Digital Leadership and Digital Transformation: Systematic Literature Review

Enok Tuti Alawiah[1*], Martinus Tukiran[2]
[1]Universitas Bina Sarana Informatika, DKI Jakarta, Indonesia
[2]Universitas Pakuan Bogor, Jawa Barat, Indonesia
*Corresponding Author: enok.etw@bsi.ac.id

Abstract – *The Covid 19 pandemic has had a major impact on the education sector. Educational organizations adopt the use of information technology so that learning activities can run well through the implementation of digital platforms. Apart from that, transformation is needed in the field of leadership in order to adapt to change.This article aims to conduct a systematic review of Digital Leadership and Digital Transformation in Education. The search was conducted for publications in the period 2020-2024 and found 81 articles which were then filtered into 12 articles. The research framework uses PRISMA. The purpose of the study is to identify digital leadership and digital transformation practices in organizations and the field of Education and to find out the development of digital leadership and digital transformation research in organizations and the field of education. This study provides an overview of digital transformation and digital leadership practices in the field of Organizations and Education and the development of research related to digital leadership and digital transformation practices in organizations and the field of Education. The focus of the study is also diverse and reveals many facts about Digital Leadership and Digital Transformation, especially in the field of Organizations and Education.*

Keywords: Digital Leadership, Digital Transformation, digital transformation and digital leadership practices, development of digital transformation and digital leadership

I.   INTRODUCTION

The Covid 19 pandemic has had a major impact on education. One of the priorities in educational organizations is to carry out digital transformation and leadership transformation. There have been many major changes in organizations to adapt good leadership through Digital Transformation [1]. Organizations need to implement the use of information technology to improve competency [2]. Universities are making adjustments to the learning process using digital platforms after the Covid-19 pandemic [3]. Many universities are adopting digital-based blended learning to improve students' learning competencies [4].

Leadership is the art of influencing and guiding others toward a shared vision (Bass & Riggio, 2006). Leadership is about using the ability to inspire, motivate and direct individuals or groups towards common goals [5]. Leadership revolves around the impact one has on others, fostering collaboration, and effectively navigating challenges in pursuit of a larger goal [6]. A key aspect of leadership is the concept of leadership styles, which summarizes the different approaches and behaviors that leaders use in their interactions with followers [7].

The term digital leadership emerged to encapsulate the critical role that leaders play in navigating and driving digital transformation in their respective domains [8]. Digital leadership goes beyond conventional understandings of management, emphasizing a proactive approach to technology adoption, cultivating a culture of innovation, and ensuring that the workforce is equipped with the skills necessary for the digital age [9].

Digital transformation is a condition that occurs when there is an organizational transition in the use of information technology to big data analytics, cloud computing technology and other digital platforms [10]. Organizations need to develop digital transformation capabilities to improve their ability to utilize information technology in dealing with business changes [11]. On the other hand, digital transformation can also pose a number of risks at the organizational and individual levels. For organizations, widespread adoption of digital technologies can compromise the security of corporate data and intellectual property, which can lead to digital fraud or improper access to data. This can be caused by the lack of specific digital skills that often occur in each individual [12]. In the field of education in particular, the major challenge faced is maximizing academic, practical and technical potential as well as work skills [13]. Further skills development is needed so that students have digital skills and mastery of information technology [14]. Although digitalization and digital transformation activities appear to be closely related to the personal expertise of leaders within an organization, there is little

knowledge currently available regarding research linking digitalization and leadership [15]. This research is important to carry out as literature review material in conducting research related to the implementation of digital leadership and digital transformation, especially in the fields of organization and education. Research needs to be carried out because after Covid-19, many organizations and the education sector are implementing digital leadership and digital transformation in order to survive and keep up with developments in digital technology.

The aim of this research is to find out:
1. The research theme that is often discussed is Digital Leadership and Digital Transformation for the 2020-2024 period, especially in the field of education.
2. The topic most frequently used in research is the theme of Digital Leadership and Digital Transformation in the field of education.
3. Distribution in which countries research is often conducted on the theme of Digital Leadership and Digital Transformation in the field of education.
4. Theoretical and practical implications regarding digital leadership and digital transformation.

II. METHOD

Systematic research first emerged from the need for better evidence-based research among the medical profession in the UK and since then, it has spread across many disciplines, including Management research [16]. A systematic review is conducted to collect as many existing evidence-based studies as possible that are relevant to the research object being conducted and is conducted to identify, evaluate and interpret research results [17].

To find articles that discuss Digital Leadership and Digital Transformation using PRISMA. Research is conducted to obtain relevant articles that best suit the theme in order to obtain comprehensive results with the PRISMA framework [18].   PRISMA has four stages, namely identifying article selection, filtering articles, and analyzing papers [19]. PRISMA is designed to help systematic reviews transparently report why a study was conducted, what the authors did, and what they found. The PRISMA stages are outlined in Table 1.

Table 1. PRISMA Framework
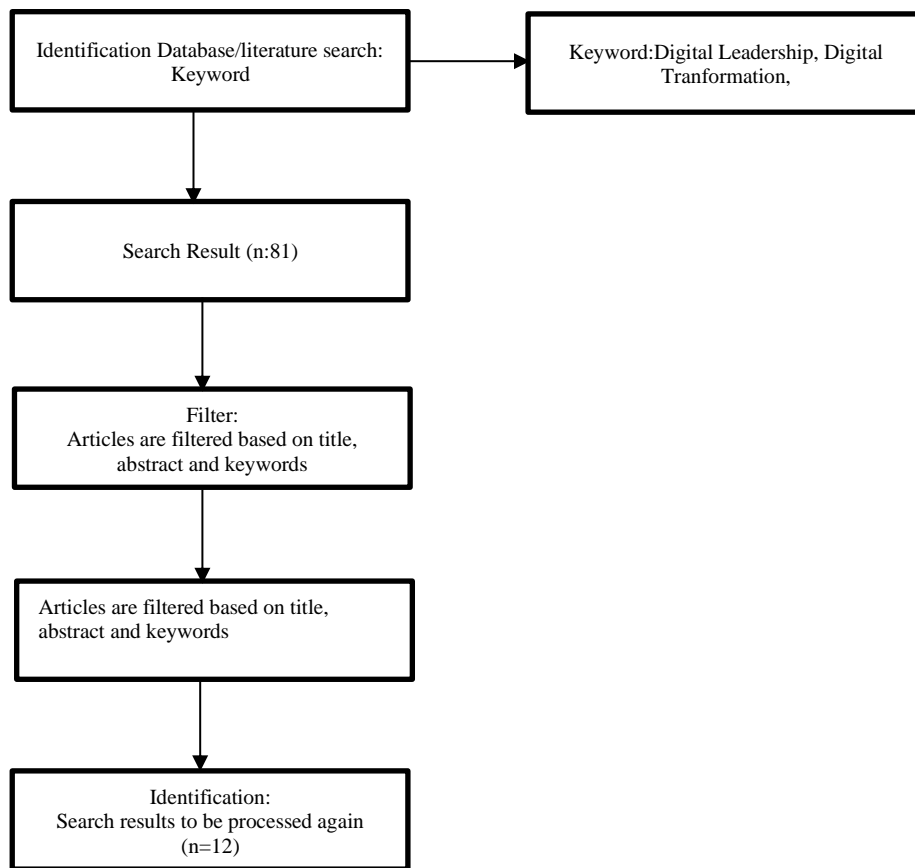
The search process uses the framework recommended by the Joanna Briggs Institute (JBI), namely Population, Concept and Context (PCC) [20]. The search was conducted on reputable journals with inclusion criteria being journal articles, published in the period 2020-2024, research article category, publication title Business research and having full text and open access.

Table 2. PCC Format

No	PCC Element	Keyword
1	Population	Employee, Student
2	Concept	Digital Leadership, Digital Transformation,
3	Context	Organization and education

The exclusion criteria are if they are not relevant to the research objectives. From the search results, 81 articles were found, but 12 articles met the eligibility criteria.

Table 3. Inclusion and Exclusion

No	Criteria	Keyword
1	Inclusion Criteria	All selected keywords appear in the title, abstract, keywords and full text
		Published in selected journals
		Published within the last 5 years
		Articles in journal form
2	Excluison Criteria	All keywords selected but not appearing in the title, abstract, keywords and full text
		Books, Essays, Editorials, Opinions in discussions

III. RESULT

A.   Result

The following is the distribution of papers based on year of publication in the following table:

Table 4. Year Publication

Journal Number Based on Year of Publication (bar chart: 2020 = 2, 2021 = 2, 2022 = 3, 2023 = 2, 2024 = 3; legend: Year Publication)
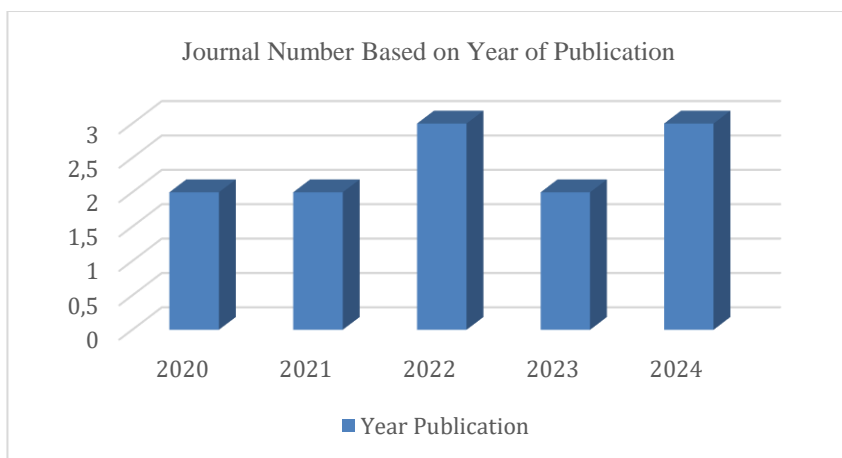
The following is the distribution of papers based on the countries observed in table 5, namely:

Table 5. Country Distribution

No	Country	Number of paper
1	Kuwait	1
2	Uni Emirat Arab	4
3	United Kingdom	2
4	Portugis	1
5	Australia	1
6	China	1
7	India	1
8	Switzerland	1

The following is a distribution of frequently discussed topics in the table 6.

Table 6. Frequently Discussed Topics

NO	Criteria	Keyword
1	Digital Leadership	Work life balance
		IT Capability
		Leadership
		Online organization
		Motivation to Lead
		Leadership style
		Digital workplace
2	Digital Transformation	Organizational change
		Problem-based-learning
		Technologhy integration
		Cyber school
		digitalization
		Enterpreneruship education
		Virtual learning environment
		Blended learning
		Digital Maturity
		VUCA
		Business digital
		Digital Strategy
		AI Technology
		Internet of things

The following are the results of the paper observed in table 7:

Table 7. Review result

No	Title	Author	Year	Result
1	Digital workplace and organization performance: Moderating role of digital leadership capability	Sheshadri Chatterjee, Ranjan Chaudhuri, Demetris Vrontis, Guido Giovando	2023	Organizational dynamic capabilities have a significant and positive influence on workplace digital transformation, which in turn improves employee work-life balance resulting in better employee performance and superior organizational performance. The study also

#	Title	Authors	Year	Findings
2	The characteristics of digital transformation leadership: Theorizing the practitioner voice	Pat McCarthy, David Sammon, Ibrahim Alhassan	2024	highlights the important role played by digital leadership in workplace digital transformation. Digital Transformation is an important factor in the success of organizations and businesses in facing challenges in the information technology era.
3	Leadership styles and AI acceptance in academic libraries in higher education	Tarek Shal, Norma Ghamrawi, Hiba Naccache	2024	AI implementation in academic libraries is most likely to occur under transformational leadership, with transactional leadership associated with less than optimal outcomes; a noteworthy relationship was observed between perceived ease of use and adoption of laissez-faire leadership.
4	Transformational leadership for technology integration in schools: Empowering teachers to use technology in a more demanding way	Maria-Luisa Schmitz, Chiara Antonietti, Tessa Consoli, Alberto Cattaneo, Philipp Gonon, Dominik Petko	2023	Transformational leadership has a significant and positive impact on digital school infrastructure, teachers' positive beliefs about digital technologies, their technical skills, and their skills in teaching with digital technologies.
5	The impact of digital leadership on teachers' technology integration during the COVID-19 pandemic in Kuwait	Munirah Khalid AlAjmi	2022	Digital leadership among principals has a positive impact on teachers' technology integration during the COVID-19 pandemic.
6	Digital Transformation and Innovation and Business Ecosystems: A Bibliometric Analysis for Conceptual Insights and Collaborative Practices for Ecosystem Innovation	an-Teng Liao, Chung-Lien Pan, Zhiying Wu	2024	Digital transformation, innovation and business ecosystems are critical to modern business strategy and the natural environment. By embracing these concepts and working together, businesses can create new opportunities for growth and success and deliver greater value to customers while ensuring the sustainability of ecosystem services.
7	Digital transformation during a lockdown	Gordon Fletcher, Marie Griffiths	2020	Research states that digital transformation during regional quarantine has three things to consider, namely organizations must increase their digital maturity, organizations that are less digitally mature are more fragile and organizations with a higher level of digital maturity are generally more flexible.
8	Digital leadership in business organizations	Lizio Marcel de Araujo, Sidik Priadana, Vip Paramarta, Denok Sunarsi	2021	This study shows a strong relationship between digital leadership and the success and productivity of companies, by following the analysis and clarification of the concept of digital leadership produced in the modern era and a review of various business strategies and positions of the concept of leadership in various sectors.

9	Mastering digital transformation: The nexus between leadership, agility, and digital strategy	Bader K. AlNuaimi, Sanjay Kumar Singh, Shuang Ren, Pawan Budhwar, Dmitriy Vorobyev	2022	Penelitian mengungkapkan gaya kepemimpinan dan peningkatan kelincahan organisasi di sektor public dapat meningkatkan transformasi digital.
10	Digital transformation as distributed leadership: Firing the change agent	Anne Christine Rosfeldt Lorentzen	2022	Research shows that digital transformation can be understood as distributed leadership, which enables a more holistic approach to mobilizing and sustaining digital transformation.
11	Leadership characteristics and digital transformation	Jos´e Ant´onio Porfírio, Tiago Carrilho, Jos´e Augusto Felício, Jacinto Jardim	2021	The results of the study show the important role of leadership and especially the importance of managers' coherence to the company's mission to promote more advanced stages of digital transformation. At the same time, it contributes to developing knowledge about the best combination of company and management characteristics to promote digital transformation.
12	Digital transformation: Five recommendations for the digitally conscious firm	Ted Saarikko, Ulrika H. Westergren, Tomas Blomquist	2020	Digital transformation requires companies to identify relevant technologies and how they will be applied in their business offerings..

Theoretical implications in this research are The findings of this systematic literature review contribute to the theoretical understanding of digital leadership and digital transformation in several ways. First, it highlights the dynamic interplay between digital leadership and digital transformation, emphasizing that effective digital leadership is not merely about technical skills but also about fostering a culture of innovation, adaptability, and continuous learning. This aligns with the concept of transformational leadership, which emphasizes inspiring and motivating followers to achieve extraordinary outcomes [21]. Second, the review underscores the importance of contextual factors in shaping digital leadership and digital transformation practices. The diverse range of studies included in the review reveals that the specific challenges and opportunities faced by organizations and educational institutions can significantly influence the strategies and approaches adopted for digital transformation. This aligns with contingency theories of leadership, which suggest that the effectiveness of leadership styles depends on the specific situation [7]. Third, the review identifies several emerging trends in digital leadership and digital transformation research, such as the growing emphasis on data-driven decision-making [22], the integration of artificial intelligence and machine learning technologies [23]), and the need for leaders to develop new skills and competencies to navigate the digital landscape [1]. These trends have significant implications for leadership theory and practice, as they challenge traditional notions of leadership and call for a more nuanced understanding of the role of leaders in the digital age.

The practical implications of this review are far-reaching. For organizations, the findings highlight the need for a holistic approach to digital transformation, one that encompasses not only technological upgrades but also changes in organizational culture, leadership practices, and employee skillsets [10]. This implies that organizations need to invest in developing digital leadership capabilities at all levels, from top executives to frontline managers. For educational institutions, the review underscores the importance of integrating digital technologies into teaching and learning practices to prepare students for the demands of the digital age [24]. This implies that educators need to develop their digital literacy skills and embrace new pedagogical approaches that leverage the power of technology to enhance student engagement and learning outcomes.

Additionally, the review highlights the need for further research on digital leadership and digital transformation, particularly in under-researched contexts such as developing countries and small and medium-sized enterprises. Such research can provide valuable insights into the unique challenges and opportunities faced by these contexts and inform the development of tailored strategies for digital transformation.

The shortcomings in this research are limited to only a few countries, especially developed countries. It would be better if research was carried out in developing countries so that we could find out the impact of implementing digital leadership and digital transformation in the education sector in the context of recovery and adaptation after the Covid 19 pandemic.

The research provides new contributions to the application of digital leadership and digital transformation in organizations and education. The majority of research uses quantitative methods. This still opens up research opportunities to use other methods, such as mix methods and longer or longitudinal research periods. Longitudinal research has the advantage of allowing for longer-term security [25].

The limitations of this research are only analyzing 12 articles that discuss digital leadership and digital transformation in the formal organizational and educational sectors. It would be better if the research was carried out over a longitudinal period and with diverse research, for example in the broader field of school and university education.

B.   Discussion

Research using systematic reviews mostly discusses the practices of implementing digital leadership and digital transformation in organizations and the field of education in various countries and the development of frequently discussed topics regarding digital leadership and digital transformation in organizations and the field of education.

Most of the research on Digital Leadership and Digital Transformation was carried out in developed countries due to the fact that countries such as Kuwait, United Arab Emirates, United Kingdom, Portugal, Australia, China and Switzerland are developed countries. Only one study looked at the phenomenon that occurred in India, which is a developing country. There are still few comparisons of Digital Leadership and Digital Transformation research in developing countries, so this is a novel opportunity in research. Therefore, if there is a similar crisis period, then research can be carried out regarding Digital Leadership and Digital Transformation. Currently the methods observed in the article are limited to qualitative, quantitative and R&D. This is a novel opportunity to use other methods such as mix methods, and others.

IV. CONCLUSION

Research on the theme of Digital Leadership and Digital Transformation in organizations and Education in the period 2020-2024 obtained 12 papers with details of 2 publications in 2020, 2 publications in 2021, 3 publications in 2022, 2 publications in 2023 and 3 publications in 2024. The majority of research was conducted in Kuwait, United Arab Emirates, United Kingdom, Portugal, Australia, China, and Switzerland. Especially in developing countries there are only publications in India. This can be developed into novelty in research to reveal phenomena in developing countries. In observations, it was found that the research used qualitative, quantitative and R&D methods so that it could be a novelty to be developed by using other approaches apart from those that have been discovered.

REFERENCES

[1]   P. McCarthy, D. Sammon, and I. Alhassan, "The characteristics of digital transformation leadership: Theorizing the practitioner voice," *Bus. Horiz.*, no. xxxx, 2024, doi: 10.1016/j.bushor.2024.03.005.

[2]   F. Castilla-Polo, A. Licerán-Gutiérrez, and M. ª. de. C. Ruiz-Rodríguez, "The adoption of corporate social responsibility active learning methodology with management accounting students," *Int. J. Manag. Educ.*, vol. 20, no. 1, 2022, doi: 10.1016/j.ijme.2022.100613.

[3]   S. Knox, "Fostering student engagement in virtual entrepreneurship education environments," *Int. J. Manag. Educ.*, vol. 20, no. 3, p. 100705, 2022, doi: 10.1016/j.ijme.2022.100705.

[4]   A. Truss and V. Anderson, "The navigational challenges of a blended learning approach to teaching in business and management," *Int. J. Manag. Educ.*, vol. 21, no. 1, p. 100733, 2023, doi: 10.1016/j.ijme.2022.100733.

[5]   B. M. Bass, *Leadership and performance beyond expectations*. NY: Simon & Schuste, 1985.

[6]   P. G. Northouse, *Leadership: Theory and practice*. Sage publications, 2021.

[7]   G. Yukl, *Leadership in organizations (8th ed.)*. Boston: Pearson, 2013.

[8]   R. M. Ghamrawi, N., & Tamim, "A typology for digital leadership in higher education: The case of a large-scale mobile technology initiative (using tablets).," *Educ. Inf. Technol.*, vol. 28, no. 6, pp. 7089–7110, 2023.

[9]   I. Avidov-Ungar, O., Shamir-Inbal, T., & Blau, "Typology of digital leadership roles tasked with integrating new technologies into teaching: Insights from metaphor analysis," *J. Res. Technol. Educ.*, vol. 54, no. 1, pp. 92–107, 2022.

[10]   T. Saarikko, U. H. Westergren, and T. Blomquist, "Digital transformation: Five recommendations for the digitally conscious firm," *Bus. Horiz.*, vol. 63, no. 6, pp. 825–839, 2020, doi: 10.1016/j.bushor.2020.07.005.

[11]   S. D. Müller, H. Konzag, J. A. Nielsen, and H. B. Sandholt, "Digital transformation leadership competencies: A contingency approach," *Int. J. Inf. Manage.*, vol. 75, no. September 2023, 2024, doi: 10.1016/j.ijinfomgt.2023.102734.

[12]   G. Elia, G. Solazzo, A. Lerro, F. Pigni, and C. L. Tucci, "The digital transformation canvas: A conceptual framework for leading the digital transformation process," *Bus. Horiz.*, no. xxxx, 2024, doi: 10.1016/j.bushor.2024.03.007.

[13]   E. Bogdány, G. Cserháti, and Á. Raffay-Danyi, "A proposed methodology for mapping and ranking competencies that HRM graduates need," *Int. J. Manag. Educ.*, vol. 21, no. 2, pp. 1–12, 2023, doi: 10.1016/j.ijme.2023.100789.

[14]   J. Navío-Marco, C. Sánchez-Figueroa, and A. Galán, "Business internships for bachelor's degrees at blended learning universities: A pilot study to assess the transition from hybrid studies to the workplace," *Int. J. Manag. Educ.*, vol. 21, no. 2, 2023, doi: 10.1016/j.ijme.2023.100821.

[15]   L. M. De Araujo, S. Priadana, V. Paramarta, and D. Sunarsi, "Digital leadership in business organizations: An overview," *Int. J. Educ. Adm. Manag. Leadersh*, vol. 2, no. 1, pp. 45–56, 2021.

[16]   et al. Tranfield, "Towards a Methodology for Developing Evidence-Informed Management Knowledge by Means of Systematic Review.," *Br. J. Manag.*, vol. 14, pp. 207–222, 2003.

[17]   et al Thorpe, "Using knowledge within small and medium-sized firms: A systematic review of the evidence.," *Int. J. Manag. Rev.*, vol. 7, no. 4, pp. 257–281, 2005.

[18]   J. McGowan *et al.*, "Reporting scoping reviews—PRISMA ScR extension," *J. Clin. Epidemiol.*, vol. 123, pp. 177–179, 2020, doi: 10.1016/j.jclinepi.2020.03.016.

[19]   T. K. F. Chiu, Q. Xia, X. Zhou, C. S. Chai, and M. Cheng, "Systematic literature review on opportunities, challenges, and future research recommendations of artificial intelligence in education," *Comput. Educ. Artif. Intell.*, vol. 4, no. November 2022, p. 100118, 2023, doi: 10.1016/j.caeai.2022.100118.

[20]   W. M. Dos Santos, S. R. Secoli, and V. A. de A. Püschel, "The Joanna Briggs Institute approach for systematic reviews," *Rev. Lat. Am. Enfermagem*, vol. 26, p. e3074, 2018, doi: 10.1590/1518-8345.2885.3074.

[21]   R. E. Bass, B. M., & Riggio, *No Title*. NY: Psychology Press, 2006.

[22]   B. K. AlNuaimi, S. Kumar Singh, S. Ren, P. Budhwar, and D. Vorobyev, "Mastering digital transformation: The nexus between leadership, agility, and digital strategy," *J. Bus. Res.*, vol. 145, no. September 2021, pp. 636–648, 2022, doi: 10.1016/j.jbusres.2022.03.038.

[23]   T. Shal, N. Ghamrawi, and H. Naccache, "Leadership styles and AI acceptance in academic libraries in higher education," *J. Acad. Librariansh.*, vol. 50, no. 2, p. 102849, 2024, doi: 10.1016/j.acalib.2024.102849.

[24]   M. L. Schmitz, C. Antonietti, T. Consoli, A. Cattaneo, P. Gonon, and D. Petko, "Transformational leadership for technology integration in schools: Empowering teachers to use technology in a more demanding way," *Comput. Educ.*, vol. 204, no. March, p. 104880, 2023, doi: 10.1016/j.compedu.2023.104880.

[25]   C. Zheng, W. Y. Huang, S. Sheridan, C. H. P. Sit, X. K. Chen, and S. H. S. Wong, "Covid-19 Pandemic Brings A Sedentary Lifestyle in Young Adults," *Int. J. Environ. Res. Public Health*, vol. 17, no. 17, pp. 1–11, 2020.