College Libraries as Drivers of Socio-Cultural Sustainability: Insights from Structural Equation Modelling

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Abstract: Purpose and Scope: This study investigates the changing function of college libraries as drivers of sustainable socio-cultural capital in self-financing Arts and Science colleges located in Tiruchy, Tamil Nadu. The emphasis is placed on three fundamental constructs: Library Service Quality (LSQ), Community Engagement and Outreach (CERO), and Institutional Support Policy (ISPS). The objective is to evaluate the impact of these institutional mechanisms on the socio-cultural sustainability of students. Methodology: A quantitative research design employing first-order Structural Equation Modelling (SEM) was implemented. A structured questionnaire employing a five-point Likert scale was distributed. The final sample consisted of 387 students, selected from a population of around 7,000 students using stratified random sampling methods. This sample, comprising 5.5% of the target population, is statistically sound and guarantees representation across various academic levels and demographics. Key Findings: The findings indicate that LSQ, CERO, and ISPS do not have a statistically significant direct impact on Sustainable Socio-Cultural Capital (SSC). Among the SSC indicators, SSC1 (Enhancement of Academic Performance and Cultural Literacy) emerged as the most significant, indicating that libraries mainly play an indirect role in fostering academic enrichment and cultural awareness. Conclusion and Implications for Future Research: Future investigations would need to take into account factors like economic development, policy interventions, and digital transformation to examine wider aspects of socio-cultural capital. A mixed-methods approach that incorporates qualitative insights could enhance the comprehension of how libraries influence community and student development.

Key Words: Library Service Quality, Community Engagement, Institutional Support, Socio-Cultural Capital, Structural Equation Modelling JEL Classification: I23 (Higher Education & Research), Z13 (Social and Cultural Capital), M14 (Corporate Culture & Social Responsibility)

Abbreviations:
LSQ: Library Service Quality
CERO: Community Engagement and Outreach
ISPS: Institutional Support Policy

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SEM: Structural Equation Modelling
SSCL Sustainable Socio-Cultural Capital
CALN: Climate Action Libraries Network
MSV: Maximum Shared Variance
AVE: Average Variance Extracted
RFI: Relative Fit Index
CFI: Comparative Fit Index
GFI: Goodness of Fit Index
IFI: Incremental Fit Index
AGFI: Adjusted Goodness of Fit Index
RMR: Root Mean Square Residual
PGFI: Parsimony Goodness of Fit Index
TLI: Tucker-Lewis Index
PCFI: Parsimony Comparative Fit Index
RMSEA: Root Mean Square Error of Approximation
CR: Composite Reliability

I. INTRODUCTION

In the past few years, college libraries have been recognised as important places that help build long-lasting social and cultural capital in academic communities. These libraries do more than just their usual jobs; they also reach out to the community and adapt to changing educational needs. This makes them even more critical for academic success and cultural progress. Studies show that libraries are essential for building social and cultural capital, as they offer a wide range of activities that enhance cultural education and foster intercultural understanding among individuals. Also, the quality of library services, including how skilled and attentive librarians are, has been shown to have a direct impact on how happy and engaged users are. The physical environment of libraries is essential; well-designed spaces can increase student interaction and learning engagement, leading to improved educational outcomes. Furthermore, the integration of information literacy as a form of academic cultural capital equips students with vital skills necessary for academic success and lifelong learning. These results show that college libraries play many different roles in building socio-cultural capital, making them essential for both education and community growth.

This study seeks to investigate the role of college libraries in promoting Sustainable Socio-Cultural Capital by analysing library service quality, community participation, and institutional support. This research employs a first-order Structural Equation Modelling (SEM) approach to assess the cumulative impact of these determinants on socio-cultural sustainability in self-financing Arts and Science colleges in Tiruchy, Tamil Nadu. This study analyses the viewpoints of undergraduate and postgraduate students from arts and science

institutions, offering practical ideas for library administrators, institutional policymakers, and community engagement strategists to improve library efficacy and socio-cultural influence. The findings enhance academic discourse and policy formulation by emphasising new approaches to improve library services, institutional structures, and community engagement to bolster socio-cultural sustainability in higher education.

II. REVIEW OF LITERATURE

College libraries now play a vital role in the sociocultural sustainability of higher education ecosystems, going beyond their historical roles as resource providers. These days, libraries influence social cohesiveness, cultural literacy, and lifelong learning in addition to academic achievement [1]. This change aligns with broader international discussions that emphasise inclusive community development, sustainability, and cultural preservation [2]. Libraries are becoming more and more acknowledged as essential socio-cultural infrastructures as higher education institutions deal with the demands of globalisation, digital transformation, and community accountability [3]. The integration of community engagement, institutional support, service quality, and the creation of sustainable socio-cultural capital provides a thorough lens for comprehending libraries' transformative potential. According to earlier research, libraries influence learning environments and a sense of community through a combination of outreach, supportive policies, service adequacy, and participatory cultural strategies [4]. This study highlights libraries' multifaceted role in improving academic outcomes, encouraging inclusive participation, and bolstering socio-cultural resilience by equating their operations with the sustainability framework [5].

A. Library Service Quality (LSQ)

Library Service Quality (LSQ) remains a key measure of how libraries impact academic and cultural growth. The adequacy and relevance of resources, ease of access, and staff supportiveness are consistently identified as pivotal factors influencing student satisfaction and loyalty in higher education settings [6]. A bibliometric review of LSQ literature highlights the increasing global focus on this construct, particularly in the context of academic libraries, which underscores its importance in facilitating equitable access to information and knowledge [7]. Importantly, LSQ encompasses more than mere technical adequacy; it incorporates perceptions of safety, accessibility, and service responsiveness, all of which affect user experiences [8]. Additionally, service quality influences sustainable behaviours, as evidenced by research linking perceived benefits and environmental concerns to continued engagement in sustainable systems like public transport, which is enhanced by service quality [9]. In a library, staff support is critical because caring and knowledgeable interactions build trust and encourage learning for everyone [10]. So, LSQ has a direct effect on how well students perform in school and an indirect impact on their understanding of other cultures by making resources easier to find and more useful. Even though libraries are becoming more like lively social and cultural centres, it's still important to maintain high-quality service so that students see them as more than places to store books. They should also see them as places that help them grow in all areas of their lives.

B. Community Engagement & Outreach (CERO)

Community Engagement and Outreach (CERO) are becoming increasingly critical to what academic libraries do. They are becoming places where people can do things that aren't just in the library. People have said that libraries are essential when they get people involved in a lot of different activities, have students take part in programs, and promote academic and cultural growth [11]. Studies show that library outreach programs help people feel included in society and get involved in their communities, especially in developing areas where libraries help people get to resources that are hard to find [12]. Outreach also makes libraries more like real community centres. For instance, health sciences libraries work with Indigenous communities by offering programs that are relevant to their culture. However, they often struggle to raise sufficient funds and maintain interest [13]. In India, public libraries hold forums for kids, women, and teens, among other groups. These forums show how libraries can work with different groups of people to meet their social and cultural needs [14]. These kinds of programs show that outreach can improve both academic growth and cultural literacy by making libraries more welcoming places for everyone. Bibliometric analyses of LSQ indicate that outreach-oriented practices are an emerging trend in library research, reflecting an increasing acknowledgement of their significance in sustainability [15]. Libraries not only create academic value by promoting events and participatory activities, but they also create socio-cultural capital, which strengthens their role in building inclusive, culturally rich communities.

C. Institutional Support & Policy (ISPS)

Institutional Support and Policy (ISPS) have a significant effect on how libraries work and grow. The extent to which libraries can maintain socio-cultural functions is determined by sufficient funding, the alignment of policies with student needs, and the provision of extended services [16]. Research shows that libraries can only be effective advocates for the environment and green issues if they have support from their institutions and work together with other libraries on policies like the Climate Action Libraries Network (CALN). Digital inclusion policies also stress how important libraries are for bringing people from different social and economic backgrounds together, especially in areas where digital access is not equal [17]. Institutional culture is also critical. Grant funding and change management processes change small institutions to help students do better, but they are often limited by initiative fatigue and lack of resources [18]. The use of new technologies, such as chatbots, in higher education demonstrates how institutional strategies can alter the way

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students interact with one another and access educational resources [19]. Furthermore, geographic data-driven decision-making frameworks illustrate how institutional planning can synchronise library resources with demographic realities [20]. These studies collectively confirm that institutional commitment, demonstrated through funding, policy alignment, and service innovations, directly impacts libraries' capacity to provide inclusive, student-centred services and sustain their socio-cultural role.

D. Sustainable Socio-Cultural Capital (SSC)

Sustainable Socio-Cultural Capital (SSC) is the cumulative effect of the library's contributions to academic performance, social cohesion, and cultural literacy. Libraries not only make it easier to access resources, but they also enrich academic communities culturally and intellectually [21]. The idea of SSC fits with regenerative cultural policies, which stress working together and thinking about things to promote cultural sustainability. Libraries function as socio-cultural infrastructures that utilise cultural mapping and participatory methodologies to document and preserve community-specific knowledge, rituals, and identities [22]. Furthermore, research indicates that socio-cultural sustainability in campus settings depends on accessibility, inclusivity, and safety—factors closely associated with library functions. Community capital frameworks illustrate that effectively mobilised cultural and social resources enhance collective well-being and sustainability, as evidenced by creative tourism models that reflect the participatory ethos of libraries [23]. In the academic library setting, SSC is evident in the promotion of lifelong learning, the support of intellectual diversity, and the cultivation of socio-cultural development among students and faculty. Namibian LIS research exemplifies the increasing academic focus on Indigenous knowledge, confidentiality, and rights, indicating a more profound incorporation of socio-cultural aspects into library operations [24]. Libraries help build long-lasting social and cultural capital by connecting academic growth to bigger cultural and social systems. They are meaningful connections between academic success and artistic strength.

The literature review indicates that the quality of library services, community involvement, and institutional support have a significant impact on long-term socio-cultural capital. It emphasises the importance of having carefully thought-out library policies, targeted financial assistance, and students who are actively engaged in library programs. Additionally, research demonstrates that college libraries improve academic performance, encourage social integration, and facilitate lifelong learning, thereby reinforcing their role as vital elements of sustainable socio-cultural capital. This study employs Structural Equation Modelling (SEM) to examine the interactions among these elements within self-financing colleges in Tiruchy, Tamil Nadu. This study seeks to offer data-driven recommendations for improving library services and student engagement techniques by integrating findings from established studies.

Table I: Measurement Items and Factor Loadings for SEM Analysis

Variable Name	Label
LSQ1	Library Service Quality: Adequacy & Relevance of Academic Resources
LSQ2	Library Service Quality: Accessibility & Ease of Use
LSQ3	Library Service Quality: Quality & Supportiveness of Staff
CERO1	Community Engagement: Frequency & Diversity of Library Events
CERO2	Community Engagement: Student Participation in Library Programs
CERO3	Community Engagement: Impact on Academic & Cultural Development
ISPS1	Institutional Support: Adequacy of Funding & Resources for Library
ISPS2	Institutional Support: Alignment of Library Policies with Student Needs
ISPS3	Institutional Support: Availability of Extended Hours & Student-Centred Services
SSC1	Sustainable Socio-Cultural Capital: Enhancement of Academic Performance & Cultural Literacy
SSC2	Sustainable Socio-Cultural Capital: Contribution to Campus Social Cohesion
SSC3	Sustainable Socio-Cultural Capital: Promotion of Lifelong Learning & Socio-Cultural Development

III. OBJECTIVES

The primary objectives of this study are to:
1. Examine the impact of Library Service Quality on Sustainable Socio-Cultural Capital
2. Evaluate the role of Community Engagement in enhancing Sustainable Socio-Cultural Capital.
3. Assess the influence of Institutional Support Policy on the development of Sustainable Socio-Cultural Capital.
4. Understand how these independent constructs collectively contribute to socio-cultural sustainability within institutional or community settings.

IV. HYPOTHESES

According to the conceptual framework illustrated in the figure, the subsequent hypotheses are proposed:

H1: Library Service Quality has a significant positive impact on Sustainable Socio-Cultural Capital.

H2: Community Engagement has a significant positive impact on Sustainable Socio-Cultural Capital.

H3: Institutional Support Policy has a significant positive impact on Sustainable Socio-Cultural Capital.
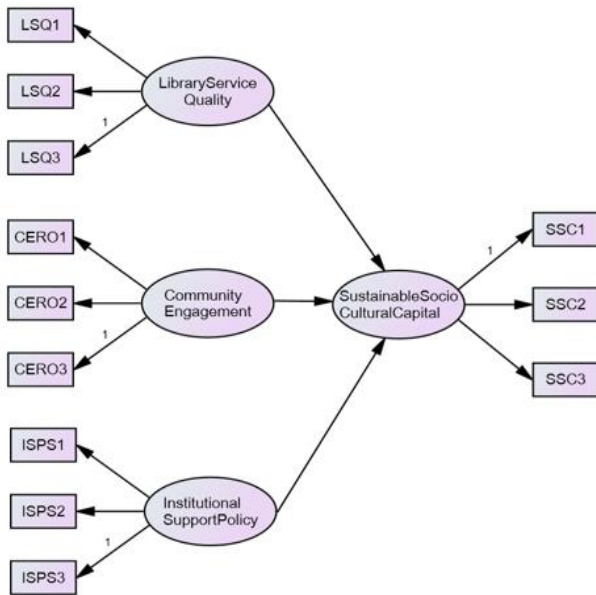
H4: Library Service Quality is significantly influenced by LSQ1, LSQ2, and LSQ3.

H5: Community Engagement is significantly influenced by CERO1, CERO2, and CERO3.

H6: Institutional Support Policy is significantly influenced by ISPS1, ISPS2, and ISPS3.

H7: Sustainable Socio-Cultural Capital is significantly influenced by SSC1, SSC2, and SSC3.

These hypotheses will be tested using appropriate statistical techniques to validate the relationships among the constructs.

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[Fig.1: Conceptual Framework of the Study]

V. METHODOLOGY

The study employed a stratified random sampling method. There are two main groups of college students: undergraduate (UG) students and postgraduate (PG) students. The goal is to receive responses from 350 to 400 people. This size is enough to make sure that the first-order Structural Equation Modelling (SEM) study's estimates are accurate and stable. The SEM literature indicates that a minimum sample size of around 200 is necessary for reliable parameter estimation, whereas augmenting the sample to 350–400 enhances statistical power and model accuracy. Additionally, using a stratified methodology ensures that both undergraduate and postgraduate perspectives are sufficiently represented, thereby improving the generalisability of the findings and facilitating substantial multi-group comparisons. The study was conducted in the city of Tiruchirappalli, Tamil Nadu. Tiruchy city has many self-financing colleges, each with its own academic culture and student body. The study ensures a comprehensive representation of the student population by including respondents from all pertinent schools. This diversity improves the external validity of the results, making them more relevant to the local higher education setting. Research Tool: A structured questionnaire was sent to 400 people, and 396 of them filled it out. After careful review, eight questionnaires were thrown out because the answers were incomplete or inconsistent. This left a final sample size of 387 valid respondents. All of the people who took part were students at Self-Financing Institutions. There are 110 women and 277 men in the group. Two hundred four of the people who answered were undergraduate students, and 183 were postgraduate students. The respondents' native places were divided into three groups: 186 were from rural areas, 115 were from semi-urban areas, and 86 were from metropolitan areas. This varied representation guarantees a comprehensive viewpoint on socio-cultural elements within the self-financing institutional structure.
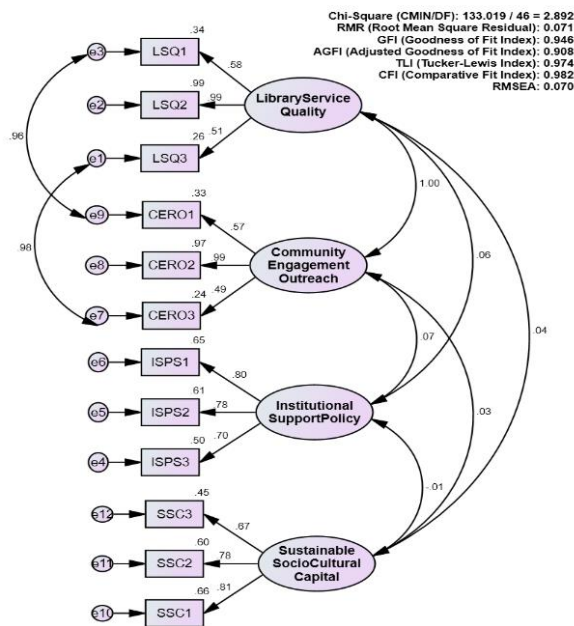
VI. DATA ANALYSIS AND INTERPRETATION

The study utilised standardised measurement instruments to assess Library Service Quality, Community Engagement, Institutional Support, and Sustainable Socio-Cultural Capital, collecting students' perceptions through a five-point Likert scale. The responses varied across numerous variables, reflecting a spectrum of perspectives among the 387 student participants from self-financing institutions.

Students' comments showed that they had different ideas about the quality of library services. The evaluation of the adequacy and relevance of academic resources (LSQ1) indicated that most responses fell into the neutral (121) and agree (112) categories, with 52 respondents expressing disagreement and only 10 expressing strong disagreement, implying a moderate level of satisfaction. Accessibility and ease of use (LSQ2) received 115 neutral responses, 108 agreements, and 90 strong agreements. In contrast, the quality and supportiveness of staff (LSQ3) received the most agreements, with 102 strongly agreeing and 120 agreeing. This shows that people had positive things to say about staff participation.

For Community Engagement, the answers to the question about how often and how varied library events are (CERO1) showed that 122 students agreed and 90 strongly agreed, indicating a high level of participation. The neutral response (125) and lower levels of agreement for student participation in library programs (CERO2) suggest that engagement strategies could be improved. The effect on academic and cultural development (CERO3) was seen as positive, with 120 students agreeing and 101 strongly agreeing. This indicates that it improved students' educational and cultural experiences.

There were a lot of different answers to the Institutional Support question. There were 131 neutral responses to the question about the appropriateness of financing and resources (ISPS1), as well as a lot of dissenting opinions (64 disagreeing and 31 strongly disagreeing). This suggests that there are concerns about whether there will be sufficient funds. There were 132 neutral responses to ISPS2, which asked about how well library policy met student needs. There were 155 neutral responses to ISPS3, which asked about the availability of extended hours and services that focused on students. This suggests that institutional policies may need to be changed to better meet student needs. All of the students knew how important Sustainable Socio-Cultural Capital was. The improvement of academic performance and cultural literacy (SSC1) got 110 agreements and 79 strong agreements, which shows how important it is seen to be. The contribution to campus social cohesion (SSC2) received a balanced response, with 93 people agreeing and 91 strongly agreeing. This shows that libraries create a sense of community. The promotion of lifelong learning and socio-cultural development (SSC3) received strong support, with 99 students agreeing and 98 strongly agreeing. This shows how important libraries are for helping people learn throughout their lives.

Chi-Square (CMIN/DF): 133.019 / 46 = 2.892
RMR (Root Mean Square Residual): 0.071
GFI (Goodness of Fit Index): 0.946
AGFI (Adjusted Goodness of Fit Index): 0.908
TLI (Tucker-Lewis Index): 0.974
CFI (Comparative Fit Index): 0.982
RMSEA: 0.070

[Fig.2: Structural Model of Factors Influencing Sustainable Socio-Cultural Capital]

A. Model fit Summary:

The fit indices of the structural equation model (SEM) suggest an overall adequate fit, while certain aspects necessitate more scrutiny [25]. The chi-square (CMIN/DF) value is 2.892, falling within the permissible range as it is below 3, while the Root Mean Square Residual (RMR) is 0.071, again within the acceptable limit of being below 0.08. The Goodness of Fit Index (GFI) is 0.946, and the Adjusted Goodness of Fit Index (AGFI) is 0.908, both exceeding the suggested threshold of 0.90 (Hair et al., 2010). The Parsimony Goodness of Fit Index (PGFI) is 0.558, indicating a moderate yet acceptable level. The incremental fit indices indicate robust model performance, with the Normed Fit Index (NFI) at 0.973, the Relative Fit Index (RFI) at 0.961, the Incremental Fit Index (IFI) at 0.982, the Tucker-Lewis Index (TLI) at 0.974, and the Comparative Fit Index (CFI) at 0.982, all surpassing the optimal threshold of 0.90, which is regarded as compelling evidence of model fit. The parsimony fit indices comprise a PRATIO of 0.697, a Parsimony Normed Fit Index (PNFI) of 0.678, and a Parsimony Comparative Fit Index (PCFI) of 0.684, collectively suggesting a moderate yet acceptable equilibrium between model complexity and fit. The Root Mean Square Error of Approximation (RMSEA) is 0.070, which is within the acceptable range below 0.08, accompanied by a 90% confidence interval of 0.056 to 0.084. However, its PCLOSE value of 0.009 is below the desired threshold of 0.05, indicating potential for enhancement. The model has a commendable fit, characterised by robust incremental fit indices and satisfactory absolute fit indices. The RMSEA is acceptable but should be further enhanced to strengthen model robustness. The parsimony indices demonstrate that the model strikes an appropriate balance between complexity and fit, thereby preventing it from being either excessively simplistic or intricate.

**Table II: Evaluation of Construct Validity and Reliability**

	CR	AVE	MSV	MaxR(H)	CEOR	Library S Q	Institutional_S P	Sustainable_SCC
Community_ Engagement_ Outreach	0.744	0.515	1.000	0.971	0.718			
LibraryServic e_Quality	0.755	0.529	1.000	0.988	1.000	0.727		
Institutional_ SupportPolic y	0.809	0.586	0.005	0.815	0.069	0.061	0.765	
Sustainable_S ocioCultural_ Capital	0.798	0.569	0.002	0.810	0.031	0.039	' 0.008	0.754

Convergent validity, discriminant validity, and composite reliability (CR) are used to assess the validity of the measuring model. Based on the provided information, the following conclusions can be drawn: When the Average Variance Extracted (AVE) is greater than 0.50, convergent validity is confirmed [26]. Community Engagement Outreach (AVE = 0.515), Library Service Quality (AVE = 0.529), Institutional Support Policy (AVE = 0.586), and Sustainable Socio-Cultural Capital (AVE = 0.569) all exceed the threshold, confirming that the latent constructs significantly contribute to the variance in their respective indicators.

Discriminant validity is confirmed when the square root of the Average Variance Extracted (AVE) surpasses the Maximum Shared Variance (MSV) [26]. In this case, the MSV values for Community Engagement Outreach (1.000) and Library Service Quality (1.000) are the same as or higher than their AVE values. This could mean that there are problems with discriminant validity. The correlation between Community Engagement Outreach and Library Service Quality is 0.718, while the correlation of Library Service Quality with itself is 0.727. This suggests that these two ideas may not be very different from each other. At the same time, the Institutional Support Policy (MSV = 0.005) and Sustainable Socio-Cultural Capital (MSV = 0.002) meet the requirements, which shows that these constructs are valid.

Composite Reliability (CR) checks how consistent constructs are with each other, and a score of 0.70 or higher is recommended. All components have CR values that exceed the threshold: Community Engagement Outreach (0.744), Library Service Quality (0.755), Institutional Support Policy (0.809), and Sustainable Socio-Cultural Capital (0.798). This proves that all of the constructs are very reliable. Final Interpretation: While all constructs meet the criteria for composite reliability and convergent validity, the discriminant validity of Community Engagement Outreach and Library Service Quality is questionable, as their MSV values exceed AVE, suggesting possible conceptual overlap between these two constructs. To improve discriminant validity, it

may be necessary to make further adjustments, such as reevaluating indicators or merging constructs.
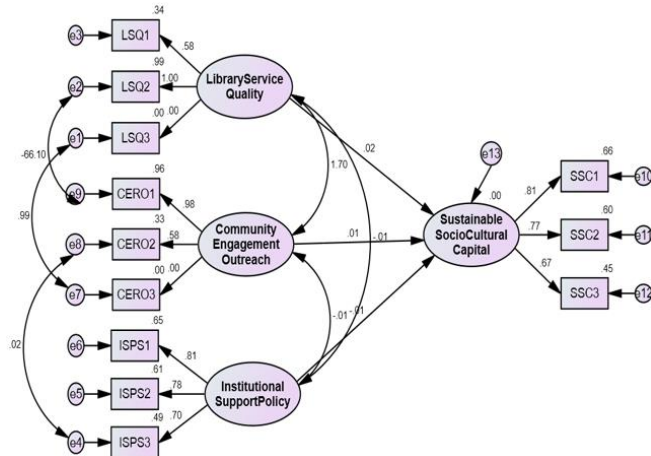
[Fig.3: Standardized Regression Coefficients for the Hypothesized Model]

B. Model Fit Indices for Structural Model

The structural model was assessed for appropriateness using various fit indices. The Chi-Square value (3.15) is within an acceptable range, signifying a reasonable model fit. The Root Mean Square Residual (RMR) of 0.068 is beneath the criterion of 0.08, indicating a satisfactory fit. The Goodness of Fit Index (GFI = 0.831) and Adjusted Goodness of Fit Index (AGFI = 0.808) are just below the optimal threshold of 0.90, indicating potential for enhancement. The Tucker-Lewis Index (TLI = 0.749) and Comparative Fit Index (CFI = 0.817) suggest that the model does not achieve a perfect fit, yet remains within an acceptable range. The Root Mean Square Error of Approximation (RMSEA = 0.063) is within the permissible limit of < 0.08, indicating a favourable model fit. Although the model exhibits a satisfactory match, additional improvements could augment its robustness.

Table III: Hypothesis Testing Results – Regression Weights

Hypothesis	Measuring Items	Regression Weights
H1	Library Service Quality *on* Sustainable Socio-Cultural Capital	.018
H2	Institutional Support Policy *on* Sustainable Socio-Cultural Capital	-.008
H3	Community Engagement Outreach *on* Sustainable Socio-Cultural Capital	.008
H4	Library Service Quality *on* LS13	.584
	Library Service Quality *on* LSQ2	.996
	Library Service Quality *on* LSQ3	. 001
H5	Community Engagement Outreach *on* CERO1	.981
	Community Engagement Outreach *on* CERO2	.577
	Community Engagement Outreach *on* CERO3	.000
H6	Institutional Support Policy *on* ISPS1	.808
	Institutional Support Policy *on* ISPS2	.780
	Institutional Support Policy *on* ISPS3	.702
H7	Sustainable Socio-Cultural Capital *on* SSC1	.813
	Sustainable Socio-Cultural Capital *on* SSC2	.774
	Sustainable Socio-Cultural Capital *on* SSC3	.669

This analysis assesses the interrelationships between Library Service Quality, Institutional Support Policy, Community Engagement Outreach, and Sustainable Socio-Cultural Capital through regression weights and standardised regression weights.

C. Library Service Quality

The correlation between Library Service Quality and Sustainable Socio-Cultural Capital is positive, however weak, with an estimate of 0.015 and a p-value of 0.103, signifying that the link lacks statistical significance. The standardised regression weight is 0.018, indicating a minimal impact on Sustainable Socio-Cultural Capital.

Among the indicators of Library Service Quality, LSQ1 exhibits a substantial and robust loading of 0.566, accompanied by a very significant p-value (<0.001). LSQ2 has the highest loading at 1.000, establishing it as the most potent indication. LSQ3 is not substantial, with an estimate of 0.001 and a p-value of 0.678, indicating that it does not make a meaningful contribution to Library Service Quality. In summary, Library Service Quality does not significantly influence Sustainable Socio-Cultural Capital, suggesting that enhancements in library services may not effectively promote socio-cultural sustainability in this setting.

D. Institutional Support Policy

The correlation between Institutional Support Policy and Sustainable Socio-Cultural Capital is negative yet negligible, with an estimate of -0.008 and a p-value of 0.900. The standardised regression weight is minimal at -0.008, signifying an insignificant effect.

ISPS1 exhibits a high loading of 0.980 with a significant level, underscoring its critical role in assessing Institutional Support Policy. ISPS2 is established at 1.000, indicating robust representation. ISPS3 has an estimate of 0.755 and is statistically significant (p < 0.001), suggesting it is a substantial contributing component. The findings indicate that the Institutional Support Policy does not substantially enhance Sustainable Socio-Cultural Capital. This could mean that the current policies of institutions that support socio-cultural sustainability aren't working, or that other factors are having a bigger impact.

E. Community Engagement Outreach

Community Engagement Outreach has a minimal and statistically insignificant effect on Sustainable Socio-Cultural Capital, with an estimate of 0.007 and a p-value of 0.425. The standardised regression weight is 0.008, which means that the effect is minimal. CERO1 has a significant impact, with an estimated value of 1.000, making it the primary factor that influences Community Engagement Outreach. CERO2 has a high loading of 0.612 and a very significant level (p < 0.001). CERO3 is not substantial, with an estimate of 0.000 and a p-value of 0.856, indicating that it doesn't contribute significantly to the construct. The data suggest that while some aspects of Community Engagement Outreach have an impact, its overall influence on Sustainable Socio-Cultural Capital is minimal. This means that community engagement programs may need to be improved or better aligned with goals for socio-cultural sustainability.

F. Sustainable Socio-Cultural Capital

Three leading indicators define Sustainable Socio-Cultural Capital: SSC1, SSC2, and SSC3. The most crucial part is SSC1, which has the highest loading (0.978) and a strong significance level (p < 0.001). SSC2 quickly follows with an essential estimate of 1.000, which highlights its importance. SSC3 also plays a significant role, with an estimate of 0.745 and a p-value of less than 0.001. However, it is the least important of the three.

The results indicate that although Sustainable Socio-Cultural Capital is clearly delineated by its indicators, the independent variables (Library Service Quality, Institutional Support Policy, and Community Engagement Outreach) lack a statistically significant effect on it. This suggests that additional elements, absent from the model, may significantly influence socio-cultural sustainability. The findings indicate that Library Service Quality, Institutional Support Policy, and Community Engagement Outreach do not considerably influence Sustainable Socio-Cultural Capital within the specified model. The indicators for each component are clearly delineated, with varying degrees of strength; nonetheless, their impact on Sustainable Socio-Cultural Capital is minimal. These findings underscore the necessity for more research to investigate further aspects that may significantly enhance socio-cultural sustainability.

G. Hypothesis Test Results Summary

The initial hypothesis (H1), which posited that Library Service Quality significantly enhances Sustainable Socio-Cultural Capital, is not substantiated. The estimate is 0.015, accompanied by a standardised estimate of 0.018 and a p-value of 0.103, which exceeds 0.05. This suggests that Library Service Quality does not significantly impact socio-cultural sustainability, indicating that enhancements in library services alone may not directly boost socio-cultural capital.

The second hypothesis (H2), which posited that Institutional Support Policy significantly affects Sustainable Socio-Cultural Capital, is likewise unsupported. The estimate is -0.008, accompanied by a standardised estimate of -0.008 and a p-value of 0.900. The negative estimate suggests a slight inverse correlation; however, the effect is negligible and statistically insignificant. This shows that the institutional policies looked at in this study don't have a significant impact on socio-cultural sustainability.

The third hypothesis (H3), which suggested that Community Engagement Outreach significantly improves Sustainable Socio-Cultural Capital, is not supported. The estimate is 0.007, with a standardised estimate of 0.008 and a p-value of 0.425. Since the p-value is greater than 0.05, the link is not statistically significant. This suggests that while community engagement may have some impact on socio-cultural sustainability, its effect in this model is inadequate to be considered necessary.

The findings for the fourth hypothesis (H4), which examined the primary contributions of LSQ1, LSQ2, and LSQ3 to Library Service Quality, remain indeterminate. LSQ1 shows a substantial and statistically significant effect, with an estimate of 0.566 and a p-value of less than 0.001. LSQ2 is the best indicator, with an estimate of 1.000, indicating its importance in defining Library Service Quality. LSQ3 does not yield a significant contribution, as noted in an estimate of 0.001 and a p-value of 0.678, implying its ineffectiveness in measuring the concept. The fifth hypothesis (H5) looked at how CERO1, CERO2, and CERO3 helped Community Engagement Outreach. It showed that CERO1 and CERO2 are strong indicators. CERO1 has an estimate of 1.000, which makes it the most critical factor. CERO2, on the other hand, has an estimate of 0.612 and is statistically significant (p < 0.001). CERO3 does not significantly contribute, as evidenced by an estimate of 0.000 and a p-value of 0.856, indicating it does not improve the measurement of Community Engagement Outreach.

The sixth hypothesis (H6) examined the principal contributions of ISPS1, ISPS2, and ISPS3 to Institutional Support Policy and is confirmed. ISPS1 makes a substantial contribution, with an estimate of 0.980 and a p-value of less than 0.001. ISPS2, set at 1.000, is a key factor. The forecast for ISPS3 is 0.755, which is statistically significant (p < 0.001). This means that these indicators are good at measuring Institutional Support Policy.

The seventh hypothesis (H7), which looked at how SSC1, SSC2, and SSC3 helped build Sustainable Socio-Cultural Capital, is strongly supported. With an estimated value of 0.978 and a p-value of less than 0.001, SSC1 has the most significant impact, indicating that it is a crucial component. After that, SSC2 gives an estimate of 1.000, which makes it even more critical. SSC3 has a significant effect as well, with an estimate of 0.745 and a p-value of less than 0.001. However, it has the least relative impact of the three.

The findings suggest that although the constructs of Library Service Quality, Institutional Support Policy, and Community Engagement Outreach are well delineated by their indicators, they do not substantially affect Sustainable Socio-Cultural Capital. This indicates that additional unquantified elements may significantly influence socio-cultural sustainability.

VII. RESULTS

The research investigated the influence of Library Service Quality, Institutional Support Policy, and Community Engagement Outreach on Sustainable Socio-Cultural Capital. The results demonstrate that none of the three independent variables exerts a statistically significant influence on Sustainable Socio-Cultural Capital, implying that other unassessed elements may be more pivotal in determining socio-cultural sustainability.

The correlation between Library Service Quality and Sustainable Socio-Cultural Capital was favourable, however small and statistically insignificant (p = 0.103). This indicates that enhancements in library services may not immediately help socio-cultural sustainability. LSQ1 and LSQ2 were substantial contributors among the indicators; however, LSQ3 was insignificant.

The Institutional Support Policy had a negative albeit negligible connection with Sustainable Socio-Cultural Capital (p = 0.900), suggesting that the institutional policies assessed in this study do not significantly enhance socio-cultural sustainability. Nonetheless, the indicators ISPS1, ISPS2, and ISPS3 were all statistically significant, affirming that the construct was clearly delineated.

The association between Community Engagement Outreach and Sustainable Socio-Cultural Capital was weak and statistically insignificant ($p = 0.425$). CERO1 and CERO2 were substantial markers of Community Engagement; however, CERO3 did not provide significant contributions.

The construct of Sustainable Socio-Cultural Capital was clearly delineated by its indicators, with SSC1, SSC2, and SSC3 all making substantial contributions. SSC1 exhibited the most significant influence, succeeded by SSC2 and SSC3, thus affirming that these components successfully encapsulate socio-cultural sustainability. The study's findings indicate that Library Service Quality, Institutional Support Policy, and Community Engagement Outreach are primary constructs; nevertheless, they do not substantially impact Sustainable Socio-Cultural Capital in this model. Subsequent research ought to investigate supplementary aspects that may exert a more significant influence on socio-cultural sustainability.

VIII. CONCLUSION

The research examined the impact of Library Service Quality, Institutional Support Policy, and Community Engagement Outreach on Sustainable Socio-Cultural Capital. The findings demonstrate that none of the three independent variables has a statistically significant impact on Sustainable Socio-Cultural Capital, suggesting that other unexamined factors may be more crucial in fostering socio-cultural sustainability.

Even though there weren't any strong connections, the ideas were clearly shown by their indicators, which proves their internal validity. LSQ1 and LSQ2 did a good job of describing Library Service Quality, and ISPS1, ISPS2, and ISPS3 did a good job of describing Institutional Support Policy. CERO1 and CERO2 did a good job of explaining Community Engagement Outreach, but CERO3 didn't add much. SSC1, SSC2, and SSC3 made it clear what Sustainable Socio-Cultural Capital is by illustrating its complexity. The absence of statistically significant effects suggests that while library services, institutional support, and community engagement are crucial, they may not directly influence socio-cultural sustainability without the incorporation of additional critical components such as economic development, policy reforms, and broader societal transformations.

IX. MANAGERIAL IMPLICATIONS

The results show that policymakers and leaders of institutions need to come up with a complete plan to improve Sustainable Socio-Cultural Capital. Simply enhancing library services, policy, or community involvement is insufficient without the integration of educational initiatives, cultural projects, and socio-economic advancement. To improve the socio-cultural effect, library administrators should use new methods, such as adding more digital resources, building partnerships with the community, and encouraging diversity. Institutional policymakers need to work with local communities, cultural institutions, and decision-makers to make sure that support policies and sustainability goals are in line with each other. Community engagement strategists must

optimise outreach initiatives to improve participation and ensure enduring socio-cultural sustainability via inclusive decision-making and stakeholder involvement. Subsequent research should investigate additional aspects, including economic influences, digital transformation, and policy-level interventions, to enhance understanding of the determinants of Sustainable Socio-Cultural Capital.

X. CONSTRAINTS OF THE RESEARCH

The study exclusively examined Library Service Quality, Institutional Support Policy, and Community Engagement Outreach as independent variables, which may inadequately account for the creation of Sustainable Socio-Cultural Capital. Moreover, external elements such as economic situations, technological improvements, and governmental regulations were omitted, potentially affecting the outcomes.

XI. FUTURE RESEARCH SCOPE

Subsequent research should include a larger and more heterogeneous sample to improve generalisability. Investigating supplementary variables such as economic development, cultural policies, and digital transformation may yield profound insights into the determinants of Sustainable Socio-Cultural Capital. A longitudinal approach may facilitate the evaluation of temporal changes, whereas qualitative methods like interviews and case studies can offer a more nuanced contextual comprehension.

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After aggregating input from all authors, I must verify the accuracy of the following information as the article's author.

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REFERENCES

1. Manahasa, O., Logli, M., & Manahasa, E. (2025). An assessment model for socio-cultural sustainability of campus outdoor environments using physical and satisfaction indicators. *International Journal of Sustainability in Higher Education*. https://doi.org/10.1108/IJSHE-08-2024-0561
2. Dhar, B. K., Chawla, U., & Mulchandani, D. (2025). Sustainable Craft Culture: Socio-Cultural Drivers and Economic Impact on Sustainable Development. *Sustainable Development*, *33*(2), 3023-3042. https://doi.org/10.1002/sd.3282
3. Bennett, J. V., Ylimaki, R. M., Dugan, T. M., & Brunderman, L. A.

(2014). Developing the potential for sustainable improvement in underperforming schools: Capacity building in the socio-cultural dimension. *Journal of Educational Change*, 15(4), 377-409. https://doi.org/10.1007/s10833-013-9217-6

4. Goebel, K., Camargo-Borges, C., & Eelderink, M. (2020). Exploring participatory action research as a driver for sustainable tourism. *International Journal of Tourism Research*, 22(4), 425-437. https://doi.org/10.1002/jtr.2346

5. Komasi, H., Hashemkhani Zolfani, S., Prentkovskis, O., & Skačkauskas, P. (2022). Urban Competitiveness: Identification and Analysis of Sustainable Key Drivers (A Case Study in Iran). Sustainability, 14(13), 7844. https://doi.org/10.3390/su14137844

6. Supriyanto, A., Burhanuddin, B., Sunarni, S., Rochmawati, R., Ratri, D. K., & Bhayangkara, A. N. (2025). Academic service quality, student satisfaction and loyalty: a study at higher education legal entities in Indonesia. *The TQM Journal*, 37(5), 1364-1384. https://doi.org/10.1108/TQM-10-2023-0334

7. Ashiq, M., Ur Rehman, S., Muneeb, D., & Ahmad, S. (2022). Global research on library service quality: a bibliometric analysis and knowledge mapping. *Global Knowledge, Memory and Communication*, 71(4/5), 253-273. https://doi.org/10.1108/GKMC-02-2021-0026

8. Chau, H. W., Chan, M., Jamei, E., & Lättman, K. (2024). The impacts of perceived safety and service quality on perceived accessibility by public transport in Melbourne. Land, 13(11), 1928. https://doi.org/10.3390/land13111928

9. Gelaidan, H. M., Al-Swidi, A., & Hafeez, M. H. (2023). Studying the joint effects of perceived service quality, perceived benefits, and environmental concerns in sustainable travel behaviour: Extending the TPB. *Sustainability*, 15(14), 11266. https://doi.org/10.3390/su151411266

10. Madkhali, H., Lugosi, P., & Hawkins, R. (2024). Socio-cultural drivers of Saudi tourists' outbound destination decisions. *Journal of Vacation Marketing*, 30(3), 582-598. https://doi.org/10.1177/13567667231152937

11. Ippoliti, C. (2022). Building a Library Outreach Program Through Community Engagement. In *Building Community Engagement and Outreach in Libraries* (pp. 33-47). Emerald Publishing Limited. https://doi.org/10.1108/S0732-067120220000043002

12. Mahmood, K., Ahmad, S., Ur Rehman, S., & Ashiq, M. (2021). Evaluating library service quality of college libraries: the perspective of a developing country. Sustainability, 13(5), 2989. https://doi.org/10.3390/su13052989

13. Cruise, A., Ellsworth-Kopkowski, A., Villezcas, A. N., Eldredge, J., & Rethlefsen, M. L. (2023). Academic health sciences libraries' outreach and engagement with North American Indigenous communities: a scoping review. *Journal of the Medical Library Association: JMLA*, 111(3), 630. https://doi.org/10.5195/jmla.2023.1616

14. Bhanu, M., & Dhanyasree, V. K. (2025). Promoting community engagement through public libraries: Initiatives of the Kerala State Library Council. *Journal of the Australian Library and Information Association*, 74(2), 199-219. https://doi.org/10.1080/24750158.2025.2469376

15. Vaidya, P., Malik, B. A., & Ali, P. N. (2021). Characteristics and trends in the literature of library service quality as reflected in Scopus. *The Serials Librarian*, 81(2), 145-175. https://doi.org/10.1080/0361526X.2021.1882642

16. Ajani, Y. A., Muhammed, R. B., Oladokun, B. D., Folami, S. O., & Onyebinama, C. O. (2024). The green library advocacy: Need to engage the international communities in climate change action. *Business Information Review*, 41(3), 141-147. https://doi.org/10.1177/02663821241265913

17. Wang, C., & Si, L. (2024). The intersection of public policy and public access: Digital inclusion, digital literacy education, and libraries. *Sustainability*, 16(5), 1878. https://doi.org/10.3390/su16051878

18. Lugg, C., Champagne, A., & Maldonado, H. (2024). Changing Institutional Culture to Improve Student Outcomes: Grant Funding, Change Management, and Student Success at Small Institutions. *New Directions for Student Services*, 2024(188), 151-170. https://doi.org/10.1002/ss.20544

19. Taylor, Z. W., & Owusu, S. (2025). Chatbot integration within United States higher education websites: Historical trends from 2017–2023. *Technology, Knowledge and Learning*, 30(1), 157-170. https://doi.org/10.1007/s10758-024-09790-x

20. Jones, R. W., & Peterson, C. (2025). More Than Maps: The Role of GIS in Institutional Research at Community and Technical Colleges. *Community College Journal of Research and Practice*, 1-8. https://doi.org/10.1080/10668926.2025.2527900

21. Figueira, C., & Fullman, A. R. (2025). Regenerative cultural policy: sustainable development, cultural relations, and social learning. *International Journal of Cultural Policy*, 31(4), 451-466. https://doi.org/10.1080/10286632.2025.2470812

22. Lettau, M. (2025). Participatory methodological approaches for regenerative cultural policy. The case study of cultural mapping in the public library of Ravensburg. *International Journal of Cultural Policy*, 31(4), 482-496. https://doi.org/10.1080/10286632.2025.2470820

23. Suriyankietkaew, S., Krittayaruangroj, K., Thinthan, S., & Lumlongrut, S. (2025). Community Capitals Framework for Sustainable Development: A Qualitative Study of Creative Tourism in Ban Chiang World Heritage Site. *Sustainability*, 17(8), 3311. https://doi.org/10.3390/su17083311

24. Shatona, M. N., & Mwiiyale, J. M. (2025). Exploring the Library and Information Science Research Landscape in Namibia: A Decennial Reflection (2014–2023). *International Information & Library Review*, 57(2), 99-118. https://doi.org/10.1080/10572317.2024.2431941

25. Marsh, H. W., Guo, J., Dicke, T., Parker, P. D., & Craven, R. G. (2020). Confirmatory factor analysis (CFA), exploratory structural equation modelling (ESEM), and set-ESEM: Optimal balance between goodness of fit and parsimony. *Multivariate behavioural research*, 55(1), 102-119. https://doi.org/10.1080/00273171.2019.1602503

26. Vispoel, W. P., Lee, H., & Chen, T. (2024). Multivariate structural equation modelling techniques for estimating reliability, measurement error, and subscale viability when using both composite and subscale scores in practice. *Mathematics*, 12(8), 1164. https://doi.org/10.3390/math12081164

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