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Assessing the Role of Mobile Libraries in Enhancing Literacy in Underserved Communities

Dr.T.R. Kalai Lakshmi[1*], Dr. Susama Nanda[2], Varsha Choudhary[3], Sushmitha Prabhu[4], Gaurav Tuteja[5] and Dr. Saroj Kanta Biswal[6]

[1]Associate Professor, Master of Business Administration, Sathyabama Institute of Science and Technology, Chennai, India

[2]Librarian, Department of Humanities and Social Sciences, Siksha 'O' Anusandhan (Deemed to be University), Bhubaneswar, Odisha, India

[3]Assistant Professor, Maharishi School of Engineering & Technology, Maharishi University of Information Technology, Uttar Pradesh, India

[4]Assistant Librarian, Learning Resource Centre, JAIN (Deemed to be University), Bangalore, Karnataka, India

[5]Research Scholar, Centre for Research Impact and Outcome, Chitkara University Institute of Engineering and Technology, Chitkara University, Rajpura, Punjab, India

[6*]Professor, Department of Management, Siksha 'O' Anusandhan (Deemed to be University), Bhubaneswar, Odisha, India

E-mail: [1]kalailakshmi.soms@sathyabama.ac.in, [2]susamananda@soa.ac.in, [3]sumukh.panday@muit.in, [4]sushmithaprabhu45.sp@gmail.com, [5]gaurav.tuteja@chitkara.edu.in, [6]sarojkantabiswal@soa.ac.in

ORCID: [1]https://orcid.org/0000-0002-1527-1829, [2]https://orcid.org/0009-0001-7561-327X, [3]https://orcid.org/0009-0005-1102-6892, [4]https://orcid.org/0009-0001-9459-2435, [5]https://orcid.org/0009-0005-1536-3722, [6]https://orcid.org/0000-0003-3304-8900

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Abstract - **Purpose: Mobile libraries serve as an innovative intervention by delivering educational materials and literacy programs directly populations with restricted access to formal learning institutions. Agricultural informationalization, which integrates digital and mobile solutions to support rural economic growth, exemplifies how mobile knowledge systems can be structured to enhance educational outreach. Mobile libraries improve reading habits, functional literacy, and lifelong learning by leveraging flexible service models, and assessing effectiveness underserved communities through accessibility, engagement, and educational outcomes.**

Methodology: Data were collected from 487 participants, including mobile library users, educators, facilitators, and local administrators, using structured surveys and literacy assessment tools. The investigation used stratified sampling to ensure diverse representation across age groups and literacy levels, and quantitative statistical models' multiple regression and ANOVA examine relationships between mobile library management usage and literacy improvement. The IBM SPSS software version 27.0 utilized for data analysis, evaluating variables reading frequency, comprehension levels, resource accessibility, user engagement, utilizing mobile library deployment strategies and digital integration.

Results: Results indicate statistically significant correlation between mobile library access and literacy improvement, with effects on reading comprehension and functional literacy skills. The multiple regression analysis revealed that mobile library usage has strongest impact on literacy improvement ($\boldsymbol{\beta = 0.451, p < 0.001}$), explaining 46.4% of the variance. Participants showed significant literacy gains, with reading comprehension increasing by 3.3 points ($\boldsymbol{t = 14.81, p < 0.001}$).

Conclusion: The findings highlight the role of mobile libraries in mitigating educational disparities, reinforcing their potential as scalable solutions for literacy development in underserved regions.

Keywords: **Mobile Libraries, Literacy Development, Underserved Communities, Educational Accessibility, Community Learning, Library Management**

I. INTRODUCTION

Literacy serves as a gateway to personal development and social change; however, a significant portion of the world's population, mainly among marginalized groups and communities, lacks access to reading materials and formal and informal education settings (Lo & Stark, 2021; Azizova et al., 2024). Conditions associated with poverty, geographic distance from reading materials and books, under-resourced formal education systems, and insufficient governmental funding for schools all contribute significantly to the existing deficit of literacy. The literacy activities exist at an uncommonly low level among its communities, creating difficulty for economic mobility and future opportunities (Campana et al., 2022; Vivas et al., 2024). To address the educational shortcomings, fresher outreach strategies based on the idea of mobile library management have emerged (Nazarova et al., 2024; Karimov et al., 2024). A mobile library is generally understood as a vehicle prepared with books, electronic media, and sometimes other educational materials, such as internet access, and focused on the distribution of educational materials and reference to

consumers of all ages living in rural or underserved areas of a community (Acheampong & Agyemang, 2021; Hawthorne & Fontaine, 2024). The mobile libraries serve children and adults as both valuable repositories of knowledge and community sites for information, cultural celebration, and community engagement. Mobile library management provides a compelling approach to supporting literacy development because of its distinctive capacity to access communities outside of the auspices of designated library facilities (Lopez et al., 2023). Even though mobile library programs are a service that is institutionalized within the field, little empirical research has been undertaken to understanding their effectiveness, especially with regard to long-term literacy development. Most evaluations have been descriptive in nature and do not lead to any legitimate data to inform policy or provisions for scaling (Sung & Bamkin, 2023). The investigation attempts to close that deficit by examining mobile library programming about literacy outcomes for learners in under-resourced communities. Understanding the effectiveness and challenges of mobile libraries and potential for scale is important for educators, policymakers, and developmental interventions that support the infusion of inclusive educational ecosystems (Ming et al., 2021; Prasanna et al., 2024).

A. Research Objective

The purpose of the research is to assess the effects of mobile library management on literacy in underserved populations. It can look at how having access to books and educational resources through a mobile unit affect reading behaviors and educational outcomes. The investigation also aims to determine the challenges and the best practices of mobile library management services.

B. Rest of the Research

The rest of the portion is organized into the following sections: Section 2 provides the related works. Section 3 and 4 covers material and methods, results and discussion are depicted in Section 5, and a conclusion is given in Section 6.

II. RELATED WORKS

The mobile libraries might help achieve SDG 4 by examining visitor frequency, favorite books, and visitor perceptions of advantages. The investigation, which involved 146 people, produced results that supported quantitative data (Suprapto & Qosyim, 2022). Both the government and the community have benefited much from the analysis, especially in terms of the development of information literacy and the achievement of the national literacy movements program. Due to dependable repositories of knowledge, public libraries were confronted with new difficulties as a result of technological advancements and digitization. Libraries have become places of encounter due to innovation ecosystems like Barcelona's Library Living Lab (Hernández-Pérez et al., 2022). The research examined the ways in which contextual, collaborative, and technologically dependent innovation practices could encourage social cohesiveness and drive social transformation through digital technologies, emphasizing the role that citizen engagement provides in these changes. The low literacy rate in Cimaja Village suggested that there was little access to schooling. The Cimaja Village group was working to address this issue through implementing early literacy initiatives for elementary school students (Futri et al., 2024). These programs incorporate reading, writing, and numeracy using the balanced literacy concept. The pupils' reading abilities have improved significantly, which would help the village's efforts to establish mobile library learning.

The investigation examined factors that affect customers' intentions to utilize public mobile libraries in order to enhance service quality (Liu et al., 2024). Chinese users reported that usage intention was strongly influenced by individual, psychological, content, and technological aspects. Information literacy, apparent compatibility and pleasure, and information quality all have a beneficial impact on usage intentions. The investigation should consider various user kinds and longitudinal research. To improve public mobile library management facilities and increase appeal, the results have practical consequences. The digital landscape was revolutionized by the metaverse, a digital domain that incorporated augmented reality (AR) technologies. Improved user experience (UX) required an understanding of human emotion (Nik Ahmad et al., 2024). Investigation of emotional experiences in AR-based mobile library apps was indeed limited. Sixty emotive keywords were gathered for the purpose of synthesizing and validating for use in the development of AR-based mobile library applications. These developments can improve the metaverse experience for academics and practitioners while also improving user experience in the educational field. The function of mobile libraries in promoting digital inclusion in Aotearoa New Zealand's non-urban areas was examined in the investigation (Bell & Goulding, 2023). The findings of the research show that communities benefit from the several digital inclusion services provided by mobile librarians, with a primary focus on technologies and improving skills.

Mobile library management was adjusting to the evolving requirements of communities and the rapid growth of technology. Information has become essential for researchers, academics, staff, and learners due to the pandemic (Panda, 2021). The main issues that libraries face include reduced funding, personnel shortages, financial problems, and user awareness. One reasonably priced way to address these demands was through mobile library technology. The way to implement mobile reference services in libraries was described and the exponential expansion of mobile communication technologies was examined. College students' mobile device usage is examined in order to understand patron demands and develop library informational mobile services. The online investigation discovered broad patterns in students' use of mobile devices. The creation of mobile applications, access to literature and fiction, chatbots in libraries, and information and reference assistance through messengers were all essential elements of

library mobile services (Hranchak et al., 2024). Libraries and other information institutions can find the results helpful in creating extensive data services based on mobile technologies. The interactive design approach and data visualization for mobile AR library document distribution were described. To comprehend user information orientations and direct the creation of library document resources, the framework made use of virtual graphics rendering, camera tracking, and displaying technologies (Lu, 2021). The design was complex as it structured data views and assembled interactive interfaces using an evolving interactive approach. The technology improved user interaction fluency while simultaneously consuming less retention. The recognition of assets and distribution of information, Quick Response (QR) codes, have gained traction in institutions. Research aimed to assess the feasibility of implementing QR codes at a private higher education institution (Din et al., 2021). In order to ensure that mobile library materials were easily accessible and would not waste excessive amounts of time, random functional acceptance tests (FAT) were conducted.

III. MATERIAL AND METHODS

The investigation utilized a quantitative approach to randomly gather particular participants with a questionnaire. Key literacy indicators, such as reading frequency and comprehension, accessibility, and engagement, were assessed. Statistical analysis, including notable regression and ANOVA, was used to examine the potential impacts of mobile library management on literacy development in underserved communities. Fig.1 shows the recommended methodology flow.

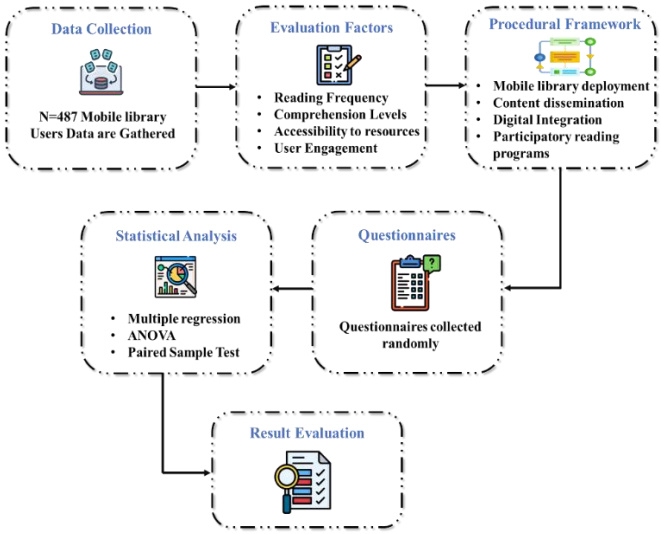

Fig. 1 Flow of Recommended Methodology

A. Data Collection

A total of 487 participants were gathered randomly, including instructors, facilitators, local officials, and mobile library users. Questionnaires were administered both in person and online to ensure broad coverage, with some gathered randomly during mobile library visits. Key focus areas included reading frequency, comprehension levels, accessibility to learning resources, and user engagement. The quantitative data were captured to assess the mobile libraries' impact on literacy in underprivileged communities. Interviews and observation techniques were also employed to complement survey responses and provide detailed insight into user experiences and educational outcomes across various demographics.

B. Evaluation Factors

The assessment variables demonstrate how mobile libraries move underserved communities by growing the incidence of reading, expanding understanding, and enhancing evaluation of resources. Additionally, learning opportunities in flexible spaces were offered, when infrastructure does not exist. Mobile libraries also promote user engagement with interactive, inclusive programs. The advancement in library management addresses educational equity.

- Reading Frequency: Mobile libraries are a key technique of promoting reading frequency for susceptible groups with books delivered directly. For populations where fixed libraries are non-existent, mobile services offer learning material evaluation. Mobile services have the potential to promote reading frequency by encouraging people in communities to read regularly, likely enhancing literacy and learning rates. Mobile services also promote learning and inquisitive principles.
- Comprehension Levels: Mobile libraries provide a special solution for underserved regions by offering access to conventional reading materials and learning resources. Mobile libraries bridge the gap in accessibility, particularly for rural communities, by delivering material and fostering literacy. By spreading books and online resources directly to regions lacking traditional facilities, mobile libraries ensure equal opportunities for education and learning.
- Accessibility to Resources: Mobile libraries are crucial to enhancing literacy in underprivileged communities through the provision of books and learning materials in areas where regular structures do not exist. Mobile library management can bridge the gap for individuals who lack convenient access to conventional libraries. Mobile libraries offer adaptable, convenient learning opportunities while fostering learning. It reaches rural and marginalized groups, builds literacy, and assists individuals to enhance knowledge and skills.
- User Engagement: User participation is crucial to the success of mobile libraries, particularly in disadvantaged areas. Mobile libraries structure activities to take books and learning materials to people, stimulating reading interest and knowledge acquisition. It also provides accessible and interactive learning environments for user participation and literacy improvement. The purpose of mobile libraries is to reduce the educational difference gap, sparking learning in the most underserved locations.

C. Procedural Framework

The procedural framework explains how mobile libraries improve literacy in historically marginalized areas by providing foundational access to learning resources through physical and virtual channels and by creating learning opportunities for marginalized communities. It fosters equitable and inclusive learning opportunities by offering access to educational resources in both physical and virtual forms. Participatory reading programs encourage sustained literacy growth through mobilizing communities in support of active reading initiatives.

- Mobile Library Deployment: Mobile libraries are created as books and educational materials for underserved communities. Mobile libraries enhance literacy through the provision of reading material for communities without a conventional library. Mobile libraries further advance the culture of learning and can also support educational efforts in the community.
- Content Dissemination: Through mobile libraries, content dissemination plays a key role in addressing the literacy gap by providing access to books, educational materials, and digital resources in underserved communities. Libraries play an important role in bridging the literacy gap. When delivering educational resources to rural, isolated, or disadvantaged communities, it provides access to learning in remote locations. It assists in developing reading habits, lifelong learning, and educational equity for all ages.
- Digital Integration: Through digital integration and mobile library management, educational content can be brought to disadvantaged communities directly to mobile devices and have access to the internet. Mobile libraries support the use of e-books, audiobooks, and learning apps to eliminate experience gaps and literacy gaps presented by traditional libraries. The mobile libraries provide simultaneity of technology and mobility, which creates opportunities for inclusive and scaled educational and community learning.
- Participatory Reading Programs: Mobile libraries and participatory reading programs are essential literacy tools that deliver books and resources to underserved communities. It invites and engages communities in reading and learning with community action. Mobile libraries and participatory reading programs foster access to reading materials that promote equity in education and enduring learning.

D. Questionnaires

Questionnaires can successfully investigate mobile libraries' role in increasing literacy among the underserved population by collecting primary research data from the users of the mobile library, librarians, and community leaders. Questions can determine the frequency of usage, types of materials used, reading habits, and perceived literacy improvement. Several of the questions can provide qualitative data to assess literacy gains based on community needs. Using questionnaires is also helpful in determining barriers such as access, resource availability, and engagement. This data is useful to inform practice about mobile library effectiveness and help the imminent planning of literacy initiatives designed around underserved community needs. The questionnaires for each factor are shown in Table I.

TABLE I QUESTIONNAIRES FOR EACH FACTOR

S.No	Questionnaires
Reading Frequency	
1	How often does the person read books or other materials provided by the mobile library?
2	Since accessing the mobile library, how has the amount of time the person spends reading changed?
Comprehension Levels	
3	Do the mobile library materials help the person improve their ability to summarize or explain what you've read?
4	How confident are you in answering questions or discussing what you've read from the mobile library?
Accessibility to Resources	
5	How satisfied are you with the availability of different types of reading materials?
6	How frequently does the mobile library visit their community or location?
User Engagement	
7	How likely are you to recommend the mobile library to others in their community?
8	How interested are you in continuing to use the mobile library in the future?

E. Statistical Analysis

The statistical analysis was based on an established quantitative research paradigm regarding the relationship between mobile libraries and literacy growth. IBM SPSS Statistics Version 27.0 was utilized to analyze the dataset with the degree of statistical precision.

- Multiple regression models aided in discerning key predictors of literacy growth and highlighted which independent variables contributed the most in terms of explanation.
- ANOVA was implemented to determine whether literacy outcomes differed statistically across demographic characteristics. Core variables incorporated into regular measures included reading frequency, comprehension, and availability of learning materials. Another important dimension was user engagement with mobile library services, measured by the frequency of visits and attendance at literacy programs.
- Additionally, added a paired sample test that examines differences in literacy domain scores before and then after mobile library interventions have remained completed. It advances the aim as it can measure the effectiveness of mobile libraries in underserved communities as it relates to literacy outcomes.
- Participatory reading initiatives, digital integration, content distribution, and mobile library deployment tactics are all included in the procedural framework.

By following a rigorous approach to research design, it has also been able to establish connections to how mobile library access contributes to literacy growth. These findings provide empirical evidence in support of mobile libraries and value in enhancing education equity and embracing literacy opportunities.

IV. RESULTS

The findings suggest that utilization of the mobile library is a powerful substance for improved literacy, especially through consistent engagement and access to technology. Literacy gains were influenced by age and access to resources; the assessment of pre-post literacy gains also revealed statistically significant changes in comprehension skills and functional literacy. Improvements were seen across the board for both youth and adult learning groups.

A. Demographic Data

The analysis of demographics shows that there is a diverse profile of participants across various social and behavioral components. There is a slight over-representation of females compared to males. A majority of participants are in the 13–18 years, while fewer come from the older and younger age groups. Although a slightly higher percentage has been observed without access to digital devices, access to these gadgets is nevertheless reasonably balanced. Concerning mobile library usage, a majority of users employ the service regularly, while others use the service less occasion. Participants come from a variety of geographic backgrounds, with rural residents making up the largest group, followed by urban and semi-urban residents. In terms of literacy, most are literate, although that ensures a combination of semi-literate and illiterate participants. Finally, many participants reported that they are not presently members of any type of library service, which provides a large gap in outreach or interest in formal library membership. Fig. 2 and Table II show the outcome of the demographic data evaluation.

TABLE II DEMOGRAPHIC INFORMATION EVALUATION

Demographic Variable	Category	Frequency (N=487)	Percentage (%)
Gender	Male	212	43.50%
	Female	275	56.50%
Age Group (years)	6–12 years	162	33.28%
	13–18 years	198	40.65%
	19+ years	127	26.07%
Access to Digital Devices	Yes	238	48.90%
	No	249	51.10%
Frequency of Mobile Library Use	Rarely (≤1/month)	115	23.60%
	Occasionally (2–3/month)	168	34.50%
	Frequently (weekly)	204	41.90%
Region Type	Urban	161	33.10%
	Semi-urban	118	24.20%
	Rural	208	42.70%
Literacy Status	Literate	392	80.50%
	Semi-literate	64	13.10%
	Illiterate	31	6.40%
Library Membership	Registered Member	183	37.60%
	Non-member	304	62.40%

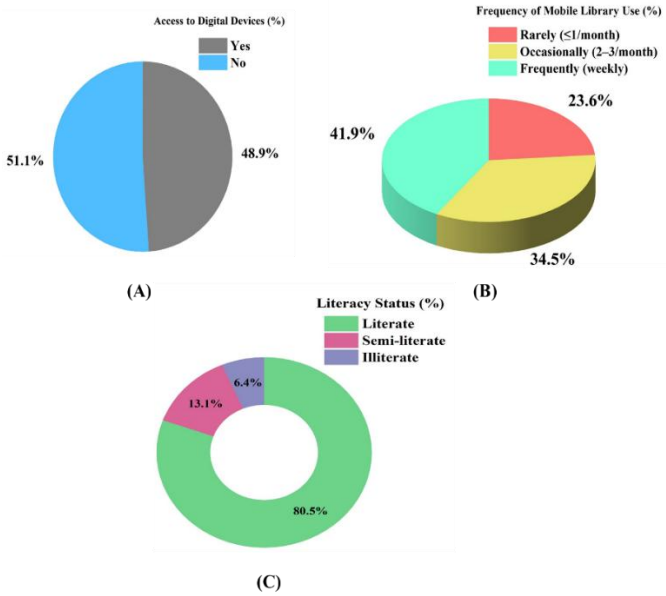

Fig. 2 Outcome of Demographic Data Evaluation (A) Access to Digital Devices, (B) Frequency of Mobile Library Use, (C) Literacy Status

B. Multiple Regression

The multiple regression analysis was used to examine the various predictors of mobile library participation, reading volume, engagement level, and access to educational resources that can be examined for association with literacy growth. The regression model results indicate the model was able to explain nearly 46.4% of the variance in literacy growth. The strongest standardized β coefficient was calculated for mobile library participation ($\beta = 0.451$), demonstrating both a notable and direct association with improved literacy. Statistically, reading volume ($\beta = 0.271$), engagement level ($\beta = 0.204$), and access to educational resources ($\beta = 0.119$) supported the idea that literacy grows with constant, engaged, and resourced use of a mobile library. This confirms that a mobile library is more than just a logistical solution; it is an embedded, data-supported educational intervention that increases literacy in under-resourced segments. The purpose is to evaluate how the dependent variable (literacy improvement) is impacted by the independent factors (mobile library management usage, reading frequency, and engagement). The outcome of multiple regression evaluation is shown in Table III and Fig. 3.

TABLE III MULTIPLE REGRESSION EVALUATION

Predictor Variable	B (Unstd)	SE	β	$t-value$	$p-value$
Mobile Library Usage	0.587	0.064	0.451	9.17	< 0.001
Reading Frequency	0.334	0.059	0.271	5.66	< 0.001
Engagement Level	0.219	0.051	0.204	4.29	< 0.001
Accessibility to Resources	0.138	0.044	0.119	3.14	0.002

Note: Standard Error (SE)

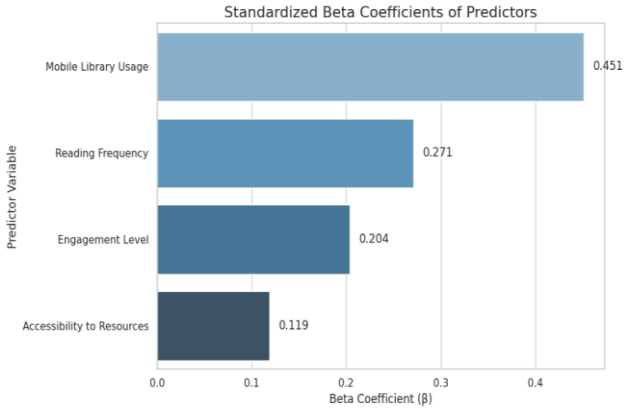

Fig. 3 Outcome performance of multiple regression evaluation

C. *ANOVA: Age-wise Literacy Score Differences*

To comprehend variations in literacy enhancement concerning demographic characteristics, the researchers analyzed variance (ANOVA) to assess the differences between the literacy scores among the three age groups. Three age groups' variations in literacy performance are examined in the investigation. When compared to the other groups, children had the lowest average literacy levels. Adults had the highest literacy levels, although adolescents did somewhat better. The age group C adults had a higher observed mean score in literacy (7.56), followed by age group B had adolescents (7.31), while the age group A children generated a lower mean score (6.89). This implies that literacy generally improves with age. The age groups mean literacy score is shown in Table IV.

TABLE IV AGE GROUP MEAN LITERACY SCORE

Age Group	N	Mean Literacy Score	SD
A	150	6.89	1.34
B	162	7.31	1.12
C	175	7.56	1.08

Note: Standard deviation (SD)

The analysis revealed statistically significant differences among groups ($F = 9.216, p < 0.001$) supporting that age is a relevant factor for the effectiveness of the mobile library management interventions. This indicates that older participants possessed stronger baseline cognitive and language abilities, tending to be more reactive to the literacy-based program. Adolescents benefitted from a similar process of program intervention while showing increased engagement due to digital engagement components. Children benefitted from the same interventions but likely required longer exposure intervals in addition to the content being structured specifically for children to be more relatable and engaging for their age group. These insights allow for consideration of age adaptations to mobile library programming, enabling more equitable content delivery techniques that best support participant demographics. The outcome performance of the ANOVA test is shown in Table V.

TABLE V OUTCOME PERFORMANCE OF ANOVA TEST

Source of Variation	SS	df	MS	$F-value$	$p-value$
Between Groups	23.74	2	11.87	9.216	0.00011
Within Groups	622.19	484	1.29	-	-
Total	645.93	486	-	-	

Note: Mean Square (MS), Sum of Squares (SS), degrees of freedom (df)

D. *Paired Sample Test: Literacy Domain Gains (Pre-Post Analysis)*

The effectiveness of mobile libraries was then evaluated with a pre-and post-intervention comparison based on two primary domains: reading comprehension and functional literacy abilities. Both results demonstrated a statistically significant increase in outcomes, with mean scores for reading comprehension increasing by an average of 3.3 points and functional literacy abilities increasing by 2.9 points. Both outcomes demonstrated $p-values < 0.001$, as evidenced by $t-values > 13$. This suggests that participants did not only engage with and use mobile library resources; there were also demonstrable cognitive and literacy gains. The cognition and literacy improvement can also be attributed to the systematic, consistent exposure to reading materials and specified literacy activities facilitated through conversation with the facilitator. The statistically significant differences support the mobile library management model as a literacy learning and engagement intervention generally able to make substantive literacy gains within relatively short time frames. The results of the investigation support the positive impact of mobile libraries in addressing educational inequities in areas that are often underserved. The outcome performance of the paired sample test is shown in Table VI and Fig. 4.

TABLE VI PAIRED SAMPLE TEST EVALUATION

Literacy Domain	Mean Score (Pre)	Mean Score (Post)	MD	$t-value$	$p-value$
Reading Comprehension	4.3	7.6	+3.3	14.81	< 0.001
Functional Literacy Skills	5.1	8.0	+2.9	13.47	< 0.001

Note: Mean Difference (MD)

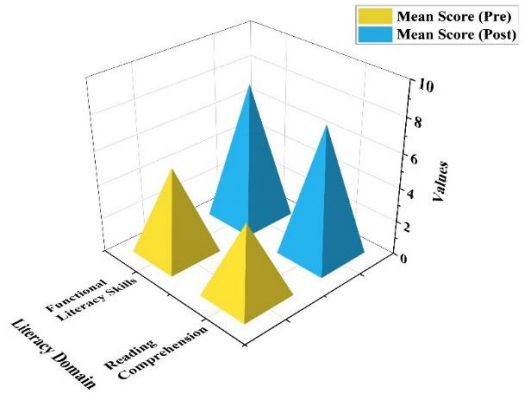

Fig. 4 Results of paired sample test evaluation

E. Procedural Framework Outcomes and Integration

The procedural pathways connecting operational practices with educational outcomes provide insight into how distinct parts of mobile library services contribute to those outcomes. The use of a mobile library resulted in greater access in remote areas, validated by a high regression coefficient value ($\beta = 0.451$). Sharing content with mobile technologies was shown to help increase the frequency of reading ($\beta = 0.271$), while digital content was especially engaging for adolescent users who also had higher comprehension scores ($mean = 7.31$). Interactive reading programs showed meaningful effects on group learning and retention, as evidenced by a 3.3-point increase in reading comprehension. Each procedural aspect is related directly to an observable outcome, confirming that the mobile library intervention is not simply a distribution model, or an adaptive learning system. This strategy makes use of mobile libraries' ability to help underprivileged groups with literacy issues in a wide range of circumstances. The results of the processual framework and interconnection are shown in Table VII and Fig.5.

TABLE VII PROCEDURAL COMPONENTS AND INTERCONNECT

Procedural Component	Observable Outcome	Supporting Numerical Result
Mobile Library Deployment	Improved accessibility in remote areas	Mobile Library Usage → $\beta = 0.451, p < 0.001$ (Strongest predictor of literacy improvement)
Content Dissemination	Increased reading frequency across demographics	Reading Frequency → $\beta = 0.271, p < 0.001$ (Significant positive effect on literacy scores)
Digital Integration	Enhanced engagement, especially among adolescents	Adolescents' Literacy $Mean: 7.31, SD = 1.12$ (2nd highest); Engagement → $\beta = 0.204, p < 0.001$
Participatory Reading Programs	Boosted comprehension and retention in group settings	Reading Comprehension $Gain = +3.3, t = 14.81, p < 0.001$ (Statistically significant gain)

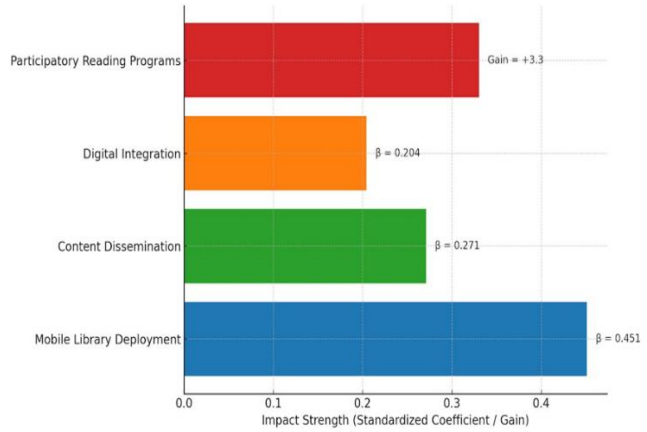

Fig. 5 Results of the Procedural Framework and Interconnect

V. DISCUSSION

The limitation of the research is that it involves a limited number of participants, and consequently the sample is not representative of the wider community (Suprapto & Qosyim, 2022). Another limitation of the research is its dependence on self-reported data from semi-structured interviews, which could possibly affect partiality towards the findings. They investigate the array of influences associated with varying mobile library models. Challenges and barriers to accessing mobile libraries were not included in the research.

The drawback of the research is focus on one public library, which can be significantly deficient in capturing the disparity or variation in different contexts across regions or cultures. All of the findings were derived from local experiences in Sant Cugat del Vallès, meaning that they are potentially not as generalizable (Hernández-Pérez et al., 2022). The investigation also had some challenges and failures. The evolving nature of digital technologies could also rapidly replicate some of the observations. Measuring citizen engagement measurement can also present a level of inherent difficulty, especially within the library context.

The research shows a significant positive impact of mobile library access on literacy development. The analysis of data showed that mobile library access strongly affected literacy improvement, with the largest value of $\beta = 0.451$ ($p < 0.001$), accounting for 46.4% of the variance. Respondents showed substantial literacy growth, with a mean increase of 3.3 points in reading comprehension ($t = 14.81$, $p < 0.001$). This shows the clear potential for mobile library services to develop reading comprehension capacity and basic functional literacy skills in the diversity of user groups within society. The research clearly demonstrates how the organisation of mobile library service implementation and digital engagement in mobile library access form stronger user experiences to promote greater user engagement and better literacy outcomes through access to relevant resources.

VI. CONCLUSION

Mobile libraries are traveling library services that offer books, educational materials, and literacy programs to underserved communities. Mobile libraries typically use vehicles, which often have resources for reading. Mobile libraries help to reduce barriers of illiteracy and promote literacy in communities where public libraries are not available. An essential role was employed in developing reading habits, promoting learning, and addressing issues of educational equity. The multiple regression analysis revealed that mobile library usage had the strongest impact on literacy improvement ($\beta = 0.451, p < 0.001$), explaining 46.4% of the variance. Participants showed significant literacy gains, with reading comprehension increasing by 3.3 points ($t = 14.81, p < 0.001$).

A. Limitation and Future Scope

An important limitation of the investigation is that it relies on self-reported data, which can be embellished. Additionally, the results are not generalizable outside the deliberately specific communities. Furthermore, the limited access to regular mobile library management records, kept in sites outside of the library, did not allow for a fuller analysis of the data. Future investigations could examine the incorporation of digital technologies to mobile libraries to enhance access to educational materials. The investigation could also examine long-term literacy outcomes among a variety of ages. Additionally, the assessment of mobile library models across different geographic and cultural contexts could help to improve effectiveness.

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