

Research

Cyberloafing Among Students: A Bibliometric Analysis

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Abstract:

Cyberloafing, an emerging concept in the field of educational settings, that has gained prominence in contemporary research. The main objective of this study is to analyse the cyberloafing articles published in the year 2002 to 20th August, 2025. This analysis has been done by extracting data from Scopus database. Using Preferred Reporting Items for Systematic Reviews and Meta-Analyses Statements (PRISMA), 82 articles were selected. The Biblioshiny application has been used to analyse the descriptive including, the prolific authors, most used terms, keywords, organisations and top most countries contributing in this field. The results were analysed by using Bibliometrix R. The descriptive analysis revealed that most prolific author is R. Davis but the highest impactful author is Akbulut, even though the highest number of publications in this area is of Margaretha and Yilmaz and most prolific country in this field is Turkey. The bibliometric analysis has shown a drastic use of cyberloafing among students since 2002. The reason of use of internet among students is COVID-19, which amplifies the usage of electronic devices among students because of availability of educational information these days. The most influential and impactful journal is computers in human behavior, followed by journal of education and information technologies, current psychology, behavioural sciences. The top most influential country in this study is Turkey followed by China, Malaysia, Indonesia and United States of America as per number of publications with most popular keyword in their study is cyberloafing and students.

Keywords: Cyberloafing, cyberslacking, bibliometric analysis, research trends.

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1. Introduction

In today's internet and digitalized world, the excessive lean on internet and tremendous increase in advancement of information technology has become an integral part of everyone's life. The internet has become an inseparable part in our daily life, from seeking knowledge to accessing internet for information (Kizilhan & Bal Kizilhan, 2016). With the proliferation of high speed connections, electronic devices like mobile, the internet penetration has witnessed exponential growth in various sectors as per the report given by ITU in 2021(*Measuring Digital Development - Facts and Figures 2021*). Advancement in technologies have

significantly impacted efficiency, productivity and flexibility, simultaneously they are also contributed to cyber deviance and digital distraction (Tarafdar et al., 2015). The wider diffusion of digital devices and technology can be experienced across multiple institutional settings, including workplace and educational institutions where employees and students rapidly rely on the internet for professional and academic activities. Over the past two decades, the wider expansion of internet technologies has driven a significant the digital transformation across educational and organisational environments. This transformed the concept of Cyberloafing (Lim,

2002). The term cyberloafing in the educational settings relates with the use of internet for non-productivity (Lim & Teo, 2005) and non-academic purpose during working hours and lectures (Simanjuntak et al., 2022).

The use of internet during working hours or academic activities for purposes that are not related to the work. It consists of wider range of activities like online shopping, use of social media, playing games, accessing digital devices or content for any other purpose and reading online news (Akbulut et al., 2016). Such behavior is very prominent among both employees and students which may influence their organisational performance or academic outcomes (Khan et al., 2023). According to Durak (2020), it may be detrimental for someone or positive for others for performing cyberloafing behavior during academic hours. The more dependency on digital devices and technology has made a cyberloafing a growing concern for educational settings and institutions. This became very prevalent during the pandemic, COVID-19, when the traditional classrooms shifted to online learning platforms, that made students more dependency on digital devices and platforms (Dhawan, 2020). Resulting, the more accessibility and autonomy related with online learning have further contributed to educational institutions regarding cyberloafing that affects students' academic outcomes.

Some students doing such behavior to rejuvenate them, to reduce stress and boredom from the existing work (Metin-Orta & Demirtepe-Saygılı, 2023). According to some research, the use of electronic devices during lectures increases the interaction of students with instructor, hence amplifies the students' participation (Barak et al., 2006; Karataş, 2018). Sometimes, the lack of supervision from instructors have also become a driven factor of using internet during classes. This paper aims to give an overview of literature on cyberloafing that includes the distribution of articles by authors, years, countries, and educational sectors that have contributed the most frequent keywords in their articles about cyberloafing and analyse these literatures using bibliometric methodology. This could help in identification of research gaps, and helping researchers to find more research in this field.

2. LITERATURE REVIEW

The research on cyberloafing has been increasing over the years of revolutionise in the era of internet usage. On reviewing the literature, it reveals that till 2000, the concept of cyberloafing was not into the existence. Due to lack of internet facility in some countries, this concept had remains unnoticed by researchers. Firstly, it was given by Lim in 2002 where the research was related to the working environment among employees. Later, in 2003 Hembrooke & Gay studied the cyberloafing among students. The goal of this research was to investigate the students' behavior when the laptop was open and closed that effects their recall memory during lectures (Hembrooke & Gay, 2003). Students in the laptop open group suffered from recall tests than that of students from laptop closed group because of doing multitasking work.

Cyberslacking and cyberloafing sometimes often used interchangeably, but there is a minor difference in both the concept. After reviewing, it has been discovered that cyberloafing is more related with procrastination while cyberslacking associates with responsibilities (Margaretha et al., 2022). Minor cyberloafing activities are associated with surfing sports sites, news sites, personal emailing, online shopping. On the other hand, serious cyberloafing activities associates with pornography, gambling, pornography, downloading music etc. Some researchers have added the contents of cyberloafing by adding various activities like watching videos, blogging, using social media during their lectures (Akbulut et al., 2016). Though, Akbulut had described five dimensions to it by developing a measure i.e. shopping, sharing, accessing online content, real time updating and gambling/gaming consisting of 30 items. This study was conducted among undergraduate students. According to Sakthi et al., (2025), the internet has brought an immense change in a way of how work has to be done and contributed to the advancement of students that leads to enhancements of institutions. A research conducted by Sevnice et al., (2022), shows that the demographics did not significantly affects cyberloafing among students (Güngör & Ustabulut, 2024; Sevinç & Dogusoy, 2022). While some studies demonstrates that gender (male and female) significantly affects for the use of cyberloafing activities (Coskun & Gokcearslan, 2019).

Cyberloafing is more researched among employees than in educational settings. A few studies have been conducted among students. They more reserved in

social media websites and also access non-academic related websites (Bjornsen & Archer, 2015). Some studies have evident of socio-psycho demographic variables i.e. age, gender, grades, siblings, income in the context of cyberloafing behavior (Durak, 2020). Various theories have been proposed to understand the concept of cyberloafing. Initially, Lim, has proposed theory in organisational context, the lack of perceived justice might be the reason of cyberloafing among employees, due to the unfairness. Askew and his colleagues had proposed the theory of planned behavior that causes cyberloafing behavior among users. This theory also posits that perceived behavioural control, attitude, subjective norms are the reasons of cyberloafing (Askew et al., 2014). Additionally, the Theory of Interpersonal Behavior when indulged into cyberloaf, Hume et al., 2017 proposed that attitude, affect, social factors, and perceived consequences are associated with cyberloafing intentions (Huma et al., 2017). Similarly, the Cognitive Load Theory was proposed by Guo et al., 2025 showed that intrinsic load, extraneous load and germane load (Guo et al., 2025). Besides all these, the intent to cyberloaf, facilities, and other factors arises the curiosity of cyberloafing behavior among students.

3. Research Objectives

On the basis of literature, the following questions have been framed for bibliometric analysis, for this purpose the articles have been examined from 2002 to 20th August, 2025 that addresses the cyberloafing among students.

1. To find out the most cited authors in articles related to cyberloafing.
2. To find out the distribution to articles related to cyberloafing by years.
3. To find out the most used keywords in relation to cyberloafing.

4. Research Methodology

For this study the bibliometric analysis has been used for analysing cyberloafing behavior among students worldwide. A bibliometric approach is more suitable for this purpose as it facilitates the identification of research objectives and helps to evaluate and analyse them. Bibliometric analysis is a methodology to examine and analyse the literature by applying quantitative indicators such as number of publications, co-occurrence, authors, citations (Bornmann & Mutz, 2015; Van Eck & Waltman, 2010). This study includes for steps process of analysing bibliometric analysis showed in figure 1.

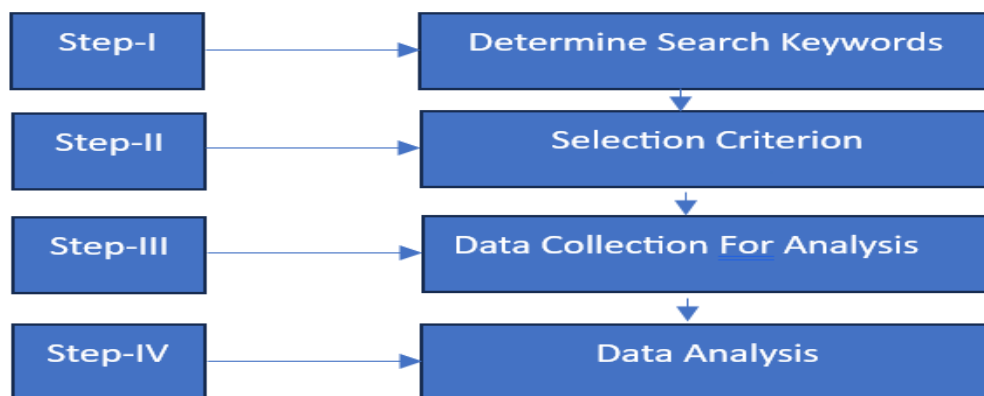


Figure1: Process of Bibliometric Analysis

Step 1: Determine search keywords

The data has been exported from the Scopus database as plain text and then imported into “biblioshiny: the shiny app for bibliometrix” (an R-tool for comprehensive science mapping analysis) for analysis. A bibliometric analysis has conducted to examine the annual growth rate of publications, nature of authorship, total and average citations, and distribution of publications among countries and authors. It amplifies unique opportunities to aid theory and practice. The Scopus database has been

used to collect the dataset as it is to be considered the largest indexing database (Donthu et al., 2021), additionally it covers the larger data from web of science (Zupic & Čater, 2015) from the period between 2002 to 20th August, 2025. In advanced search query the appropriate keyword has been used for “cyberloafing”. The following keywords were included in search query: “cyberloafing”, “cyberslacking”.

Step II: Selection Criterion

PRISMA (Preferred Reporting Items For Systematic Reviews and Meta-Analyses Statements) template is used to record the inclusion and exclusion criterion of the documents in the study for the review (Kumar & Gupta, 2023). The following was the search criterion:

- **Inclusion:** Keywords: “cyberloafing” Or “cyberslacking” AND “students”
 - **Dates:** 2002 to 20th August, 2025
 - **Document type:** Articles

- **Source type:** Journal
- **Language:** English

TITLE-ABS-KEY ("cyberloafing" OR "cyberslacking" AND "students") AND PUBYEAR > 2001 AND PUBYEAR < 2026 AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (SRCTYPE , "j")) AND (LIMIT-TO (PUBSTAGE , "final"))

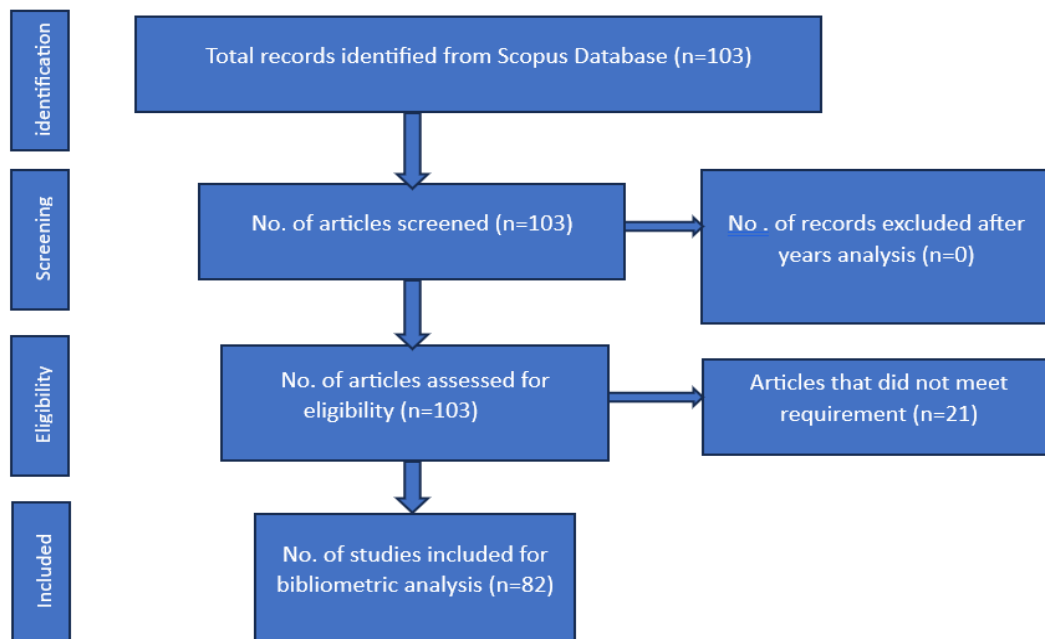


Figure 2: PRISMA flow diagram for bibliometric analysis.

Step III: Data collection for analysis

Data was extracted from Scopus using keywords “cyberloafing” OR “cyberslacking” present in the title, keywords or abstract. As only one database was used so no duplications were removed. Total 103 articles made up the initial data, which was later filtered by inclusion and exclusion criteria. Only 13 articles were excluded after putting document type related to articles only and included 90 articles. Only those articles have taken into consideration which were published in the English language. After all, following this criterion only 82 articles extracted for the present study till the date 20th August, 2025. All the inclusions and exclusions had been done after the agreement of both the researchers.

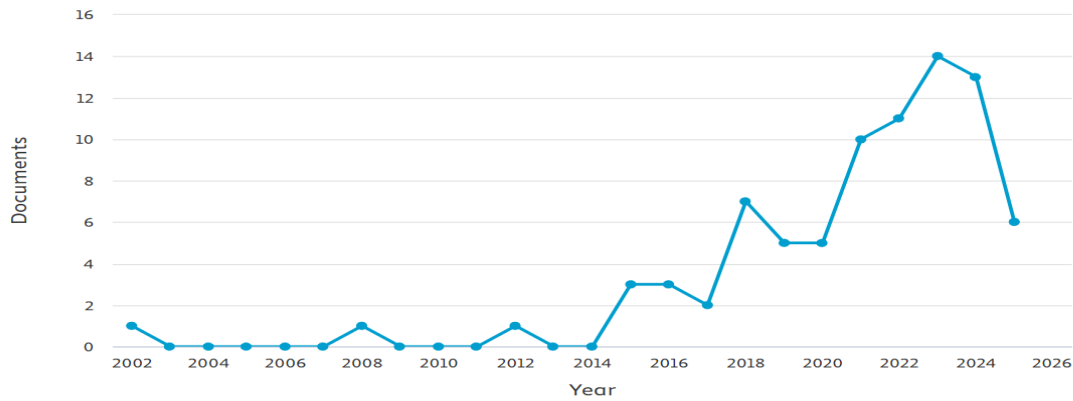
Step IV: Data analysis

Bibliometric analysis, reporting and findings will be done in fourth step. First of all, the distribution of articles has been found out on cyberloafing by years as shown in figure 3, where it has been shown the

publications by years. From figure 4, it has been found that the Davis R, 2002 has published a paper on the validation of scale on cyberloafing behavior among undergraduate students, which has been cited most that is 580 (Davis et al., 2002). So far, his paper has maximum citation despite of validation of many other scales by various authors in this field. Figure 4, it has been also showed that the over years the no. of citations has been increased but the latest publications have lesser no of citation of articles than the articles published in earlier years. Most citations till date are of Davis with 580 citations though the most relevant and prolific authors in this research is Margaretha as shown in fig. 5. Davis is followed by Gokcearslan with 299 citation, Blanchard AL with 279 citations published in year 2008, Taneja A with 113 citations. Akbulut in 2016 has developed a valid scale with five dimensions of cyberloafing has 86 citations till date.

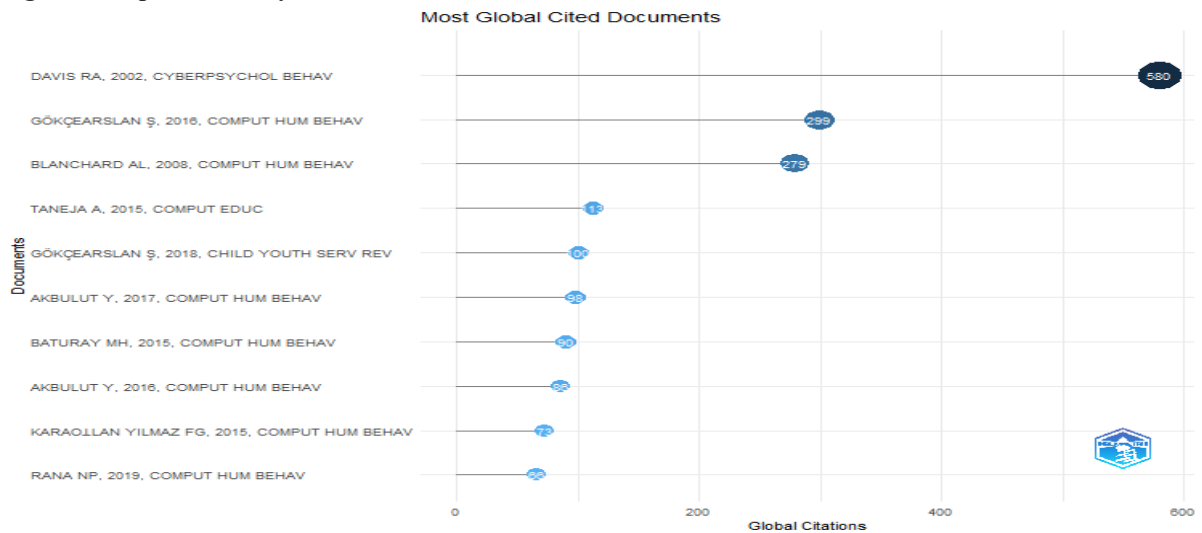
Figure 3: Publications on cyberloafing from 2002 to 2025

Documents by year



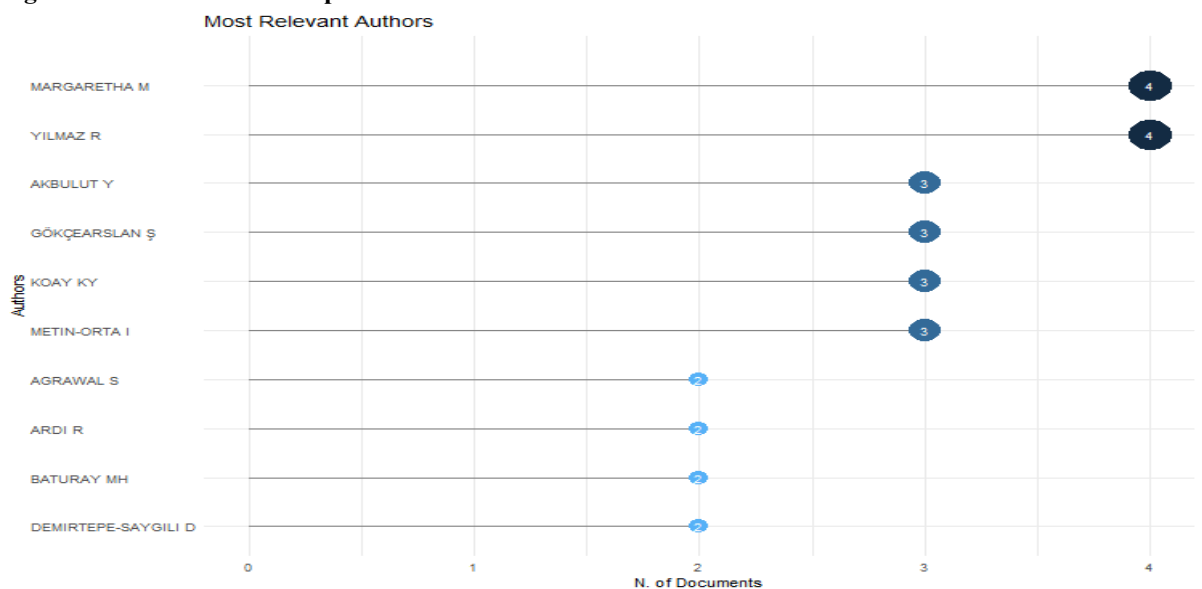
Source: Scopus Database

Figure 4: Top 10 Globally cited authors



Source: Biblioshiny software

Figure 5: Most relevant and prolific authors



Source: Biblioshiny software

5. Descriptive Analysis

The descriptive analysis gives the basic information about the literature collected. The foremost information collected regarding the documents considered under the study in terms of authors, articles, and keywords, provided the relevant and an overview of collected literature on cyberloafing as shown in table 1. Table 1 shows that in period 2002-2025, 82 articles have been published on cyberloafing among students only with an average citation of 32.22 per article with an average citation

per document per year is 4.2. In this study, there are 249 keywords plus and 242 are author's keyword. Keyword plus means the keyword used in the entire article even though it is not there in the title or abstract of that article whereas, the authors keyword is the keyword when it is uses in the abstract of the article. Out of 224 authors, only 9 have been documented by single-authored articles and 215 have multi-authored articles. The co-authors per article is 3.16.

Table 1: Descriptive Analysis

Description	Results
Timespan	2002:2025
Sources (Journals, Books, etc)	60
No. of Documents	82
Annual Growth Rate %	8.1
Document Average Age	4.2
Average citations per doc	32.22
References	4787
Keywords Plus (ID)	249
Author's Keywords (DE)	242
Authors	224
Authors of single-authored docs	9
Single-authored docs	9
Co-Authors per Doc	3.16
International co-authorships %	20.73

Source: Biblioshiny software

Most relevant authors

The most relevant authors have been analysed by listing down top 10 authors. Their impact has been studied with the help of h-index and g-index. Out of 224 authors, Y Akbulut, Gokcearslan, Koay, Metin have 3 publications and Margaretha and Yilmaz have published 4 publications on cyberloafing as shown in table 2. But Akbulut has the highest impact among all with the highest h and g index with 86 citations and considered to be third most prolific author.

Table 2: Top most authors

Author	No. of Articles	h_index	g_index	m_index	TC	NP	PY_start
AKBULUT Y	3	3	3	0.3	220	3	2016
GÖKÇEARSAN S	3	3	3	0.3	415	3	2016
KOAY KY	3	3	3	0.375	46	3	2018
MARGARETHA M	4	3	4	0.3	16	4	2016
METIN-ORTA I	3	3	3	0.6	65	3	2021
YILMAZ R	4	3	4	0.27272727	112	4	2015
ARDI R	2	2	2	0.28571429	17	2	2019
BATURAY MH	2	2	2	0.18181818	101	2	2015
DEMİRTEPE-SAYGILI D	2	2	2	0.4	50	2	2021
DURSUN ÖÖ	2	2	2	0.2	184	2	2016

Source: Biblioshiny software

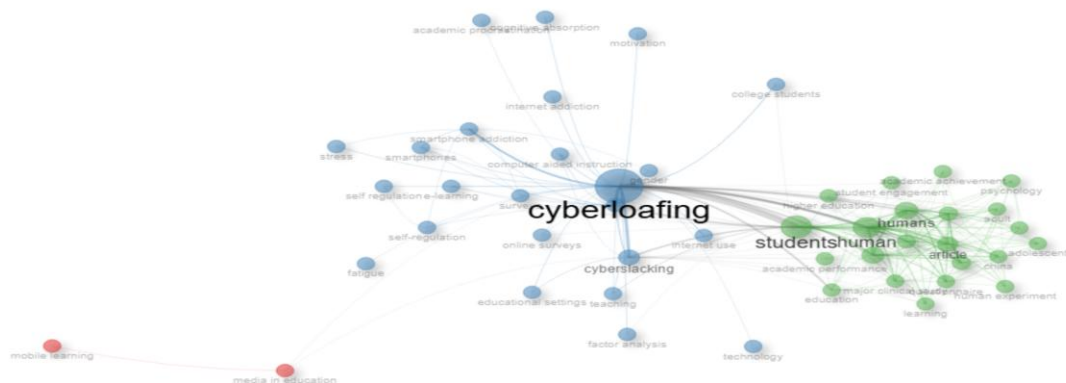
The descriptive analysis of top most countries have been shown in table 3. In Turkey, most the articles have been published and even cited that i.e. 73 articles with an average citation per article is 34.4. There are many countries where the number of publications is less but their citation is more than that of countries having larger number of publications.

Table 3: Top 10 most cited countries

Country	Articles	TC	Average Article Citations
TURKEY	73	894	34.4
CANADA	7	585	195
USA	11	279	279
CHINA	50	221	14.7
UNITED KINGDOM	4	66	66
MALAYSIA	27	40	8
SLOVENIA	2	32	32
INDONESIA	22	30	6
SPAIN	5	26	26
AUSTRALIA	2	23	23

Source: Biblioshiny Software

Figure 6: Co-Occurrence network



Source: Biblioshiny software

6. Science Mapping

Science mapping is a tool used by biblioshiny that helps researchers to visualise the representation of the structure to understand the specific research field. It focuses on examining the relationships among journals, keywords, authors and publications to reveal the research trends, patterns and thematic structures within a given field (Cobo et al., 2011). This study has used thematic mapping as a scientific technique of science mapping.

7. Thematic mapping

The main of this study is to give a pathway for the future research and for this purpose the thematic

Turkey considered to be the most impacting leader in this leader among all. In India only 12 publications are there in this field, but its citation is less than Canada, UK, Spain and Australia. The most frequently used keyword is cyberloafing and students as shown in figure 6.

mapping has been used in order to consider the author's keywords related to this field. The two metrics have been taken into consideration density and centrality. On the basis of density, that relates with the evolution of the theme and its development over the years, whereas the centrality deals with the pertinence of theme in the complete research field, various themes has been grouped in the form of clusters.

7.1. Cluster 1. Outcomes of cyberloafing

The first quadrant shows the outcomes of cyberloafing i.e. lower left quadrant (emerging or declining themes). This quadrant is low on density

and centrality. As it deals with the emerging or declining results, in this study it relates with the emerging trend as all the results are in upward direction. Cognitive absorption and motivation have the highest number of occurrences in this cluster.

The other outcomes are also included in this cluster like academic procrastination, learning goal orientation, e-learning readiness, online learning, emotion regulation.

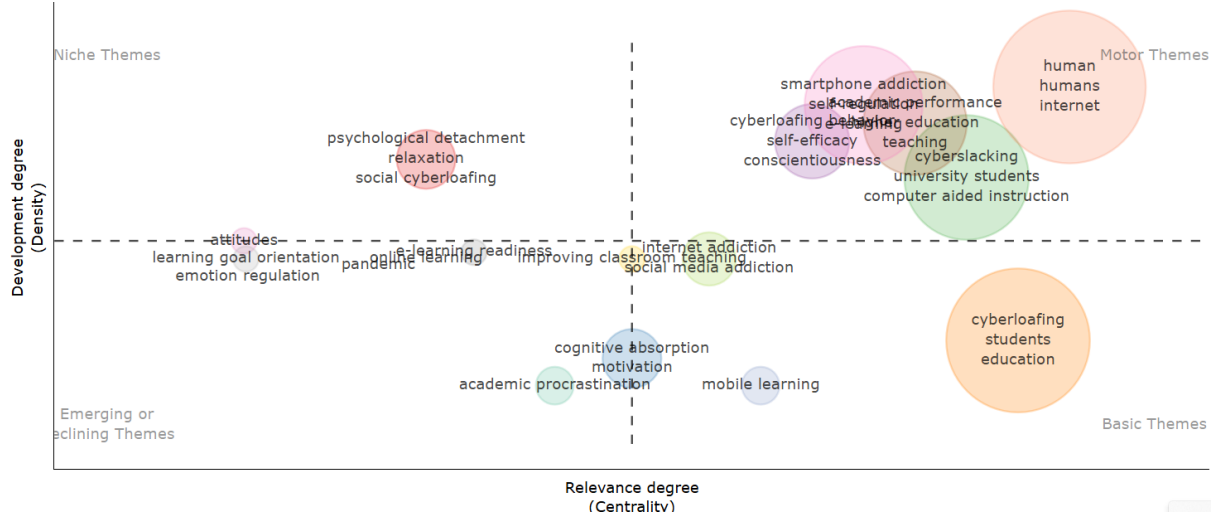


Figure 7: Thematic Mapping

Source: Biblioshiny Software

7.2.

7.3. Cluster 2. Antecedents of cyberloafing

The second cluster has been recognised as the antecedents of cyberloafing. This the upper right quadrant where both the density and centrality are on high. It considers as the motor themes that provides the well-developed areas for the future research for the researchers. In this cluster cyberslacking has the highest number of occurrences with 17 in count, followed by human (12), smartphone addiction (10), academic performance (5). Further this cluster identify the antecedents of cyberslacking into media in education, university students and computer aided instructions and human into female, male, students etc. Smartphone addiction's antecedents are self-regulation, e-learning, learning environments etc. Academic performance's antecedents are higher education, teaching, technology etc.

7.4. Cluster 3. User's behavior is cyberloafing

The third cluster is lower right quadrant that is labelled as basic themes, low on degree of development (density) but high on degree of relevance (centrality). It shows that more research can be done on mobile learning, internet addiction, classroom teaching and social media addiction. The maximum number of keywords can be seen in this quadrant as it is a quadrant of basic theme. The cyberloafing has maximum words here with 52 in

number with a maximum of 104 words in this quadrant followed by students with only 18 occurrences. Cyberloafing, internet addiction, students, classroom teaching, social media addiction, mobile learning have impacted directly on students' cyberloafing behavior as they grouped together.

7.5. Cluster 4. Constructs of cyberloafing

The last cluster is recognised as constructs of cyberloafing in upper left quadrant 'niche theme' where the density is on high but the centrality is at low. This quadrant shows the keywords of high importance. This means that the keywords in this developing over the years comparatively to other quadrants but not very frequently researched by the researchers. Psychological detachment, relaxation and social cyberloafing are the only three keywords with 2 occurrences in this quadrant. This quadrant shows that these are the constructs that can also be called as cyberloafing.

8. Summary of review

The bibliometric analysis has shown a drastic use of cyberloafing among students since 2002. The reason of use of internet among students is COVID-19, which amplifies the usage of electronic devices among students because of availability of educational information these days. Despite, number of citations R Davis, Margaretha is considered to be most relevant author. The most influential and

impactful journal is computers in human behavior, followed by journal of education and information technologies, current psychology, behavioral sciences. The top most influential country in this study is Turkey followed by China, Malaysia and Indonesia as per number of publications with most popular keyword in their study is cyberloafing and students.

9. Implications

Cyberloafing is becoming a most revolutionary concept in educational field. The students, instructors, researchers, academicians and practitioners need to grasp the various ideas and factors of cyberloafing. There is a need to examine the dual aspect of cyberloafing in this going trend of technology advancement. As it may serves a source of coping up with fatigue, stress, academic pressure, boredom and psychological relief but at the same time for some users it can used to procrastinate their work that leads to mismanagement of time, decreases motivation, increases fatigue, poor learning habits. By identifying the causes, trends, factors and patterns of cyberloafing, the researchers can provide a valuable insights to the educational institutes that build a bridge between the technology and academic performances of the students.

10. Limitations and Future research

The bibliometric analysis shows the cyberloafing has steadily expanded from workplace to educational settings with intent to self-regulation, procrastinate. The rise of cyberloafing studies began from Turkey followed by China, Malaysia, Indonesia, USA. In educational settings, the concept of cyberloafing and cyberslacking has more in talks since COVID-19 due to the more widespread of internet, while contribution from developing countries remain limited. Based on key contributions of publications, journals, authors, the aim of this study to identify both current trends and historical development in this field. The results drawn from multiple disciplines like, information technology, area. The cyberloafing can be taken as ambivalent approach as it has both effects positive and negative.

This study has some limitations also. First of all, the data for this study has been collected from single database i.e. Scopus, other database can also be taken into consideration. Secondly, only 'cyberloafing' and 'cyberslacking' has been used for study, other keywords related to this term like 'internet use', 'digital distraction', 'online loafing'

can also be used for further research. Next, the other science mapping technique can also use for analysis which is not covered in this study (Gao et al., 2021). This research focused on cyberloafing among students, employees can also be taken for future study.

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