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## THE INTERSECTION OF TECHNOLOGY AND SOCIAL BEHAVIOR IN LIBRARY USE

<sup>1</sup>Narreen Hashmi, <sup>2</sup>Zainab Ajab Mohideen

<sup>2</sup>PhD in Library and Information Science, University of Sains Malaysia  
[nareenhashmi63@gmail.com](mailto:nareenhashmi63@gmail.com), [Zainab@usm.my](mailto:Zainab@usm.my)

### Article Details

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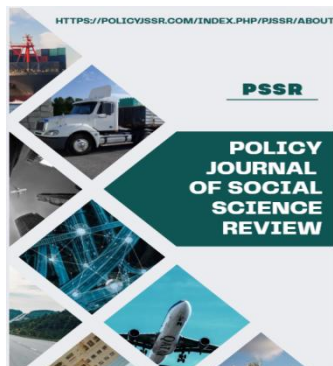
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### ABSTRACT

This research will investigate how digital transformation affects information seeking behaviours and user engagement and user interaction with use of the library and its implications of a relationship between technology and social behaviour. Over the last few years, some of the more sophisticated digital technology has been employed in libraries for providing improved services and improving accessibility. A broad range of technologies are involved such as online catalogs, electronic databases, digital repositories, mobile apps and self-service kiosks. The developments have led to high efficiency and convenience; however, they have also changed the usual social context of the library. The study in this research adopts quantitative approach in studying the relationship between the technological adoption and the social response of the users in academic library and general library respectively. A total of 103 respondents from a variety of genders, age groups and education levels were asked to fill out a common questionnaire. The large mean scores for the main variables indicate that the use of digital technologies has a positive effect on independent learning, accessibility of information and on general satisfaction with the use of digital technologies. Yet, the study also shows that with the increased use of the technology comes a decrease in the line of communication between users and library workers, which consequently affects connections between them in a way. However, the study also indicates the decrease in human interaction between the user and the library staff members, thus affecting the traditional communication patterns.

**Keywords:** Digital Libraries, User Behavior, Technology Adoption, Social Interaction, Digital Literacy



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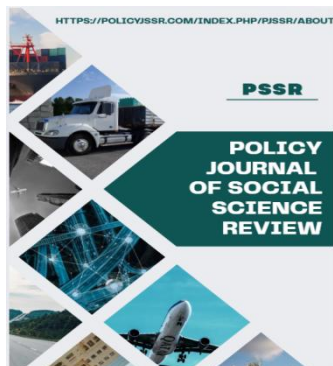
## Introduction

With the growing adoption of digital technology, the ways people use the library and make use of information has changed. Today's libraries are well aware of the value of using online catalog systems, e-books, e-repositories, self-service kiosks, mobile apps, and virtual reference services to efficiently distribute information. They have become increasingly handy technologies and people are easy to have access of materials and be self-sufficient in the process of search for knowledge. This shift in the human relations of service to techno-mediated interactions has also affected the social relations of the uses of the library, a factor that shapes the types of communication, collaborative and interactional activities that are possible in library settings.

The use of technology for the modernization has a positive effect at the part of users for management and use of the library and its development, but it has a complex effect on the social behaviors and social participation of the users in the Library. Digital can contribute to reducing the number of face-to-face contact with library employees, but can also lead to new forms of collaboration on digital platforms and shared digital resources. Simultaneously, there is a variation in the level of digital literacy, confidence in technology, and access to technological infrastructure which could affect different

groups of people's library service experience. These differences may lead to participation opportunities and challenges, and may impact user interactions with one another and with the library system. This understanding of these social and behavioural aspects of it is key to make sure that the technical advances made by libraries adds up to impactful and accessible user experience.

Empirical research that focuses on taking the interaction between technology use and social behavior in academic and public libraries is limited and is steadily growing more important for academic and public libraries with growing reliance on digital systems. The majority of studies are typically aimed at enhancing efficiency of the systems or user satisfaction, yet do not tend to consider the effect of technology use on participation, collaboration or engagement in information-seeking. This study attempts to fill this vacuum by evaluating the relationship between the library users' views of technology, intentions to use technology, and actual usage of technology with social interaction, engagement and collaborative learning. The study is quantitative in nature with the aim of building evidence to support libraries in choosing to implement technology in a manner that will improve service delivery and social benefit of using the library.



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## Problem Statement

The fast development of digital technology within library systems has greatly impacted the ways in which users have access to information and interact in library environments. The benefits of these developments include efficiency, increased access and self-directed learning but also an alteration of longstanding social norms. Technologies are being increasingly used to replace physical interactions with service providers or one another instead of interacting with peers or service providers in a face-to-face manner. Further, there are discrepancies in user group experience due to the varying levels of digital literacy, technological accessibility and confidence. These technologies have been widely used, but little empirical research has been conducted to evaluate the effects of these tools on the social interaction, collaboration and engagement of library users. Hence, the objective of this study is to identify relation between the use of technology and its influence on functional and social aspects of library use.

## Study Objectives

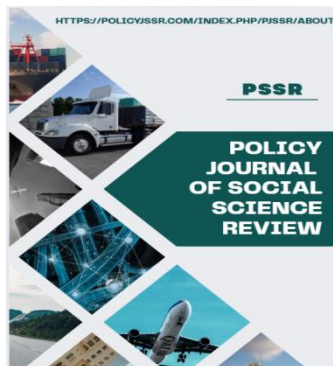
The rapid integration of digital technologies in libraries has significantly transformed information access, communication patterns, and user engagement. Previous studies have highlighted that digital tools such as online catalogs, electronic databases, mobile applications, and social media platforms

have improved the accessibility and efficiency of library services while simultaneously influencing users' social interactions and learning experiences. However, there remains a need to further examine how these technological developments affect user behaviour, social engagement, and satisfaction within library environments (Arif et al., 2023; Hashim et al., 2025). Therefore, the present study was conducted to investigate the impact of digital technology on library users' behaviour, explore the relationship between technology use and social interaction in libraries, identify the factors influencing the adoption of digital library technologies, and examine user engagement and satisfaction associated with digital literacy and technology-enabled library services.

1. To investigate how digital technology impacts library users' behaviour.
2. To explore the correlation between technology in use and the social interaction in libraries.
3. To find the main factors influencing the use of digital library technologies.
4. To explore the impact of user engagement or satisfaction when using digital literacy.

## Significance of the Study

The study has its significance because in general it will be one of the technological developments changing the functional or



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social dimension of library's use. It is an important part of the system of knowledge about technology use and behavior, specifically the social interaction context. The results will inform library workers and policy makers to develop user-centric services the equilibrium efficiency with engagement. The research also highlights the importance of digital literacy or 'digital inclusiveness' and gives tangible examples of what can be done to increase the accessibility and reduce the discriminatory nature of the technologies for different groups of users.

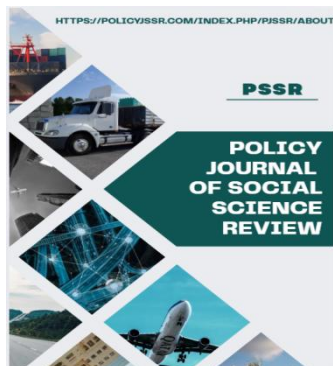
## Literature Review

Digital technologies have transformed the way academic and general libraries provide services and deal with users in a great way. Research indicates that the use of web-based library and information services has been on the rise because of the improved access to digital tools and virtual platforms particularly at the time and after the COVID-19 pandemic. In an investigation of Malaysian post university students, the usefulness, library support, and virtual environments were found to be the important technology factors which influenced postgraduate students to use web-based services positively, which demonstrates the importance of digital infrastructure in academic institutions (Hashim et al., 2025).

The combination of digital and instructional technologies in libraries also

increases the community involvement and learning among the users. The study within the context of higher learning established that the availability of library teaching technologies correlates with the increased rates of community involvement, and the presence of convenient digital platforms and collaborative tools that enable students to engage with each other (Zafar, 2023).

Social media and digital outreach strategies are gaining acceptance to promote user interaction and participation in library services . Henez (2024) found that social media, especially Facebook and Youtube, has contributed to the growth of the number of library visitors and their satisfaction. The most effective in increasing motivation was found to be interactive and multimedia content. Furthermore, theoretical models have been developed to propose participatory services through social media interaction connecting online communication technologies and the development of dynamic learning communities within academic libraries (Abd Rahim et al., 2024). In principle, the UTAUT and related technology adoption models have been used in libraries so as to understand how consumers adopt digital services. For instance, UTAUT-based research in Pakistan showed that performance expectancy, effort expectancy, and social influence have a significant impact on the library workers' intention to adopt social



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media technologies in academic libraries, highlighting the significance of the core constructs of acceptance to explain the intention to adopt technology (Arif et al., 2023). Similarly, the research on the use of UTAUT-2 based research of mobile academic library services is validated to suggest the usefulness of the model in the prediction of acceptance and usage of technology enhanced library settings.

Digital literacy is now a decisive factor of successful library access and contentment with online services. The literature indicates that the greater the digital literacy, the more effectively users explore web-based library resources and find satisfaction with the digital resources, which implies that the technical skills of users are prerequisites to high levels of the utilization of the digital library systems (Malik, 2025). Besides that, as per the research, differences in digital literacy affect the interpretation and use of library technologies, which supports the necessity to develop specific literacy support practices, which will contribute to a better inclusion strategy and user experience.

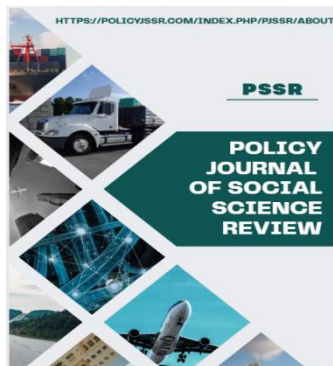
Recent studies have further highlighted the growing influence of digital technologies on library services and user behaviour. Aharony and Gazit (2020) found that the increased availability of digital information resources significantly improved users' information-seeking behaviour and promoted independent learning. Their

findings indicated that users increasingly rely on electronic resources for academic and research purposes, resulting in greater autonomy in information retrieval.

Similarly, Cox and Brewster (2020) reported that digital transformation has enhanced accessibility and efficiency within library services. However, they observed that the extensive use of self-service technologies and online communication platforms may reduce direct interpersonal interactions between users and library professionals. The study emphasized the importance of maintaining a balance between technological advancement and human-centered service delivery.

Rafiq et al. (2021) examined technology adoption among university library users and concluded that digital competence plays a crucial role in determining the effective utilization of library technologies. Users possessing higher levels of digital skills demonstrated greater engagement with electronic databases, online catalogues, and virtual reference services.

The role of technology in promoting collaborative learning was highlighted by Boateng and Agyemang (2021), who found that digital platforms facilitate communication, teamwork, and knowledge sharing among students. Their study suggested that virtual discussion forums and shared digital resources contribute



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positively to collaborative learning experiences within academic libraries.

Research by Kim and Lee (2021) revealed that mobile library applications significantly improve user satisfaction by providing convenient access to library resources regardless of time and location. Mobile technologies were found to enhance service accessibility and encourage continuous engagement with library services.

Chisita and Chigwada (2021) focused on issues of digital inclusion and reported that disparities in technological skills, internet connectivity, and access to digital devices continue to affect users' experiences. Their findings stressed the importance of developing inclusive strategies that support diverse user groups.

Emerging technologies such as artificial intelligence have also begun to reshape library services. Zhang et al. (2022) found that AI-powered systems improve information retrieval accuracy and enhance personalized service delivery through intelligent recommendation systems and automated assistance tools.

Ahmed and Siddique (2022) investigated the relationship between digital literacy and library usage and found that users who participated in digital literacy training programs demonstrated higher confidence and effectiveness in utilizing electronic resources. The study emphasized the value

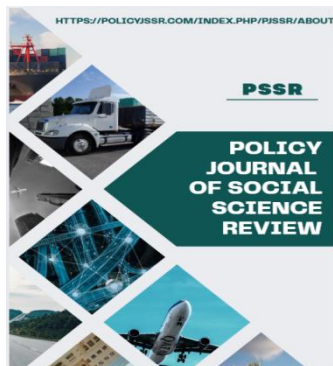
of user education initiatives in improving technology adoption.

Alajmi and Albudaiwi (2022) examined the use of social media in libraries and concluded that social networking platforms serve as effective tools for user communication, engagement, and service promotion. Their findings indicated that interactive online content can strengthen relationships between libraries and their communities.

Noh (2022) explored the implementation of smart library technologies and found that self-service systems, automated circulation services, and intelligent resource management tools contribute to greater operational efficiency and user convenience. The study highlighted the increasing acceptance of smart technologies among library users.

Corrall and Jolly (2023) emphasized the changing role of librarians in digital environments. Their findings suggested that librarians increasingly function as facilitators of digital learning, supporting users in navigating complex information systems and developing information literacy skills.

Kaushik et al. (2023) reported that virtual learning environments integrated with library systems positively influence student engagement and collaborative learning. The availability of digital learning platforms was found to strengthen



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academic participation and information sharing among users.

Moyo and Ngulube (2023) investigated digital repositories and found that they enhance research visibility, scholarly communication, and institutional knowledge sharing. Their study demonstrated the growing importance of open-access digital resources in supporting academic activities.

Recent evidence also suggests that technology-enabled services contribute positively to overall user satisfaction. Islam and Habiba (2024) found that digital library services improve perceptions of service quality, convenience, and accessibility among library users.

Ofori and Martey (2024) explored user preferences regarding library services and reported a growing demand for hybrid service models that combine digital access with personalized support from library professionals. Their findings indicate that users value both technological convenience and human assistance.

Al-Qallaf and Al-Mutairi (2025) examined digital communities within academic libraries and found that technology-supported communication platforms strengthen social connectedness, participation, and collaborative learning among users.

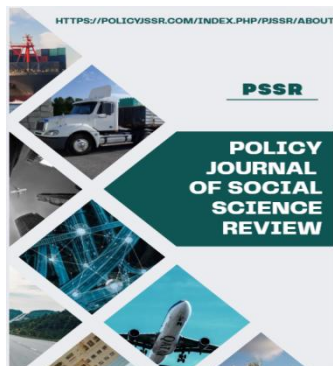
Most recently, Sharma and Verma (2026) highlighted the growing influence of artificial intelligence in library

environments. Their study reported that AI-powered chatbots, intelligent search systems, and personalized recommendation technologies enhance user engagement and improve overall library experiences by delivering customized services.

Lastly, even though digital innovations widen access, there are still barriers that are persistent that influence equitable uptake and use. Public library system surveys indicate that some of the challenges facing these libraries include subscription fees, lack of resources to train people on digital literacy and intra-infrastructure challenges that make these libraries access to all the digital services to the users (Public Library Association, 2024). These barriers indicate the potential to limit the positive impacts of digital transformation in libraries by institutional as well as socio-economic factors, including underrepresented or limited in resources population groups.

## Research Gap:

There are many studies that have been done regarding the effectiveness and usability of digital library systems, but little research focus on the social behaviour part of using library technology (Arif et al., 2023; Hashim et al., 2025; Malik, 2025). Most work on the past (Abd Rahim et al., 2024) focuses on journalistic and technological system performance or on users' enjoyment, without addressing the effects of digital technologies on communication patterns, collaboration



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and social engagement. In addition, little empirical experience exists of how users' experiences have been impacted by digital literacy and user diversity. The current study aims to address this by painting a picture of the technological and social aspects of users' use of libraries. To address these gaps, the present study employs a quantitative survey-based methodology to investigate the influence of digital technologies on library users' behaviour, social interaction, collaboration, and overall engagement within academic library environments.

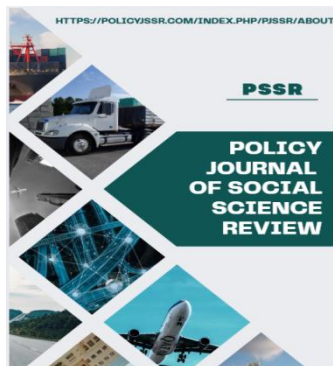
## Research Methodology

This study adopted a quantitative research approach to examine the relationship between technology use and social behaviour among library users. A descriptive survey design was employed because it allows the collection of standardized data from a large number of participants and facilitates the analysis of patterns, attitudes, and perceptions regarding the use of digital technologies in libraries. The target population consisted of library users from both public and private universities. A total of 103 respondents participated in the study through a structured questionnaire designed to collect information on technology usage, interaction with library staff, social engagement, digital literacy, user satisfaction, and collaborative learning experiences.

The questionnaire included both demographic questions and Likert-scale items to measure respondents' perceptions of technology adoption and its influence on social behavior within library environments. Data were collected through online and physical distribution methods to ensure broader participation. The collected data were analyzed using descriptive statistical techniques, including frequencies, percentages, mean scores, and graphical representations. These statistical measures enabled the researchers to identify trends in technology usage, evaluate user perceptions, and examine the influence of digital technologies on communication, collaboration, social connectedness, and overall library experiences. The quantitative approach was considered appropriate because it provides objective and measurable evidence regarding the relationship between technological transformation and social behavior in contemporary library settings.

## Justification of the Research

This research is justified because it addresses an important gap in the existing literature by investigating the intersection between technology use and social behaviour in libraries. The study provides empirical evidence on how digital technologies affect user interactions with library staff, peer collaboration, social connectedness, and learning experiences. Furthermore, it explores the role of digital



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literacy and technological accessibility in shaping user engagement and satisfaction. The findings of this study will assist library administrators, policymakers, and information professionals in developing balanced technology strategies that enhance service efficiency while preserving meaningful social interaction and inclusive learning environments. Consequently, the research contributes both theoretically and practically to the growing body of knowledge on digital transformation in libraries and its broader social impact.

### Data Analysis:

This research reflected over the usage of digital technologies in the library environment and how these affect users' behaviour and engagement. The investigation is to measure the technologies used (digital, self-service, online catalog) and the users' interaction with the library staff and users. Data collection and analyses to get pattern of usage behavior

### Result and Discussion:

#### Population:

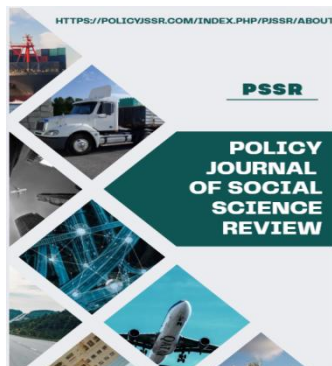
Gender	No of Respondents	Frequency
Male	61	59.2%
Female	41	39.8%
Not Respondent	01	1.0%

**Table 1. Gender wise Response**

From table 1 distribution one can see the distribution was slightly higher for male. A significant proportion of the female response was still included, too, however, which helped for variety. Male and female

was done through structured questionnaire. The results indicate that most of the users are actively using digital tools for learning, indicative of a trend towards self-sufficient and technology mediated learning. However, differences were evident across users; a user that was confident and involved was more likely to be digitally literate compared to one that was less involved, either because they felt they lacked the skill or were not aware of the technologies. Yet another finding from the study concluded that technology can enhance the library's efficiency and accessibility, but reduces the amount of 'real world' inter-personal interactions. The findings are important for providing insights into the process of digital transformation, as it has illustrated a change in users behaviour or user interaction pattern in the 21st century libraries.

respondents will ensure the reliability of the results by taking into account viewpoints regarding the use of technology and social behaviour within library contexts.



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Age	No of Respondents	Frequency
18-25	23	22.3%
26-35	50	48.5%
36-45	28	27.2%
Not Respondent	2	1.9%

**Table 2. Age wise Response**

Table 2 explained the digital library use with the highest level of use was with young adults. The participants ages ranged between 30–38, with 50 (48.5%) in the age range 26-35. This age group may have more flexibility and advanced technological skills, hence their advanced use of electronic tools and on-line resources. The second largest age group was 36-45 years, with 28(27.2%) per cent; indicating that middle aged people are also actively using the digital library facilities.

Furthermore, students from this age group, aged 18-25 (n = 23; 22.3 %), demonstrate medium engagement with digital tools for academic activities, indicating the presence of students and early-stage learners using digital tools to complete academic tasks. There were relatively few undocumented gaps in the data and the number of missing data values in the 'other/missing' category was small.

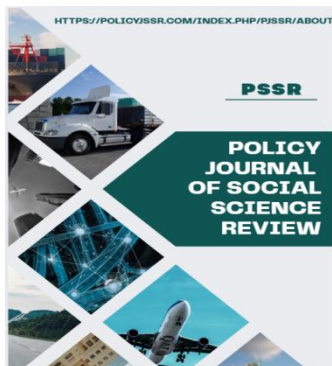
Universities	No of Respondents	Frequency
Public University	53	51.5
Private University	50	48.5

**Table 3. University sector wise Response**

The distribution of respondents table 3 by type of university gives an indication of the representativeness of users from different types of institutions in this study. Of the total respondents, 53 respondents are from public universities and 50 respondents are from private universities.

The sample was around 51.5 percent public university respondents and approximately 48.5 percent private university respondents.

The respondents are distributed almost evenly, meaning that the study is based on data from both public and private sector institutions, and therefore, diverse user experiences may be examined. The marginal preponderance of responders from public universities reflects a somewhat higher response rate from public institutions, however this is not a significant difference.



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## Technology Use and Staff Interaction:

*Figure 4. Has Technology Improved Interaction with Library Staff?*

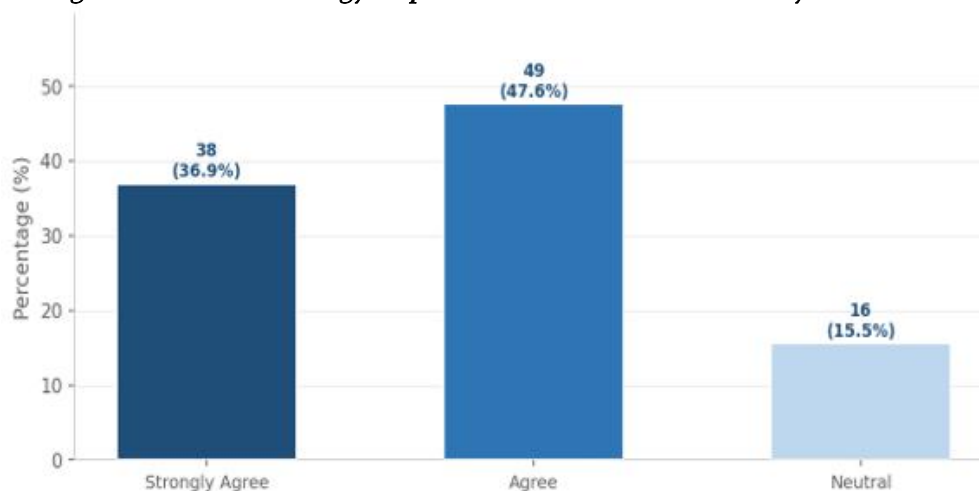
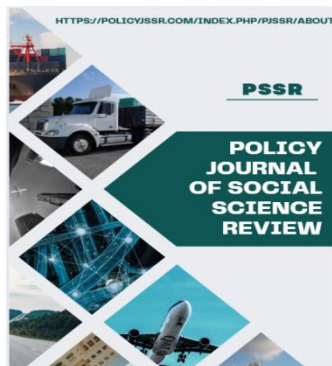


Figure 4 shows respondents' thoughts on if technology has improved their interaction with library workers. Overall, the findings reveal that people in general had positive attitudes towards technology use for enhancing communication and engagement in library services. In particular, 49 respondents (47.6%) felt that technology had improved engagement with library workers, while 38 respondents (36.9%) strongly agreed. In contrast, 16 respondents (15.5%) were neither disagreeing nor neutral about the statement, while 0 respondents disagreed.

The results show that technology-mediated communication in libraries has a high general acceptability. Overall, there is a high level of agreement as a result of the involvement of digital systems, online support and technology-based communication channels making contacts with library staff more efficient, accessible and user-friendly. In addition, there was a lack of negative feedback, indicating users' satisfaction with the use of technology in the library, and reinforcing the positive impact of technology on library services and users satisfaction.



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*Figure 5. How Often Do You Use Technology in the Library?*

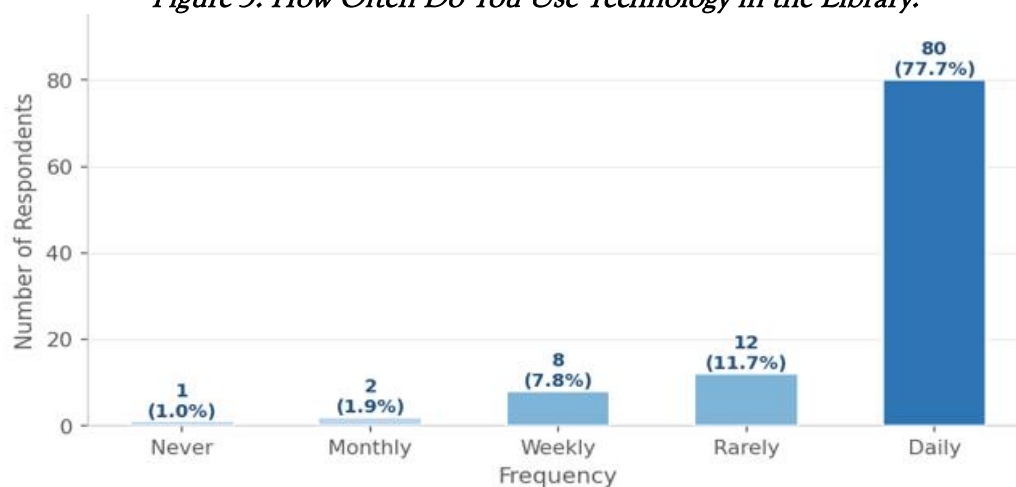
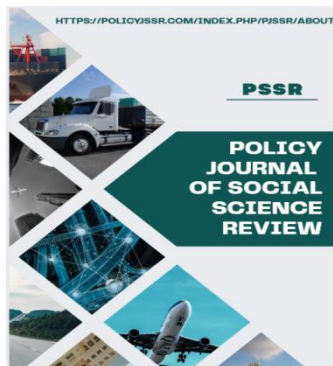


Figure 5 presents the frequency of usage of technology in the library by the respondents. The results indicate that the majority of respondents use technology on a daily basis. Specifically, 77.7% of respondents (80 people) said they used technology every day in the library. This demonstrates the dependence of academic and information jobs on digital tools and technical services. Also 12 respondents (11.7%) said that they rarely use technology and 8 respondents (7.8%) said they use technology weekly. 2 respondents (1.9%) reported using technology monthly and 1 respondent (1.0%) reported never using technology at the library.

The results emphasize the importance of technology in contemporary library services as well as in the everyday academic lives of users. The figure of a large percentage of the daily users using technical resources such as digital catalogs, online databases, internet services and electronic learning aids shows that these are important components of library operations. Further, the low percentage of non-users indicates that the use and integration of technology in library environments is on the rise, emphasizing its importance in broadening access to information and improving the overall user experience.

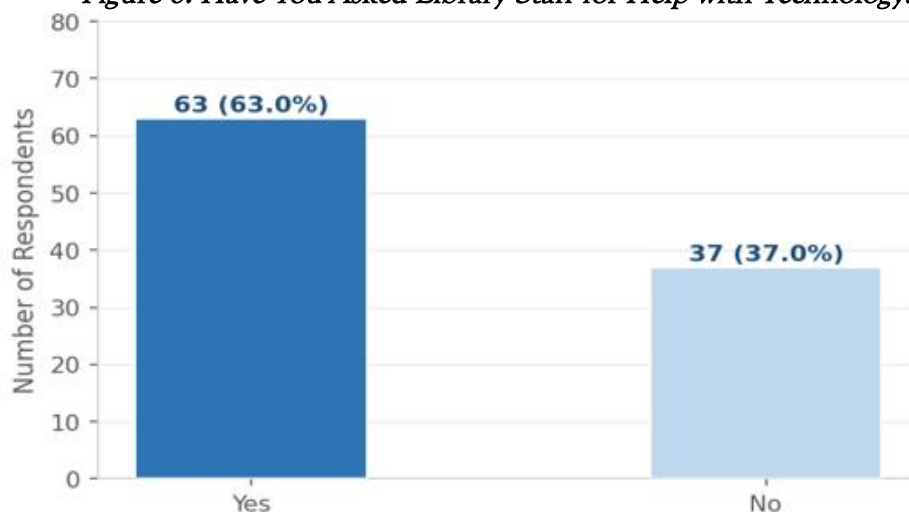


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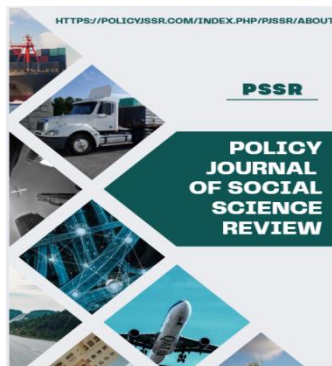
*Figure 6. Have You Asked Library Staff for Help with Technology?*



The chart in Figure 6 indicates whether they have requested library staff to assist them in technology related issues. The findings show that most of the respondents had received support in technology use from the library staff. In other words, 63 respondents (63.0%) replied “Yes”, that in some way technological support was sought from the staff of the library while 37 responded (37.0%) that they have not requested technological support.

The results indicate that there has been a need for the library staff from both

immediate and digital resources to assist users. This underscores the importance of staff recommendations for using digital tools, online databases, and electronic resources and shows a trend of increased library technology dependency by the respondents. The study further indicates that the perceptions of users of library services were that the library staff was accessible and helpful to solve their technological problem thereby enhancing their satisfaction and using the library resources appropriately.



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## Social Behavior and Technology in the Library:

*Figure7. How Comfortable do you Feel Using Technology in the Library?*

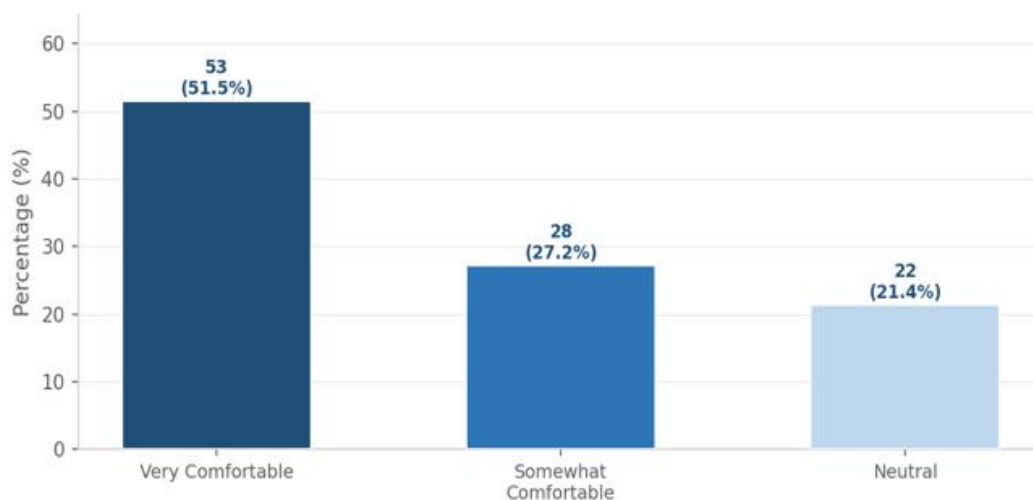
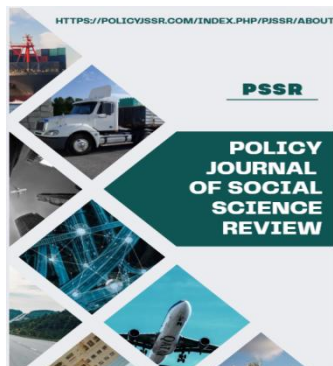


Figure 7 illustrates the comfort level of respondents utilizing technology in the library environment. The results show most respondents feel secure and comfortable using technological resources at the library. Specifically, 53 respondents (51.5%) indicated that they are “Very Comfortable” using technology, while 28 respondents (27.2%) indicated that they are “Somewhat Comfortable.” In contrast, 22 respondents (21.4%) were indifferent about their comfort level.

These findings show that the vast majority of library users have good attitudes about

and confidence in technology use in libraries. The large percentage of respondents feeling very comfortable points to the fact that users are acquainted with digital tools, online databases, electronic catalog systems and other technological services given by libraries. Also, the absence of negative replies shows that the technology use in libraries is mostly a success and user-friendly. Overall, the results underline the increasing technical literacy of library users and point to the success of libraries in establishing helpful digital learning settings.

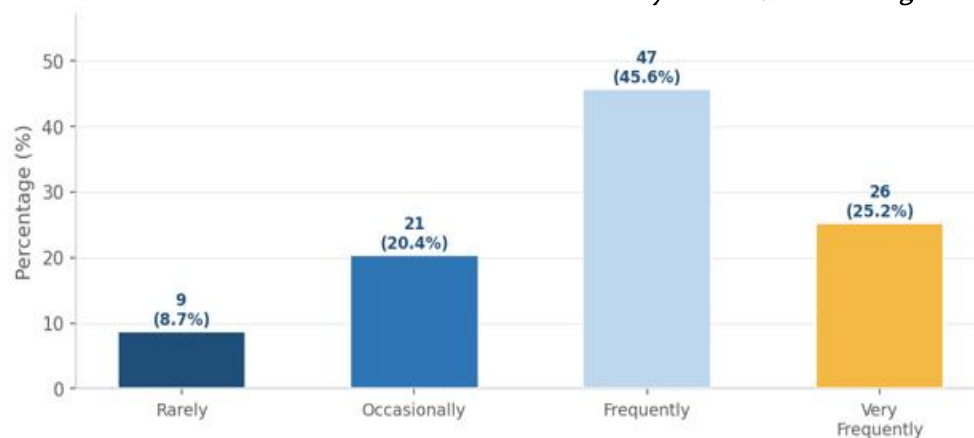


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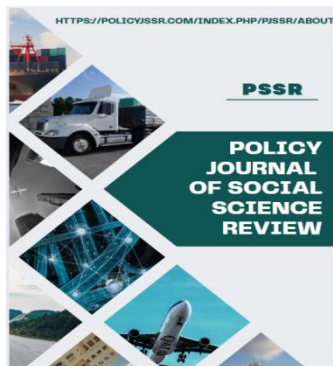
*Figure 8. How Often Do You Interact with Other Library Users While Using Technology?*



The respondents responded about how often they interacted with other library users when using technology in the library, as shown in Figure 8. In terms of interaction with other users in library while using technology, the respondents responded as presented in Figure 8. Findings indicate that when people are using technology, many connect to others on a regular basis. In particular, 47 (45.6%) said that they “Frequently” interact with other library users and 26 (25.2%) said they “Very Frequently” interacted with other library users. The “Occasional” interaction is for 21 respondents (20.4%) and “Rare” for 9 respondents (8.7%).

The results indicate that technology in libraries not only increases the chances to

access the information but also helps to socialize and engage users in collaboration. The significant number of regular and extremely frequent interactions shows that technological surroundings in libraries promote communication, information exchange and cooperative learning experiences. Also, the relatively low number of the respondents who said that they have rare interactions points to the library's technology environment cultivating community and connectedness among library users. The conclusions reached in this research highlight the role of technology in making learning collaborative and social interaction in the library environment.

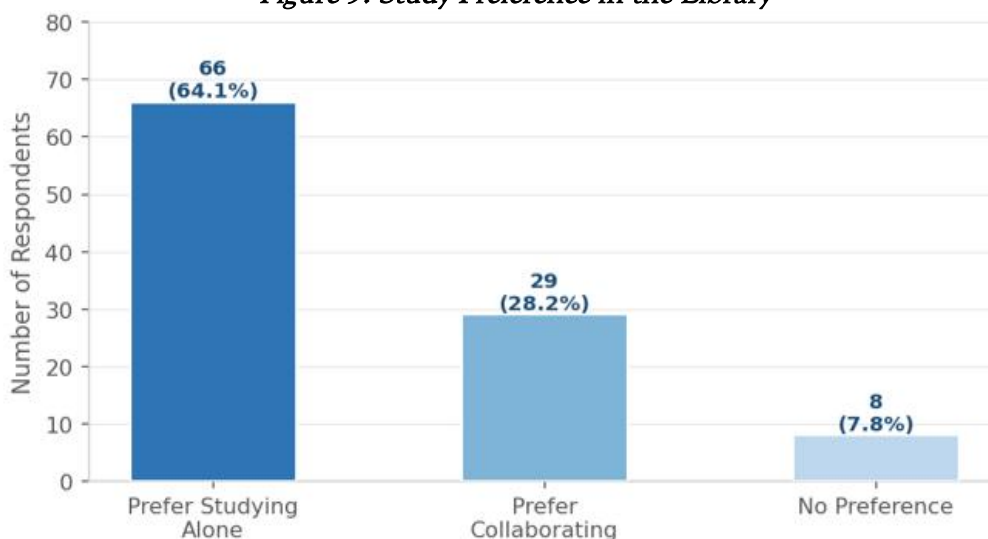


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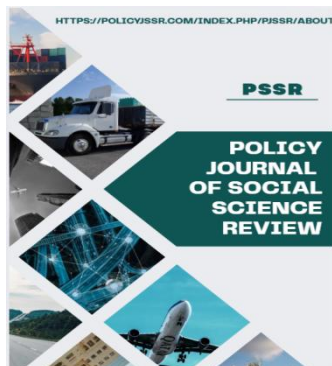
*Figure 9. Study Preference in the Library*



Those who responded to the question about the library environment responded to the questions as presented in Figure 9. The results revealed that most of the participants were willing to study individually. Specifically, 66 respondents (64.1%) claimed that they enjoyed solo study while 29 respondents (28.2%) claimed that they enjoyed collaborative study. On the other hand, just 8 (7.8%) of the respondents did not have any specific interest to study.

The fact that these statistics reveal that independent learning is still the biggest approach of library users indicates that more people study by independent learning in library. We can hypothesize that the large proportion of respondents' who would like to learn independently might be

attributed to the requirement of quiet, concentration and a steady speed of learning in school hours. The massive number of respondents who selected The use of collaboration does, however, highlight the need for group discussion, peer learning and cooperative learning and engagement in the library area. Furthermore, less than 10% of the respondents responding spontaneously said they did not prefer a study routine, indicating that the majority of the users had definite study routines and learning styles. Results collectively suggest that the libraries need not only quiet spaces for solo-work, but also learning and working spaces for the various interests of library users.

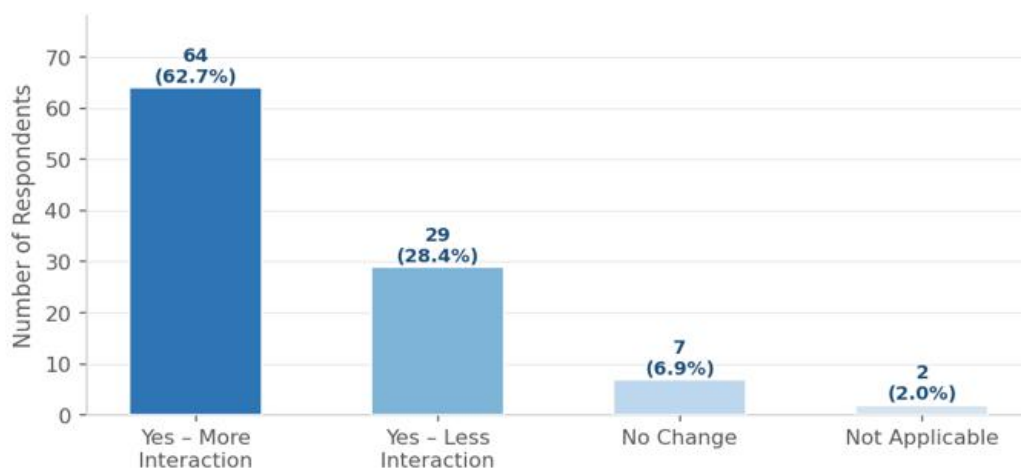


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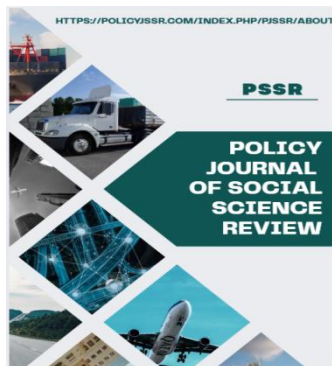
*Figure 10. Has Communication with Other Library Users Changed Due to Digital Services?*



As to the perception of communication with other users of library increased or decreased after digital services were introduced, respondents' point of view is illustrated in figure 10. The findings indicate that from the perspective of the respondents, the use of digital services has produced improved interaction between the Library users. In particular, 64 respondents (62.7%) said that digital services have led to “More Interaction” and 29 respondents (28.4%) thought that digital services have led to “Less Interaction. In contrast, 7 respondents (6.9%) responded that there was “No Change” and just 2 respondents (2.0%) chose “Not Applicable”.

These results indicate that digital services are an important factor in the formation of

communication practices in library settings. The large number of respondents reporting greater interaction suggests that technologies such as online communication tools, digital collaboration platforms, electronic resources and social learning settings may facilitate connectivity and engagement among users. But, the less interactive responses also indicate that some users feel that digital technologies are decreasing face-to-face communication. The overall results indicate that the digital services have an obvious impact on the user communication in the library. The overall trend is that the contemporary library environments are moving towards more interaction and collaboration.



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*Figure 11. Digital Platforms Foster a Sense of Community Among Library Users*

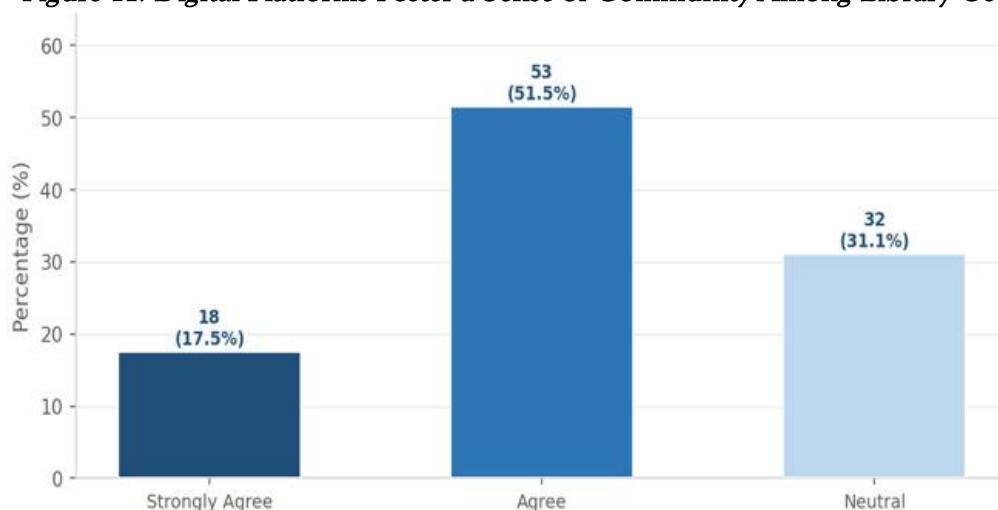
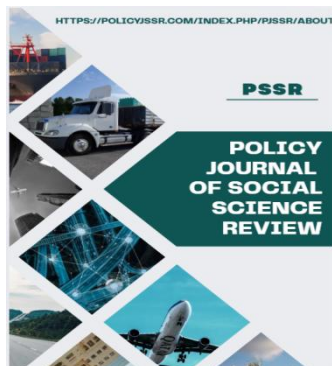


Figure 11 shows the respondents' views on whether digital platforms provide a sense of community among library users. The results show that most of the respondents have a good perspective towards the function of digital platforms in fostering community participation in libraries. More specifically, 53 respondents (51.5%) agreed that digital platforms provide a sense of community and 18 respondents (17.5%) strongly agreed with the assertion. Conversely, 32 respondents (31.1%) were neutral, and no respondents disagreed. The results indicate that digital platforms positively impact library users' communication, collaboration and social

connectivity. The total of those who agreed and strongly agreed indicates that the online tools, digital communication systems and technology-enabled services may increase the users' connection and facilitate the participation in academic and informative activities. Likewise digital platforms as a medium of community building appears to be a medium that is generally accepted by users, in library culture, due to the lack of negative feedback. The overall results show that digital technology is becoming increasingly important to increasing the user's engagement and establishing a library culture together.



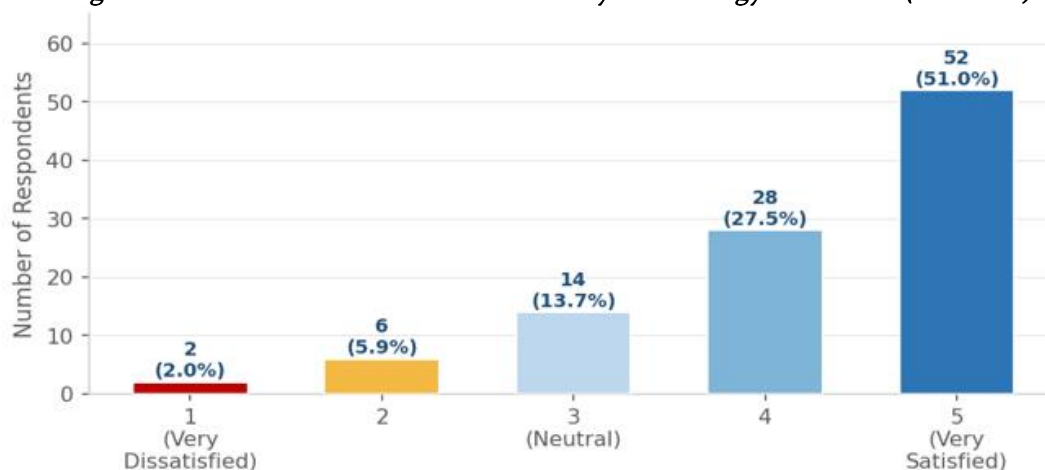
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## Satisfaction, Barriers, and Motivation:

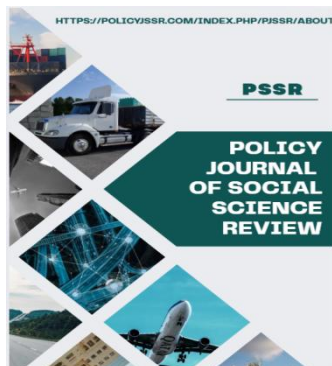
*Figure 12. Overall Satisfaction with Library Technology Resources (Scale 1-5)*



Respondents rated their overall satisfaction with library technology resources on a five-point scale in Figure 12. The results reveal a high level of customer satisfaction with the technology resources and services supplied by libraries. Specifically, 52 respondents (51.0%) selected “5 Very Satisfied” in their satisfaction level, and 28 respondents (27.5%) selected “4,” indicating favorable satisfaction levels. Also, 14 respondents (13.7%) chose “3” which means they were neutral. In comparison, just 6 respondents chose “2” (5.9%) and 2 respondents indicated they were “1 Very Dissatisfied” (2.0%).

The results show that most of the respondents are satisfied with the

availability, effectiveness and quality of the library's technology resources. The large percentage of respondents choosing the highest levels of satisfaction implies that libraries are doing a good job in addressing users' demands for technology in their digital services, electronic materials, internet facilities and technology-based support systems. Furthermore, the very low percentage of unhappy answers suggests that most users find library technologies to be dependable and useful for academic and informational reasons. The results overall demonstrate the favorable influence of technology integration on user happiness and the quality of library services.



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*Figure 13. Barriers Faced When Using Technology in the Library*

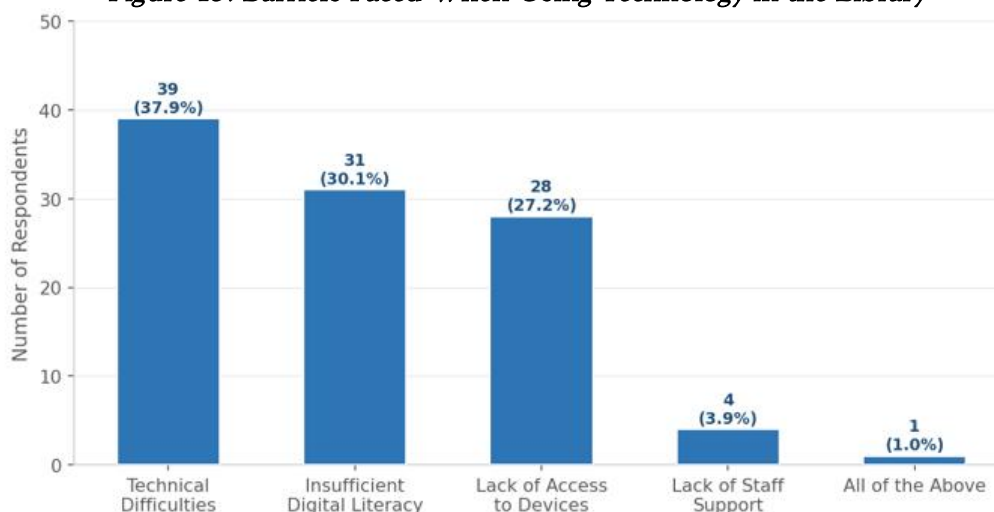
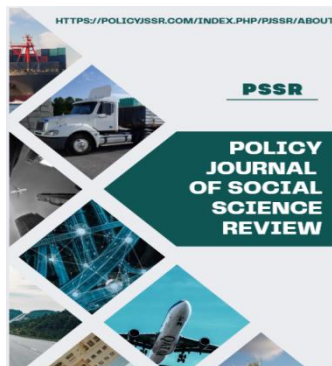


Figure 13 shows the barriers experienced by respondents in the use of technology in the library. Technical challenges were the most generally stated challenge, with 39 respondents (37.9%) identifying this as an issue. There was also insufficient digital literacy, stated by 31 respondents (30.1%), and lack of access to gadgets, indicated by 28 respondents (27.2%). By contrast, just 4 respondents (3.9%) mentioned lack of staff support as a barrier, and 1 respondent (1.0%) answered “All of the Above.”

These results show a general pattern of high technology integration and a good attitude towards it in libraries but a considerable amount of barriers that prevent the effective use of digital resources in libraries are uncovered. The high percentage of respondents who reported

technical problems indicates that they need more technological infrastructure, a more reliable system and more technical maintenance in the library environment. Likewise, the high percentage of respondents who showed insufficient digital competencies emphasize the importance of training users and the building up of digital skills and awareness raising. Furthermore, a lack of gadgets is an issue, which needs to be addressed by libraries by providing sufficient gadgets in the library and library materials for the users to use for academic works. Finally, these results highlight the importance of addressing these obstacles to gain full benefit from library technology services and to enhance the library experience.



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## Collaboration, Atmosphere, and Connectedness:

*Figure 14. Library Technologies Encourage Collaboration Among Users*

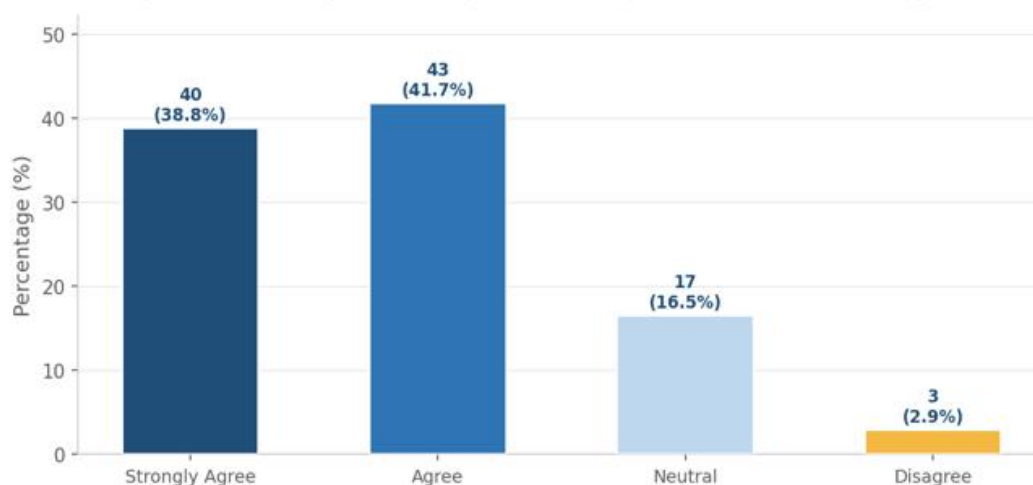
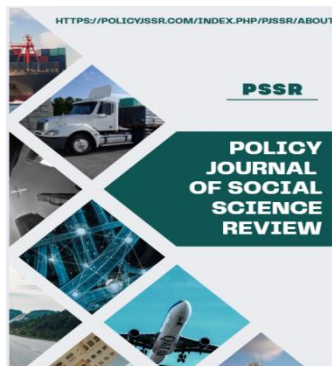


Figure 14 represents respondents' ideas about library technologies that promote collaboration among library users. The findings clearly show that most of the respondents are confident about "library technologies" as an effective aid in collaboration. Likewise, 43 suppliers (41.7%) agreed that library technology encourages collaboration and 40 suppliers strongly agreed. In comparison, 17 respondents (16.5%) were neutral and only 3 respondents (2.9%) disagreed.

These results highlight out the great importance of technology tools and digital services in libraries to promote communication, teamwork and

collaborative learning among users. Technology, including online discussion platforms, shared digital resources, Internet, and a collaborative learning environment enhances participation and knowledge sharing, as indicated by the high percentage of respondents who agree and strongly agree with this. In addition, the small amount of disagreement indicates that library technologies are generally satisfying to users, with respect to the collaborative opportunities that they allow. The overall findings indicate that new technology has a positive impact on collaborative learning and enhances user engagement in the library.

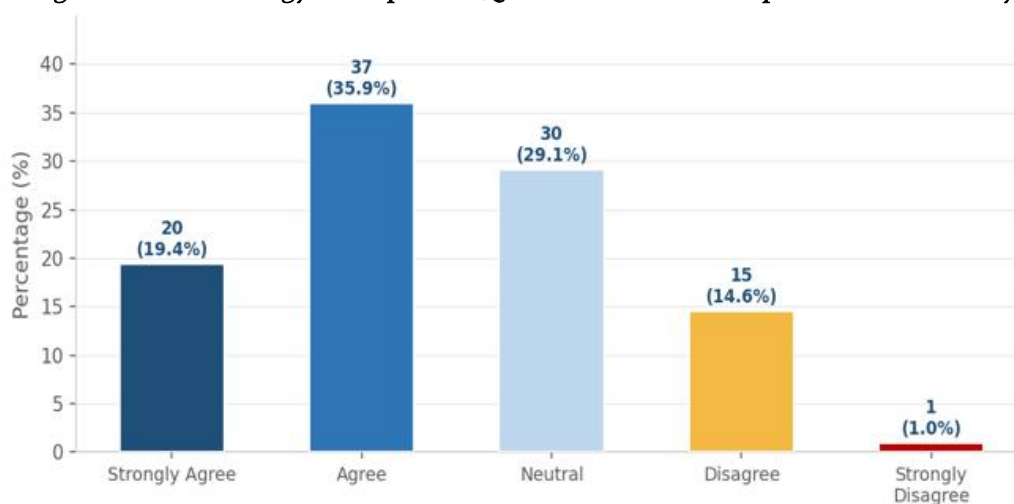


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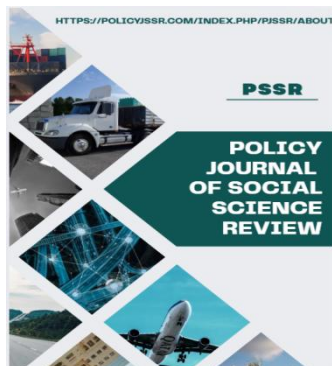
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*Figure 15. Technology Disrupts the Quiet or Social Atmosphere of the Library*



Alternatively, according to figure 15 the individuals have different ideas about whether or not technology detracts from the quiet and reflective atmosphere of the library. These findings indicate that some users think technology is threatening the library environment. In particular, 37 respondents (35.9%) said “Yes, they do” and, 20 respondents (19.4%) strongly agreed that technology is a hindrance to the library atmosphere. 30 respondents (29.1 %) were neutral. 14.6% (15 respondents) disagreed, with only the one respondent (1.0%) strongly disagreeing with this statement.

The outcomes indicate that technology has numerous advantages for libraries but has the capacity to become a distraction and lower the level of quietness in libraries. This finding indicates difficulties with noise, excessive gadget use and increased social involvement through technology as a result of many respondents agreeing to the statement. But lack of inaction and disaffection suggests that not everyone feels technology is having a major impact on consumers. The results were presented overall and showed the need to balance technological advancement with a peaceful learning environment in libraries.

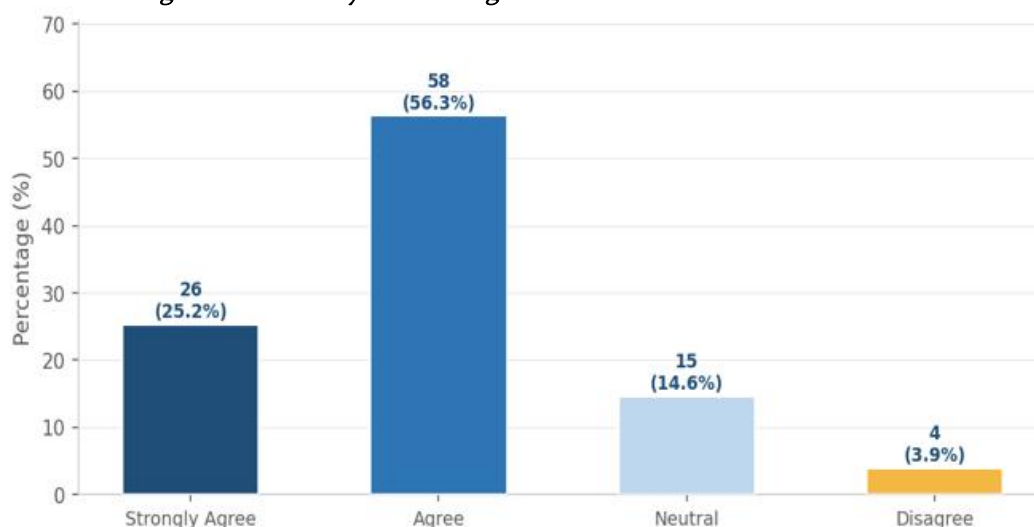


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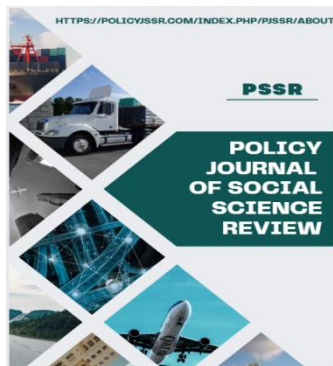
*Figure 16. Library Technologies Enhance Social Connectedness*



This can be seen in figure 16 the respondents feel that using technology in the library does make the users socially connected. The finding above shows that most (65.1%) felt that library technologies are valuable to social connectivity. In particular, 58 respondents (56.3%) agreed and 26 (25.2%) strongly agreed that the library technologies heighten social connectedness. On the other hand, 15 respondents (14.6%) were neutral whereas only 4 respondents (3.9%) disagreed with the statement.

Analysis of the research results shows that technical resources and digital services in the library have an influence in enhancing

users' communication, engagement and relationship. It is the outcome of high agreement level meaning that technology based on digital platforms, communication online and collaborative learning systems draws users to make contact with them, to share knowledge and collaborate in academic activities. In addition, relatively little disagreement was shown in the results, which was suggestive of favourable attitudes of the users toward the social benefits of library technologies. Results point to the need to engage in technology and more social interaction in the library and to encourage connected learning communities.



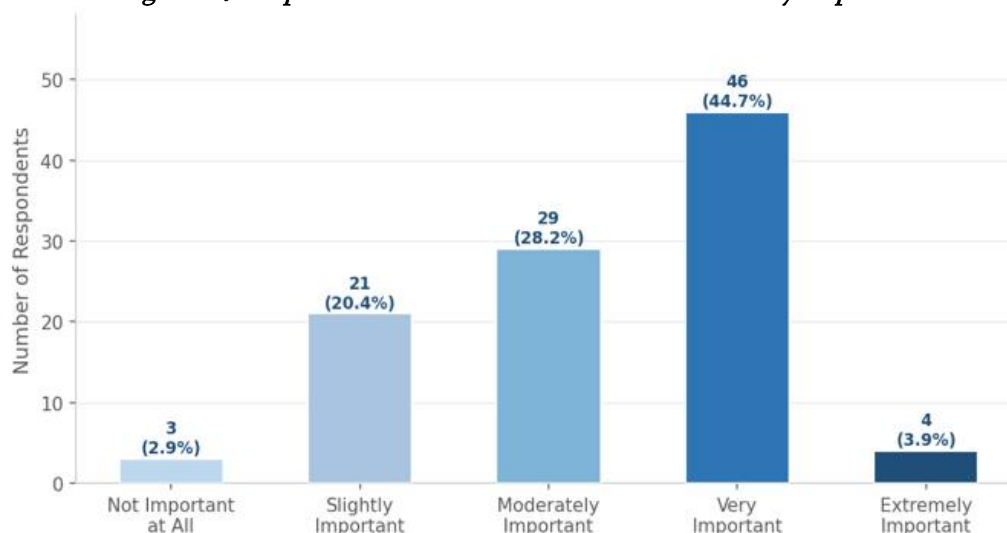
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## Social Interaction, Tool Effectiveness, and Spaces:

*Figure 17. Importance of Social Interaction in Library Experience*

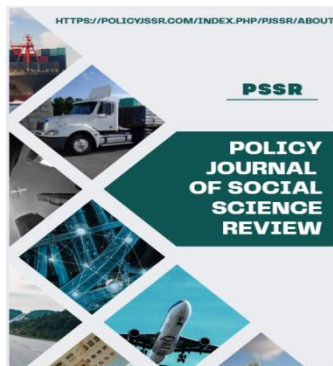


Respondents' views as to the importance of social interaction in the library experience are illustrated in figure 17. The findings show that most of the respondents view social interaction as a crucial characteristic of the use of the library. In particular 44.7% (46 respondents) ranked social connection as "Very Important" and 28.2% (29 respondents) ranked social contact as "Moderately Important." Besides, 21 respondents (20.4%) felt it to be "Slightly Important". In contrast, 4 participants (3.9%) rated it to be "Extremely Important", and 3 rated it to be "Not Important at All".

The results show the importance of social interaction as a part of overall user

experience in the library. The high percentage of those who identified social connection as very important implies the importance of communication, collaboration and peer interaction in the library environment. The data also indicate libraries as a space for individual learning, setting a space that is conducive for an academic conversation and social connectivity. The results highlight the importance of providing library environment and services that encourage an opportunity to develop participants' social interaction in an appropriate and creative manner.

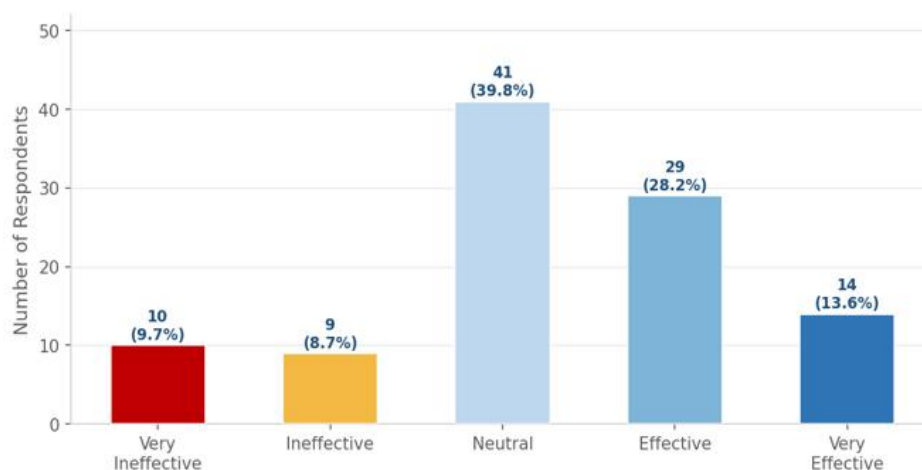
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*Figure 18. Effectiveness of Library-Provide Tools is Supporting Teamwork and Social Learning*

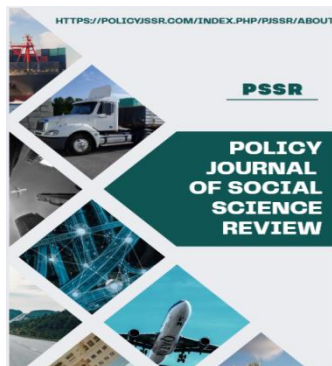


In figure 18, respondents' opinions about the social learning and the convenient collaboration in library resources are presented. The tools have been rated positively, and a large majority of those that took the survey have given them a positive rating, but the results illustrate variation of expressed opinion. In particular, 14 respondents (13.6%) considered the tools to be “Very Effective” and 29 respondents (28.2%) considered the tools to be “Effective”. On the other hand, 41 (39.8%) were undecided about its effectiveness. Ten (9.7%) respondents, however, rated the tools as “Very Ineffective” and nine (8.7%) respondents rated the tools as “Ineffective”.

The results above indicate that while some users are not yet sure of the effectiveness of

these resources, libraries' technology resources generally have a positive effect on collaboration and social learning. The relatively high number of answers that were neutral might suggest different use experiences with the tools available, or lack of knowledge of the tools themselves and how they can work together. Until then, the positive feedback provides instances of how technology in learning spaces, platforms, and shared resources can support collaborative projects, communication, and learning. In conclusion, the results pointed out the need for the development and enhancement of the library technology that will allow the users to collaborate and learn through a social approach.

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*Figure 19. Library Spaces That Best Support Collaboration Through Technology*

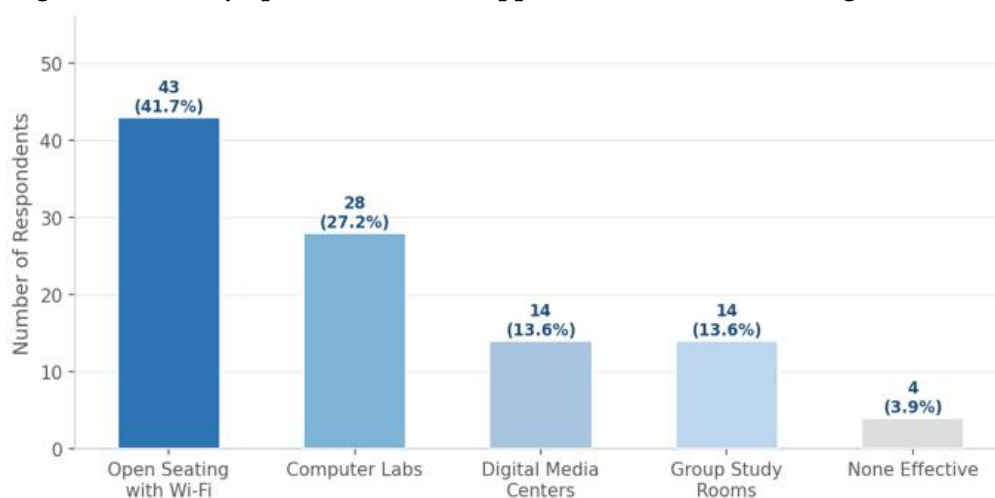


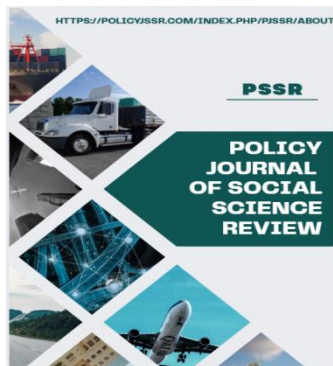
Figure 19 illustrates respondents' perceptions of the aspects of libraries that best promote collaboration via technology. The findings indicate that crowd-friendly open space with WiFi is considered as the most ideal place for collaborative working. In specific, 43 out of the respondents (41.7%) selected "Open Seating with Wi-Fi" as the most supportive environment when collaboratively working. "Computer Labs" was next with 28 respondents (27.2%). Also, 14 users (13.6%) said Digital Media Centers are useful collaboration areas and 14 users (13.6%) said Group Study Rooms. By contrast, 4 (3.9%) reported that neither one or two of the spaces were effective.

Each result points out the necessity of flexible and technology enhanced learning environments to make collaboration among library users easy. Open seating and

Wifi suggest the importance of internet access, a conducive environment and a place for students to have conversations with each other while studying. The results also demonstrate that computer labs, digital media centres, and collaborative study spaces are important areas for facilitating collaboration, communication and learning together. To recap, library collaborative spaces featuring technology will persist in expanding to serve learners' needs for both academic and social learning.

### **Discussion on Results:**

The results of this research indicate that digital technologies have been greatly influential on the way the library functions and is socially utilized. Findings reveal that, that majority of the respondents indicated that they incorporate technology use in the library environment every day, further



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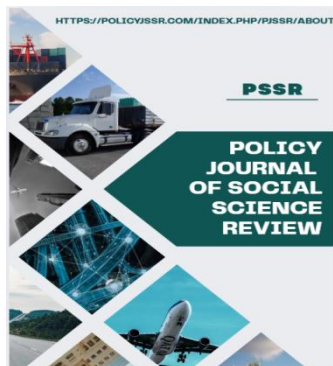
corroborating that the technology adoption is high among the library users. This means that library services have integrated digital information and services including online catalogs, electronic databases, Internet services, and digital learning materials. The findings are consistent with past research, which showed that incorporating technology allows for better access to information, its efficiency and ease of retrieval.

Positive impact of technology in relation between the user and librarian is also included in the research. The vast majority of respondents believe the digital technologies have improved communication and access to library support services. This shows that services and communication with users can be facilitated online with the help of virtual communication systems and digital platforms. However, the results also indicate that users still depend on the help of library professionals in the use of technology, which shows the importance of the human dimension in the context of the development of automation and self-service technologies.

The one-touch parameter that correlated with technology use or social interaction in the Library environment was also an important one. Many respondents indicated they had frequent interactions involving other library users while using technology, or many felt that digital

services promote communication and collaboration among users. It is found that technology can be used to improve accessibility of information and it can also be used to create a community, to share knowledge or collaborate in learning. Users also reported a development of community and connection among users in the digital space - a social burgeoning of technology library.

The study did identify a number of issues that libraries had to deal with even if they were reasonably successful in adopting technology, however. Some significant negative user experiences identified that would affect users included: technical problems, lack of knowledge or skills to use digital devices, or low levels of digital literacy. The results have shown that technology now has a range of different uses for some users, there may be access gaps to technology skills and/or infrastructure that presents a challenge for effective use. This is in line with previous research, which emphasises the importance of comfortable skills in digital use for effective use of digital library services. It was also found that there was a discrepancy with regards to the impact of technology on the "traditional" library environment. Technology had brought opportunities for collaboration to many respondents, others, however, believed that increased technology too intruded on library's quiet, tranquil culture.



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The findings also indicate that social interaction is considered to be a part of the library experience in respondents' opinion. Most users would like to learn individually while many enjoyed learning through technology-driven learning groups. Last, open seating and computer labs were the most conducive learning spaces for technology-based support of collaboration, indicating flexible and technologically-rich, learning spaces that facilitate academic engagement and social connection.

The overall statistics are consistent with the two way effect of technology on library use. It does so, it enhances the efficiency, accessibility, communication and collaboration. But there are challenges associated with digital inequality, social behaviour change in traditional ways and technical issues. For libraries, however, it will be necessary to balance innovative technology with the ability to maintain a supportive and inclusive learning environment, as well as adding engaged learning spaces.

### **Future Recommendations:**

1. Libraries must invest in the technology infrastructure to enhance system reliability, expand Internet access and access to digital materials.
2. Users should utilize the library technologies and online resources properly; and for that reason, there should be regular training sessions on digital literacy.

3. Libraries must create a delicate balance between the virtual and in-person experience, enabling access to library resources while providing space for library professionals to be on hand to assist and guide users.

4. Group study rooms, open seating areas with Wi-Fi and digital media centers should be built to aid and encourage social learning and teamwork.

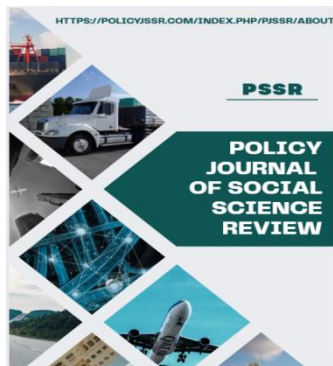
5. There is a need to initiate awareness programs to inform the library users on how to use the digital technology effectively and responsibly in a library setting.

6. Steps should be implemented to prevent technological disruption and to create peaceful study spaces and encourage cooperative learning activities.”

7. The availability of technology equipment and digital services to all students is ensured to minimize disparities among students from varying and diverse educational and socio-economic backgrounds.

8. Satisfaction and demands of users on technology should always be assessed by conducting surveys and feedback mechanisms to enhance the quality of service in libraries.

9. More studies are needed to examine social and psychological outcomes of library technology use in the long-term in various educational and cultural settings.



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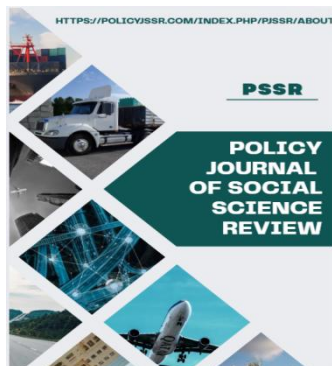
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10. About thinking about introducing hybrid forms of the library service, which combines two elements proximity with the person and possibility for digital communication, which can improve the efficiency and meaningful socialization of the library service.

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