

## Relationship of social factors, commitment, challenges, efforts and current status of Going Green in university libraries: A survey of librarians

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### Abstract

*Climate change and global warming have an impact on the natural world and its resources. Because of this, going green has become more humane in order to avoid the negative effects of global warming. The repercussions of environmental changes call for going green in every aspect of life, including libraries. It is more needed by the nation with fewer resources. In light of this background, it is crucial to comprehend the attitudes, beliefs, and perceptions of library directors regarding environmental challenges and green library issues. Quantitative research design has been adopted for this study and structured survey questionnaire is used for data collection. Data was collected from library heads of university libraries of Punjab, Khyber Pakhtunkhawa, Azad Jammu and Kashmir and Islamabad. The data analyzed by using descriptive and inferential statistics through SPSS software. The findings revealed that majority of the respondents were personally committed to promoting and supporting environmentally friendly initiatives within the library. The attitude, efforts and challenge faced by respondents are associated with one another. The values of the Pearson correlation show that the positive attitude and efforts of respondents and other stakeholders did not create any green impact on libraries. Gender, experience, age and qualification have impacts on the attitude, and efforts of respondents. It is hoped that the study's findings will assist librarians in promoting eco-friendly library services in their facilities. For improving green libraries, this study will be beneficial to leadership.*

Keywords: social factors, commitment , Going Green

### Introduction:

#### 1. Background of the study

Libraries play an important role in society because they make sure that the right people get the right information at the right time. Libraries ensure that information can be accessed without discrimination or distinction. The leadership has a significant impact on

how libraries are to be run. As never before, society is constantly evolving and striving to advance new ideas. Generating new ideas is dependent on the help of libraries. Libraries play a crucial role in the development of society because they facilitate study and dissemination. According to Vyas and Parmar (2021), whether a library is in academia or not, its primary function is to provide the right information to the right people.

In order to provide good and healthy information, libraries require a good environment. But this environment is affected by global warming. In this situation, to meet the challenges of global warming, green libraries become more influential. Green library improvement is revolutionary change that meets the needs of the present without jeopardizing those of the future. The most talked-about topic at the 2018 Australian library and statistics association summit on the Sustainable Development Goals (SDGs) was how the SDGs apply to all libraries, including public, academic, and university ones. In the green library, natural and renewable resources are used a lot. These resources facilitate efficient library work in a green environment. The library experts are attempting to enhance such a type of library that will reduce electrical energy consumption, be energy-efficient, and be environmentally friendly. Though it is now not definitely utilized in library fields, nonetheless, we are in a developing phase.

The librarians must make some selections for a green library. For that motive and implementation of the green library, librarians are continuously inclined to work beneath the eco-library machine and perceive these human beings who are inclined to work in this environment. Librarians, being a critical phase of the library, have a vital function in obtaining sustainability for green libraries. The green library saves power by using recycled fabric for lowering the uncooked material, herbal mild, and energy-saving mild bulbs and techniques. A "green library movement" and related activities have been established since around the year 2000 to promote increased environmental awareness, ecological sustainability, and offerings in regular library procedures (Antonelli, 2008). The time and risk are right for librarians to help communities become sustainable and to play a significant role in environmental safety. "Going green" and environmentally friendly, sustainable library and information offerings are serious problems requiring immediate attention, planning, and action (Fourie, 2012; Miller, 2010).

This highlights the importance of environmental awareness in libraries as well as the actions and efforts of library staff. Similar to what Aslam (2018) discovered in his research, these global issues and emerging tendencies have an impact on library leadership. Leadership demands a progressive set of skills and an excellent desire to deal with the changing structure of libraries, and leaders must play a significant role in the period of transformation of libraries (Brown et al., 2015). Green libraries are welcoming and environmentally conscious establishments whose mission is to promote environmental sustainability. The framework of 17 green improvement goals outlined in the UN's 2030 Agenda for Sustainable Improvement was established in 2015. In the last few years, IFLA has been working on the UN 2030 agenda, which aims to promote access to information, cultural heritage preservation, records, and verbal exchange technology. Libraries are involved in achieving these goals.

According to Afacan (2017), the international community faces difficulties in addressing global issues like halting climate change, protecting natural resources, and reversing the trend toward aid depletion and environmental degradation. Numerous studies have shown that libraries, like any other organization that uses energy and resources and offers services to its clients, have a manageable impact on the surroundings of library structures, printed and digital materials, tools and facilities, data offerings, and daily operations or packages. Environmental problems like global warming and electricity depletion will also

have an impact on the sustainable data offers and packages that libraries offer to their communities (Antonelli, 2008; Harger, 2008). For instance, Harger (2008) argued that global warming is at the core of our professional concerns as librarians, and Jones and Wong (2016) called for increasing recognition of organizations working on a variety of issues pertaining to environmentally friendly and sustainable libraries as a result of their very own strategic plan.

Despite the current popularity of environmental sustainability as a topic of interest, there is a lack of literature on environmentally acceptable practices in libraries (Fourie, 2012). Moreover, the literature examining the relationship between library instruction and sustainable development is even scarcer (Stark, 2011). However, the availability of information on green libraries and environmental friendly practices has grown exponentially. Pakistan as a developing nation also needs a green library environment (Asim & Ahmad, 2022). Given the significance of green library, research is necessary in this area. The move from traditional to green libraries is the need of the day, and it ought to be researched at a large level to benefit green libraries friendly nature. This not only keeps the environment friendly, but it also improves the performance of libraries. In every developed country, green libraries are in practice. The environment and natural resources are affected by global warming and climate change. This aspect has made it humane to adopt a green environment to avoid harmful consequences caused by global warming. Implications of the urge to go green in all sectors of life, including libraries. The country where resources are in short supply needs it more. Pakistan, where water and energy resources are in great need, is in great need of a green library (Asim & Ahmad, 2022). This background has led the researchers to understand the attitudes, beliefs, and perceptions of library directors regarding green library issues. The researchers hope that this explanatory study will draw attention to this area and open up new avenues for green library research. In addition, the idea of green library recognition is very helpful in raising environmental awareness and keeping library leadership concerned about encouraging a more enthusiastic attitude toward going green.

## 2. Research Questions

The following research questions are helpful to achieve the study objectives:

1. What is the level of commitment of respondents and library administration towards green library?
2. How much efforts have been made by respondents for making libraries green?
3. How many challenges are being faced by libraries for green libraries?
4. What is the current status of green library in the academic institutions located in AJK, Punjab, KPK and Islamabad?
5. How the social factors, attitude, efforts, challenges and impact are associated with one another.

## 3. Literature review

Green libraries research is an emerging concept that refers to the integration of sustainable practices into library operations and services to reduce their carbon footprint and promote environmental protection. Academic institutions have an important role to play in promoting green library practices because they are important sources of resources and have a significant impact on the environment. This literature review aims to investigate relationship of different social factors and green library constructs.

### 3.1 Environmental understanding and commitment

The importance of environmental literacy and commitment is recognized. A closely related but distinct concept is ecology deals with the understanding and appreciation of the environment and the impact of human actions on it. Environmental literacy also includes the ability to identify and make sustainable choices (Miller, 2010).

For a long time, libraries have focused on achieving economic and social progress rather than prioritizing environmental sustainability. However, due to the fast depletion of natural resources necessary for sustainable growth, libraries, just like other organizations, will confront the extraordinary challenge of maintaining their services and importance for both current and future generations". (Chowdhury, 2014) Libraries now use energy-intensive technology and building designs, including 24-hour machines, servers, and digital resources.

Environmental sustainability involves the use of resources and interactions with the natural world in order to protect the availability of these resources for future generations. This perspective ultimately leads to the idea of embracing eco-friendly knowledge and practices, which in turn leads to more eco-friendly decision-making and lifestyles with the purpose of protecting and conserving the environment (Kurbanoglu & Boustany, 2014).

### **3.2 Challenges faced by libraries to become green**

Green libraries face many challenges in trying to promote sustainable practices. This literature review aims to explore the challenges libraries face in terms of green practices. Salehi et al. (2022) examined challenges being faced by libraries in the path to green library and ways to address these challenges in the near future tackle these challenges strategically. Important challenge for libraries is the lack of knowledge and skills to implement sustainable library practices.

Zhao and Zhu (2021) investigated the barriers to the implementation of green library practices in Chinese academic libraries. The study found that a lack of knowledge and skills among librarians is a major barrier to the implementation of sustainable practices. Research shows that libraries can overcome this challenge by providing training and development programs to improve staff knowledge and skills.

Xu and Zhang (2021) examined the challenges of implementing green library practices in Chinese academic libraries. The authors surveyed 79 libraries and found that lack of funding, poor infrastructure, and lack of knowledge and support from library leaders are major challenges for libraries in implementing green library practices. The study suggests that these challenges should be addressed through appropriate library funding, service improvements, and a culture of sustainable improvement among library users. Another challenge for libraries is the lack of user awareness and participation in green initiatives.

Fakunle et al. (2021) checked the barriers to the implementation of green library practices in Nigerian academic libraries. The authors surveyed 78 libraries in Nigeria and found that lack of funding, awareness, and resources were major barriers to implementing sustainable practices. The study highlighted the need for training and building instruction in green practices and emphasized the resources available to support these efforts.

Sharma et al. (2020) explored user perceptions of sustainable library practices in Indian academic libraries. The study found that user awareness and participation are important challenges for the implementation of green practices. Studies show that libraries can overcome this challenge by increasing awareness among users and engaging them in the decision-making process.

Bajpai and Singh's (2020) study examined the challenges faced by academic libraries in India in adopting sustainable practices. The authors surveyed 150 libraries and found that

lack of funding, resources, and unskilled staff were major challenges for libraries to implement sustainable practices.

One of the most important challenges for libraries is the lack of resources and funding for sustainable projects. According to the research of Musah and Yusuf (2020), lack of funds and resources was found to be a major challenge for the adoption of sustainable practices in academic libraries in Nigeria.

### 3.3 Green library efforts

Guo et al. (2022) reviewed the implementation of green library practices in Chinese textbook libraries. The authors surveyed 184 libraries and found that implementation rates of green library practices were low, with only 44% of respondents implementing some sustainable practices. The study also found that political support and a lack of funding are the biggest barriers to implementing sustainable practices in Chinese academic libraries.

Chen and Wu (2022) explored the implementation of green library practices in Chinese academic libraries. The authors surveyed 105 libraries and found that 80% implemented some environmentally friendly library practices such as energy conservation, waste reduction, and sustainable purchasing.

Green and Callahan (2021) found that the operating conditions of the library and the support and resources provided to users are important factors. The status of green libraries in academic institutions is generally positive, and many libraries are taking steps to implement sustainable practices. The authors surveyed 157 academic libraries in the United States and found that, among their respondents, 80% use green library practices in some way.

Saravanan and Vijay Kumar (2021) examined the status of green library practices in Indian academic libraries. The authors surveyed 230 libraries and found that 69% of respondents demonstrated some green library practices such as energy-efficient lighting, reduced waste, and sustainable purchasing. The study also found that available resources, such as money and technology, support library operations, and staff are important resources for implementing green library practices.

Kim and Yang (2020) examined the implementation of green library practices in South Korean academic libraries. The authors surveyed 91 libraries and found that 84% implemented some green library practices, such as recycling, saving energy, and reducing paper. The study also found that libraries, labor, the number of animals used, and the availability of resources are important factors that implement sustainable practices in order to reduce environmental impact. Other factors, such as money, technology, and support for library management, staff, and users, emphasize the need for additional investment.

In recent years, many studies have explored the impact of green libraries on libraries. The purpose of this literature review is to explore the extent to which green library practices impact library physical resources. Shafi et al. (2022) studied the impact of environmentally friendly library practices on noise levels in libraries. The authors conducted a survey of 50 academic libraries in Malaysia and found that green library practices such as the use of acoustic materials and noise barriers helped reduce noise levels. The study also found that green libraries have a positive impact on user happiness and satisfaction.

Hassan et al. (2022) examined the impact of green library practices on the carbon footprint of academic libraries in Bangladesh. The authors analyzed 26 libraries and found that libraries that had implemented green practices had lower carbon footprints than libraries that had not. Research shows that green library practices such as energy-efficient

lighting, the use of renewable energy, and sustainable purchasing can significantly reduce the carbon footprint of libraries while also helping the environment and saving costs.

Kavulya et al. (2021) examined the impact of green library practices on thermal library stability. The authors conducted a study of an academic library in Kenya and found that green library practices, such as the use of shading devices and natural ventilation, contributed to the improvement of thermal efficiency. The study also found that green libraries positively impact energy conservation and reduce greenhouse gas emissions. The conclusion shows that the physical climate of the green book is a positive influence; the amount of oxygen, the temperature, and the number of lesions are such information that these conclusions have support if provided in the health of the green book with relief expressed. A healthy green book in the educational literature of Riyadh. The impact was analyzed. The authors compared the energy consumption of two libraries and found that one type of green library, without the other, had 36% less energy than a library with a green type.

Jensen et al. (2020) examined the impact of green library practices on waste management in academic libraries in the United States. The authors surveyed 109 libraries and found that libraries reduced waste by implementing green practices. The study shows that green library practices such as composting and recycling can reduce the amount of waste in libraries, leading to environmental benefits and cost savings.

Zhang et al. (2020) examined the impact of green library practices on indoor library air quality. The authors studied 34 academic libraries in China and found that green library practices such as the use of carbon-free building materials and ventilation contribute to indoor air emissions. The study also found that green libraries have a positive impact on health and wellbeing among their users.

### **3.4 Impact of attitude, awareness and commitment with green practices**

Leadership perceptions of green libraries have become a topic of interest in recent years due to the importance of sustainability in the library industry, and many studies have examined the relationship between leadership perceptions and green library practices. Yu et al. (2022) that examined the relationship between leadership behavior and green library practices in Chinese academic libraries. The authors surveyed 156 library administrators and found that leadership behaviors were positively correlated with green library practices such as energy conservation, waste reduction, and the implementation of sustainable procurement. Research also found that organizational culture and government policies are important drivers of green library practices.

Huang and Cheng (2022) examined the effect of leadership support on the adoption of green library practices in academic libraries in Taiwan. The authors surveyed 89 libraries and found that leadership support was positively associated with the adoption of green library practices. Research results show that library leaders can impact the adoption of green library practices by offering resources, expressing desires, and promoting a way of life that promotes sustainability.

Soroya et al (2022) focused on assessing the attitudes of Pakistani academic librarians towards green libraries and green computing. The study examines the influence of various factors on the intention of academic librarians in Pakistan to adopt computers with green practices. The study findings indicate that both attitudes and perceived behavior control play an important and positive role in shaping academic librarians' intentions to adopt green computing practices. Furthermore, the study highlights the importance of green computing skills, suggesting that increased knowledge leads to a stronger tendency among librarians to adopt green computing. Furthermore, the study highlights the role of

library directors in influencing attitudes towards green libraries. This indicates that the leadership and management of academic libraries in Pakistan have a significant impact on the implementation and promotion of green library practices.

Asim and Ahmed (2022) conducted a study on the adoption of green computing. They stated that appropriate development and mechanical and physical development have a significant impact on all areas of a green lifestyle, including libraries. Libraries are responding well to these changes, but not all countries are making rapid progress.

Haider and Bhatti (2021) scrutinized the function of ecological leadership within libraries. Extensive studies have revealed that the attitudes and conduct of principals wield significant influence over organizational culture and advancement toward sustainable practices. In general, the literature supports the idea that qualities associated with being a leader are instrumental in driving environmentally conscious library practices. Principals who display unwavering dedication to sustainability and conscientious resource management are more predisposed to endorsing eco-friendly endeavors, yielding a more sustainable library.

Dhiman and Kaur (2021) examined the impact of control on the adoption of green library practices in instructional libraries in India. The authors surveyed one hundred fifty libraries and concluded that library management is an important predictor of the adoption of inexperienced library practices. The study suggests that successful implementation of sustainable practices in libraries requires leadership aid, and they'll be worried.

Yang and Wen (2021) measured the impact of control on the adoption of inexperienced library practices in Chinese university libraries. The authors surveyed 149 libraries and found that the management guide became absolutely associated with the adoption of sustainable practices in libraries. Research indicates that management plays an important role in promoting inexperienced library practices and developing a sustainable lifestyle in libraries.

According to Zhang et al. (2021), management behavior performs a vital function in the implementation of green library practices. The study determined that leadership dedicated to sustainability and environmental stewardship has an inclination toward useful resource and green library duties, growing a more sustainable library environment. Similarly, Singh and Kaur's (2021) study found management assistance to be a vital factor in inexperienced library practices. The authors emphasize that control plays a key role in promoting sustainable practices and working with stakeholders to ensure the fulfillment of green tasks.

Kalfatowicz and Pajesivac (2021) explored the characteristics of library management in the improvement of sustainable instructional libraries within the United States. The authors surveyed 160 library leaders and found that leadership aid ends up being an enormous predictor of adoption of sustainable practices in libraries. Research shows that library leaders can have an impact on the adoption of sustainable practices by providing assets, setting priorities, and selling a lifestyle of sustainability.

Suhaimi and Majid's research (2021) suggests that green libraries' leaders manifest positive traits, with many cognizant of sustainability's importance and taking proactive steps like emulsifying green hues into their bookshelves. The scholars surveyed 120 Malaysian library managers, discovering 76% had already adopted some eco-friendly library techniques such as recycling, energy saving, and minimizing paper usage. Thus, the study corroborates leadership behaviors as decisive factors in green library practices.

Park et al. (2020) studied the relationship between leadership style and the adoption of green library practices in academic libraries. The authors conclude that leadership support and commitment are critical to the success of green library initiatives and that leaders

who demonstrate a strong commitment to sustainability can promote this goal and strongly encourage the adoption of green practices.

Saravanan and Vijay Kumar (2021) examined the state of green library practices in Indian academic libraries. This study surveyed 230 libraries and found that 69% of respondents implemented environmentally friendly library systems such as energy-efficient lighting, waste reduction, sustainable purchasing, etc. Similarly, research for green library practices and better utilization of available resources, including funds and technology, emphasized the vital role of staff and support.

Shen and Sun (2020) examined the role of leadership in the implementation of green library practices in Chinese academic libraries. The study found that leadership practices are positively related to support and adoption of green library practices and leaders who demonstrate a strong commitment to sustainability are more likely to support and promote green initiatives. Similarly, a study by Tuan and Huang (2020) examined the relationship between leadership styles and the implementation of green library practices in Vietnamese academic libraries. The authors found that leadership support and involvement were critical to the success of green library initiatives and that leaders who demonstrated a strong commitment to sustainability were more likely to encourage and endorse ongoing practices. These findings highlight the importance of supporting participatory leadership in promoting sustainable practices in libraries.

Lefebvre and Markey (2020) examined factors affecting leaders' perceptions of green libraries. The authors interviewed 15 Canadian library directors and found that library directors, staff, and levels of community support were key determinants of leadership perceptions of green libraries. They also highlighted the importance of training and education on green practices and access to resources as key drivers for emphasizing leadership strategies towards sustainability.

Kim and Yang's (2020) research focused on the adoption of environmentally friendly library practices in South Korean academic libraries. Researchers and 91 library guards have learned to include a variety of green books that include 84% libraries, energy conservation, paper, and paper usage reduction. Some factors played an important role.

Khalid and Batoool (2020) conducted a study on the green environment, practices, attitudes, and future strategies in a Pakistani university library. It was found that the need for a multi-layered approach to addressing the strengthening of the capacity of colleges and libraries to support the environment could be a dialogue to practice. Most importantly, the facts show that librarians appreciate the current research topic and develop a strong knowledge of environmental responsibility. Clearly, this is a complex problem that will not be solved by simply asking librarians to adopt more environmentally friendly practices. The key motivation will be policy development.

Ahmed and Tariq (2020) examined the role of library leadership in the sustainable development of academic libraries in Pakistan. The authors surveyed 50 libraries and found that leadership support was a key factor in the adoption of sustainable practices in libraries. The research shows that library leaders play a critical role in creating a culture of enabling libraries and promoting sustainable practices among library staff and users. The review included a variety of case studies from different geographical areas. It attempts to analyze the initiatives taken by libraries in various locations and measure the progress made in the green library movement. In conclusion, the literature suggests that green library practices can have a significant impact on the environmental impact of libraries, including factors such as energy consumption, waste, and carbon footprint.

#### 4. Research Design



The overarching framework or structure that leads a research project is referred to as research design. It specifies the methodologies, processes, and techniques that will be utilized to gather and analyses data, as well as the systematic approach and framework for doing research. The design of a research project is critical because it ensures that the study is organized, legitimate, and capable of producing relevant responses to research questions (Creswell, 2011). On the basis of data, there are four types of research methodologies: quantitative, qualitative, mixed methods and multimethods (Ullah & Ameen, 2023; Ullah & Ameen, 2022). Quantitative research is a type of empirical study that focuses on the systematic collecting and evaluation of numerical data. It seeks to quantify and generalize findings through the use of large sample numbers and statistical analysis. The population of the study is scatted; therefore, this study used quantitative research approach to obtain the objectives. Quantitative study includes a large number of individuals to ensure statistical significance and generalizability, boosting the dependability of the findings (Creswell & Creswell, 2017). Survey research is a flexible method that is utilized in a variety of sectors, including social sciences. It gives important insights into attitudes, behaviors, and preferences, making it an effective decision-making tool and academic research instrument. In library science research, survey research methods are often used to obtain data, views, and comments from library users, employees, or stakeholders. These surveys assist librarians and researchers in making informed decisions, evaluating the efficacy of library services, and understanding user requirements (Wildemuth, 2016). To view the importance of survey research method in library science and started population of the study, survey research method was employed to collect the data from the respondents.

A population is the entire set of individuals, items, or elements that meet specific criteria and share common characteristics relevant to the research study (Bryman & Bell, 2015). The population of this study is consisted of chief/head librarians from Higher Education Commission (HEC) recognized universities that are located in the province of Punjab, KPK, Azad Jammu Kashmir, and Islamabad, the Capital of Pakistan. The process of selecting an acceptable sample and drawing accurate inferences from the sample to the population are critical components of study design and statistical analysis (Creswell & Creswell, 2017). Proper sampling procedures are essential for ensuring that the sample is representative of the population and that research findings may be generalized accurately. The current study used convenience sampling technique for the selection of the respondents for this study.

To obtain data from respondents, a questionnaire was created. The questionnaire is divided into five sections. The first part contains demographic data. In second section, the questions were asked about leadership attitudes, efforts and impact of their efforts towards green libraries. The construct was adapted from from different studies (Callahan, 2014; Fakunleet et al., 2021; Haung & Cheng, 2022; Shen & Sun, 2020). Five-point likert scale was used in this questionnaire. To check the validity of the questionnaire, it was sent to three experts of the field. The recommendations received from the experts were incorporated in the questionnaire. For Pre-testing, questionnaire was distributed to a small group of respondents in order to detect and fix any problems with the instrument before it is utilized in the main research. Pre-testing is an important phase in questionnaire preparation in which the instrument is evaluated with a small group of possible respondents to discover and fix any flaws or misunderstandings. Pre-testing was carried out on 5 research participants. The goal of pilot testing was to get additional clarity and assess respondents' comprehension, and the time it took to complete the questionnaire. However, to assess the reliability of the study instrument, the Cronbach

alpha reliability test was used. Pallant (1997) stated that “Cronbach values were reliant on the number of items in the instrument”. The lower acceptable number for the Cronbach alpha coefficient typically is 0.70, however in certain circumstances it is 0.60 (Hair et al., 2006). The reliability of the constructs of the questionnaire ranges from 0.78 to 0.92.

For collection of data from respondents, the researchers prepared questionnaire on Google Forms. The researchers distributed the link of questionnaire through email and WhatsApp. The researcher briefed the question when respondent asked for more clarity. However, data was collected from 117 chief/head of university libraries. The data was entered into the "Statistical Package for the Social Sciences" (SPSS) for analysis. The mistakes that occurred during data input into SPSS were corrected by re-checking the data carefully. The data was analyzed using descriptive and inferential statistics. To determine the difference in opinions, the Independent Sample t-test was performed. Pearson correlation was used to measure relationship among different constructs of green libraries.

## 5. Results

### 5.1 Demographic Information

The findings (Table 4.1) revealed that majority of the respondents 80 (69%) were male and belonged to age group of 31-40 years 55 (47%). The outcomes showed that majority of the respondents 63 (54%) did MLIS/BS degree, followed by 43 (37%) respondents have M.Phil degree. The results demonstrated that majority of the respondents 47 (40%) have job experience 16 years and above.

**Table 1: Demographic information**

Variables	Level	Frequency	Percentage
<b>Gender</b>	Male	80	69
	Female	37	31
<b>Age</b>	21-30	06	05
	31-40	55	47
	41-50	45	38
	51 and above	11	10
<b>Qualification</b>	MLIS/BS	63	54
	M.Phil	43	37
	PhD	11	09
<b>Job Experience</b>	1-5	15	13
	6-10	21	18
	11-15	34	29
	16 and above	47	40
<b>Total</b>		<b>117</b>	<b>100</b>

### 5.2 Relationships among Green library constructs

Pearson correlation was applied to examine the relationships of different constructs of green libraries. The values of correlation coefficient (Table 2) show that impact has not been created by the attitude and efforts of respondents, their perception about the role of users and library administration.

Attitude of respondents has positive significant correlation with perception of respondents about the role of users and attitude of library administration for green libraries. The respondents who have positive attitude also consider the role of users and library administration as positive.

Perception about the user role has positive significant relationship with attitude of administration. It shows that positive attitude of library administration has positively influences the role of users towards green libraries.

Perception of respondents about the attitude of library administration has positive significant correlation with efforts of respondents and perception about the efforts of library administration. Positive attitude resulted in better efforts among respondents and library administration.

Efforts made by respondents have positive significant relationship with their perceptions about efforts of library administration. Respondents who have made higher efforts consider that library administration is making higher efforts.

Efforts of respondents have negative significant correlation with challenges faced by them. It shows that challenges have haunted the efforts of respondents.

**Table 2: Relationships among green library constructs**

Green library constructs	ATI	USER	ADM	EFRES	EFADM	CHA	IMP
Attitude of respondents (ATI)		.350**	.477**	.137	.125	-.033	-.104
Perception about role of library users (USER)			.202*	.055	.053	.101	.099
Perceptions about attitude of library administration (ADM)				.659**	.598**	-.141	.157
Efforts made by respondents (EFRES)					1.00**	-.349**	-.069
Perceptions of respondents about efforts made by library administration (EFADM)							-.054
Challenges faced by respondents (CHA)							-.022
Impact of efforts on libraries (IMP)							

### 5.3 Effects of gender and type of university on Green Library constructs

Gender has shown effects on perception about attitude and efforts of library administration and efforts made by respondents (Table 3). Female has high perception about positive attitude and efforts of library administration for green libraries. Mean values showed that female respondents made higher efforts as compared to male for making libraries green. Gender did not show any significant impact for attitude of respondents, their perception about the role of library users and impact of efforts for green libraries.

Independent Sample t-test was also conducted on the basis of affiliation of respondents with government and private sector but results did not show any significant difference.

**Table 3: Effects of gender and type of university on green library constructs**

Green library constructs	Male	Female	t	Sig.
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	Mean	Mean		
Attitude of respondents for green libraries	16.90	17.40	-1.159	.250
Perception about role of library users	08.17	08.54	-1.159	.204
Perceptions about attitude of library administration	15.46	16.48	-1.929	<b>.050</b>
Efforts made by respondents	29.11	31.83	-2.937	<b>.004</b>
Perceptions of respondents about efforts made by library administration	29.11	31.83	-2.918	<b>.004</b>
Challenges faced by respondents	36.27	37.38	-.828	.411
Impact on libraries	38.73	38.02	.916	.362

#### 5.4 Effects of qualification, age and experience of respondents on green library constructs

Qualification did not show any effect on attitude of respondents towards green libraries (Table 4). All other constructs of green libraries show significant relationship with qualification of respondents. Qualification of respondents has positive relationship with their perceptions about the role of library users about green libraries, challenges faced and impact of efforts on green libraries. Qualification has negative significant relationship with efforts made by respondents, their perception about the attitude and efforts made by library administration.

Age did not show any effect on perception of respondents about the role of library users towards green libraries. All other constructs of green libraries show significant relationship with qualification of respondents. Age of respondents has positive significant relationship with the efforts made by respondents and their perception about the attitude and efforts of library administration for green libraries. Age has negative significant relationship with challenges and impact of efforts on green libraries.

Experience of respondents did not show any effect on perceptions about the role of users and impact of efforts for green libraries. All other constructs of green libraries show significant relationship with qualification of respondents. Experience of respondents has positive significant relationship with their attitude, efforts made by them and their perception about efforts made by library administration for green libraries. Experience has negative significant relationship with challenges faced by respondents (Table 3).

**Table 4: Effects of qualification, age, and experience of respondents on green library constructs**

Green library constructs	Qualifications		Age		Experience	
	Coeff.	Sig	Coeff.	Sig	Coeff.	Sig
Attitude of respondents	-.150	.107	<b>.228*</b>	<b>.013</b>	<b>.401**</b>	<b>.000</b>
Perception about role of library users	<b>.354**</b>	<b>.000</b>	-.081	.385	.022	.810
Perceptions about attitude of library administration	<b>-.229*</b>	<b>.016</b>	<b>.398**</b>	<b>.000</b>	<b>.475**</b>	<b>.000</b>
Efforts made by respondents	<b>-.296**</b>	<b>.001</b>	<b>.345**</b>	<b>.000</b>	<b>.200*</b>	<b>.030</b>
Perceptions of respondents about efforts made by library administration	<b>-.285**</b>	<b>.001</b>	<b>.336**</b>	<b>.000</b>	<b>.195*</b>	<b>.035</b>
Challenges faced by respondents	<b>.185*</b>	<b>.046</b>	<b>-.363**</b>	<b>.001</b>	<b>-.238*</b>	<b>.010</b>
Impact of efforts on libraries	<b>.301**</b>	<b>.001</b>	<b>-.365**</b>	<b>.000</b>	.013	.898

### 5.5 Attitude of respondents, library administration and role of library staff and users for Green Libraries

The findings (Table 2) revealed that majority of the respondents were personally committed with promotion of green libraries. They consider environmental sustainability as priority and believe in promoting, exploring, implementing, environmentally friendly initiatives within the library. The respondents also believe that library administration also believes in green libraries and recognizes the importance and actively supports implementation of green practices. Library administration incorporates environmental sustainability and allocates resources to achieve it.

**Table 5: Attitude of respondents and library administration towards Green Libraries (N=117)**

Sr. No.	Statements	Mean	SD
	<b>Attitude of respondents towards green libraries</b>		
i)	I am personally committed to promoting and supporting environmentally friendly initiatives within the library.	4.52	0.50
ii)	I believe that implementing green practices in our library is essential for contributing to environmental sustainability.	4.20	0.71
iii)	I am open to exploring and implementing new eco-friendly technologies and practices in the library.	4.16	0.95
iv)	I consider environmental sustainability to be a priority in our library's strategic planning.	4.07	1.15
	<b>Attitude of library administration towards green libraries</b>		
i)	Library leadership recognizes the importance of adopting eco-friendly practices and reducing environmental impact.	4.17	0.56
ii)	Library leadership actively supports and encourages the implementation of green initiatives, such as recycling and energy conservation	4.09	1.06
iii)	Library leadership appropriately allocates resources to support environmentally sustainable practices	3.93	1.02
iv)	Library leadership considers environmental sustainability when formulating policies and making critical decisions	3.58	1.15
	<b>Role of library staff and users for going green</b>		
i)	It is important to involve library staff in decision-making related to sustainable practices	4.30	0.68
ii)	It is important to involve library users in decision-making related to sustainable practices	3.98	0.83

Scale: (Strongly Agree=5, Agree=4, Neutral=3, Disagree=2, Strongly Disagree=1)

### 5.6 Challenges in Implementing Green Practices

The findings (Table 5) revealed that majority of the respondents agreed that they faced difficulties in implementing green practices in university libraries. Insufficient training, infrastructure, lack of collaboration with external organizations, and difficulty in integrating sustainability goals in strategic planning of libraries were four major difficulties. Library leaders faced difficulties in getting funds for green initiatives. Respondents have higher rate of agreement with limited awareness among library staff

but saw less resistance. Library leader faced issues of inadequate support from library users but in less frequency.

**Table 6: Challenges Faced in Implementing Green Practices (N=117)**

Sr. No.	Challenges	Mean	SD
i)	Insufficient training on implementing eco-friendly initiatives.	4.02	0.72
ii)	Inadequate infrastructure for implementing eco-friendly practices.	3.86	1.03
iii)	Lack of collaboration and partnerships with external organizations.	3.79	1.01
iv)	Difficulty in integrating sustainability goals into the library's strategic planning.	3.83	1.04
v)	Lack of adequate funding and budget for green initiatives.	3.62	1.17
vi)	Limited awareness and understanding among library staff about the importance of green practices.	3.66	1.09
vii)	Difficulty in finding eco-friendly alternatives for library materials.	3.63	0.99
viii)	Inadequate support from library users in green initiatives.	3.48	1.13
ix)	Resistance to change among library staff in adopting green practices.	3.35	1.16

Scale: (Strongly Agree=5, Agree=4, Neutral=3, Disagree=2, Strongly Disagree=1)

### 5.7 Efforts of respondents for green libraries

The results demonstrated (Table 5) that majority of the respondents strongly agree and agreed with the current level of efforts for promotion of green libraries. The respondents encourage green practices, involved library staff in decision making, set proper goals, allocated resources and collaborated with external organization for achieving green library status.

**Table 7: Efforts of respondents for green libraries (N=117)**

Sr. No.	Efforts	Mean	SD
i)	I actively encourage and support the implementation of green practices within the library.	4.21	0.76
ii)	I communicate the library's commitment to environmental sustainability to library users and the community.	3.84	0.86
ii)	I involve library staff in decision-making processes related to green initiatives.	3.71	0.96
iv)	I regularly monitor and evaluate the progress of green initiatives within the library.	3.70	0.88
v)	I set specific goals and targets for the library's environmental sustainability efforts.	3.67	0.93
vi)	I provide training and awareness programs for library staff on eco-friendly practices.	3.65	1.00
vii)	I collaborate with external organizations and partners to enhance the library's green initiatives.	3.58	0.92
viii)	I allocate adequate resources and budget for implementing environmental sustainability initiatives.	3.56	0.89

Scale: (Strongly Agree=5, Agree=4, Neutral=3, Disagree=2, Strongly Disagree=1)

### 5.8 Perception of respondents about efforts of library administration for Green Libraries

The findings about efforts of library administration for green libraries (Table 4) revealed that majority of the respondents were satisfied with the status of libraries as green institutions. The library's policies and strategic plans include specific provisions (Mean=3.67). Libraries actively promote environmental awareness and green practices among students, faculty, and library users through various campaigns and initiatives. Libraries have incorporated green concepts in to programs and services and implemented various green initiatives.

**Table 8: Perception of respondents about efforts of library administration for Green Libraries (N=117)**

Sr. No.	Green Library Status	Mean	SD
i)	The library's policies and strategic plans include specific provisions and goals related to green practices.	3.67	0.93
ii)	The library actively promotes environmental awareness and green practices among students, faculty, and library users.	3.63	0.77
iii)	The library incorporates green concepts into its educational programs and services.	3.61	0.91
iv)	Our library has implemented various green initiatives, such as energy-efficient lighting, waste recycling, and digitalization of resources to reduce paper usage.	3.55	1.00
v)	The library procures eco-friendly and sustainable products and materials	3.51	0.90
vi)	There is a high level of awareness among library staff and administrators about the importance of implementing green practices in our library.	3.45	1.21

Scale: (Strongly Agree=5, Agree=4, Neutral=3, Disagree=2, Strongly Disagree=1)

### 5.9 Impact of efforts

**Table 9 : Impact of efforts (N=117)**

Sr. No.	Green Library Status	Mean	SD
i)	The introduction of eco-friendly materials and resources in the library has improved its environmental sustainability.	4.0171	.60148
ii)	Green libraries have served as role models for other institutions to adopt environmentally friendly practices.	4.0085	.80404
iii)	The efforts of our green library have contributed to a more sustainable community and environment.	3.9573	.77006
iv)	The use of energy-efficient lighting and appliances in the library has resulted in a more sustainable environment.	3.9402	1.00250
v)	The promotion of eco-conscious behavior among library users has positively influenced the overall library environment.	3.8547	1.01934
vi)	The implementation of green practices has positively impacted the library's overall carbon footprint.	3.8120	.65563
ii)	The implementation of sustainable waste management practices has positively influenced the library environment.	3.7778	.67096
iii)	Green libraries have effectively reduced water consumption through various	3.7179	.70523

	sustainable measures.		
iv)	Green libraries have contributed to a healthier indoor air quality, promoting a better environment for library users and staff.	3.7179	.79704
v)	Green initiatives in our library have led to reduced energy consumption.	3.7094	.95646

**Scale: (Strongly Agree=5, Agree=4, Neutral=3, Disagree=2, Strongly Disagree=1)**

### Conclusions

The core aim of the study was to investigate the opinion of library leadership concerns about going green. Attitude of library leadership show that they recognize the importance of adopting eco-friendly practices. This study discovered that chief librarians are committed to enhance green initiatives and sustainability efforts in the future. They recognize the importance of adopting eco-friendly practices. Different constructs of the green library have shown positive and negative correlation with one another. Libraries need to actively promote environmental awareness and green practices among library users through various campaigns and initiatives. The experience, age, qualifications and gender of respondents have impacted the issues surrounding green libraries. The findings showed eco-friendly the library has improved its environmental sustainability but the association of efforts with impact on libraries was not found. The challenges faced by university librarians have created hurdles in their efforts.

By considering the findings, the current study recommend to consider installing solar panels or utilizing other renewable energy sources to power the library. Promote a culture of resource conservation among staff and visitors, encouraging them to turn off computers, printers, and other equipment when not in use. Implement a paperless approach by digitizing materials and encouraging digital borrowing. Provide recycling bins throughout the library and make it easy for patrons to recycle paper, plastic, and other materials. Establish a program for reusing and repurposing materials when possible. Encourage library staff and visitors to use public transportation, carpool, bike, or walk to the library to reduce carbon emissions. Offer programs, workshops, and displays that educate the community about environmental issues and promote sustainable living practices. Purchase eco-friendly office supplies, furniture, and cleaning products that are made from sustainable materials and have minimal environmental impact. Create green spaces both inside and outside the library, such as indoor plants and outdoor gardens, to enhance the library's aesthetics and air quality. Install low-flow faucets, toilets, and water-efficient landscaping to minimize water usage. There is need to collaborate with local environmental organizations to host events, workshops, and lectures on environmental topics. Involve the community in sustainability initiatives and seek their input on green library projects. Keep track of the library's environmental performance by monitoring energy usage, waste reduction, and other metrics, and report progress to staff and the community. Regularly assessment of the library's green initiatives is necessary to stay current with best practices and technologies.

### 7. Implications of the study

The current study is valuable as it a useful resources for librarians who want to actively support the promotion of green library services inside their institutions. Libraries can more effectively match their practices with sustainability objectives by highlighting the problems and potential solutions. The study serves as a vital source of insights for leadership within libraries. The research provided workable answers, and may support leadership in their initiatives to promote environmentally friendly library services. The study's conclusions also have implications for readers, knowledge seekers, academics, and leadership in general, extending beyond just librarians and management.

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