



Current Trends in Research on the Role of University Libraries in Students' Academic Success: a Review

Cristina Florica SELICEAN*, Marioara ILEA

Faculty of Horticulture and Business in Rural Development, University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Calea Mănăştur Street, No. 3-5, Cluj-Napoca, Romania

*Corresponding author: C.F. Selicean e-mail: cristina-florica.vasiu@usamvcluj.ro

REVIEW

Abstract

The student's academic success is considered as a measure of institution's performance and their departments, therefore also of the libraries. The purpose of this paper is to review the literature to determine the impact of university libraries on student's academic success. A four-step literature review methodology was performed. The search was made in Web of Science Core Collection and Google Academic databases. The most used elements to measure this success were: grade point average, semester grades and retention. The most used library services were: borrowing, information literacy, library visit, computer login and library website login. The literature analyzed in this research shows that university libraries have a clear positive impact on the student's academic success. Also, they have a role in maintaining academic integrity and promote nine Sustainable Development Goals. Libraries embrace all aspects of sustainability. However, the focus is on environmental aspects. The importance given to this subject increases starting from 2017. Another aspect that should be mentioned is that there are no articles that came from the Central and Eastern Europe region.

Keywords: academic library; library impact; student success

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INTRODUCTION

Worldwide, there is a decrease of interest in university libraries as a result of intensive digitization in all fields and the new generations of students who are more and more anchored in the digital world, no longer having the same interest in printed publications and socialization as previous generations. As a result of this phenomenon, university libraries began to find different methods to prove their value, because "In a world without libraries, it would be difficult to advance research and human knowledge or preserve the world's cumulative knowledge and heritage for future generations" (White, 2012). Students' academic success is an important topic for higher education. It is considered as a measure of institutions' performance and their departments, therefore also of the libraries. Because "universities frequently call upon academic libraries to document their value when competing for university resources" (Croxtton and Cooper Moore, 2020), many libraries tried to assess their influence on students' academic success. Therefore, the aim of this study is to review the literature in order to find the methods that researchers have used to determine the impact that the use of university library resources and services has on the academic success of students, how it supports the institution's mission of which it is a part, as well as the results obtained. According to Rietz (2021), the university library is "an integral part of a college, university, or other institution of postsecondary education, administered to meet the information and research needs of its students, faculty, and staff" (https://odlis.abc-clio.com/odlis_a.html). The libraries patrimony consists of: books, serial publications, manuscripts, microforms, cartographic

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documents, audiovisual documents, graphic documents, electronic documents, photographic documents, archival documents and other categories of documents, regardless of the material support. Libraries collections are established and developed by purchasing specific documents, publications, books, regardless of their value and the support on which they were recorded, as well as by transfer, national and international interlibrary exchange, donations, and sponsorships. According to International Federation of Library Associations and Institutions, globally there are 85821 academic libraries reported in 2022 (www.ifla.org). The largest number of academic libraries is in India with over 42000, followed by the United States, 4266 and China, almost 3000. At the continent level, Nigeria has the most academic libraries in Africa (815), Ukraine in Eurasia (1843), Italy in Europe (1581), Brazil in Latin America and the Caribbean (2407), Egypt in the Middle East and North Africa. (464), and Australia in Oceania (190). Globally there are 1.32 academic libraries per 100000 people. At regional level this percentage varies from over 1.5 in North America to 0.31 in Africa and 0.41 in the Middle East and North Africa. The largest academic library in the world is the Harvard Library, with a collection of over 19 million items. The largest library in Europe is the Library of Birmingham. Romania currently has 88 university libraries, of which 46 are affiliated with civil state higher education institutions, 7 are affiliated with military state higher education institutions, and 35 are affiliated with private higher education institutions (www.edu.ro). The role of university libraries is to collect, keep and preserve and at the same time to offer students and teaching staff any type of informational resources: physical and digital publications, references and periodicals. They also allow students to use workspaces (individual or group learning areas), provide access to the Internet and a series of technological resources, training, printing and multiplication services. Also, academic libraries provide many benefits to universities. They increase positive interaction with students by strengthening their instruction and making them more open to academic help. They also improve the educational environment by conducting various academic activities. Regarding sustainability, according to <https://librarymap.ifla.org/stories>, libraries contribute to all 17 Sustainable Development Goals.

Library standards

The International Organization for Standardization (ISO) is a non-governmental organization responsible for developing international standards for products and services. ISO has designed several standards to measure library activity and make it more efficient. According to <https://www.iso.org/ics/01.140.20/x/> there are currently 106 standards for libraries. The most used from the point of view of student academic success are ISO 11620 and ISO 16439.

ISO 11620:2023 standard "Information and Documentation. Library Performance indicators "

This standard is applicable to all types of libraries in all countries. "The main purpose of this document is to endorse the use of performance indicators regarding the quality of library services in libraries and to spread knowledge about how to conduct performance measurement" (www.iso.org). Performance indicators are numerical, symbolic or verbal expressions. They characterize library activities qualitatively and quantitatively to assess their value. Performance indicators are structured in this standard into four main categories: resources, access and infrastructure, use, efficiency, potential and development.

ISO 16439:2014 standard "Information and Documentation. Methods and procedures for assessing the impact of libraries"

This standard is used to demonstrate and assess the value of libraries, the influence of their services and products. The standard "defines terms for impact assessment of libraries and specifies methods for such assessment: for the purpose of strategic planning and internal quality management of libraries; to facilitate comparison of library impact over time and between libraries of similar type and mission; to promote the libraries' role and value for learning and research, education and culture, social and economic life; to support political decisions on levels of service and strategic goals for libraries" (www.iso.org). ISO 16439:2014 considers the impact of libraries on individuals, institutions and society. It is applicable to all types of libraries in all countries.

Students' academic success

Students' academic success is an important topic for higher education. Many institutions and departments have made it a priority and are developing strategic plans to optimize it. Academic libraries collaborate with universities to help achieve this goal. In an attempt to improve this success, researchers have tried to define it and find ways to measure and even predict it. York et al. (2015), reviewing the specialized literature, concludes that " Based on our findings we define academic success as inclusive of academic achievement, attainment of learning objectives, acquisition of desired skills and competencies, satisfaction, persistence, and post-college performance". Common measures of student's academic success are: self-efficacy, performance, completion, retention and persistence. Self-efficacy is the belief in one's ability to succeed. Academic performance refers to how students achieve their

educational goals. Completion is the graduation of the university cycle. Retention is the rate of return among students from year to year. Persistence is a measure of student progress from one reference point to another. Individually, these values do not provide a complete vision of students' academic success. Measuring the success is a vision of the relationship between them and how they affect each other. Libraries impact on students' academic success is determined by correlating the elements of success with the use of university library resources and services.

MATERIALS AND METHODS

To identify the scientific articles related to the research topic, a four-step literature review methodology was used (Price, 2017): 1) development of a topic; 2) literature search; 3) narrowing the scope; 4) synthesizing previous research. The databases used to identify scientific articles were Web of Science Core Collection (WoS) and Google Academic. Web of Science Core Collection is a bibliographic and bibliometric database in online format, mainly comprising scientific journals, conferences and books. This database allows more advanced searches than Google Academic. The search terms were: "academic library", "library impact" and "student success". For Web of Science Core Collection database restrictive settings related to document type, year of publication and WoS categories were used. Two sets of searches were performed. Only the articles from the period 2002-2023 and from the "Information Science Library Science" category were selected for the first set. For a more accurate search, in addition to the field tags, the AND operator was also used. The search was performed using the abstract (A) and topic (T) field. The results can be found in Table 1.

Table 1. The first set of search results

| Search term | Field | Number of articles |
|------------------|-------|--------------------|
| Academic library | A | 4832 |
| | T | 6592 |
| Library impact | A | 2111 |
| | T | 3083 |
| Student success | A | 449 |
| | T | 597 |

Note: Source: Web of Science

In order to find the most representative articles for the chosen subject, a second search was performed to select the articles that simultaneously contain all three terms used in the previous search. The restrictive settings were: for the nature of the document "article" and for the period of publication "2002 – 2023". The search result can be found in Table 2.

Table 2. The second set of search results

| Search terms | Number of articles |
|---|--------------------|
| academic library + library impact + student success | 123 |

Note: Source: Web of Science

Distribution of articles by Web of Science categories

The analysis of articles identified in set 2 was made according to the categories in which they are included. The result is represented graphically in Figure 1.

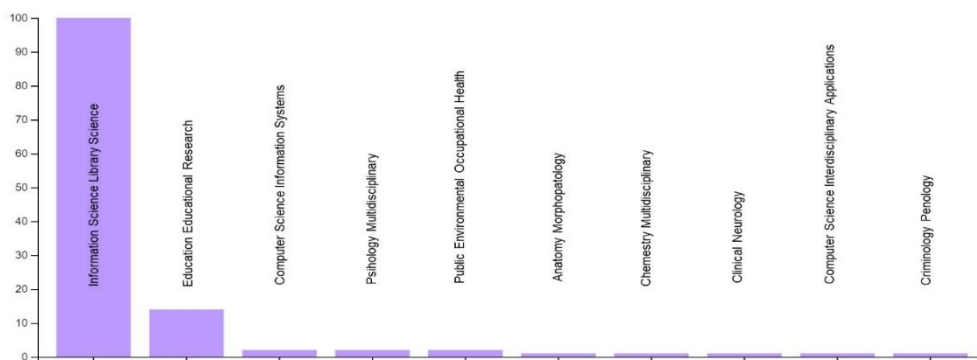


Figure 1. Distribution of articles by WoS categories. Source: Web of Science

The majority of articles belongs to Information Science Library Science category - 100, followed by Education Educational Research - 14, Computer Science Information System - 2, Psychology Multidisciplinary - 2, Public Environmental Occupational Health - 2, Anatomy Morphology- 1, Chemistry Multidisciplinary - 1, Clinical Neurology - 1. Computer Science Interdisciplinary Applications - 1, Criminology Penology - 1 as presented in Figure 2.

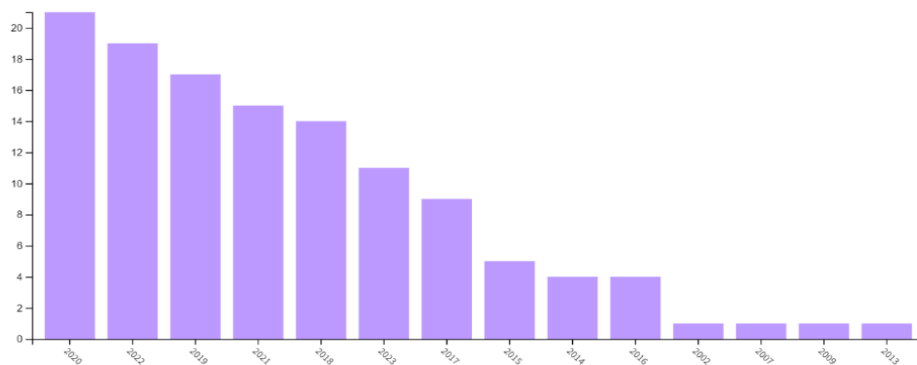


Figure 2. Distribution of articles by year of publication. Source: Web of Science

From the graph it appears that most of the articles were published between 2017 and 2023, indicating that since 2017 there has been an increased interest in the impact of academic libraries on student success.

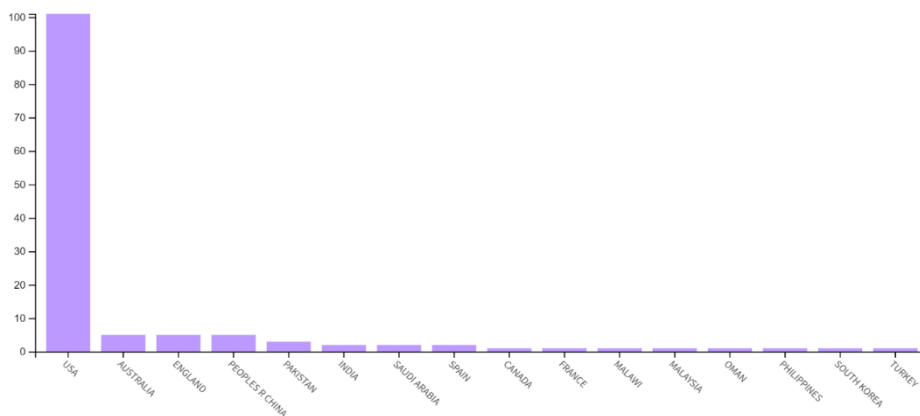


Figure 3. Geographic distribution of articles by country. Source: Web of Science

The country that gave the most importance to the research topic in the selected period is United States of America - 101, followed by Australia - 5, People R China - 5, England - 5, Pakistan - 3, India, - 2, Saudi Arabia - 2, Spain - 2, France, Malawi, Malaysia, Oman, South Korea, Turkey, Canada and the Philippines - 1. Also, it is observed that there are no publications related to this topic during this period from Central and Eastern Europe.

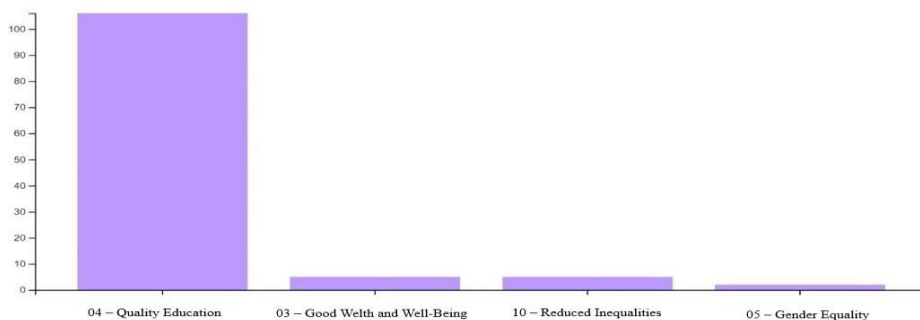


Figure 4. Distribution of articles according to Sustainable Development Goals. Source: Web of Science

It is observed that the majority of articles belongs to SDG 04 – Quality Education - 105, 4 articles to SDG 03 – Good Wealth and Well-Being, 4 articles to SDG 10 – Reduced Inequalities and 2 articles to SDG 05 – Gender Equality. It is noted that 12 articles do not contain data in the analyzed field.

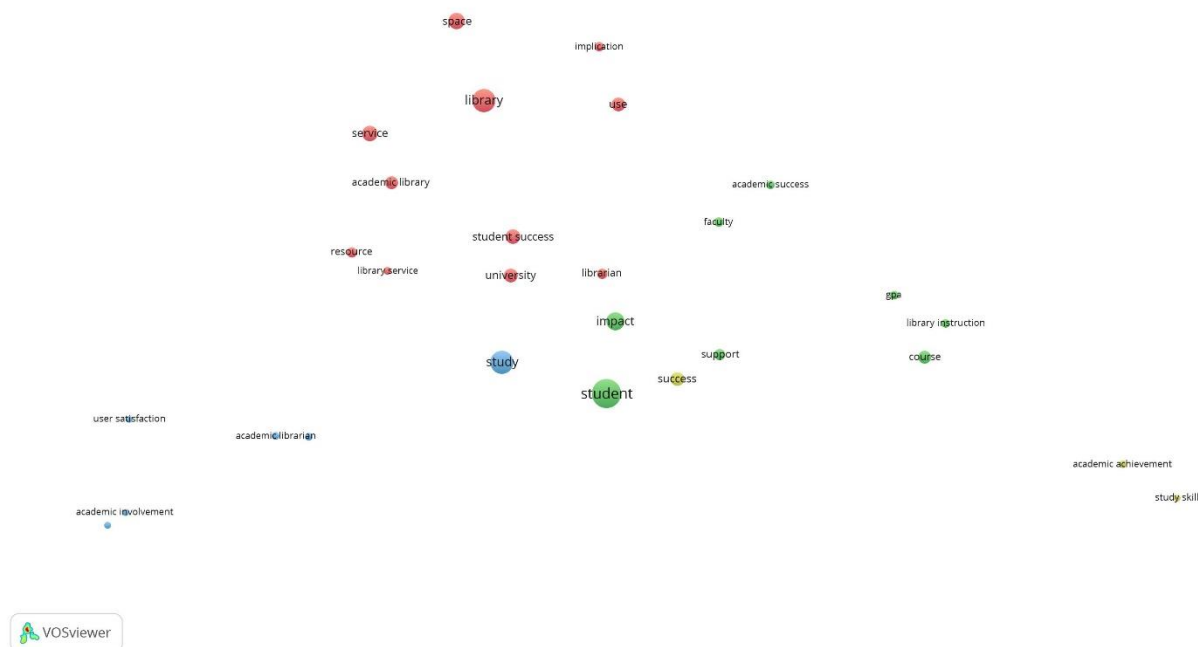


Figure 5. Frequency of words used in the analyzed scientific articles. Source: Web of Science

The most frequently words used in the analyzed articles are: student, library, study, impact, student success, service, space, use, academic library, university. In order to achieve the goal of the research, four aspects will be followed in the content of the articles: students' academic success, the impact of academic libraries on students' academic success, user satisfaction and academic integrity, sustainability and Sustainable Development Goals. The correlation between the elements by which the academic success of students is defined and the library categories of resources and services used determines the impact that the university library has on this success. User satisfaction indicates a positive impact on one or more aspects by which they define their academic success and at the same time it is beneficial to the institution. The involvement of the university library in promoting academic integrity, sustainability and the SDGs prove that it supports the institution's mission of which it is a part.

RESULTS AND DISCUSSIONS

After analyzing the distribution of articles by WoS domains, it was observed that the research topic fits best in the Information Science Library Science category, 100 of the 123 articles belong to it. The distribution of articles according to the year of publication revealed an interesting thing, namely the fact that until 2017 only a few articles were published, and starting with 2017 the number of articles has increased significantly from one year to the next. This indicates an increase in interest in the impact that university libraries have on the academic success of students. The geographical distribution of the articles by country revealed a large discrepancy in the interest given to this subject. Out of 123 articles, 101 come from United States of America. The other articles are distributed in Australia, North America, Asia, Africa, the Middle East and Western and Southern Europe. It was observed that there is no article distributed in Eastern Europe, the region where the author belongs, seeing the opportunity of conducting a future research using a university library from this region. The distribution of articles according to Sustainable Development Goals demonstrated the contribution of university libraries to quality education, 101 articles out of 123 belonging to SDG 4 Quality Education. Also, they have a contribution in the field of health, reduced inequalities and gender equality. The 123 selected articles were analyzed individually and a number of 35 articles were chosen that best express the connection between the use of the library resources and services and the academic success of the students. The main topics covered by the authors were: students' academic success (definition and

measurement methods), the impact of academic libraries on students' academic success and user satisfaction. Other topics covered by the authors were: sustainability of libraries and how do they promote United Nations sustainable development goals. The research methods used in all cases were questionnaires addressed to students, teachers and librarians. Also, data collected from library systems were used. These data were analyzed by researchers using several types of statistical analysis, such as: ANOVA, Chi-square test, T-test, Pearson correlation, Kruskal-Wallis test, Least squares method, Hosmer and Lemeshow's test (2000) as well as the SEM methodology. These types of analysis can be a source of inspiration for those who want to do research on this topic, using these types of data.

Students' academic success

The definition of student academic success appears in two articles. Weatherton et al. (2021), concluded that "articles that defined success often used quantitative, academic outcomes such as grade point average, retention, career success and social level". They also suggested the need to integrate student voice into current definitions of success. Students defined success by acquiring leadership skills and building a career (Maryrose and Schussler, 2021). In the specialized literature, academic success is measured according to the elements included in its definition. These elements are grouped in Table 4 according to the authors who used them in their scientific works.

Table 3. Measuring elements of academic success.

| Element | Autor |
|---|--|
| Grade Point Average | Castillo-Manzano J et al., Mayer J et al., Scoulas J et al., Soria K et al 2018, Croxton R et al, Cetin Y et al., Gaha U et al., LeMaistre T et al, Anderson L et al., O'Kelly MK, De Groote SL, Soria K et al. 2017 |
| Retention | Wright L, Haddow G et al, LeMaistre T et al., Soria K et al. 2015, O'Kelly MK, Howell K |
| Self-reported gains in critical thinking | Whitmire E |
| Semester grades | Moodley S et al., Salem Jr J, Cetin Y et al., Soria K et al. 2015, Carvalho M et al. |
| Information literacy instruction results | Moodley S et al. |
| Obtaining desired skills and competencies | Mayer J et al., Soria K et al. 2017 |
| Persistence | Mayer J et al., Salem Jr J |
| Personal performance | Mayer J et al. |
| Academic involyment | Soria K et al. 2017 |
| Percentage of subjects passed on first sitting | Castillo-Manzano J et al. |
| Speed of completing university studies | Castillo-Manzano J et al. |
| Total number of promoted disciplines | Castillo-Manzano J et al. |
| Disciplines x time | Castillo-Manzano J et al. |
| Credits earned | Croxton R et al. |
| Courses promotion | Wimberley L et al. |
| Completion of doctorate | Jaiprakash M |
| Publication of scientific papers | Jaiprakash M |

It is noticed that the most used elements for measuring the students' academic success were: grade point average, semester grades and retention. Other variables used in the analysis performed in these articles were socioeconomic and demographic variables: university admission grades, age of admission, time spent in university, domicile, nationality, gender, social scholarship, American College Test average. Soria K et al. (2015) analyzed the impact of these socioeconomic factors on first-year students' library use in six areas: borrowing books, reading e-books, using online references or talking to a research consultant, logging into an electronic journal, using library workspaces or connecting to a database. The research found that first-year students from lower socio-economic backgrounds are less likely to use libraries in almost all areas.

The impact of academic libraries on students' academic success

Academic success was correlated with the use of the following university libraries resources and services to demonstrate the impact they have on students' success.

Table 4. Services and resources of academic libraries

| Services and resources | Author |
|--|---|
| Loans | Castillo-Manzano J et al., Moodley S et al., Mayer J et al., Croxton R et al, Haddow G et al., Cetin Y et al., Soria K et al. 2017 , Carvalho M et al. |
| Loans x time | Castillo-Manzano J et al. |
| Renew coef | Castillo-Manzano J et al. |
| Information literacy instruction | Wright L, Moodley S et al., Mayer J et al., Soria K et al. 2015, Croxton R et al., Gaha U et al., Soria K et al. 2018, Anderson L et al., O’Kelly MK, Soria K et al. 2017 |
| Usage of library services and resources | Whitmire E, Scoulas J et al., Jaiprakash M, Anderson Let al., De Groote SL, O’Kelly MK, Soria K et al. 2015 |
| Computer login | Moodley S et al., Mayer J et al., Croxton R et al., Haddow G et al., Soria K et al. 2017 |
| Laptop logins outside the campus | Moodley S et al. |
| Library visit | Scoulas J et al., Croxton R et al, Haddow G et al., Soria K et al., Carvalho M et al. |
| Interlibrary loans | Soria K et al. 2015 |
| Database login | Soria K et al. 2015, Haddow G et al., Soria K et al. |
| Library website login | Soria K et al. 2015, Croxton R et al., Haddow G et al., Soria K et al. , Carvalho M et al. |
| Open educational resources | Salem Jr J, Wimberley L et al. |
| Special collections visit | Croxton R et al |
| Library user status | LeMaistre T et al. |
| Living learning communities | Howell K et al. |

The most used library services and resources in the analyzed scientific papers were: borrowing, information literacy, library visit, computer login and library website login. After correlating the services and resources of the library with the elements of measuring the students’ academic success, authors confirmed that the use of various services and resources of the academic library positively influenced the great point average, retention, semester grades and persistence. Moreover, the students acquired the desired skills and competencies. The performance measures of academic library have a positive influence on students’ educational outcomes. (Whitmire, 2002). In addition to the impact on student success, the library also has a positive impact on the research activity of its institution. Noh (2012) confirmed that workforce and budget, investment in e-resources and in university libraries improves academic research output. Romo-Gonzalez J et al. (2018), concluded that some of the information resources have a positive impact on academic productivity and quality, but not innovation.

User satisfaction

The satisfaction of university library users is determined by the quality of library services, resources and library equipment. Allison et al. (2019), investigated the immediate impact of opening a learning space in an academic library and concluded that this attracted more students to the library. Beneyat-Dulagan and Cabonero (2023) concludes that " The most preferred physical learning spaces were a makerspace, group study spaces, quiet study rooms, and individual study spaces (individual study carrels), while the most preferred virtual learning spaces were computer workstations, interactive learning spaces, video viewing stations, and internet cafés. ". Essien et al. (2021), turned their attention to international students and how they use academic library. The results showed that “in the absence of library orientation, international students took time to get used to and learn to use library resources through social learning practices that combined their personal cognitive characteristics with environmental and social features” However, the specific library use challenges faced by international students were network access and library database access outside the university campus.

Academic integrity, sustainability and Sustainable Development Goals

In addition to the role that academic libraries have in supporting students to achieve academic success, in supporting teaching and research, they have a positive effect in other areas as well. Gunton (2022), demonstrated the important role of libraries and librarians in contributing to the development of evidence-based educational approaches to prevent and reduce incidents of academic misconduct, as well as students' understanding of

academic integrity. Sustainability is an increasingly debated topic in all fields of activity. Ochôa and Pinto (2014), pointed out the importance of integrating sustainability with quality management of libraries. Tribelhorn (2023), explored sustainability, awareness of sustainability, and how it is measured in academic libraries in the United States of America. He mentioned that few libraries have adopted sustainability holistically and the focus has been on the environmental aspects. There are limited sustainability assessment tools and the United States Sustainable Libraries Initiative considers the following indicators: preparation, campus involvement, community engagement, social wellbeing and resiliency, financial sustainability, collections, and services, and environmental stewardship. Keller (2023), transposed a sustainability model from business to the context of libraries, indicating the four stages of sustainability in libraries:

- **Sustainability 0.0:** Increasing efficiency through centralization and standardization
- **Sustainability 1.0:** Strengthening customer orientation
- **Sustainability 2.0:** Sustainability targets as an element of library strategy
- **Sustainability 3.0:** The library turns its perspective to look from the outside in

The contribution of libraries to the achievement of the United Nations Sustainable Development Goals is also covered in the selected articles. Mashroofa (2022) and Connaway (2023) confirmed that academic libraries support sustainable development goals. Mashroofa (2022) identified nine Sustainable Development Goals: Goal 1- No poverty, Goal 3 - Health and well-being, Goal 4 - Quality education, Goal 5 - Gender equality, Goal 9 - Industry, innovation and infrastructure, Goal 11 - Sustainable cities and communities, Goal 12 - Responsible consumption and production, Goal 16 - Peace, justice and strong institutions, Goal 17 - Partnerships to achieve the goals. Library services that can support sustainable development are: supporting institutions' mission, increasing literacy, transforming nations through knowledge, promoting peace, social harmony and social cohesion, reducing the digital gap, reducing social and gender inequalities, evaluating academic libraries, contributing to university rankings.

Limitations

Although a thorough analysis as possible of the databases was attempted, the large amount of articles limited the finding of all relevant for this topic. Also, the search was made according to the terms that were considered the most representative, there being the possibility that there may be articles that were not included in the obtained results.

CONCLUSIONS

After analyzing the selected scientific articles, a general conclusion was drawn, that academic libraries have a clear positive impact on the students' academic success. This impact is achieved either through the use of library resources (printed and electronic publications, databases, interlibrary loans, etc.), or through the use of library equipment (computers, internet, printers etc.), or through the use of library spaces (for study and for socializing), either through the services offered and through the qualified library staff who provide support in searching and identifying articles for study and research, support in understanding the notion and importance of academic integrity and organize information literacy courses. This impact positively reflects on all the elements that define the academic success of students: grade point average, semester grades, retention, persistence, acquisition of desired skills and abilities, academic involvement, speed with which they complete their studies, etc. Also, libraries have a role in preventing and reducing incidents of academic misconduct, contribute to the achievement of nine Sustainable Development Goals. Regarding sustainability, the focus is on environmental aspects.

Analyzing the period of publication, there is a growing trend of interest in how academic libraries support their institution in achieving students' academic success starting with 2017. An important aspect that emerges from the analysis of the geographical distribution of the publications is that there are no articles from the Central and Eastern Europe, seeing the opportunity to conduct a research using a university library from this region.

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Conflicts of Interest

The authors declare that they have no conflict of interest.

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