

The Role of University Libraries in Achieving SDGs at Research Universities in Türkiye

H. Buluthan ÇETİNTAŞ^{1*}  Raife İBEKÇİ² 

¹ Doç. Dr., Necmettin Erbakan Üniversitesi, Uygulamalı Bilimler Fakültesi, Yönetim Bilişim Sistemleri Bölümü, Konya, Türkiye, halitbuluthan.cetintas@erbakan.edu.tr

² Yüksek lisans öğrencisi, Atatürk Üniversitesi, Edebiyat Fakültesi, Bilgi ve Belge Yönetimi Bölümü, Erzurum, Türkiye, raife.ibekci17@ogr.atauni.edu.tr

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ABSTRACT

Due to the transformations and changes taking place globally, the importance of the concept of sustainability is increasing. The Sustainable Development Goals (SDGs), established by the United Nations, include fundamental goals such as eradicating poverty, combating climate change, reducing inequalities, increasing prosperity, and preserving peace. Various institutions and organizations are carrying out various studies on a global scale to achieve these goals. Research universities and their library units play a significant role in these efforts. University libraries contribute to the implementation of the SDGs through sustainability projects, training programs, and services. The primary objective of this study is to reveal the role of library units in achieving the SDGs of 23 research universities operating in Turkey. The study employed a qualitative research method, and face-to-face interviews were conducted with library staff at these research universities. In this context, a total of five basic questions regarding sustainability and the SDGs were posed to 11 library staff, and the data obtained were analyzed using content analysis. The analysis revealed that activities such as transferring resources to electronic media, expanding relevant publication collections, and increasing energy efficiency stand out among the practices that contribute to participants' sustainability goals. The findings indicate that library staff are undertaking various initiatives to contribute to the implementation of the SDGs. However, the most significant obstacle to these efforts was identified as a lack of financial resources. These results highlight the need to increase financial support and resources provided to university libraries to further contribute to sustainability and play a more active role in this area. Furthermore, decision-making institutions such as the Ministry of National Education and the Council of Higher Education must develop policies in this area.

Türkiye'deki Araştırma Üniversitelerinin Sürdürülebilir Kalkınma Amaçlarını Gerçekleştirmesinde Üniversite Kütüphanelerinin Rolü

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Dünyada yaşanan dönüşüm ve değişimlere bağlı olarak, sürdürülebilirlik kavramının önemi giderek artmaktadır. Birleşmiş Milletler tarafından belirlenen Sürdürülebilir Kalkınma Amaçları (SKA), yoksulluğun ortadan kaldırılması, iklim değişikliğiyle mücadele, eşitsizliklerin azaltılması, refahın artırılması ve barışın korunması gibi temel hedefleri içermektedir. Bu amaçların gerçekleştirilebilmesi için küresel ölçekte çeşitli kurum ve kuruluşlar tarafından çeşitli çalışmalar yürütülmektedir. Bu çalışmaların önemli bir payını ise araştırma üniversiteleri ve onların kütüphane birimleri almaktadır. Üniversite kütüphaneleri, sürdürülebilirlik alanında yürütülen projeler, eğitimler ve hizmetler aracılığıyla SKA'ların hayatı geçirilmesine katkı



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Amaçları,
Üniversite kütüphaneleri,
Akademik sürdürülebilirlik,
Yeşil Kütüphane.

sağlamaktadır. Çalışmanın temel amacı, ülkemizde faaliyet gösteren 23 araştırma üniversitesinin sürdürülebilir kalkınma amaçlarını gerçekleştirmedeki kütüphane birimlerinin rolünü ortaya koymaktır. Çalışmada, nitel araştırma yöntemi benimsenmiş olup, araştırma üniversitelerinin kütüphane personeliyle yüz yüze görüşmeler gerçekleştirilmiştir. Bu kapsamda, toplam 11 kütüphane personeline, sürdürülebilirlik ve SKA'lar ile ilgili toplam 5 temel soru yöneltılmış ve elde edilen veriler içerik analizi yöntemiyle değerlendirilmiştir. Analiz sonucunda, katılımcıların sürdürülebilirlik hedeflerine katkı sağlayan uygulamalar arasında kaynakların elektronik ortama aktarılması, ilgili yayın koleksiyonunun geliştirilmesi ve enerji verimliliğinin artırılması gibi faaliyetler öne çıkmaktadır. Elde edilen bulgular, kütüphane personelinin SKA'nın gerçekleştirilemesine katkı sağlamak amacıyla çeşitli çalışmalar yürüttüğünü göstermektedir. Öte yandan bu çalışmaların önündeki en önemli engelin mali kaynak yetersizliği olduğu tespit edilmiştir. Bu sonuçlar, üniversite kütüphanelerinin sürdürülebilirlik konusuna daha fazla katkı sağlamaası ve bu alanda daha etkin rol alması için kütüphanelere verilecek mali desteklerin ve kaynakların artırılması gerekliliğine işaret etmektedir. Ayrıca Milli Eğitim Bakanlığı ve YÖK gibi karar alıcı kurumların bu alanda politikalar geliştirmesi büyük önem arz etmektedir.

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***Corresponding Author:** H. Buluthan Çetintaş, halitbuluthan.cetintas@erbakan.edu.tr

INTRODUCTION

The concept of sustainability has been used in a broader context, especially since the 1980s. The concept of sustainability, which originates from the Latin word "Sustinere" is used in many senses and carries meanings such as sustaining, providing, continuing, supporting, and existing (Carvalho, 2001). The concept of sustainability, which is frequently used in many areas today, is defined as a participatory process that ensures the prudent use of all social, cultural, scientific, natural and human resources of society and creates a social perspective based on respect for these (Gladwin et al., 1995). Sustainability can also be seen as an effort to maintain the ability to meet the needs of future generations by preserving the balance of environmental resources and ecosystems. This concept aims to establish a balance between economic growth and environmental and social justice (Haris, 2000). The basic feature of this concept is that it aims to use existing resources effectively, efficiently and with maximum performance by focusing on the human future.

The Sustainable Development Goals (SDGs) are a call to action consisting of 17 universal goals that are valid for all countries at different levels of development. These 17 calls to action form a plan created within local and global sustainable development practices aimed at combating poverty, protecting the entire planet, and ensuring that humanity lives in peace and tranquility, the objectives thereof are expected to be achieved by 2030 (Global Compact Network Turkey, 2023). Within the framework of the SDGs, efforts are being made to integrate all humanity economically, socially, and environmentally, and to provide a better world (IFLA, 2019). SDGs attract the attention of all institutions and organizations worldwide and are also becoming the focal point of libraries and information centers. In this context, the International Federation of Library Associations and Institutions (IFLA) plays an active role in the implementation of the SDGs. Within the framework of the SDGs, IFLA works on issues such as facilitating access to information, protecting cultural heritage, increasing universal information literacy, and providing access to communication technologies (Cakmak and Eroglu, 2020).

University libraries are seen as the heart of universities because they play an important role in academic and research activities (Cakin, 1998). While universities make and gradually implement different strategies and plans to contribute to the realization of SDGs, university libraries play multiple roles as catalysts in areas such as R&D, education and training activities, holding an important position in the implementation of SDG-oriented practices. However, the roles they undertake and the strategies they will implement should be compatible with the institutional strategies of universities. The roadmap that each university library will follow to achieve SDGs may differ. This roadmap will show the path taken by the university as well as the library in achieving its strategic goals and objectives (Mashroofa, 2022, 52). In order for libraries in universities to fulfill their functions and contribute to sustainable development, it is important that the resources in the library are made available to users both physically and digitally, that the resources are up-to-date, that services are provided in different languages, that there is the right to access the resources regardless of their status as students or academics, that users are trained on library resources, and that services are provided uninterruptedly 24/7 (Cakmak and Eroglu, 2020; Mulyono et al., 2020; Oh, 2020). Sustainability is possible with the combined action of effectiveness, competitive power, physical facilities, financial and qualified human resources (Bandara et al., 2021). In this respect, the features should be considered and implemented by libraries.

In the first part of the study, the concept of SDGs is explained, and in the second and third parts, the relationship between research universities and research university libraries and SDGs is discussed. Afterwards, interviews with the personnel in charge in line with the purpose of the study are given, the obtained data are conveyed, and the results are given in the discussion section. It is thought that this subject, which is addressed for the first time in the relevant field, will contribute to literature and serve as an example for the studies in this field.

1. The Concept of SDGs

The concept of sustainability was first brought to the agenda at the United Nations (UN) Human Environment Conference in 1968. At the conference held in Stockholm in 1972 that protecting the environment was possible alongside economic growth. In 1987, the concepts of economy and environment were included together in the Brundtland Report. The subject was placed back on the agenda in 1992 at the United Nations Conference on Environment and Development (UNCED) to reconcile economic development with environmental protection (Gunasekera and Samarakoon, 2020, p. 47). SDGs were first defined by the UN General Assembly in 2005 and were accepted by the UN member countries and entered into force on January 1, 2016. The UN General Assembly accepted the SDGs as a road map planned to be completed by 2030, aiming to protect the entire planet, eliminate poverty, and combat inequality and injustice (Global Compact Network Turkey, 2023).

Although the concept of sustainability is defined in different ways, the expression “not stealing from the future” has recently been emphasized. Sustainability, which used to mean ensuring continuity, has begun to mean protecting today’s resources and transferring them to future generations (Topkaraoglu, 2021, 100). Based on this meaning, the defines sustainability as “development that meets today’s needs without compromising the ability of future generations to meet their own needs” (University of California, 2020). In a different study, it is emphasized that ecological and scientific understanding should be integrated in ensuring the continuity of the world for future generations (Kilic, 2013, 205). In this context, sustainable development, which comprises solutions to the problems arising in various environmental, economic, social, political, educational and cultural values of a country, considering the welfare and peace of all humanity, involves global decisions that aim to make the world a more livable place (Abata-Ebire, Adebawale and Ojokuku, 2018, 90).

The UN prepared 17 SDGs aiming for sustainable development that cover areas of social life and have been accepted by many countries around the world due to their alignment with these goals (IFLA,

2023; Mamtora and Pandey, 2018; Onyam and Benson, 2020, 207-208; UN, 2015; UN, 2023; Yap and Kamilova, 2020):

- SDG 1 (No Poverty): End all forms of poverty everywhere in the world,
- SDG 2 (Zero Hunger): End hunger, achieve food security, improve nutrition and promote sustainable agriculture,
- SDG 3 (Health and Quality of Life): Health and Quality of Life: Ensuring that everyone can live a healthy life at all ages and support well-being,
- SDG 4 (Quality Education): Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all,
- SDG 5 (Gender Equality): Achieving gender equality and empowering all women and girls,
- SDG 6 (Clean Water and Sanitation): Ensure availability and sustainable management of water and sanitation for all,
- SDG 7 (Affordable and Clean Energy): Ensuring access to affordable, reliable, sustainable and modern energy for all,
- SDG 8 (Decent Work and Economic Growth): Promote inclusive and sustainable economic growth, full and productive employment and decent work for all,
- SDG 9 (Industry, Innovation and Infrastructure): Building a resilient infrastructure, promoting inclusive and sustainable industrialization and innovation,
- SDG 10 (Reducing Inequalities): Reducing inequalities within and between countries,
- SDG 11 (Sustainable Cities and Communities): Make cities and human settlements inclusive, safe, resilient and sustainable,
- SDG 12 (Responsible Production and Consumption): Ensuring sustainability through production and consumption patterns,
- SDG 13 (Climate Action): Take urgent action to combat climate change and its impacts,
- SDG 14 (Life Below Water): Protect and sustainably use oceans, seas and marine resources for sustainable development,
- SDG 15 (Terrestrial Life): Protect, restore and promote the sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and prevent the decline of biodiversity.
- SDG 16 (Peace, Justice and Strong Institutions): Promote and develop peaceful and inclusive societies for sustainable development, provide access to justice for all, and establish effective, accountable and inclusive institutions at all levels,
- SDG 17 (Partnerships for the Goals): Strengthen the means of implementation and revitalize the global partnership for sustainable development.

2. Research Universities and SDGs

Research universities are institutions that play an important role in the social, cultural and economic development of countries. In its status as a developing country, Turkey has classified some higher education institutions as research universities to increase its production in the fields of science and technology. In this context, a total of fifteen research universities, five of which are candidates, were determined by the Higher Education Council in 2017 (Erdogmus, 2018, 2). As of 2022, the number of research universities has reached twenty-three and they continue to provide services in the field of science and technology. These universities, which also constitute the sample of the study, are given below (YÖK, 2023):

<ul style="list-style-type: none">• Ankara University• Ataturk University• Bogazici University	<ul style="list-style-type: none">• Bursa Uludağ University• Çukurova University• Dokuz Eylul University
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- Ege University
- Erciyes University
- Firat University
- Gazi University
- Gebze Technical University
- Hacettepe University
- İhsan Doğramacı Bilkent University
- Istanbul Technical University
- Istanbul University
- İstanbul University-Cerrahpaşa
- Izmir Institute of Technology
- Karadeniz Technical University
- Koc University
- Marmara University
- Middle East Technical University
- Sabancı University
- Yıldız Technical University

Research universities, whose importance is increasingly recognized, provide social, cultural and economic contributions to the country they are in and play a role in the development and progress of the country (Erdogmus, 2018, 3). It is known that young generations need to receive the necessary education to achieve the goals of the countries regarding economic and social development and the improvement and protection of environmental conditions, and that research universities play the most important role in raising awareness of these goals (UN, 1987).

Research universities are trying to make the SDGs a part of the mission and vision statements of higher education institutions. In addition, they lead other universities in creating a socially and economically sustainable approach in education and training activities (Velazquez, Munguia, Platt and Taddei, 2006). Research universities contribute to the creation of norms and values in behavioral change as well as finding solutions to social problems with the courses and programs they offer to improve the social, economic and environmental factors of countries (Mulder, 2010). In addition to courses and programs, research universities, with the projects they carry out, focus on issues such as infrastructure and settlement on campus, climate change, waste and water management, and transportation facilities. This supports the idea that the understanding of sustainability should be spread to all levels of the university in terms of both education and campus life (De la Poza et al., 2021: 3; Ralph and Stubbs, 2014, 12).

Examples of various applications of some research universities in Turkey in line with the SDGs are given below.

Table 1
Sustainable development studies of universities

University	Studies
Bogazici University	By adding courses to its academic curriculum within the scope of Sustainable Development Goals (SDGs), it contributes to its students' awareness of SDGs and their knowledge on the subject (BOUN 101, 2022).
Istanbul Technical University	In 2021 The Sustainable Development Expertise Certificate Program at Istanbul Technical University, which received the title of the best in Turkey within the scope of SDGs (ITU, 2021), aims to train sustainability experts who are competent, professional and equipped with the necessary skills in this field. Quacquarelli Symonds, a higher education rating institution, announced the 2023 sustainability list. ITU ranks between 201-220 in the general sustainability ranking, 110th in the environmental impact category and 373rd in the social impact category (ITU, 2022, 2023).
Izmir Institute of Technology	Izmir Institute of Technology (IYTE) aims to create a sustainable environment that goes beyond the boundaries of the campus for the continuity of the services it provides on and off campus. For this purpose,

	it has participated in the application for the Greenmetric World University Ranking. IYTE has determined its status and future goals by conducting a sustainability performance analysis and has adopted the concept of "Campus is happy, İzmir is happy." In this context, the IYTE Sustainable Green Working Group, consisting of 35 volunteer academics, employers, researchers, assistants and 15 students, has been established (IYTE, 2022).
Middle East Technical University	In response to the climate change caused by global warming, the Climate Change and Sustainable Development Application and Research Center was established within the Middle East Technical University. The main purpose of this center is to contribute to the development of scientific, realistic and reliable climate and sustainable development strategies and policies that our country and society will need at national and international levels (METU IKLIM, 2023).
Yildiz Technical University	To carry out sustainability activities in a more systematic, comprehensive and planned manner, the "Sustainable Campus Commission" was established at Yildiz Technical University. The commission has been working in line with the "Greenmetric Sustainability Indices" since 2016 (YTU, 2023).

3. Research University Library and SDGs

University libraries, which are important infrastructure units of all modern universities, are vital. University libraries renew themselves and adapt to widespread technological developments. They support all aspects of the education and training services provided by universities, especially new learning styles (Owusu-Ansah, 2021). In addition to supporting educational initiatives, university libraries also help universities realize the SDGs. Studies in this direction are listed as follows (IFLA, 2016, 332):

- Supporting all types of literacy and digital skills, especially information and media literacy,
- To help meet the information needs of the business world, civil society organizations, countries and all people in the best way possible by closing the gap in access to information,
- To provide a service network for the best realization of the programs and services prepared by the state,
- To help users with digital skills to join the current digital world by taking advantage of technological opportunities,
- To carry out all librarianship duties as the heart of the academic and research community,
- To protect and preserve world heritage and culture and to support society in accessing this heritage.

Each goal in sustainable development includes measures that need to be taken to make the world a more livable place for current and future generations. University libraries also play various roles in helping the university they are affiliated with achieve the SDGs. These roles can be listed as follows (IFLA, 2023; Mamtora and Pandey, 2018; UN, 2015; Yap and Kamilova, 2020):

- SDG 1 (No Poverty): In university libraries, information literacy skills are taught to users within the framework of this purpose. The aim is for users to gain new knowledge and skills by developing various social skills. In addition, users' lifelong learning processes are supported, providing educational opportunities to help them survive without suffering from poverty, or financial difficulties thanks to the skills they acquire.
- SDG 2 (Zero Hunger): Within the scope of this goal, agricultural libraries provide access to market information and research on methods applied in agriculture. They also provide

information on relevant literature on sustainable and resilient crop production. Public libraries also enable users to be literate, enable them to benefit from technological opportunities and encourage them to become more conscious individuals.

- SDG 3 (Health and Quality of Life): In order to achieve this goal, university libraries provide users with access to information so that they can learn proper family planning. They also run health literacy programs so that others can access health information.
- SDG 4 (Quality Education): Various programs and studies are organized in university libraries for the purpose of quality education, and they play a supportive role for all academic activities in universities. The library, which mobilizes all its resources for a more equitable education, supports the goal of quality education by lending books to users and making its databases open access.
- SDG 5 (Gender Equality): One of the most important responsibilities for achieving this goal rests upon university libraries. Libraries focus on implementing programs that support gender equality. University libraries support women by providing them with different technological opportunities, thus playing a role in creating a more egalitarian structure in society.
- SDG 6 (Clean Water and Sanitation): University libraries provide the opportunity to learn where the authorized centers for providing safer drinking water to the community are and how to reach them.
- SDG 7 (Accessible and Clean Energy): University libraries around the world are among the few places where users can reliably carry out many activities such as reading, studying and doing research, with access to light and electricity always.
- SDG 8 (Decent Work and Economic Growth): University libraries can help users become entrepreneurs by providing them with access to information and communication technologies. They also enable users to find the right job for themselves or apply for jobs online, with the assistance of qualified librarians.
- SDG 9 (Industry, Innovation and Infrastructure): University libraries provide universal and affordable access to the information needed. One of the most important indicators of the service they provide is electronic databases. Thanks to advancements in technology, users can access their desired information sources by using these databases. Again, these libraries ensure that the young generation is informed about technological developments and innovations.
- SDG 10 (Reducing Inequalities): University libraries help reduce inequalities by providing services to their users on issues such as fair access to information, freedom of expression for all ideas, freedom of assembly and privacy.
- SDG 11 (Sustainable Cities and Communities): University libraries play an important role in the preservation of cultural heritage in many different areas, helping to archive and preserve it. This ensures the transfer of cultural heritage to future generations and facilitates access to these works.
- SDG 12 (Responsible Production and Consumption): The aim of responsible consumption and production can be considered as the knowledge and awareness of all people to aim for sustainable development and to maintain a lifestyle in harmony with nature. University libraries help users gain awareness to protect nature and to carry out sustainable production and consumption through various programs and services.
- SDG 13 (Climate Action): University libraries provide access to data and research on climate change and offer training on measures to be taken against it.
- SDG 14 (Life Below Water): University libraries provide access to data, research and information resources that form the basis of life, especially in areas such as fisheries management, sustainable biodiversity, and water protection.

- SDG 15 (Life on Earth): University libraries play an important role in providing access to data, research and information that support informed inquiry and decision-making about environmental aspects of life, including sustainable resource conservation, appropriate use of land and sustainable biodiversity.
- SDG 16 (Peace, Justice and Strong Institutions): University libraries call for public access to information in accordance with national and international legislation. This call mentions the importance of peace and justice for humanity.
- SDG 17 (Partnerships for the Goals): It aims to establish partnerships with all countries of the world to achieve SDG 17 through online platforms prepared by university libraries. These online platforms will facilitate access to information and help ensure cooperation between all countries of the world.

The first concept to emerge at the intersection of the SDGs and university libraries was the green library. While knowledge of green libraries and their practices remains limited, interest in the topic is growing. The first studies on green libraries began appearing in the 1990s. The February 1991 issue of the Wilson Library Bulletin featured the theme "Libraries and the Environment." The issue's editorial, "The Green Librarian," was written by James and Suzanne LeRue. In this article, the LeRues detailed ways to be environmentally responsible both at home and in the library environment. Tom Watson's article, "Trees in the Forest: Finding Environmental Information Sources," listed information sources, institutions, groups, and publications that focus on environmental issues and aimed to facilitate user access to these resources. Linda Rome's article, "Celebrating Earth Day Year-Round," shared ideas for activities that could be implemented throughout the year to draw public attention to environmental issues. Ann Eagan, in her article titled "Noise in the Library: Its Effects and Control", addressed the issue of noise pollution in libraries and brought up another important issue in terms of environmental impact (Antonelli, 2008).

METHOD

The aim of the study was to reveal the roles and strategies implemented by university libraries in the realization of SDGs in research universities. In line with this purpose, the following research questions were posed:

1. RQ1. What is the role of university libraries within the scope of SDGs?
2. RQ 2. What are the practices and strategies of university libraries within the scope of SDGs?
3. RQ 3. What are the goals of university libraries within the scope of SDGs?
4. RQ 4. What are the services provided in university libraries within the scope of SDGs?
5. RQ5. What are the challenges faced by university libraries within the scope of SDGs?

Within the scope of the study, semi-structured interviews were conducted with staff working in university libraries. This technique was chosen to collect more effective data for research. Studies on SDG in libraries may differ depending on university facilities and the competence of the staff. One of the most effective methods to reveal these experiences is to conduct interviews. In this context, the semi-structured interview form consists of 5 open-ended questions prepared based on the relevant literature (Mamtora and Pandey, 2018; Owusu-Ansah, 2021). The interview questions are as follows:

1. As Library X, what role did you play in your university's realization of SDGs?
2. As Library X, what practices and strategies have you implemented towards SDGs of your university?
3. As Library X, what do you aim to do for your university's SDGs?
4. As X Library, what services do you provide within SDGs?

5. As X Library, what challenges do you face in realizing SDGs?

The research universe consists of 23 university libraries located in 23 research universities in Turkey. In the first stage, all libraries were contacted, but only a few of them agreed to be interviewed. In the second stage, interviews were conducted with the staff of 11 libraries that agreed to participate in the research. The participants in the research, in line with the sustainable development goals, consist of personnel in the administrative section of the library. The distribution of the participating library personnel according to their duties is as follows: department head, 5 people; information management and access officer, 4 people; quality management officer, 2 people. The interviews with 11 participants were conducted online (via e-mail and online video calls). The data were recorded via voice recordings, and notes taken by the researchers. The interview lasted approximately 15 minutes for each participant.

Content analysis was used in data analysis. Content analysis is one of the qualitative data analysis methods, coding and themes related to the data are not determined in advance. However, according to the status and content of the data, new coding can be done during the analysis process and themes can be created. One of the principles that should be considered when applying content analysis is to clearly and precisely specify the analysis categories (Arik, 1998: 119-122). The data obtained from the interviews conducted with the participants in the research were analyzed in the MAXQDA 2020 program. The responses received from the participants were analyzed with content analysis, the data obtained was coded and themes were created and interpreted. The themes created were services, objectives, work done, challenges, strategies and applications. The findings from the analysis were presented in tables and interpreted by supporting them with the views of the participants.

FINDINGS

In this study, interviews were conducted with library staff to evaluate the work carried out in university libraries within the scope of the SDGs. The data obtained were analyzed using content analysis, coded, and these codes were grouped under specific themes. The originality of this study is crucial as it is the first qualitative and comprehensive analysis conducted in this field. The code-theme structure made in the MAXQDA 2020 program regarding content analysis along with the coding and explanations regarding the themes in this model, are presented below in tables. Five themes related to the sustainable development goals of libraries were created. These themes were determined as studies (12 codings), strategies and practices (11 codings), objectives (10 codings), services (13 codings) and challenges (9 codings). A total of 65 codings were made within these themes.

The efforts of university libraries towards the realization of the SDGs

The findings regarding the librarians' views on the roles that libraries play in the implementation of SDGs are given in Table 2. They stated that, accordingly, they have a role in sustainable development by participating in symposiums and webinars, encouraging resource use, preventing environmental pollution, preparing procedures, conducting quality management system studies, supporting R&D studies, allocating significant budget, being Greenmetric members, and acting in accordance with the strategic plan. Participants generally stated that they have various roles regarding SDGs such as organizing seminars and providing training, allocating a high budget, including SDGs in the strategic plan. Sample statements from the participants' responses to the interview questions are given below:

“As a library, we actively participate in symposia and webinars organized by the ministry, associations and academia about SDGs. As a result of the services we provide, we actively participate in the university's activities regarding SDGs.” (P1)

“There are a few areas where we are active. Our university is a research university and the studies conducted by international rating agencies are important. For example, activities such as Greenmetric have been carried out. We also applied to Greenmetric in terms of sustainability as

a university 2 years ago. During that period, our university contributed to sustainable development through Greenmetric.” (P7)

“The makerspace called Co-Space, which was established for the first time in Turkey under the roof of a university library, is extremely important in that it enables students from all programs, regardless of discipline, to work together, create new ideas, new products and then market these products.” (P9)

Table 2

Libraries' work towards SDGs

Codes	Participants
Participating in symposiums and webinars	(P1)
Encouraging resource use	(P2)
Preventing environmental pollution	(P3)
Preparing procedures	(P4)
Quality management system studies	(P5)
Supporting R&D studies	(P6)
High level budget allocation	(P6)
Greenmetric membership	(P7)
Acting in accordance with the strategic plan	(P5)
Co-space application	(P9)
No planned work	(P10)
Taking part in the strategic plan	(P11)

Strategies and practices of university libraries towards SDGs

The findings regarding the strategies and practices implemented by university libraries towards SDGs are given in Table 3. Accordingly, the initiatives include establishing unit libraries, developing projects, using natural lighting, recycling and rainwater, forming committees, creating strategic plans, providing scientific research support, organizing seminars and providing training, collecting researchers' work in a system, and months integrating targets into the strategic plan with a six-month timeline. In particular, the views included involve preparing co-spaces for healthcare professionals and working within the scope of TSE ISO 9001. The views of the participants are generally focused on expanding library services, establishing quality standards and providing training. When the responses given by the participants are examined, it is thought that the practices such as preparing short and long-term plans, developing projects, supporting scientific research and providing outward-looking training using methods such as seminars can support sustainable development. Sample statements regarding the views of the participants are given below:

“Collecting recyclable materials, using LED lights, taking advantage of natural lighting, encouraging staff to use their own glass or porcelain cups, collecting rainwater and using it for garden irrigation” (P3)

“We provide orientation training to new students on the use of the library. We provide guidance to students at the master's and doctoral levels by showing them scientific research methods. With all these practices, we fulfill our duty in the educational process.” (P6)

“In accordance with our university's strategic goals, the goals and objectives determined within the scope of TSE ISO 9001 are monitored at certain periods and recorded, together with the evidence files, in a system called the Data Management System.” (P11)

Table 3

SDG strategies and applications of libraries

Codes	Participants
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Setting up unit libraries	(P1)
Developing projects	(P2)
Natural lighting, recycling and rainwater utilization	(P3)
Forming a committee	(P4)
Creating a strategic plan	(P5)
Providing scientific research support	(P6)
Conducting seminars and providing training	(P2, P4)
Gathering researchers' work in one system	(P7)
Include the goals in the strategic plan for six months	(P8)
Preparing co-space, especially for healthcare professionals	(P9)
Working within the scope of TSE ISO 9001	(P11)

The aims of university libraries towards SDGs

The findings regarding the participants' views on the aims of SDG in university libraries are given in Table 4. Accordingly, when the coding was examined, the most prominent statements were; using printed and electronic resources, environmental awareness, energy efficiency, increasing the allocated budget, being among the top five universities in Turkey, working towards the university's goals, increasing the number and diversity of resources per capita, being on the world library map, expanding the publication collection, providing sharing among scientific platforms, and creating resources. The participants' views were generally converting resources into electronic form, developing the publication collection, and providing energy-efficient solutions. Sample statements regarding the participants' views are given below:

“We would like to state that we follow the general application policies of our university in our sustainability studies. Our sustainability-related steps and practices are carried out within the framework of the guidelines and standards determined by the university on issues such as environmental awareness, energy efficiency, waste management and resource use.” (P2)

“The necessary work has been carried out on the issues included in the Strategic Plan of our University and within the scope of our Presidency.” (P5)

“While providing these services, we emphasize to quality in terms of institutional and personnel quality. For example, we provide training opportunities to our personnel who have language improvement needs. At the same time, we help our personnel by offering them opportunities to take courses in various subjects. We provide these services in line with the educational sustainability goal.” (P6)

“Our library aims to continuously develop its role as an indispensable element of the dynamic academic process facilitating the exchange of information between scientific platforms with the knowledge, ideas, and art products it offers.” (P11)

Based on the responses, it appears that building-focused practices are prominent in SDG projects. In particular, the integration of recycling systems, energy-saving lighting solutions, and practices aimed at reducing water consumption, in line with sustainability and energy efficiency goals, contribute to raising awareness of the project. These approaches constitute important steps toward minimizing environmental impacts and sustainable resource use.

Table 4
Objectives of libraries regarding SDGs

Codes	Participants
Using printed and electronic resources	(P1, P2, P4)

Environmental awareness	(P2, P3)
Energy efficiency	(P2, P3)
Increase allocated budget	(P6)
To be among the top five universities in Turkey	(P6)
Working towards the university's goals	(P7)
Increasing the number and diversity of resources per person	(P8)
Being on the world library map	(P9)
Expanding the publication collection	(P10)
Providing sharing and creating resources between scientific platforms	(P11)

Services provided by university libraries within the scope of SDGs

The findings regarding the services provided by the participants as university libraries within the scope of SDG are given in Table 5. Accordingly, the coding were determined as increasing the use of electronic resources, zero waste approach, following up-to-date resources, conducting studies in a library environment, providing equal opportunities for students and academics, implementing an open access policy, providing service at high standards, providing service in different languages, preparing a website, evaluating the performance of access to resources, providing training to students, providing training to academics, providing 7/24 service and continuously evaluating the service quality. Sample statements regarding the participants' opinions are given below:

“It attaches great importance to Zero Waste management. In this context, a waste management system has been established to effectively manage hazardous/non-hazardous waste generated from education, training, research, production and service activities on the university campus. According to this system, waste is collected separately at source, transported, and temporarily stored.” (P2)

“Providing relevant resources on sustainability, following current publications, providing a place for educational activities in the library” (P3)

“To continuously improve the quality and quantity of our university's education and training programs while preserving the integrity of the collection in printed and electronic terms, we must implement strategic planning and resource management. We aim to conduct a survey to measure the services provided to the users in our library, which provides 24/7 service, and evaluate the results at certain intervals to eliminate deficiencies. To set a target for increasing library usage, one must measure user engagement and other relevant metrics.” (P11)

Table 5

Libraries' services for SDGs

Codes	Participants
Increasing the use of electronic resources	(P1, P4, P5)
Zero waste approach	(P2)
Current source tracking	(P3)
Working in a library environment	(P3)
Providing equal opportunities for students and academics	(P4)
Implementing an open access policy	(P4)
Providing service at high standards	(P6)
Providing services in different languages	(P6)
Preparing a website	(P7)
Evaluating the performance of access to resources	(P8)
Providing training to students	(P9)

Providing training to academics	(P10)
Providing 24/7 service and continuously evaluating service quality	(P11)

Challenges faced by university libraries in achieving the SDGs

The findings regarding the difficulties encountered by university libraries in implementing the SDGs are given in Table 6. Accordingly, the codes made are as follows: economic difficulty, old buildings, infrastructure problems, waste management, professional staff assignment problem, budget problem and exchange rate difference, previous lack of organization, cost problems and inadequate planning. The views of the participants generally stand out as economic problems and lack of planning. It is understood that the difficulties encountered here are mostly economic problems. For example, budget problems and exchange rate differences cause products/services with certain prices to require more economic resources when acquiring services from outside due to exchange rate fluctuations. In addition, due to fluctuations in the free market conditions of products and services, there is a decrease in accessibility. This situation negatively affects sustainable development. Sample statements regarding the views of the participants regarding this subject are given below:

“There are financial problems.” (P2)

“Our friend responsible for our library's advisory unit has prepared all the university reports by conducting the research on SDGs. independently. He did it without any support. This is among the difficulties we have experienced. Waste management was carried out without a clear set of guidelines. There were difficulties in accessing open-source systems.” (P4)

“Due to fluctuations in exchange rates, problems may occur, particularly regarding membership decisions and payments for database subscriptions. For all encountered problems, root causes are found, and the problems are resolved with corrective and preventive activities within the determined deadline.” (P11)

Table 6

Challenges facing libraries under SDGs

Codes	Participants
Economic hardship	(P1, P2, P5, P8)
The buildings are old	(P3)
Infrastructure problems	(P3)
Waste management	(P4)
The problem of appointing professional staff	(P5)
Budget problem and exchange rate difference	(P6)
Previous lack of organization	(P7)
Cost issues	(P9, P11)
Being unplanned	(P10)

DISCUSSION

There are various studies in literature regarding sustainability in university libraries. A similar study was conducted by Akkaya (2023). In the study, it was stated that universities have educational, teaching and advocacy identities within the framework of sustainability, that university libraries, unlike other types of libraries, should provide information and raise awareness, and that to achieve sustainability goals, library staff should be educated, and the infrastructure should be sufficient in this regard.

Özdemir and Arslantekin (2024) emphasize that green libraries are more than just buildings; they are a more comprehensive concept. The study selected and examined a green library example that

received the green library award from the International Federation of Library Associations and Institutions (IFLA) and a building with a Leadership in Energy and Environmental Design (LEED) certification. A detailed literature review was conducted using documentary review, a qualitative research method. Furthermore, observational data collection techniques were employed to analyze and identify spatial needs and accelerate solution processes. Observations were conducted based on the full observation role. The study revealed that green libraries not only incorporate new technologies and information but also require new attitudes and approaches.

Al Sensoy and Midilli Sarı (2020) examined how the changing lifestyles and needs brought about by technological advancements affect the formal and functional structure of new-generation university libraries serving young people and academics in the digital age. To this end, four university libraries distinguished by their architectural designs were selected. The selected examples were evaluated through detailed morphological and functional analyses, focusing on criteria such as form and façade, plan scheme, circulation layout, natural lighting, atrium use, color palette, and spatial diversity. The findings indicate that new-generation university libraries differentiate themselves from traditional libraries, prioritize technological and digital content, offer users functional and diverse spatial spaces, and eliminate rigid interior boundaries, allowing for more flexible and aesthetically pleasing arrangements. Furthermore, they have achieved a striking and inviting appearance.

In the study conducted by Akkaya and Yıldırım (2020), the relationship between libraries and sustainability was examined. In the study, it was stated that libraries consist of five basic elements: collection, personnel, building, and budget. It was stated that financial support is extremely important for library services to be efficient, capable of development and sustainable. However, in libraries with adequate equipment, energy saving, respect for users, integrity and the formation of a library climate can be achieved. When the principles of sustainability in libraries are taken as a basis, it is considered important that the materials are prepared digitally, that they are accessible without technical problems, and that there are no cost problems for users.

In the study conducted by the Urban Library Council (2011), it was stated that in order to achieve sustainability in libraries, social equality should be ensured, and everyone should have access to library resources. Branch libraries or mobile libraries should be available, training regarding library activities should be planned successfully and in the long term, and individuals should be provided with safe and effective access to library resources when needed. In addition, it was stated that within the scope of the green library approach, resources should be converted to electronic format and library designs should provide energy efficiency to consume less paper, benefit more from sunlight, and protect the ecological balance. In this direction, libraries should not face economic problems, but they should be supported by the institutions they are affiliated with. Evaluating the research conducted in the literature alongside the findings of this study reveals similar findings and perceptions regarding sustainability.

New demands such as greater participation in educational processes, flexibility and personalization necessitate the adoption of a different approach in higher education. In this context, reviewing and updating teaching methods and contents will be an important step in preparing future generations (Koyuncuoglu, 2023, p. 137). University libraries have played an important role in the realization of goals since the day the concept of SDGs was introduced. It reveals the importance of SDGs especially with the concepts of open knowledge and lifelong learning. Apart from being an institution that provides ways to collect, store, protect, and access information, university libraries see information as an instrument of power to ensure equality and as a role that accelerates development. This situation plays an important role in the realization of SDGs.

The fourth goal of the SDG, “Quality Education” and the sixteenth goal, “Peace, Justice and Strong Institutions,” are goals that directly overlap and are associated with the basic service

understanding of university libraries. It is an important institution that helps large user groups access information and engage in lifelong learning with the opportunities it offers in line with the goal of "Quality Education". In addition, access to information is realized regardless of place and time using technological opportunities (Creative Commons Turkey). This has also been a situation triggering digital transformation. Digital transformation is seen as the way for societies to sustain their existence in a competitive environment today and is considered mandatory to catch up with the requirements of the age and increase social welfare (Kalem, 2022, 97).

University libraries, which play an important role in the implementation of the SDGs, have been performing a series of tasks and services related to the 17 goals for a long time. University libraries provide support by developing practices and strategies such as supporting formal education, constructing green buildings, implementing green technology practices, saving paper, encouraging electronic resources, separating waste and recycling, and conducting cultural adaptation studies (IFLA, 2024). The SDG emphasizes that achieving a sustainable future is only possible through universal cooperation. In this context, the aim of strengthening the implementation tools for sustainable development and revitalizing global partnership forms the basis of the development goal (EUROSTAT, 2022). These collaborations are shaped by elements such as global partnership, financial governance, access to technology, and donations, aid, and sponsorship. Sustainable development goals make university libraries an important stakeholder in this process. Libraries can be used to instill sustainability thinking and teach sustainable development behaviors (Tecimer, Hamalosmanoglu and Kizilay, 2024, 18).

University libraries, by their nature, are always open to collaboration and continue to interact with various actors. Many elements such as information and knowledge resource producers, providers, administrators, other libraries, users and local and central administrations render the library an indispensable part of collaboration. This also reinforces the social acceptance and reputation of libraries. Since sustainability depends on success achieved through deep collaborations and effective partnerships, libraries play a meaningful role in this process. Partnerships are crucial for attaining development objectives and offering mutual benefits for all involved parties. In this framework, the significance of libraries and their linkage to sustainable development goals is increasingly apparent (Akkaya, 2023, 133).

Understanding the relationship between the concepts of sustainability and sustainable development and university libraries has led many university libraries around the world to increase their efforts in developing products and services to contribute to each of the SDGs (IFLA, 2019, p. 4). This increased sensitivity has also been reflected in the relevant literature. In the research conducted by Jankowska and Marcum (2010, 161), studies on sustainability in university libraries were collected under various headings. These headings are "budget and collection sustainability, green library practices, green library buildings and measuring and improving sustainability". However, these reviews reveal that the literature on sustainable development goals and libraries' knowledge partnership is quite limited.

CONCLUSION

The study aimed to examine the services provided by university libraries and the practices implemented by SDGs. In the interviews conducted within the scope of the study, it was determined that the participants implemented practices such as organizing seminars and providing training, allocating high budgets, and including sustainability activities in the strategic plan. It was determined that the libraries had goals such as expanding library services, establishing quality standards, and providing training. It was revealed that the participants carried out studies such as converting library resources into electronic form, developing the library publication collection, and ensuring energy efficiency under the SDGs. At the same time, practices such as "green campus and "waste management" were carried out. It

was concluded that the most important obstacle to achieving the SDGs in university libraries was economic issues.

Universities need to develop environmental, economic, and human characteristics within the scope of sustainability activities to become preferable. If library services are provided successfully, it will be possible for libraries to serve university purposes and support sustainability goals. When the sustainability activities carried out in libraries are taken into consideration, studies are being conducted for this purpose in line with the obtained data. Studies can be conducted in different periods and samples, to determine how effective these studies are. In this context, evaluations can be made regarding the number of services provided, the number of people reached/trained, the effectiveness of the training provided, user satisfaction with the services, and the recommended ability of the services, explaining the levels of realization of sustainable development goals in libraries.

A policy can be proposed to support the libraries of research universities in Türkiye in line with the SDGs and to encourage them in green transformation, digitalization and open information policies. The policy proposal consists of five main topics:

- a. A national funding pool:** Under the coordination of the Council of Higher Education (YÖK) and TÜBİTAK, a dedicated fund could be allocated to sustainable library projects focused on the SDGs. This fund could finance projects such as electronic resource conversion, energy efficiency applications, open access platforms, and staff training.
- b. Green library standards:** A common "Green Library Index" should be created for research university libraries, and institutional performance should be measured annually.
- c. SDG integration with institutional strategies:** University libraries should directly include at least three SDGs in their strategic plans, and these goals should be incorporated into quality assurance processes.
- d. Education and awareness programs:** Regular training should be provided for library staff on SDG-focused digital transformation, sustainability management, and open science.
- e. SDGs monitoring and reporting system:** University libraries should prepare SDG-focused activity reports, and actions should be monitored through these reports and shared with the public.

This policy proposal emphasizes that university libraries can be not only information providers but also active actors in the implementation of sustainability policies. It also provides a management framework and includes concrete tools that decision-makers can implement.

Ethical Statement

This study is an original work.

Ethics Committee Approval

29/11/2024 dated 2024/864 numbered ethical approval was given by NEU University, Social and Human Sciences Scientific Research Ethics Committee.

Author Contributions

Research Design (CRediT 1) Author 1 (%60) – Author 2 (%40)

Data Collection (CRediT 2) Author 1 (%30) – Author 2 (%70)

Research - Data analysis - Validation (CRediT 3-4-6-11) Author 1 (%50) – Author 2 (%50)

Writing the Article (CRediT 12-13) Author 1 (%70) – Author 2 (%30)

Revision and Improvement of the Text (CRediT 14) Author 1 (%50) – Author 2 (%50)

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There is no conflict of interest.

Sustainable Development Goals (SDGs)

Sustainable Development Goals: 4. Quality Education

Sustainable Development Goals: 5. Gender Equality

Sustainable Development Goals: 8. Decent Work and Economic Growth

Sustainable Development Goals: 9. Industry, Innovation and Infrastructure

Sustainable Development Goals: 10. Reduced Inequalities

Sustainable Development Goals: 16. Peace, Justice and Strong Institutions

Sustainable Development Goals: 17. Partnerships for The Goals

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