view of digital resource usage, structured questionnaires were developed and administered to students and teachers across a sample of educational

institutions. Specifically, the study targeted two universities and five colleges to ensure a broad representation of both higher education and undergraduate settings. The questionnaires included a range of closed-ended questions, such as Likert scales and multiple-choice items. These questionnaires were distributed in paper form, with careful coordination to accommodate the preferences and accessibility of each institution. Data collected from the completed questionnaires was entered into statistical software (SPSS) for analysis. Descriptive statistics were employed to summarize the data, while inferential statistics were used to detect significant patterns and differences among various demographic groups. The reliability of the questionnaire was tested through a pilot study, and its validity was ensured through expert review and factor analysis, aiming to provide a robust assessment of the effectiveness and usage patterns of e-libraries and e-textbooks in the sampled institutions.

3.2 Sample Size and Selection

A total of 310 participants were selected using random sampling methods from 2 universities and 5 colleges in both urban and rural regions of Myanmar. The samples included students, younger teachers and older teachers to capture a broad range of perspectives on the adoption and usage of digital resources. The surveys focused on key areas such as accessibility, user satisfaction, and the perceived effectiveness of e-libraries and e-textbooks. This sampling method considered factors such as regional distribution, institutional type, and participant demographics to avoid overrepresentation or underrepresentation of any subgroup. The rationale for this approach is grounded in the need to generalize the findings across different contexts within Myanmar, ensuring that the results are applicable to both urban and rural educational settings.

3.3 Data Collection

Quantitative data were collected through structured surveys that targeted students and teachers at two universities and five colleges across Myanmar. The surveys were distributed in paper formats to accommodate participants' preferences and to ensure a high response rate. The surveys were designed to gather comprehensive information on several aspects of e-library and e-textbook usage. Participants were asked about their frequency of use, types of

resources accessed, and preferences for digital tools. Additionally, the surveys explored the challenges faced in accessing these resources, including technical difficulties and issues related to digital literacy. To assess perceptions of the benefits of digital learning tools, participants provided feedback on improvements in learning outcomes, convenience, and overall satisfaction. The questionnaires were distributed in paper form to ensure clear and precise participation. Data collected were then entered into statistical software (SPSS) for analysis to identify patterns, correlations, and significant findings regarding the use and effectiveness of e-libraries and e-textbooks.

3.4 Data Analysis

Quantitative data were analysed using a range of statistical methods to uncover trends and correlations in digital resource usage. Descriptive statistics, such as means, frequencies, and percentages, were computed to summarize the overall patterns and general usage of e-libraries and e-textbooks. Inferential statistics, including t-tests, were employed to examine differences between demographic groups and to assess the significance of observed patterns. Additionally, correlation analysis was conducted to explore relationships between variables such as access challenges and perceived benefits, providing deeper insights into how different factors influence digital resource utilization.

4. RESULTS AND DISCUSSION

4.1 Overview of Survey Demographics

The survey gathered responses from 310 participants, comprising students and teachers from various educational institutions of 2 universities and 5 colleges in Myanmar. The demographic breakdown of the participants included 130 males, 172 females, and 8 individuals who preferred not to disclose their gender. The age distribution was predominantly in the 18-34 age range, with the majority being university students or recent graduates. The educational status of the respondents showed a mix of university students, graduates, postgraduates, master's degree holders, and a small percentage of doctorate holders. A majority of respondents, 244 individuals (78.7%), are graduates, reflecting a highly educated sample. Additionally, the survey collected data on participants' monthly income levels, with a significant portion earning 300,000 kyats or less.

This income distribution reflects the financial constraints that many teachers and students face, which may impact their access to and use of digital resources such as e-libraries and e-textbooks.

4.2 Awareness and Usage of E-Libraries and E-Textbooks

The study revealed that while there is a significant level of awareness about e-libraries and e-textbooks among students and educators in Myanmar, the actual usage of these digital tools is much lower. Specifically, 97% of participants reported being aware of the availability of e-libraries and e-textbooks, but only 3% of them indicated that they regularly use these tools. These data suggest that while most participants are aware of the existence of e-libraries and e-textbooks, various barriers prevent them from fully utilizing these resources. The lack of access to necessary technology, such as smartphones, laptops, or tablets, was frequently cited 43 as a significant hurdle.

As shown in Fig. 1, a significant majority (97%) of respondents have heard about these digital resources, indicating a high level of awareness within the study group. However, despite this widespread awareness, the actual adoption and regular usage of e-libraries and e-textbooks remain less common due to various barriers, such as limited access to necessary technology and high internet costs. This gap between awareness and usage suggests that while the concept of digital resources is well-known,

practical challenges hinder their effective utilization.

4.3 Correlation between Regional Disparities and Educational Status

This study investigates the disparities in educational attainment across various states in Myanmar, focusing on how regional differences influence access to higher education. These states include Yangon, Nay Pyi Taw, Mandalay, Taunggyi, Myitkyina, Ayeyarwady, and Bago, which vary significantly in terms of infrastructure, educational facilities, and economic development.

According to Table 1, the analysis of educational attainment across various states in Myanmar reveals significant regional disparities, with Yangon standing out as the most developed educational hub due to its robust infrastructure, diverse academic programs, and greater access to higher education resources. In contrast, regions like Nay Pyi Taw and Mandalay show limited opportunities for advanced degrees, highlighting the need for more institutions and infrastructure. Taunggyi presents a more balanced educational profile, suggesting potential for broader opportunities. Meanwhile, areas such as Myitkyina, Ayeyarwady, and Bago lag in higher education, reflecting challenges related to funding and accessibility. The findings call for strategic policy interventions to address these inequities and promote national development.
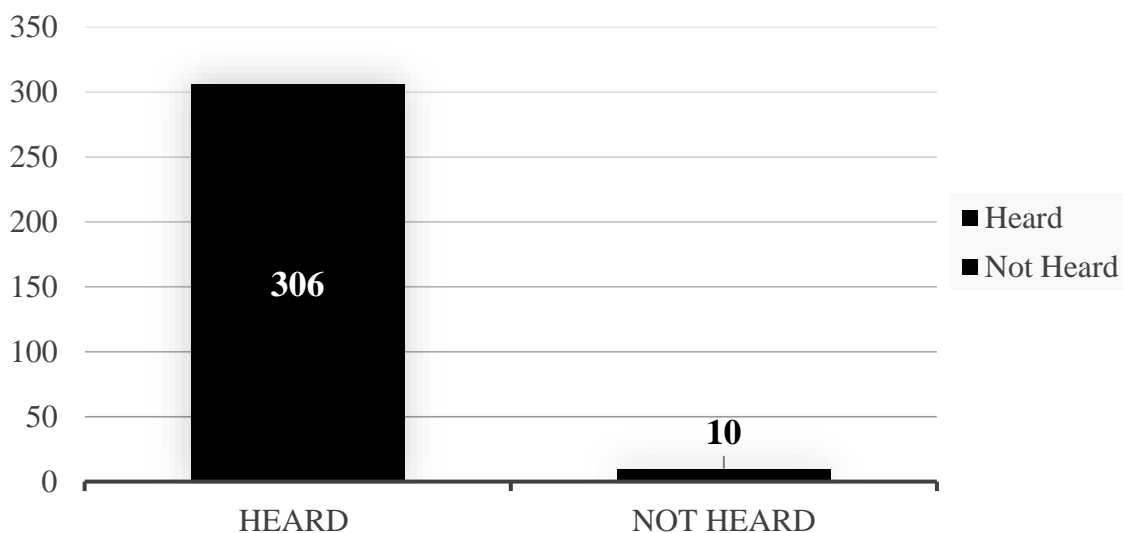

Fig. 1. Awareness of E-libraries and E-textbooks among participants

Table 1. Correlation between regional disparities and educational status

	University Students	Graduate	Post-graduate	Master	Doctorate	Total
Yangon	0	101	0	8	5	**114**
Nay Pyi Taw	0	15	1	0	0	**16**
Mandalay	0	25	0	0	0	**25**
Taunggyi	17	46	22	1	2	**88**
Myitkyina	0	12	5	2	0	**19**
Ayeyarwady	0	17	0	0	0	**17**
Bago	0	28	0	3	0	**31**
Total	**17**	**244**	**28**	**14**	**7**	**310**

In urban areas, students and teachers showed greater familiarity with e-libraries and were more likely to use them compared to those in rural areas. However, even in urban settings, usage rates remained below 50%. In rural areas, less than 20% of respondents reported regular use of e-libraries or e-textbooks, largely due to limited access to reliable internet and lack of necessary devices.

4.4 Challenges and Barriers to Adoption of E-Libraries and E-Textbooks

The study identified three major barriers to the widespread adoption of e-libraries and e-textbooks in Myanmar:

4.4.1 Power outages

Power outages are a significant obstacle to the effective use of e-libraries and e-textbooks in Myanmar's educational system. With 277 respondents agreeing or strongly agreeing that power interruptions would hinder the usage of these digital resources, unreliable electricity supply is a critical infrastructural barrier. The dependency on consistent power not only affects accessibility but also raises concerns about the practicality of implementing digital learning tools in regions where power outages are frequent.

4.4.2 Satisfaction with current systems of E-libraries and E-textbooks

When it comes to satisfaction with current books and library systems, opinions among respondents were mixed. A total of 142 respondents expressed dissatisfaction, indicating a perceived need for improvement or change. Conversely, 168 respondents reported being satisfied with the existing systems, suggesting that while there is room for modernization, traditional methods still hold value for a significant portion of the population. This division in opinion reflects the broader challenge of transitioning to digital resources while ensuring that the needs and preferences of all users are considered.

4.4.3 Policy and planning

The need for robust policy and planning was overwhelmingly supported by the survey respondents. A vast majority, comprising 293 respondents, strongly agreed that the establishment of national policies and strategic plans is crucial for the development and integration of e-libraries and e-textbooks. This strong consensus highlights the importance of government and institutional support in creating a framework that not only encourages the adoption of digital learning tools but also addresses the various challenges associated with their implementation.

According to Fig. 2, the survey results reveal several critical challenges and barriers that must be addressed to successfully implement e-libraries and e-textbooks in Myanmar's educational system. These challenges are multifaceted, spanning infrastructural deficiencies, user satisfaction, and the urgent need for comprehensive policy and planning. Addressing these barriers is essential for ensuring that e-libraries and e-textbooks can play a transformative role in modernizing education in Myanmar.

4.4.4 Financial constraints

The initial cost of implementing e-libraries and e-textbooks was identified as a significant barrier by the respondents.
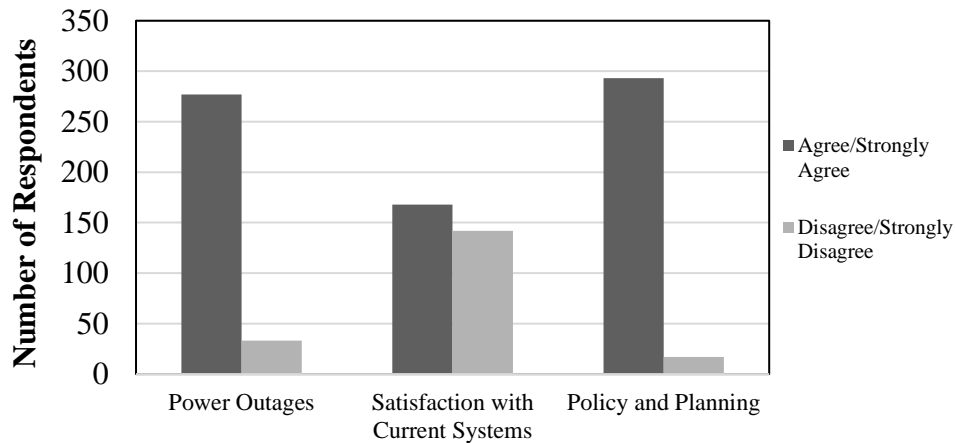
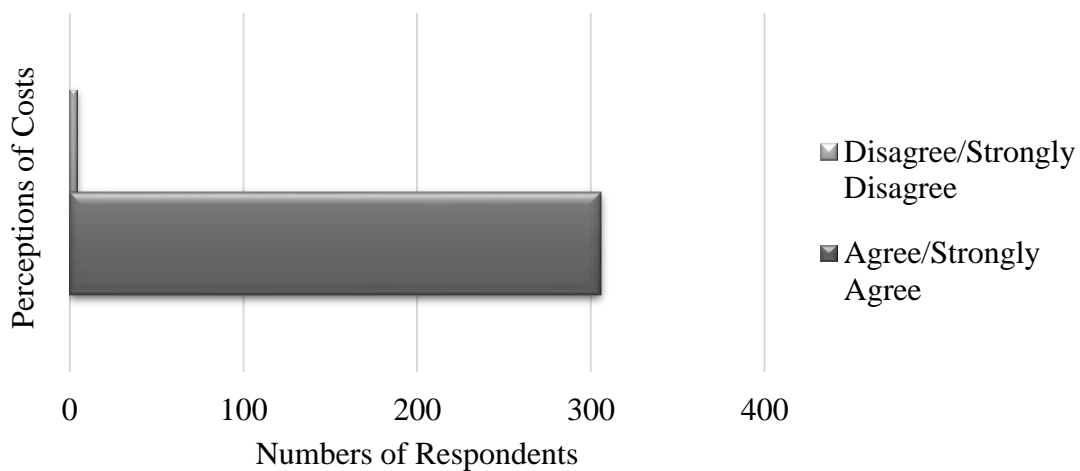**Fig. 2. Challenges and barriers to adoption of E-libraries and E-textbooks**

Fig. 3. Perceptions of costs and infrastructure for E-libraries and E-textbooks

As shown in Fig. 3, 97% of students surveyed stated that they could not afford the necessary devices, such as laptops or tablets, required to access e-libraries and e-textbooks. Over 50% of students surveyed stated that they could not afford the necessary devices, such as laptops or tablets, required to access e-libraries and e-textbooks. This financial constraint was particularly severe among students from low-income families and those residing in rural areas. Even though e-textbooks could reduce long-term costs associated with purchasing physical textbooks, the initial investment in digital devices and internet subscriptions remains prohibitive for many students. According to the study, 58% of institutions surveyed also reported insufficient financial resources to invest in the development of digital infrastructure, such as upgrading computer labs or expanding internet bandwidth.

4.4.5 Cultural resistance

When addressing traditional textbooks, 132 respondents agreed and 158 strongly agreed that they are burdensome for young students, affecting their spine health. Interestingly, there was resistance among younger teachers compared to older teachers regarding the adoption of e-libraries and e-textbooks, with 69 respondents strongly disagreeing and 175 disagreeing with the statement that older teachers are more interested in these developments.
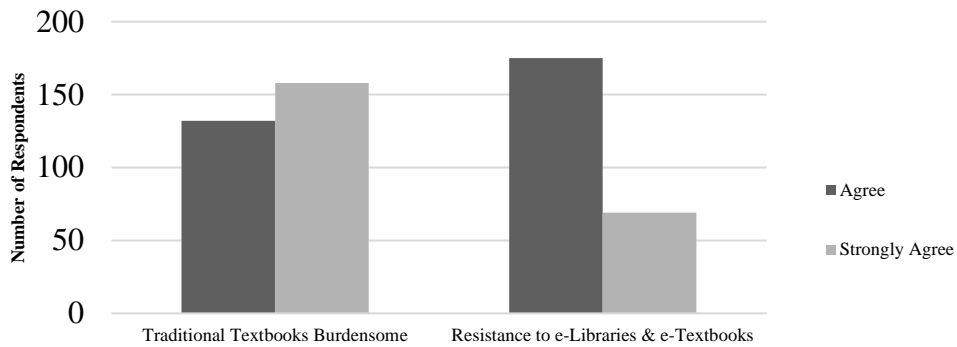
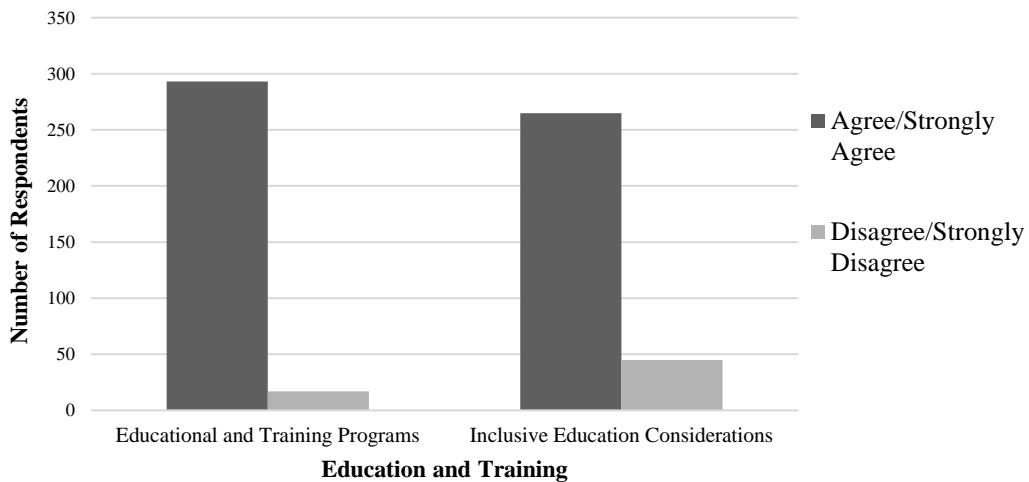**Fig. 4. Preferences and resistance to change**

Fig. 5. Educational and training programs

As shown in Fig. 4, 42% of teachers expressed a preference for traditional learning methods, such as printed textbooks and face-to-face lectures, which they believed were more effective. This cultural resistance was more pronounced among older teachers, many of whom reported feeling uncomfortable or unprepared to use digital tools in their teaching. 60% of teachers stated they had not received sufficient training to incorporate e-libraries or e-textbooks into their teaching methods, contributing to their hesitation.

4.5 Impact on Learning and Teaching

Despite the relatively low usage rates, participants who regularly used e-libraries and e-textbooks reported positive outcomes. 63% of students who had regular access to these digital resources indicated that their academic performance improved, particularly in subjects requiring up-to-date information, such as science and technology.

Similarly, 48% of teachers who adopted e-libraries or e-textbooks in their curriculum reported that their students' engagement improved significantly. They observed that digital tools allowed for a more dynamic learning environment, where students could explore topics in-depth using the vast array of resources available online. Teachers also noted that e-libraries provided them access to current academic research, which enhanced the quality of the materials they could present in their lectures.

However, the lack of consistent access to these resources hindered their effectiveness in the broader population. For instance, students in rural areas who relied on sporadic internet access expressed frustration over their inability to download or access materials in a timely manner. 71% of rural students cited this as a major issue that diminished the potential benefit of e-libraries.

Table 2. Correlation between age and satisfaction with current books and libraries

Dependent variable	Independent variable	Standardized coefficients (β)	R2	Sig (ρ)
Satisfied with Current Books and Libraries	Age	0.131	0.017	0.021

Table 3. Correlation between educational status and perception of accessibility of E-libraries to socioeconomic groups

Dependent variable	Independent variable	Standardized coefficients (β)	R2	Sig (ρ)
Accessible to all socioeconomic groups	Education	-0.120	0.014	0.035

4.6 Correlation between Age and Satisfaction with Current Books and Libraries

Understanding the relationship between age and satisfaction with current educational resources is crucial for informing the development and implementation of new educational tools, such as e-libraries and e-textbooks. By identifying these relationships, educational policymakers and administrators can better tailor their strategies to address the needs and preferences of various age groups, ensuring a smoother transition to modern educational technologies.

The Table 2 shows the Pearson correlation analysis between age and satisfaction with current educational resources, such as books and libraries, revealed a weak but statistically significant positive relationship (r = 0.131, p = 0.021), supported by a standardized coefficient (β) of 0.131 and an R² value of 0.017, indicating that only 1.7% of the variance in satisfaction is explained by age. The standardized coefficient (β) of 0.131 indicates a weak positive relationship between age and satisfaction with current books and libraries. The R² value of 0.017 suggests that only 1.7% of the variance in satisfaction with books and libraries can be explained by age. The significance level (p = 0.021) confirms that this relationship is statistically significant at the 0.05 level. While the effect of age on satisfaction is small, it suggests that older individuals are slightly more satisfied with traditional educational resources, which could have implications for how institutions balance traditional and digital educational tools. These findings imply that institutions should offer targeted support and communication to older users when implementing digital tools, while maintaining a balance between traditional and digital resources to accommodate diverse preferences.

4.7 Correlation between Educational Status and Perception of Accessibility of E-Libraries to Socioeconomic Groups

As Myanmar continues to integrate e-libraries and e-textbooks into its educational system, understanding the factors that shape perceptions of these resources is crucial for developing inclusive and effective educational policies. The correlations between educational status and perceptions of e-libraries and e-textbooks were undertaken to explore how different levels of education influence attitudes toward the accessibility and effectiveness of digital educational resources.

The analysis of the correlation between education level and perceptions of the accessibility of e-libraries and e-textbooks reveals a weak but statistically significant inverse relationship (r = -0.120, p = 0.035). As education level increases, individuals tend to perceive these digital resources as less accessible to all socioeconomic groups. This may stem from a greater awareness among more educated individuals of systemic barriers such as the affordability of technology, internet access, and digital literacy. Higher-educated individuals may also be more informed about infrastructure and policy challenges that limit equitable access to digital resources. These findings suggest that individuals with higher education are more likely to advocate for inclusive policies that address disparities in access to e-libraries and e-textbooks across socioeconomic groups. The standardized coefficient (β) of -0.120 and R² value of 0.014 indicate that education level accounts for only 1.4% of the variance in perceptions of accessibility.

5. CONCLUSIONS

This study evaluates the potential of e-libraries and e-textbooks to transform Myanmar's higher

education system by addressing key barriers to their widespread adoption, including financial, infrastructural, and cultural challenges. Although awareness of digital resources is high among students and educators, actual usage remains low, especially in less developed regions. Major obstacles include the high cost of necessary technology, disparities in infrastructure, and limited internet access, particularly in rural areas. Without targeted financial support and infrastructure improvements, achieving digital equity in Myanmar's education system will remain a significant challenge.

Cultural resistance to digital learning, especially among older educators, also hinders the adoption of e-libraries and e-textbooks. A strong preference for traditional learning methods and a lack of digital literacy skills contribute to this resistance. To address these challenges, comprehensive training programs are essential, focusing not only on building digital skills but also on changing perceptions toward digital tools. Peer mentoring, workshops, and the integration of digital literacy into teacher education curricula are recommended strategies to promote the adoption of digital resources.

The study's findings can inform policymakers and educational institutions about specific barriers to adopting e-libraries and e-textbooks in Myanmar, enabling the development of targeted strategies to enhance access, usage, and learning outcomes. Implementing these strategies can lead to more effective integration of digital resources, ultimately improving digital literacy and academic performance. To ensure inclusivity, e-library and e-textbook systems should be designed to accommodate the needs of all students, including those with disabilities. The study recommends national strategies, policies, and funding mechanisms to promote digital inclusion, as well as data protection laws to safeguard user information. By addressing these financial, infrastructural, and cultural barriers, Myanmar's education system can fully leverage the benefits of digital resources, paving the way for a more modern, equitable, and effective educational environment.

6. RECOMMENDATIONS

To overcome the barriers to adopting e-libraries and e-textbooks in Myanmar, several key strategies are recommended.

(i)   Investment in digital infrastructure, particularly in rural areas, is essential to improve internet connectivity and power supply.

(ii) Comprehensive teacher training programs are needed to enhance digital literacy and encourage the integration of digital resources into classrooms.

(iii) Financial support should be provided to students and teachers through subsidies for digital devices and internet access.

(iv) Continuous monitoring and evaluation are necessary to assess the effectiveness of these initiatives and refine digital education strategies.

(v)   Collaborative efforts between the government, educational institutions, technology providers, and communities will be essential to modernize Myanmar's education system.

By addressing financial, infrastructural, cultural, and technological challenges, the country can create a more inclusive, equitable, and effective education system that benefits all students.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

The author affirms no generative AI technologies, such as Large Language Models (e.g., ChatGPT, Copilot), or text-to-image generation tools, were employed in the writing, editing, or preparation of this manuscript. All content was produced solely by the author, ensuring the intellectual integrity and originality of the work without reliance on automated or AI-assisted tools.

CONSENT

This study followed ethical guidelines by obtaining informed consent from all participants. The consent process included explaining the study's purpose, the participants' roles, and their rights. Confidentiality was maintained by securing personal data and anonymizing it in the results. The authors declared any potential conflicts of interest, such as financial or personal interests that could affect the research. The manuscript presents data honestly, without any fabrication or falsification, and any changes to the data are clearly explained.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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