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# Co-Working Space in Library: A Literature Review

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# ABSTRACT

This study aims to understand the transformation and implementation of co-working spaces in the context of libraries. This research is important because the presence of co-working spaces can provide good opportunities for libraries in the future. The research method used is a literature review. The data comes from searching for information with the keyword "libraries OR library AND working AND space" in the Scopus and Google Scholar databases and 15 articles were obtained as primary literature. The results of the study stated that libraries can undergo a significant transformation from just an information center to an activity center by integrating the concept of co-working space. The implementation of co-working space in the library is not only considered a temporary solution but also an integral part of the ongoing strategy to transform the library into a dynamic learning center, in line with the latest developments and user needs. Co-working is part of the innovation of transforming libraries from just information centers to activity centers.

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## **1. INTRODUCTION**

Libraries, as centers of knowledge and learning, have undergone many changes over time. In this digital era, libraries are no longer just a place to read books or find references, but also a place that supports various learning, working, and collaborating activities (Andrews et al., 2016; Einarsson & Hertzum, 2020; Lefebvre, 2018). The development of information technology has changed the way people work. Many jobs now no longer require a physical office, and this has driven the growth of co-working spaces. The modern co-working phenomenon, according to (Butcher, 2018) has explored many forms of organization through group work. With more than 7,800 co-working spaces worldwide and around 510,000 coworkers in 2015, emerging co-working claims widespread participation and exponential growth. However, since its inception in the mid-2000s, co-working has grown at an exponential pace, and this growth coincided with the Global Financial Crisis of 2007-2008. In general, it has been found that co-working is a sign of a larger social change driving demand for flexible, independent, and entrepreneurial work.

A co-working space can be interpreted as a place where a group of students, lecturers, researchers, the community, and business people gather to discuss, socialize, and work. Co-working space aims to improve the image of the library and reduce the "boredom" of visitors or users (Nashihuddin et al., 2019). Co-working spaces offer a flexible and collaborative work environment, which is perfect for freelancers, startups, and other professionals (Sukirno & Junandi, 2021).

However, not everyone has access to co-working spaces, especially in areas far from the city center. This is where libraries can come into play. Research conducted by (Urrutiaguer, 2016) shows that libraries aim to provide collections needed by users, but in reality, libraries are currently providing breakthroughs to attract users to come to the library by providing co-working space services that attract users to come to the library. By providing co-working space, the library can not only increase the number of visitors but also expand the range of its services and provide added value to the community (Bednář et al., 2023, Lee, 2017). Procuring a co-working space in a library is not an easy task. There needs to be careful planning, including determining the location, space design, and facilities to be provided. In addition, libraries must also consider how to manage this co-working space, including determining rates, operational schedules, and usage rules (Syamsiati, 2018).

The concepts related to co-working spaces and libraries have several similarities that create innovative environments and support learning (Schopfel et al., 2015). First, there is a new library model known as a learning center, which integrates services, digital resources, and user orientation. Its main focus is to provide learning opportunities and support for students and researchers. Second, a coworking space is a place where individuals from different backgrounds and professions can come together to work independently or collaborate. The existence of these coworking spaces not only provides a physical workspace but also creates a sense of community, networking opportunities, and access to a variety of resources. Third, both coworking spaces and libraries are considered places that encourage innovation. By creating an environment conducive to creativity, both provide a platform to share knowledge and develop new ideas. Finally, both libraries and co-working spaces promote social learning. They become places where individuals can engage in shared learning, collaboration, networking, and knowledge exchange. Flexibility is also a key characteristic, with both offering a range of spaces and resources that can be tailored to individual needs and preferences. All of this together forms an active community and supports intellectual and professional growth.

Ray Oldenburg's research highlights the development of intermediary places adapted to individualistic urban lifestyles and mobility, bridging the gap between the workplace and home. This third place, characterized by its friendly atmosphere and adaptability, involves locations like train stations, libraries, bookstores, or cafes-essentially any place that encourages human interaction and personal development. Emphasizing the synergy between private benefits and the greater public good, this third venue serves as a collaborative workspace with foundational principles such as openness, flexibility, usability, and accessibility. Most importantly, those places that emphasize work orientation are referred to as "coworking spaces," reflecting the evolving nature of these intermediary places in facilitating informal meetings and social interaction (Schopfel et al., 2015).

Previous research at the Faculty of Engineering Library with the tagline "Space, Community, and Knowledge" emphasized the importance of innovation in providing services to users, including students, lecturers, and staff employees. In its development efforts, the library not only involves the academic community through activities and skills training but also enriches its collection of library materials with technical and non-technical books. The concept of co-working space adopted aims to break down barriers, create synergy in cooperation, and expand social relations. The correlation between the concept and the significant increase in the utilization of service facilities and participation in library activities is the main highlight, illustrating the positive impact of the innovative approach taken by the Faculty of Engineering Library (Syamsiati, 2018).

Previous research has discussed the potential to transform libraries into maker spaces through initiatives such as the Tech Hub, Co-Working Space, Mini Lab, and Research Pod. The main challenges faced involve the uneven distribution of ICT infrastructure as an external factor and the difficulty in adopting the makerspace concept due to the mindset and culture of the library as an internal aspect. Although the opportunity for library transformation into a maker space is very large, hard work is needed to convince stakeholders (Irhamni, 2018).

Based on the explanation above, this study aims to understand the transformation and implementation of co-working spaces in the context of libraries, clarify their potential impact, and help identify knowledge gaps that can be filled by this research. Evaluations include increased visits through comfortable workspaces, increased user satisfaction through additional facilities, and contributions to the development of the creative economy through collaboration. Research also considers integration challenges and looks for potential solutions to provide insights for libraries looking to adopt co-working spaces.

#### 2. METHODS

This study adopts a literature review method to understand more deeply the implementation of co-working spaces in libraries. According to (Fink, 2014) there are seven stages in a literature review. To make this paper more reliable and accurate, the author uses these seven stages, which are as follows:

(i) Selection of research questions. This research question, can provide an overview of the transformation and implementation of co-working space in the library, so that research questions can be drawn, namely: how is the implementation of co-working space in the library?

(ii) Selection of bibliographic databases. A bibliographic database is a composite of articles, books, and reports that provide the data needed to respond to a research question. Generally, access to these databases is done online. In this case, the author uses trusted databases, namely Scopus and Google Scholar.

(iii) Search term selection. The definition of search terms is formed through words and concepts that form research questions and apply certain grammar and logic in searching. To get the desired result, the author uses the Boolean logic formula. The author entered the keyword "libraries OR library AND working AND space" for an information search on the Scopus and Google Scholar databases.

(iv) Application of practical screening criteria. Identify relevant articles by formulating inclusion criteria or by specifying criteria to exclude topics or reviews. The handy filter guide combines information such as language, publication location, article category (academic journal), publication date, and funding institution. Search results differ depending on the database and the use of filters. In this case, the authors only filter on years within the last decade.

(v) Application of methodological screening criteria. Criteria for evaluating scientific quality are included in methodological standards. In the fourth stage, this fifth stage is also used by the author to ensure that the selected or downloaded article is relevant. At this stage, the author does the screening manually, namely by looking at titles that are relevant to the research topic. From the screening results, the author found 32 articles that were relevant to topic.

(vi) Review. Ensuring that reviews are reliable and accurate, abstracting data from articles, training readers to abstract, supervising the quality of research, and testing developed processes require the use of standard formats. Of the 32 articles that the author found, 15 were used as primary literature.

(vii) Synthesize results. The results of the literature review in this paper are synthesized descriptively. Descriptive synthesis is the interpretation of a review finding based on the reviewer's experience, quality, and available literature content.

This analysis will involve a comprehensive literature review to understand the transformation and implementation of co-working spaces in the library context, clarify their potential impacts, and help identify knowledge gaps that this research can fill. The main data sources will be scientific articles, books, and related publications that discuss the concept of co-working space and the role of libraries as a place. Literature analysis will involve identifying the main findings and research methods used. The results of this literature review method will provide a solid theoretical foundation to guide further research.

#### **3. RESULTS AND DISCUSSION**

Analysis using the literature review method can provide a deeper understanding of various aspects related to the transformation and implementation of co-working space in the library. The following is the result of literature analysis based on research that has been done.

Author	Year	Result
J. Schopfel, J. Roche, G. Hubert	2015	This article introduces the concept of co-working space and innovation in the context of a learning center. From the results of the discussion in this article, it can be concluded that through the application of a collaborative and shared workspace model, academic libraries can fulfill their social responsibilities on campus and in the community while contributing to innovation and knowledge transfer. Programs in the Learning Center will enhance students' employability and job placement prospects.

Table	· 1.	Researc	h	's	Find	ling
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Author	Year	Result
		Each library must create its project to fit into the specific
<u>Irhamni</u>	2018	ecosystem on its campus. This article discusses the opportunities and challenges of libraries transforming information centers into activity centers and maker spaces. Based on the results of the study, it can be concluded that the library has the opportunity to open activity center services such as a tech hub, co-working space, mini lab, and research pod. There are several problems faced from an external point of view, including limited infrastructure. The second problem is the internal problem faced by the library itself, namely the mindset (mindset) and culture (work culture)
		of the library.
I. Syamsiati	2018	The purpose of this article is to create and improve collaboration between librarians and users in establishing synergistic cooperative relationships in libraries, as well as provide concrete insights into the implementation of co- working space in the FK-KMK UGM Library and concrete examples of its impact on users. Based on the results of the study, it can be concluded that co-working spaces can create creativity, innovation, and social interaction.
S. Sukirno, S. Junandi	2021	This article discusses a case study on the experience of the Library of the Faculty of Engineering at UGM in developing library facilities using a co-working space approach and implementing it, as well as its impact on creativity in the academic environment. Based on the results of the study, it can be concluded that the development of library facilities with the implementation of co-working spaces encourages users to feel comfortable using FK-KMK UGM library facilities. For this reason, for the co-working space in the FK-KMK UGM library to function properly, care and cleanliness must always be carried out.
Noorika Retno Widuri, Maman Setiawan	2021	The article describes the possibility of the library's physical business becoming CWS as well as the potential information business within CWS. Then there are the market segments of these businesses. The results and discussion contain a list of business plans that can be developed; CWS SWOT analysis and scientific information services; business analysis; users and suppliers; analyzing awareness; whether this business is easy to follow or not; analysis has been seen at a more limited scope, namely competitors in the same industry or market; market segmentation of information business services; product prices; product advantages; and CWS competitors; a marketing plan;
Mirna W. Lotfy, Shaimaa Kamel, Doaa K. Hassan, Mohamed Ezzeldin	2022	and a budgeting plan. This article outlines the reasons why students favor informal learning spaces over libraries. The report encompasses the researcher's observations and survey findings on whether an informal learning environment identified in the literature and part of the research data collection checklist is present within the architectural library space.
Fang Zhao, Catherine Prentice, Joseph Wallis, Arvind Patel, Marie- France Waxin	2020	The research examines the trend of co-working spaces in the context of smart cities and examines their implications integratively, from an economic, social, and cultural perspective, and provides a better understanding, at a strategic level, of what role coworking spaces might play in smart cities

Author	Year	Result
		and smart city ecosystems. Results and discussions contain the
		concept and model of coworking spaces; important scenarios emerging in the workforce; the importance of social capital
Nikko Aditya Perdana,	2015	generated through social interaction in coworking spaces as a platform for innovation and open collaboration; an urban economic perspective; and a public space perspective. The article discusses the design of the library and co-working
Mariana Wibowo, Filipus Priyo Suprobo		space in the city of Surabaya, which has the aim and hope of facilitating its users so that it can unwittingly spur people's interest in reading in the city of Surabaya so as not to ignore a lot of information that continues to grow but also add insight and relationships in the business world that can later support the welfare of the people in the city of Surabaya.
Muntashir	2023	This article aims to review the concept of co-working space (Co- WS) as well as the principles of building and its influence in meeting the needs of co-working spaces for digital nomads. In addition, the paper also discusses strategies for integrating Co-
		WS as a library service, including the characteristics of librarians needed to manage Co-WS. The results and discussion contained the following: CWS concept, Co-WS potential users: Serving digital nomads, Library as a co-working space; embedded business librarian in co-working space services.
Masykur Hidayatullah, Hermintoyo	2018	This article discusses maker space activities in community libraries. C2O Library and Collaborative have a role as a space for exploration and learning practice (hands-on learning and exploration), coworking space (coworking space), and a place to foster a culture of sharing equipment (make culture share your stuff). The results and discussions contained: Implementation of Makerspace in C2O Library and Collaborative; Relevance of Makerspace as a Tool for Community Empowerment in C2O Library and Collaborative.
Wahid Nashihuddin, Rochmad Kartiko, Nurul Farida, Petrus Lende	2019	This article discusses the concept of developing a co-working space library café' (CWS-LC) in libraries for Gen-C. Gen-C is the millennial generation (without being limited by age) that has behaviors and characteristics of dependence on digital technology and also discusses how to implement and develop COWs. Content of discussion: description of co-ws services (digilib café fisipol UGM), libri café Unsyiah, café library UM), behavior and characteristics of Gen-C, library-infosphere, bookless library, social library business.
Tim Tully	2018	This article discusses the reasons and benefits public business librarians should implement COWS externally and some strategies on how to implement library services.
Nurida Maulidia Rahma, Cipta Endyana,	2022	This study aims to determine whether libraries participate in collaboration and innovation activities. The results showed that
Dicky Muslim		the library is a place of collaboration and innovation. So libraries have a role in the creation of collaboration and innovation. So it can be concluded that the new role of the library is to support collaboration and innovation activities.
Ruth V. Small	2014	This article describes a study of the attitudes toward innovation activities, motivational support, and information needs of young innovators in grades 4 to 8 as they progress through the innovation process. This initial research implies that school

Author	Year	Result
Valery Urenev, Tetyana Rumilets, Olga Savytska, Nadiia Dmytrik, Bakhtin Dmytro	2022	librarians have the opportunity to (1) provide "innovation spaces" within the library that encourage curiosity and exploration, and (2) serve as role models or "innovation mentors" for all students. which means there is an opportunity to increase student motivation. Provide information on support needs throughout the innovation process. Contains an analysis of the renovation experience of industrial facilities, showing the practice of placing new functions in industrial facilities with appropriate planning layout systems and in facilities that do not have relevant indicators but are unique or have a history. and also identified two types of library design based on renovation: buildings specifically adapted to libraries or libraries integrated into broader uses.

#### **3.1.** Library Transformation

Research conducted by (Irhamni, 2018) shows that unrelenting technological developments over the past two decades have caused significant changes in various aspects of human life. In particular, in the realm of libraries, a striking transformation occurs, especially in the dynamics between users and the library environment. This evolution manifested itself in the transformation of libraries from information centers into complex public spaces. This article aims to explain the prospect of libraries changing from information stores to communal hubs of activity, commonly referred to as maker spaces. Ways to transform this include the addition of Tech Hub, Co-Working Space, Mini Lab, and Research Pod services. However, two fundamental challenges, namely external problems related to uneven Information and Communication Technology (ICT) infrastructure, as well as internal problems involving the mindset and culture of library staff, are serious obstacles.

Then today's libraries are required to re-permeate their views on users with a unique perspective. As a result, the library finds itself at the point of transition into a community-oriented public space or maker space. A maker space is considered a space created to facilitate collaborative and creative learning (Einarsson & Hertzum, 2020). As the influence of technology continues to increase, libraries must strategically collaborate with technology to facilitate a mutually beneficial interaction process for users. Although the opportunities for library transformation are considerable, there are two main challenges. External challenges involve uneven ICT infrastructure limitations, while internal challenges relate to the mindset and internal cultural framework of libraries. Internal challenges relate to libraries' ability to transition smoothly to collaborative practices, both within the library environment and in collaboration with external parties.

In connection, the research conducted (Rodin, 2019) stated that Islamic university libraries in the 4.0 era like today must be able to transform if they want to remain relevant to the times and not outdated. This will certainly support the library to turn into a place to interact with social communities and coworking spaces as a place for new productive and constructive innovations to grow.

With challenges related to internal infrastructure and culture, libraries and librarians have a responsibility to engage in advocacy efforts creatively (Nagle, 2021; Kosciejew, 2020; Einarsson, 2020). It involves merging contemporary communication approaches and modern marketing strategies to convincingly communicate the benefits of transformation into a maker space. Hard and coordinated efforts are needed so that libraries can play an increasingly important role as centers of creativity in society.

#### **3.2. Library Co-Working Space Implementation**

#### 3.2.1. Co-Working Space as The Collaboration and Innovation

In several countries around the world, they have used coworking spaces to support collaboration activities to create innovation and creativity. Coworking spaces have evolved in the last decade. Coworking spaces place a greater emphasis on ' sharing'. In addition, coworking spaces provide a community to foster a culture of sharing, social interaction, and knowledge and expertise exchange. There are many terms used to refer to coworking spaces (Cheah et al., 2019). In addition, (Cheah et al., 2019) study that local governments can formulate policies to set aside land and buildings for infrastructure development, such as coworking spaces.

The emergence of "co-working space librarians" reflects the impact of these changes on the profile of jobs in libraries. Librarians in this role have responsibility for the development and assistance of philosophies and approaches to social, cultural, and educational programs that support co-working communities.

Libraries need to collaborate with technology to create useful interactions for users. It involves the integration of technology to support collaborative and creative learning. In addition, libraries also need to engage in collaborative efforts with various relevant parties, including government agencies, educational institutions, and the general public. This collaboration aims to strengthen the library's position as a center of community activities (Lee, 2021).

In the academic environment, there are initiatives such as the "Blended Library" project at the University of Tübingen that explore the concept of co-working. Academic libraries can also host co-working communities for students, faculty, and entrepreneurs, demonstrating the library's economic value and new ways to envision academic library space. Academic libraries need to engage in innovative initiatives and programs, especially those related to knowledge transfer and innovation from research. The library's involvement in programs such as the entrepreneurship program in France and courses on entrepreneurship in the United States shows the potential and opportunities that can be explored.

In line with the research that has been conducted by (Rahma et al., 2022) namely the application of library co-working space to develop libraries to have a new role as a supporter of collaboration and innovation activities. This research states that libraries can contribute to creating an innovation ecosystem by adopting the concepts of co-working spaces and innovation hubs. The study also states that libraries can provide services and facilities that support the development of skills, knowledge, and networks of users.

Research conducted (Small, 2014) illustrates that there is no collaboration in libraries, and libraries do not play a role in student innovation. Students get innovation from other media. Nevertheless, (Small & Douglas Meredith Professor, 2014) suggest that libraries and librarians participate in the innovation activities of their students. Therefore, libraries should be aware of and actively participate in creating collaboration and innovation. Practically, it will be facilitated by the start of the application of the concepts of co-working space, maker space, learning commons, and other room concepts, in which some activities can provoke collaboration and innovation among its users.

The concept of co-working spaces and innovation hubs in libraries is designed to serve as a dynamic platform that fosters interaction, collaboration, and networking among users. These spaces not only facilitate knowledge sharing and professional connections but also serve as innovation centers equipped with state-of-the-art services and facilities aimed at nurturing the development of new ideas, prototypes, and products. By embracing this model, libraries transcend their traditional roles and become integral players in shaping innovation ecosystems within academic institutions and broader community environments. This approach enables libraries to drive interdisciplinary collaboration, enhance access to resources, and support entrepreneurial ventures, ultimately contributing to the socio-economic development and intellectual advancement of society (Soska & Navarro, 2020).

In addition, in research (Syamsiati, 2018) libraries must create a difference by diversifying their collections to include technical and non-technical materials such as literature, entrepreneurship, novels, psychology, health, and popular general knowledge magazines. This diversification not only aims to enrich the library's collection but also to form a unique identity, distinguishing the Faculty of Engineering Library from other departmental libraries. Furthermore, libraries should engage in collaborative efforts by organizing skills training activities and sessions to form synergies and exchange information, scientific knowledge, and experience. Placing emphasis on social interaction and improving relationships between students, faculty, and staff creates an environment that supports the exchange of ideas and knowledge.

# 3.2.2. Library Co-Working Space Development

In another study on the discussion of co-working space libraries by (Sukirno & Junandi, 2021) on the attitude of facing significant changes in user habits and behaviors triggered by the use of information technology and digital content, the FK-KMK UGM Library shows a sustainable response. Users tend to switch to using devices such as laptops and smartphones when utilizing library facilities, encouraging the need for continuous adaptation to technological developments and user habits.

In a concrete response to the change, the co-working space approach was implemented. Practical steps such as rearranging layouts, adding facilities, and changing room colors are planned to create spaces that suit the needs of increasingly digitized users. Co-working space is seen as a solution to create a dynamic and creative environment. Changes in layout and the addition of facilities, such as a reading space on the front porch, demonstrate a commitment to providing a better learning experience. This creates a space that not only functions practically but also has aesthetic elements, accommodating the needs of users to use the library as a comfortable and supportive place of learning.

The study findings highlight the importance of user comfort, and the study recommendations emphasize the need for consistent care and hygiene. This shows that non-technical factors such as cleanliness and a comfortable atmosphere have a crucial role in ensuring the success of the co-working space concept. With the growing awareness of its responsibility to users, the FK-KMK UGM Library understands the need to continue to develop facilities. This highlights the importance of sustainable strategies in library space management and development to remain relevant and meet the evolving expectations and needs of users.

In subsequent research conducted by (Schopfel et al., 2015) it was introduced that the concept of co-working can be applied in academic libraries by turning the space into an "information commons" equipped with new collaborative workstations. The transformation includes facilities such as co-working areas, multimedia stations, a writing center, and a café area, creating an environment that supports collaboration and creativity. Libraries have the potential to adopt the idea of "bookless" by turning it into a co-working space where social learning emerges from sharing workspaces for creative activities. Examples of implementation of this concept, such as in The Edge, demonstrate the application of smart technology to create a place for meeting, exploration, learning, and discussion around creative practices in digital technology.

In line with the research that has been conducted by (Syamsiati, 2018) co-working in libraries can be categorized into four different types, as exemplified by the response of the Library of the Faculty of Engineering at UGM to the demands of the millennium era through innovative strategies. This is reflected in a range of activities and skills training programs tailored for students, faculty, and staff. The library's guiding principles, embodied in the tagline "Space, Community, and Knowledge," affirm its commitment to providing physical spaces that support creativity, build active communities, and offer diverse sources of knowledge.

Co-Working Space aims to remove barriers and encourage an open environment that supports collaboration (Orel et al., 2022). The correlation between this concept and significant improvements in service utilization is evidence of its success, suggesting that innovative approaches can have a positive impact on library development in academic settings. Through this initiative, the Library of the Faculty of Engineering at UGM has succeeded in creating an atmosphere that motivates and inspires, stimulating growth and optimal utilization of its facilities.

Several aspects were emphasized regarding the new role of the library. It includes definitions, characteristics, benefits, and challenges in the implementation of the concept of co-working space and innovation hub. In addition, the discussion also involves the services and facilities that can be provided by the library to support collaboration and innovation activities, as well as the skills and knowledge needed by librarians to manage the library. Finally, the discussion involves methods and indicators to measure the impact of libraries as co-working spaces and innovation hubs.

The recommendations resulting from this study include feasibility studies before implementation, cooperation with various parties, promotion and socialization of the new role of libraries, as well as evaluation and continuous improvement of the services and facilities provided. These recommendations reflect efforts to ensure the sustainability and effectiveness of the library as a co-working space and innovation hub in supporting collaboration and innovation activities.

# 4. CONCLUSION

Based on the analysis of the article, it can be seen that the library can undergo a significant transformation from an information center to an activity center by integrating the concept of co-working space. This concept allows the library to become more than just an information provider but also a place that supports the development of skills, knowledge, and networks for users. The implementation of co-working spaces in libraries is not only considered a temporary solution but also an integral part of an ongoing strategy to transform libraries into dynamic learning centers, in line with the latest developments and user needs. With this approach, the library not only responds to current changes but also actively seeks to ensure its relevance in the face of future trends. Measures such as space reorganization and facility additions aim to create an environment that not only meets the needs of current users but also supports the evolution of their needs and expectations in the future

# 5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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