

Social Media Addiction: A retrospective examination through bibliometric analysis

Social Media Addiction: A
retrospective examination
through bibliometric
analysis
76

Dr Shikha Rana, Associate Professor, School of Management, Graphic Era Hill University, India.

Dr Vandana Singh, Assistant Professor, School of Management, IMS Unison University, India

Received: 17.01.2024

Revised: 14.02.2025

Accepted: 04.03.2025

Abstract

Purpose: The present bibliometric study aims to review the extant literature through a retrospective lens on social media addiction (SMA) research by identifying the existing body of research, and the future research areas.

Design/methodology/approach:

An extensive bibliometric analysis was administered on 581 articles extracted from SCOPUS database. Data was procured from Scopus by performing a keyword search of "Social Media Addiction". Biblioshiny software and VOS Viewer was used to organise, analyse and present the data. This study identifies majorly the thematic clusters and collaborations through science mapping further, most prolific authors, authors, documents, and their impacts were also examined through performance evaluation technique.

Findings: The findings of the study are categorized in to two parts. The performance evaluation techniques identified the most relevant authors, cited documents, top sources and country collaborations while the science mapping technique reveals the thematic clusters based on co-occurrence of authors keywords, bibliographic coupling of sources and documents, co-citation network of the most cited author and the Sankey diagram.

Research limitations/implications: In the current study the fragmented literature on social media addiction has been organized and structured to provide an overview of extant literature through an exhaustive bibliometric analysis. Further, themes which are identified gives a clear view about the research agendas for future researchers and has huge social implications. As the study utilized only the Scopus database so future research studies may be conducted using other databases also.

Originality/value: This paper is unique in the sense that it is divergent from the previous studies which has only offered the empirical investigations in this area. The authors have tapped the methodological gap as this is the first attempt of its kind which has given valuable insights on the current state of research on social media addiction and guides for potential future agendas through bibliometric analysis.

Keywords: Social Media Addiction, Social Networking Sites, Bibliometric Analysis, Scopus, Biblioshiny-R studio, VOSViewer.

1. Introduction

The proliferation of technology and smartphones have resulted in the exponential expansion of social media usage. In the past decade, the usage of social media undoubtedly exploded limitlessly for maintaining friendships and seeking new acquaintances for common interests and needs fulfilment (Ellison et al., 2007). May it be workplace, home or any other social setting, the usage of social media is enormously growing. Famous social networking sites like Facebook, Twitter, Instagram, and YouTube has mainly captivated the individuals of different demographics, as the users shares photos, text, voice, and data. As reported by Statista (2022), the current users of social networking sites are 3.96 billion across the globe and by 2025 they are most likely to reach 4.41 billion. Social media if used appropriately may give positive results like building connections, obtaining work-related information and feedback. However, it has been criticised on various grounds too as the contemporary research studies have identified that social media usage leads to addictive behaviours also. It has also been observed that smartphone deprivation induce anxiety among young people,



Gurukul Business Review (GBR)
Vol. 20 (Spring 2024), pp. 76-95
ISSN : 0973-1466 (off line)
ISSN : 0973-9262 (on line)
RNI No. : UTTENG00072
Impact Factor : 2.82 (IIFS 2020)

a phenomenon that is certainly equal to drug withdrawal (Smith, 2018). The researchers have claimed that excessive usage of social networking sites has led to various negative situations like escapism, mood change, psychological disorders, abandoned personal life, and masking the addictive behaviour (Young, 1998). Several researchers have argued that time spent on social networking may lead to addiction in people (Griffiths & Pontes, 2014; Sussman et al., 2011). Further, through new forms of social interactions the individuals may show dysfunctional and unhealthy behaviours (Soh et al., 2014). In few research studies it is opined that the individuals who are addicted to social networking sites depicts the same symptoms as reflected by the people who are under the influence of the substance use (Enrique, 2010).

Social media addiction (SMA) has also been referred as problematic social media use, compulsive social media in various research studies. Researchers have revealed that the overuse of social media leads to low performance at work, poor work-family balance, unhealthy social relationships, poor sleep, dissatisfaction from life, and other dysfunctional problems like jealousy, anxiety, depression, and stress (Xanidis & Brignell, 2016; Zivnуска et al., 2019; Müller et al., 2016; Wolniczak et al., 2013; Hawi & Samaha, 2016; Pantic, 2014). There is a growing concern over the addictiveness of social media and few researchers even stated that excessive usage of social media manifests the addictive symptoms like salience, mood modification, tolerance, withdrawal, conflict, and relapse (Andreassen et al., 2016). Dong & Potenza (2014) explained the state of SMA as when an individual has an uncontrollable motivation to excessively use social media which interferes the day-to-day tasks. Researchers have proclaimed that one of the important reasons for SMA is the fear of missing out (FOMO). The individuals who are not able to get in touch with their network may develop impulsive checking habits which results into addictive behaviour (Griffiths & Kuss, 2017). The topic of social media addiction has generated huge interest amongst researchers but what exactly comprises of social media addiction is still not unveiled and it's in a controversial state (Widyanto and Griffiths, 2006) and agreeable viewpoint over the terminologies used for social media addiction like disorder addiction, problematic social media usage has not yet attained (Lortie and Guitton, 2013). Therefore, there is a need to learn and research further to better understand the concept of social media addiction with a retrospective lens. Despite there being good number of empirical investigations by researchers in this field of study, there is a paucity of bibliometric research, especially related to social media addiction. Therefore, by conducting a bibliometric review using the Bibliometrix - R tool and VOSViewer, this paper attempt to consolidate and provide a structured outline of the existing research in the field of social media addiction by analysing the significant research studies done throughout the years, collaborations and thematic clusters which in addition helps to invigorate knowledge, enhance understanding, and in the end the study aims to aid researchers, policymakers and social media users.

The current research aims to attain the following research objectives:

- 1) To explore and analyse the available literature on social media addiction
- 2) To recognize influential sources, documents, relevant authors based on citations and collaborations.
- 3) To investigate the thematic evolution of social media addiction.

The study further deals with methodology; findings, and results; and lastly the conclusion, implications, future scope, and limitations.

2. Methodology

For reviewing the literature on social media addiction, bibliometric analysis approach was used. Through Bibliometric analysis, a detailed retrospection of the publication pattern on productive authors, keywords, documents, journals, affiliated countries, bibliographic coupling and thematic design have been carried out to get an insight into social media addiction domain. The "Scopus" database was utilized to retrieve the data on social media addition. The "Scopus" database was chosen because it is regarded as one of the most prominent databases dealing with worldwide academic research and offers a extensive coverage of peer-reviewed journals in multiple specializations including social sciences

(Valenzuela-Fernandez et al., 2019). Several other researchers have opined that the Scopus supersedes WoS in terms of the title coverage moreover, Scopus had much stronger captivation in domains like Social Sciences, Arts & Humanities (Pradhan & Zala, 2019). Another rationale for using Scopus database was the impact of publications, since nearly in all disciplines and sectors the impact was assessed more positively in Scopus than in WoS (Stahlschmidt & Stephen, 2020).

2.1 Search strategy

The search for this study was conducted on May 12th, 2022, using "Scopus" database. For determining the appropriate keywords, the previous research papers in this field were inspected. "Social media addiction" as keyword search term was identified and pursued for the further extraction of the data. The topic for search was "social media addiction" in the title, abstract and keywords to analyse the global recent research trends on social media addiction. The search string was set as: (TITLE-ABS-KEY {"social media addiction"}). A total of 2829 articles were retrieved using this search string the time-range for the general material retrieved was 2012-2022. The search records were further filtered by limiting other criteria like subject area, doc type (articles), keyword, and source type (Journals) and language (English). After applying the filters, a total of 581 articles were retrieved for performing the bibliometric analysis, the below mentioned exclusion inclusion criterion in Table 1 gives the due rationale of choosing 581 articles:

Date	Database	Search String
12 May 2022	Scopus	“Social Media Addiction” within title, Keywords and abstract
Result	2829 Papers	
Filter: (Exclusion and Inclusion criterion)	Time Range: 2012 -2022 Subject Area: Psychology, Social Sciences, Business, Management, Multidisciplinary Document Type: Articles Keywords: Social Media, Psychology, Social Media Addiction, Psychological Aspect, Social Network online, Mental Health, Social Networking Sites, FOMO, Facebook Addiction, Smartphones Source Type: Journal Language: English	Excluded: Editorials, Magazines, Masters and doctoral theses, Book Chapters, Conference proceedings, books, non - English journals, non -peer-reviewed journals.
Result	601 papers	
Filter	The articles were scrutinized on the basis of title, abstract and keywords. Further, only peer reviewed articles were considered which matched with the theme of current research study.	Excluded: Irrelevant articles on the basis of title, abstract and keywords were removed.
Final Result	581 papers	

Table 1.
Search Process (Exclusion
Inclusion criterion)

2.2 Bibliometric Technique

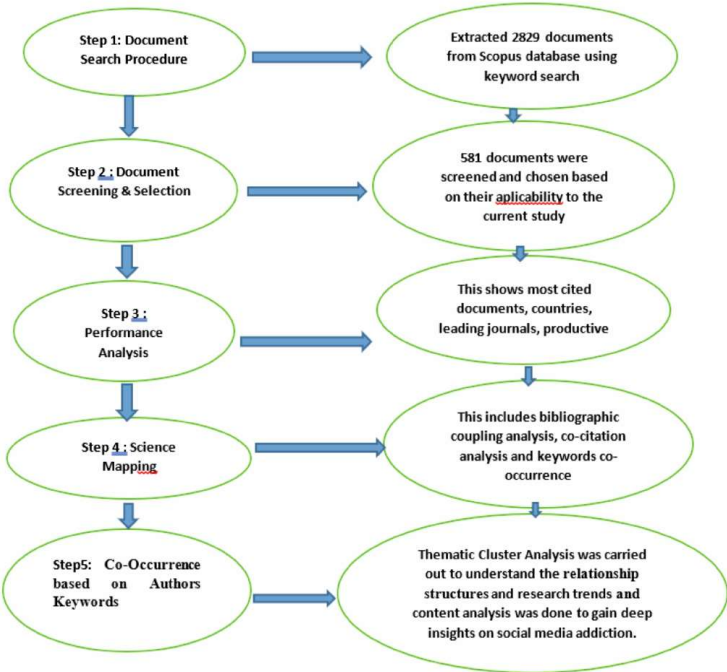
In the present study Bibliometric analysis has been used as it unveils the emerging trends of the article and journal performance, further a detailed information on the conceptual and intellectual structure of the domain is also determined (Donthu et al., 2021a; Verma & Gustafsson, 2020). Bibliometric analysis is significant as it provides the researcher with a reliable, structured piece of quantitative metrics which further helps in gaining qualitative insights on the domain under study (Van Raan, 2004). The bibliometric analysis requires representation and mapping software to direct the quantitative analysis (Cobo et al., 2011). In the present study we used Biblioshiny and VOSViewer to construct, visualize and analyse bibliometric networks.

2.3 Bibliometric Map

Aria & Cuccurullo (2017) developed the Bibliometrix- R package tool and the current research has been administered using the same tool. The Bibliometrix - R package aids in exhaustive bibliometric analysis as it employs distinct tools for both bibliometric and scientometric quantitative research. The benefits of using Bibliometrix are two- fold, not only its data visualization features are strong but also the results derived are statistically complete and

correct (Dervis, 2019). The bibliometric analysis has two broad categories i.e., performance analysis and science mapping. Former investigates the contribution of the research constituents in the given domain (Cobo et al., 2011) while the science mapping assesses the relationship between research constituents of the domain (Baker et al., 2021). In the present study performance analysis was done using Biblioshiny-R which included the overview of the research on social media addiction and other productivity metrics about most relevant authors, sources, impact analysis, growth trends. Further science mapping or relational analysis was done using VOSViewer (Visualization of Similarities) software. VOSViewer was specifically used due to its promising graphic interface which rapidly examines the bibliographic structures (Cobo et al., 2011). The co-occurrence analysis (Authors keywords), bibliographic coupling of sources and documents and co-citation analysis was carried out to unveil the relationships structures of social media addiction domain. The diagrammatic flow of research methodology is as follows:

Figure 1.
Research Methodology
Process



3. Findings

This section begins with a performance analysis which includes the descriptive statistics while the science mapping covers the thematic evolution of the social media addiction domain.

3.1 Performance Analysis

3.1.1. Main information about the data

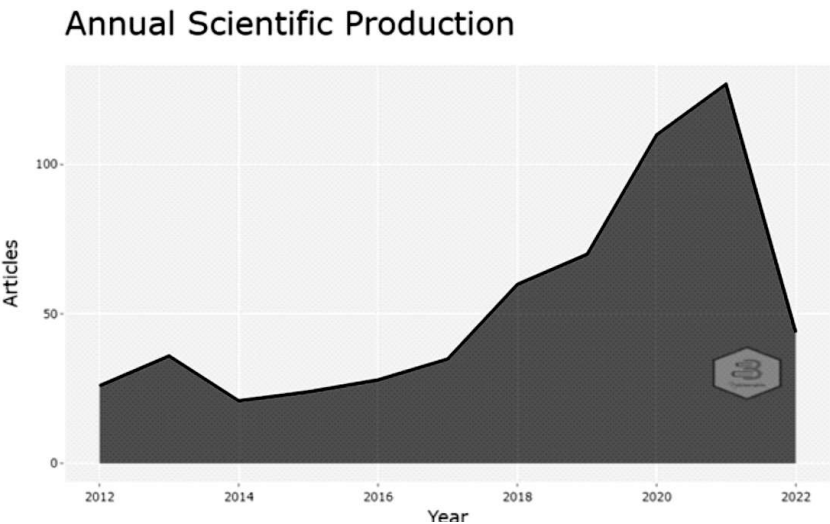
Table-2 shows the main statistics of social media addiction based on Scopus database. The time span considered for the current study is 2012-2022. The 581 total number of documents were considered for the analysis. The average year from publication is 3.55, the average citation per document is 24.88 while the average citation per year per document is 4.514. There are 1939 authors, out of them 51 authors published single-authored documents and 1888 authors published multi-authored documents. The collaboration index is 3.58 and co-authors per document is 3.98.

MAIN INFORMATION ABOUT DATA		Social Media Addiction: A retrospective examination through bibliometric analysis 80
Timespan	2012:2022	
Sources (Journals)	241	
Documents	581	
Average years from publication	3.55	
Average citations per document	24.88	
Average citations per year per doc	4.514	
References	29386	
DOCUMENT TYPES		
article	581	
DOCUMENT CONTENTS		Table 2. Main Information about Social Media Addiction based on Scopus data
Keywords Plus (ID)	2224	
Author's Keywords (DE)	1370	
AUTHORS		
Authors	1939	
Author Appearances	2312	
Authors of single-authored documents	51	
Authors of multi-authored documents	1888	
AUTHORS COLLABORATION		
Single-authored documents	54	
Documents per Author	0.3	
Authors per Document	3.34	
Co-Authors per Documents	3.98	
Collaboration Index	3.58	

3.1.2 Annual Scientific Production

The scientific production of social media addiction papers between 2012 to 2022 demonstrates a progressive development by 5.4 percent annual growth rate, especially rising from 2017 onwards. Figure.2 depicts the publications on social media addiction, it is evident from the figure that this field is expanding and there exists exponential growth. The year 2021 marked the highest scientific production with 127 papers and declined to 44 papers in the year 2022 on the basis of the annual growth rate. Further, as the data was retrieved in the first half of the year so probably this may be the reason of its decline but the research on social media addiction may show an increasing trend towards the end of the year 2022 as that will show a comprehensive view of annual research. Table.2 depicts the main data information derived through bibliometric analysis. The information summary stated that about 1939 authors have contributed to the domain of social media addiction. The publications have been fetched for analysis through 241 sources.

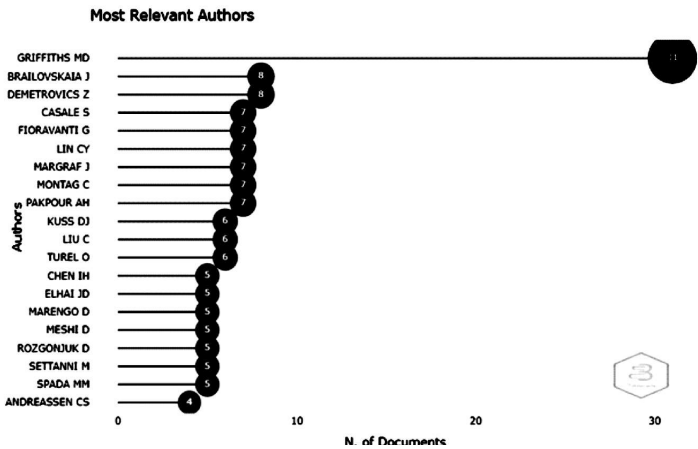
Figure 2.
Annual Scientific
Production of Social
Media Addiction



3.1.3 Authors' analysis: Most Relevant Authors, Top Authors' Production, Authors' Impact, Global cited Author's Document.

The authors' analysis was done using significant parameters like - most productive authors and authors having highest citation count in social media addiction, production of top authors over time. "Griffiths MD" emerged as the most relevant author as he has to his credit the highest publications i.e., thirty-one publications, followed by "Brailovskaia. J" and "Demetrovics. Z", "Casale. S", "Fioravanti. G", "Lin, C.Y", "Margraf. J", "Montag. C", and "Pakpour, A. H" with seven publications. "Kuss, D. J", "Liu. C" and "Turel. O" with six publications, "Chen, I. H", "Elhai, J. D", "Marengo D", "Meshi. D", "Rozgonjuk. D", "Settanni. M", "Spada, M.M" with five Publications and "Andreassen, C.S" having four publications respectively (see Figure. 3). Consequently, "Griffiths M.D" has in-depth knowledge as well as expertise in a diversified field. Table 3 lists the globally cited documents in the social media addiction field and "Andreassen, C. S" (492 Citations) has the highest cited global document to his credit i.e., the document authored by him in social media addiction domain has got the highest citations. Figure. 4 describes the top authors production over the years, "Griffiths, M.D" come-up with highest publication and citations. The different sizes of shades and circles depicts that the bigger the circle is, the more articles have been published by the author in that year. The darker the circle is, the more citations have been received per year. Figure 5 showed the author's impact by H index where "Griffiths M.D" is at the top position with nineteen citations followed by "Brailovskaia. J", "Lin, C.Y" and "Pakpour, A. H" with eight citations and "Demetrovics. Z", "Kuss, D.J", "Margraf. J", and "Turel. O" with six citations respectively.

Figure 3.
Most Relevant Authors



					Social Media Addiction: A retrospective examination through bibliometric analysis 82
1	ANDREASSEN CS, 2016, PSYCHOL ADDICT BEHAV	492	70.286	10.1593	
2	ANDREASSEN CS, 2017, ADDICT BEHAV	363	60.500	5.5797	
3	FOX J, 2015, COMPUT HUM BEHAV	337	42.125	6.8659	
4	HENRY KL, 2012, J YOUTH ADOLESC	298	27.091	7.5150	
5	BNYAI F, 2017, PLUS ONE	287	47.833	4.4115	
6	BLACKWELL D, 2017, PERS INDIVID DIFFER	268	44.667	4.1195	
7	KUSS DJ, 2013, COMPUT HUM BEHAV	266	26.600	4.3096	
8	ROSEN LD, 2013, COMPUT HUM BEHAV	259	25.900	4.1962	
9	VAN DEN EIJNDEN RJJM, 2016, COMPUT HUM BEHAV	245	35.000	5.0590	
10	KOC M, 2013, CYBERPSYCHOL BEHAV SOC NETWORKING	229	22.900	3.7102	
11	ZETTERQVIST M, 2013, J ABNORM CHILD PSYCHOL	221	22.100	3.5806	
12	PANTIC I, 2014, CYBERPSYCHOL BEHAV SOC NETW	184	20.444	2.2309	
13	SHENSA A, 2017, SOC SCI MED	156	26.000	2.3979	
14	HAWI NS, 2017, SOC SCI COMPUT REV	131	21.833	2.0136	
15	KARADA E, 2015, J BEHAV ADDICT	120	15.000	2.4448	
16	WOLNICZAK I, 2013, PLOS ONE	113	11.300	1.8308	
17	MONACIS L, 2017, J BEHAV ADDICT	109	18.167	1.6755	
18	TUREL O, 2014, PSYCHOL REP	106	11.778	1.2852	
19	STIEGER S, 2013, CYBERPSYCHOL	106	10.600	1.7174	
20	ELHAI JD, 2020, J AFFECTIVE DISORD	104	34.667	8.1135	

Table 3.
List of top 20 global cited Documents: Total citation, TC per year, and Normalized TC

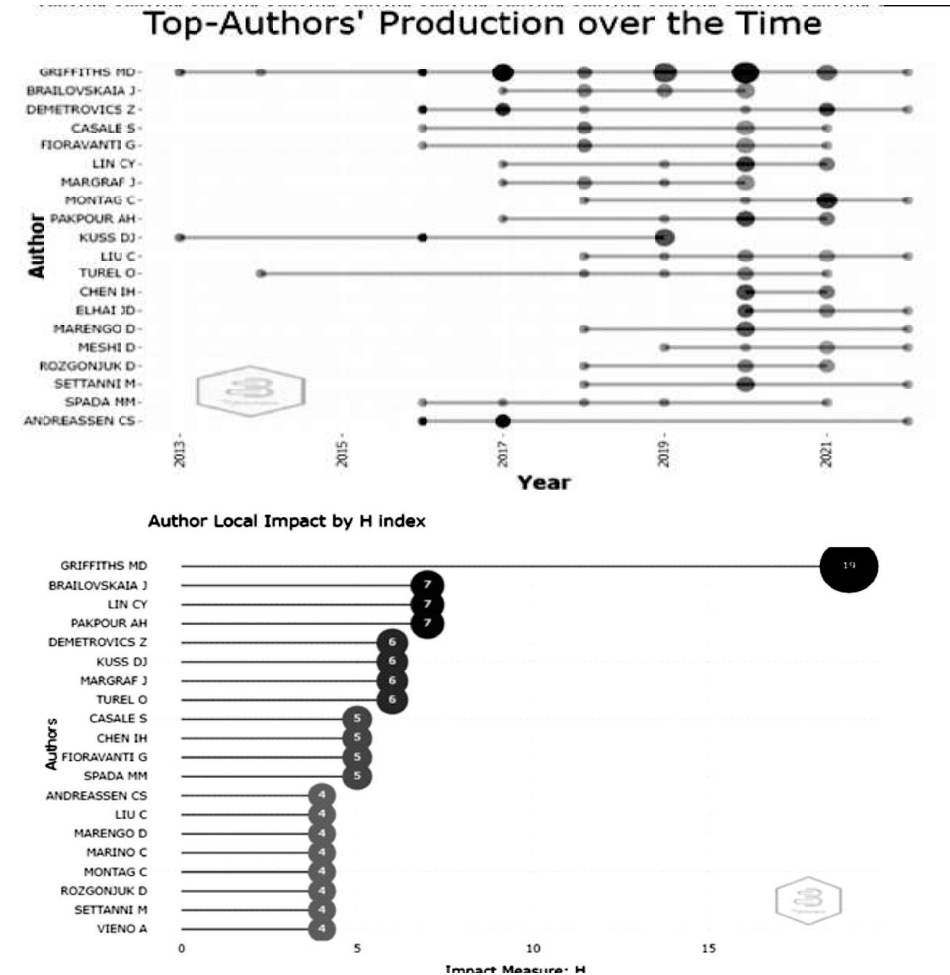


Figure 4.
Top-Authors' Production

Figure 5.
Author local impact by H index

3.1.4 Source Analysis: Most Relevant Sources and Source Impact

The total publications on social media addiction from 2012 to 2022 in various sources were 581. Figure 6 indicates the top 20 journals which have published research on social media addiction domain. The "Journal of Behavioral Addictions" emerged as the most relevant source on the basis of publications (35 documents) followed by "Addictive Behaviors" (34 documents). Figure 7 shows that the "Journal of Behavioral Addiction" is having the impact with h-index of 23 followed by "Computer in Human Behaviour" and "Cyberpsychology, Behaviour, and Social Networking" h-index of 19, and "Addictive Behaviours" with 15 h-index respectively.

Figure 6.
Most relevant Sources on
the basis of Publications

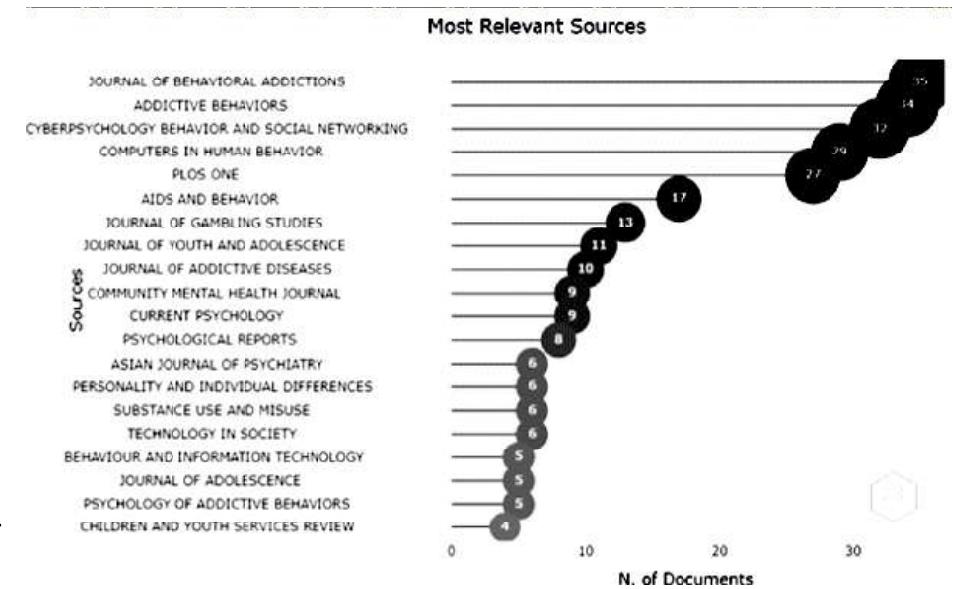
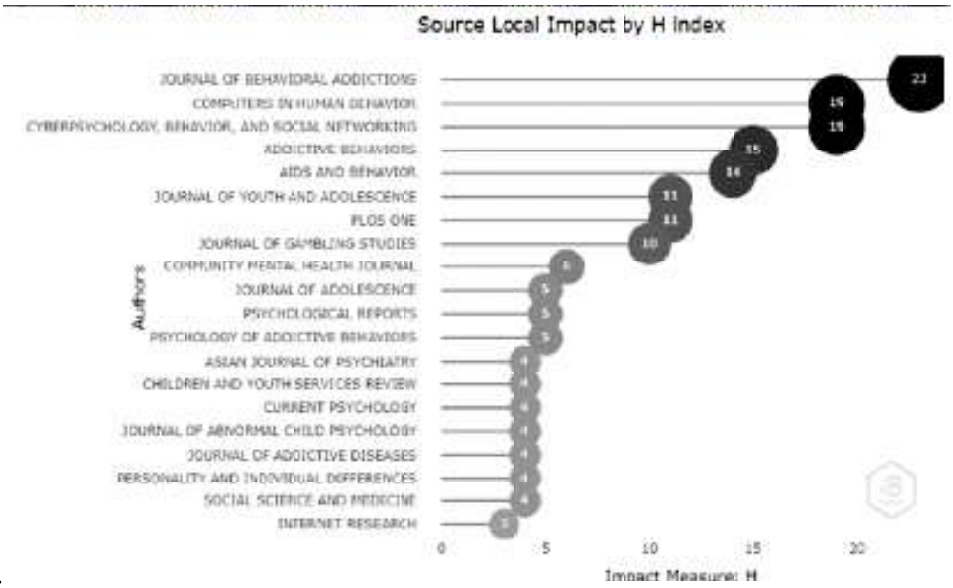


Figure 7.
Source local impact by H
index



3.1.5 Country Scientific Production

Table 4 and Figure 8 showed the total number of countries whose research papers were analysed for the topic of social media addiction. "United States" (494) is at the first place. The second rank is of "China" (175) and the "United Kingdom" is at the third place respectively. Many researchers have studied this phenomenon and highlighted the features that directly impacts the social media addiction. Other countries which are ranked below them are Turkey (75), Italy (68), Australia (59), Germany (57), Canada (44), and India (43). It may be noted here that maximum number of studies have been done in the developed nations.

Region	Frequency of Publication
USA	494
CHINA	175
UK	118
TURKEY	75
ITALY	68
AUSTRALIA	59
GERMANY	57
CANADA	44
INDIA	43
NETHERLANDS	29
IRAN	27
SPAIN	24
HUNGARY	18
MALAYSIA	18
POLAND	18
SWEDEN	17
FRANCE	16
SOUTH KOREA	13

Table 4.
Top Country Scientific
Production

Country Scientific Production



Figure 8.
Country Scientific
Production

3.2 Science Mapping

3.2.1 Bibliographic Coupling Analysis

According to Kessler (1963) and Weinberg (1974), bibliographic coupling assumes that two publications sharing common references are also identical in their content. Researchers defines bibliographic coupling as when two papers cite the similar third work as it presumes that two documents referring to the same topic (Yuan et al., 2015). In the present study, Bibliographic coupling has been done for sources and documents using VOSViewer.

3.2.1.1 Bibliographic Coupling based on Sources

For analysing this, minimum number of sources were kept as five, out of 242 documents 18 meet the threshold making two clusters. Red and green colour represented two clusters respectively. The sources falling under red coloured cluster like "Journal of Behavioral Addiction", "Computers in Human Behaviour", "Cyberpsychology Behaviour and Social Networking" and in the green colored cluster "Addictive Behaviors" and "Current Psychology" emerged as the most productive and network sources on the basis of the number of documents published by each source in the respective field (See Figure. 9(a)). The table 5 shows the most productive sources based on the number of documents further the density visualization (Figure. 9(b)) shows the density map which shows the sources such as "Journal of Behavioral Addiction", "Computers in Human Behaviour", "Cyberpsychology Behaviour and Social Networking", "Aids and Behaviour" had strong connections with other sources and established strong clusters

Figure 9 (a)
Network Visualization

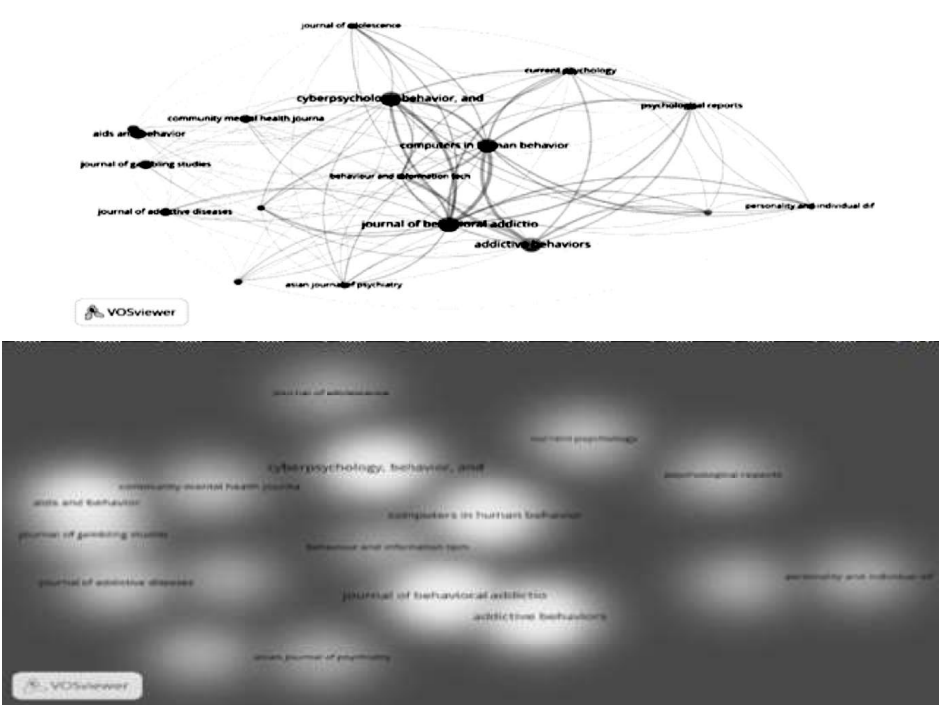


Table 5.
Bibliographic Coupling on
the basis of Sources

Sources	No. of Documents
Aids and Behavior	17
Asian Journal of Psychiatry	6
Behaviour and Information Technology	5
Community Mental Health Journal	9
Computers in Human Behavior	29
Cyberpsychology, Behavior, and Social Networking	31
Journal of Addictive Diseases	10
Journal of Adolescence	5
Journal of Behavioral Addictions	35
Journal of Gambling Studies	13
Journal of Youth and Adolescence	11
Psychology of Addictive Behaviors	5
Substance Use and Misuse	6
Addictive Behaviors	34
Current Psychology	9
Personality and Individual Differences	6
Psychological Reports	8
Technology in Society	6

3.2.1.2 Bibliographic Coupling On the basis of Documents

The fig. 10 (a) outlines the bibliographic coupling on the basis of authors who cite the same document based on citation count. For the purpose of analysis, the minimum number of citations were kept as 100 and the top 20 documents were selected which formed the four clusters. The coloured circles are representing distinct documents coupled with the same-coloured links, and the size of the circle illustrates the citation score of the published document. The bigger the circle, the higher citation count it has. In fig. 10 (a) "Andreassen (2016)" in red color is coupled to "bányai (2017)", "Blackwell.D (2017)" and "Andreassen (2017)," while "Fox (2015)" in blue color is linked to "Rosen (2013)," "Shensa (2017)" and "Kuss(2013)" in green coupled with "Koc (2013)", "Karada (2015)" and the last in yellow circle "Kirkaburun (2018)" coupled with "Elhai (2020)" and so on. The density map visualization indicates the most productive documents authored by different authors. The darker the yellow color the more number of times it has been cited as per the cluster. Fig. 10 (b) indicate that the documents authored by Andreassen c.s. (2016), Andreassen (2017), Fox (2015) followed by Bányai (2017) Blackwell (2017), Kuss d.j. (2013) has the highest density and the total citation count against these documents were 492, 363, 337, 287, 268, and 266 respectively. Andreassen (2016) in a large-scale cross-sectional study identified the correlation between social media addictive use, video games and psychiatric disorders and in 2017 Andreassen evaluated the relationship between addictive use of social media, narcissism, and self-esteem through a large national survey. Fox (2015) explored the dark side of social networking sites while Banyai (2017) unveiled the problematic social media uses. Blackwell (2017) found extraversion, neuroticism, attachment style and fear of missing out as predictors of social media use and addiction on the other hand Kuss (2013) assessed the prevalence and risk factors of internet addiction amongst adolescents. An important aspect was observed during the bibliographic coupling of documents that the documents which has the highest citation count has majorly been co-authored by Griffith with few exceptions.

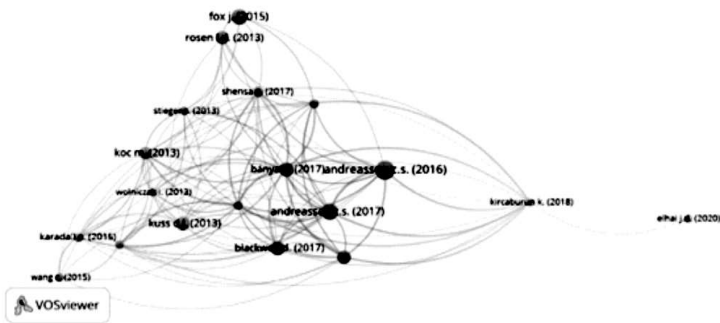


Figure 10 (a)
Network Visualization

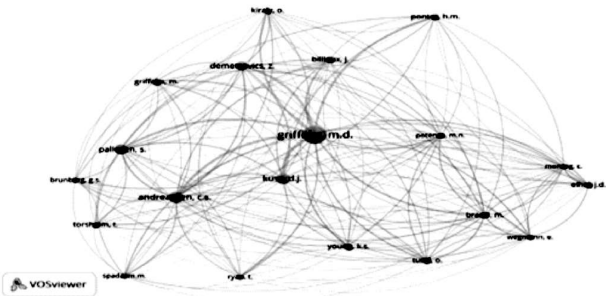


Figure 10 (b)
Density Visualization

3.2.2 Co-citation Authors

When two authors are cited in the same document a co-citation link is created. In the present study for analysing the most co-cited author, the minimum number of citations of an author were kept as 100 and finally twenty authors were selected those who had the highest citation count. Figure 11 shows co-citation analysis of cited authors. The authors and their co-linkages with other authors are represented by the coloured circles and lines. The size of the circle represents the citation count. "Griffiths,M.D" , has most citations to his credit (1,179 Citations) and forms a green cluster and majorly collaborated with "Kuss D.J"(424 citations), "Demetrovics, Z"(301 citations). The blue colored cluster is majorly dominated by "Andreassen, C.S" (446 Citations), "Pallesen" (375 citations), and "Spada, M.M" (145 citations). In the third red colored cluster "brand, m" (193 citations), "Turel, O." (186 citations) and "Young, K.S" (168 citations) has been highly co-cited. "Griffith,M.D", "Kuss", "Andreassen" and "Pallesen" are the authors who are highly co-cited across all the clusters. However "Griffiths,M.D" ranked the highest in co-authorship across all the clusters.

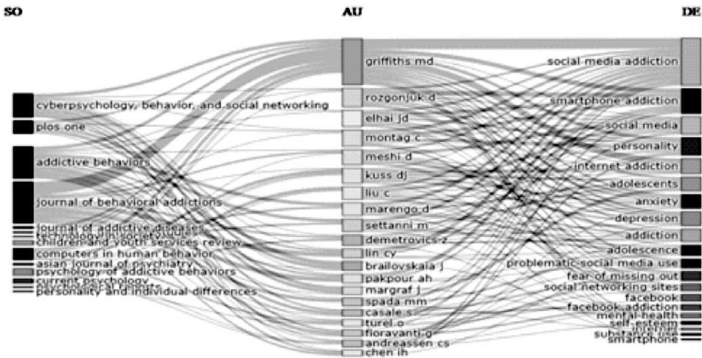
Figure 11.
Co-Citation of authors



3.2.3 Three-Field plot

Figure.12 showed that the three-field plot (Sankey diagram) of source, author and keyword. The three-field plot shows the keywords which were most frequently used by the authors and journals. The rectangle size represents the eminence of a particular aspect under analysis. In the current study "Griffiths, MD" has immensely published research on the keywords "social media addiction", "smartphone addiction", and "internet addiction" which have been mainly published in sources like "Journals of Behavioural Addictions", "Addictive Behaviours" and "Cyberpsychology, Behavior and Social Networking".

Figure 12.
Three-Field Plot (Sankey
Diagram)



3.2.4 Co-Occurrence based on Authors Keywords

The keyword co-occurrence analysis assess the connection between the co-occurrence of keywords by studying the relation of their co-occurrence in a wide-ranging publications or documents. Keyword co-occurrence analysis relies on the statistics of the number of times a combination of keywords is cited in the similar document. The main emphasis of keyword co-occurrence analysis is to understand the relationship structures and to unveil the research trends of the domain under study. As per some scholars, research topic development may also be known through author keyword analysis (Wen & Huang, 2010). In the present study, for clear visualization the minimum number of occurrence of a keyword in the domain was kept as 10, out of which 1367 keywords were identified where 29 meet the threshold and after deleting the duplicates occurring from spelling differences (e.g., Addiction, addictions, smartphones, smartphone) 24 keywords were selected. The occurrences of keywords represents the size of the circle the larger a circle, the more a keyword is chosen in the selected documents. In the red coloured network, the keyword "social media addiction" while in blue coloured network "social media" and "addiction", in the green-coloured network "internet addiction" and lastly yellow coloured network "adolescents" had emerged as the strongest keywords depicting their co-occurrence in the 581 documents related to social media addiction domain (see Figure 13).

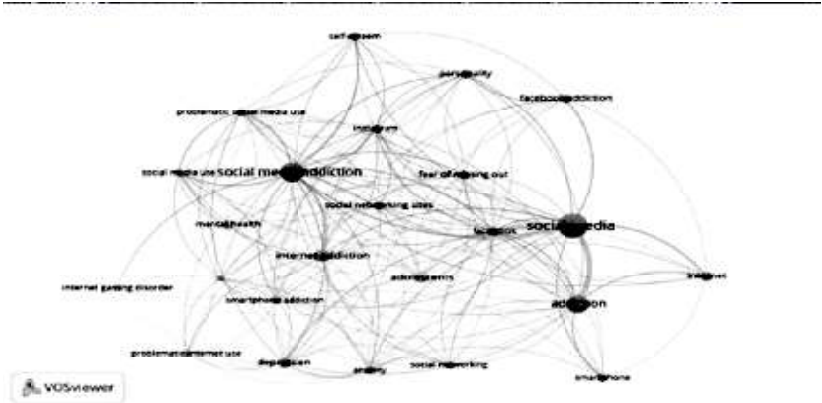


Figure 13.
Co-Occurrence based on
Authors Keywords

The table 6 indicates the thematic representation of the clusters. Each cluster has been named as per the frequency of occurrence of the keyword. We found four keyword clusters and labelled them based on keywords in each cluster as: Social Media Platform: Usage and Addiction; Psychological Impact of Internet Addiction and Social Networking; Social Media, Smartphone and Addiction; Internet infused disorders in adolescents. A detailed discussion of all the themes are elaborated below.

Cluster 1 (Red) (Social media platforms: usage and addiction)	Cluster 2 (Green) (Psychological impact of internet addiction and social networking)	Cluster 3 (Blue) (Social media, smartphone and addiction)	Cluster 4 (Yellow) (Internet infused disorders in adolescents)
Facebook (20)	Anxiety (16)	Addiction (86)	Adolescents (37)
facebook addiction (19)	Depression (26)	Internet (25)	internet gaming disorder (14)
fear of missing out (19)	internet addiction (40)	Smartphone (16)	mental health (21)
Instagram (14)	problematic internet use (10)	social media (166)	
Personality (18)	problematic smartphone use (10)		
problematic social media use (17)	smartphone addiction (17)		
self-esteem (15)	social networking (13)		
social media addiction (102)	social networking sites (21)		
social media use (12)			

Table 6.
Thematic Cluster-Level
Analysis of the Authors
Keywords

Theme 1- Social Media Platforms: Usage and Addiction

Majorly the studies are related to social media addiction which exhibits a compulsion to use social media to unlimited extent (Griffiths, 2000 & Starcevic, 2013). Social media platforms such as; Facebook, Instagram have been studied a lot and has been highly studied in relation to social media addiction. Several studies have proved that Facebook, Instagram, and other social media channels induced uncontrollable need amongst the humans to log on to and use them (Andreassen & Pallesen, 2014). In addition, some studies have identified recognition needs, social needs and entertainment needs as the major contributors to Instagram addiction (Foroughi et al., 2021). Researchers have unveiled that even the fear of missing out (FOMO) a psychological condition may get worsen due to excessive use of social media at the expense of other activities (Przybylski et al., 2013). Few researchers have promulgated that Facebook usage has significant and positive correlation with social media addiction (Donnelly & Kuss, 2016). Several scholar have even empirically tested the personality traits in relation to social media addiction like extraversion has been found to be a positive correlate of social media addiction (Kuss and Griffiths 2011; Ho et al. 2017). Few scholars even distinguished between social media addiction and Facebook addiction and identified that the two differed in strengths of their relationships with gender and age and social media addiction had more significant impact as compared to Facebook addiction (Balcerowska et al., 2022).

Theme 2- Psychological Impact of Internet Addiction and Social Networking

The second theme comprises of the psychological impact of Internet addiction combined with social networking. "Compulsive computer use" also known as "Internet Addiction" had majorly contributed to personal distress, or social, professional, monetary, or legal consequences. The contemporary studies on Internet addiction have discussed the adverse impact of Internet addiction on the health of the humans like the depression rates increases in university students of Japan due to the severity of Internet addiction (Seki et al., 2019). A lot of studies have empirically tested that Instagram use predicted social media addiction, which further increased the symptoms of depression. Therefore, the more a user participates in Instagram, the more likely they are to experience social media addiction symptoms (Pantic et al, 2012; Andreassen & Pallesen, 2014). Erstwhile the empirical findings of a research study indicated that Social Networking Site addiction may pose serious mental health problem with unhealthy psychosocial functioning of the person and other near and dear one's of that person (Andreassen 2015).

Theme 3- Social Media, Smartphone and Addiction

In the third cluster research studies highlighted mainly the social media, smart phone, and addiction-related studies. Park and Lee (2012) explained smart phone addiction as the excessive use of smartphones in a way that is hard to stop and influences other areas of life in a gloomy way. Further, researchers proposed the factors which may result in to smart phone addiction such as: daily-life disturbance, positive anticipation, withdrawal, cyberspace-oriented relationship, overuse, and tolerance (Kwon et al., (2013)). Several researchers have found that smart phone addiction is caused by social networking sites (SNS) as people remain addicted to smart phones due to the number of online social networks on online networking sites as these are more suitable for group discussions and SNSs are not restricted by geographic boundaries (Salehan and Negahban, 2013). On the contrary, few studies even claimed that the primary reason for social media addiction among adolescents was smartphone addiction (Kwon, et al., 2013; Mohammadi, et al., 2018; Park, 2005). Nevertheless, few researchers claimed that the patterns of smartphones addiction can originate from mobile phone applications such as calling, messaging, or online networking sites on smartphones (Kuss & Griffiths, 2017). The negative impact of the usage of smartphones is such that it may significantly hinder the day-to-day work like driving, classroom performance and job-related tasks (Gill et al., 2012). A lot of studies have proved that overuse of smartphones may be categorised under behavioral addictions (Billieux et al., , 2015; Kuss & Griffiths, 2017; Salehan & Negahban, 2013).

Theme 4- Internet Infused Disorders in adolescents

The fourth cluster discusses the detrimental impact of internet addiction on the adolescents' mental health. Internet addiction may also sometimes describe as "Internet Gaming Disorder" and "Internet Gaming addiction". A broad range of research studies have discussed about the internet infused disorder in adolescents. Researchers promulgated that population comprised of adolescents may develop internet addiction due to changeability in their mind control (Leung, 2006 & Casey et al., 2005) and boundary setting skills (Liu & Potenza, 2007). Researchers have proved that internet addiction leads to physical and mental disorders in adolescents. Internet addiction has been reported to be associated with depression and insomnia, suicidal tendencies, social phobia, aggressiveness, hostility, and drug use (Gong et al., 2009; Cheung & Wong, 2011; Fu et al., 2010; Ko et al., 2008; Ko et al., 2009). Moreover, many researchers even found online gaming as a significant predictor of internet addiction (Kuss et al., 2013). The findings of few other research studies also provided some empirical shreds of the probable linkages between internet addiction and mental health of adolescents (Lam, 2014; 2015). Adolescence, a critical period for development, is characterized by profound changes in social, emotional, and cognitive domains. As a result of the growth of digital technology and social media platforms, adolescents interact more and sometimes excessively online. Adolescents are increasingly getting addicted to social media addiction, a subtype of behavioural addiction, because it affect their relationships with others, academic performance, and psychological health (Andreasen et al., 2012). Compulsive and excessive social contact, particularly occurring on digital platforms such as social media, messaging apps, and online gaming communities, is known as social addiction psychoactive substances, relies on behavioural reinforcement mechanisms that lead to a reliance on digital interaction and social approval. Adolescents are more likely to engage in addictive behaviors amidst their social ecosystem as they are easily influenced by their peers (Kuss & Griffiths, 2015). It is crucial to investigate intervention options that encourage teenagers to adopt healthy digital habits, given the possible hazards linked to social addiction. To reduce excessive social media, its usage and promotion of healthy social relationships, behavioural treatments, digital literacy programs, and parental advice have all been proposed as successful strategies (van den Eijnden et al., 2016).

4. Discussion

The present study aims to build the knowledge base of the domain social media addiction and the other connected field of studies through retrospective view. For attaining the objectives, a bibliometric analysis was conducted using VOSViewer and Bibliometrix package of R. The Boolean logic for the current research was used as "Social Media Addiction" The analysis was done using two important techniques performance analysis and science mapping. For performance analysis was done using metrics such as annual scientific production, most relevant authors, top authors production, author and source impact, most local cited documents, and Country scientific productions. The relational analysis or science mapping was conducted using Three-field plot analysis of the Sankey diagram, bibliographic coupling of sources and documents, co-citation analysis of cited authors and keyword co-occurrence analysis. 581 documents were retrieved from the Scopus database to conduct the methods.

The scientific production of social media addiction publication between 2012 to 2022 depicted an accelerated growth of 5.4 percent annually especially hiking from 2017 onwards. "Griffith M.D" emerged as the most relevant author both in terms of citations and publications. Further the most relevant source is the "Journal of behavioral addiction" The country scientific production indicated that "United States" stood at the first position with 494 publications on social media followed by China with 175 publications however surprisingly the contribution of India remained very less with only 43 publications in social media addiction domain despite having 518 million social media users which is an extremely high figure when compared with USA (Statista, 2020). In USA the total social media users accounts for 223 million (Statista, 2020). Few researchers confirm the finding of the present study as they conducted study on IT infrastructure and research in south Asian countries which accounts

for 17% of the world population claimed that South Asian region lags behind the developed nations on almost all scientometric indicators related to IT research domain (Singhal et al., 2014). They further confirmed that along with the productivity level (citation impact), the total IT research output of the region is low. Since social media comes under IT domain only so this phenomenon calls for more studies on social media addiction in Indian context and other developing nations.

The science mapping indicates the relational structures of the social media addiction field. The co-occurrence analysis of authors keywords indicates the occurrence of the keywords in the documents. "Social media addiction", "Internet addiction", "Addiction" "Social Media" "Adolescents" "Facebook addiction", "Depression" "Mental health" emerged as the most significant keywords in social media addiction domain. Four clusters were derived from the authors keywords referred as "Social media platforms: usage and addiction", "Psychological impact of Internet Addiction and social networking", "Social networking social media, smartphone and addiction", and "Internet infused disorders in adolescents". To derive the thematic structure, the co-occurrence analysis was specifically used as Donthu et al., (2020) opined that keywords that frequently appear together have a thematic relationship with each another further, the keyword co-occurrence analysis aids in predicting future research in the domain under study.

The bibliographic coupling of the sources revealed that "Journal of Behavioral Addiction", "Computers in Human Behaviour", "Cyberpsychology Behaviour and Social Networking" and "Addictive Behaviors" and "Current Psychology" appeared as the most productive and networked sources on the basis of the published documents. The bibliographic coupling of the documents reported that the documents authored by Andreassen c.s. (2016), Andreassen(2017), Fox (2015) followed by Bányaí (2017), Blackwell. (2017), Kuss d.j. (2013) has the highest coupling with others with a good number of citation count. In these documents all the authors majorly argued over the dark side of social media, addictive use of social media and video games and psychiatric problems, problematic social media uses. Several studies focused on predictors of social media use and addiction and risk factors of internet addiction amongst adolescents. These findings support the analysis derived through co-occurrence analysis as the authors' keywords too depicted the same line of research. The co-citation analysis of cited authors indicates that "Griffith,M.D", "Kuss", "Andreassen" and "Pallesen" are the authors who have been highly co-cited across all the clusters. The findings of co-citation analysis confirms the findings of the bibliographic coupling of documents as "Griffiths,M.D" who ranked the highest in co-authorship across all the clusters was a co-author in all those documents which has highest citation count and he too emerged as the most productive author in the field of social media addiction (see Figure 2). The last component of science mapping, the Sankey diagram or the three-field plot analysis depicted that "social media addiction" found to be the most dominant keywords and the research published in this area research is primarily published in "Journal of Bahavioral Addiction" where again "Griffith MD" has taken the highest lead.

5. Conclusion, implications, Limitations, and future scope

Social media is a growing phenomenon and will continue to flourish in future also, however the addictive usage of social media is quite alarming and harmful. The empirical findings of research papers which have been included in the current study have proved this. The behavioural scientists have treated this as behavioural addiction which may hinder the personal and professional growth of the social media user. The findings intend to guide and persuade researchers toward the field of social media addiction. The present study build foundation for future research development and research collaboration across the countries and authors. Since it has been identified in the research study that developing nations including India has not given any significant contribution on the domain under study despite having a huge number of social media users, so this study enlightens and pave a way for the scholars to do more contribution in the field of social media addiction. Based on the co-occurrence of the authors keywords analysis and clusters generated the authors were able to find themes which were closely linked to social media addiction. With the rise in

internet infrastructure, social media platforms, the users of social media are increasingly rising therefore, the negative impacts must be reduced for the effective functioning of human beings in all arenas like personal, social, and professional respectively. The extant literature informs the govt, policy makers, and researchers about the impacts for SMA, through which they may develop effective strategies to prevent the people from the addictive use of social media. Another theme generated in the study talks about the internet infused disorders amongst the adolescents which is again an area of major concern. The documents published on this aspect gives an eye-opening finding and the relevant suggestions to deal with the negative impacts of internet use. This research study gives a wake-up call to the policymakers and other stakeholders who should emphasize on curbing the detrimental impacts of social media addiction and internet addiction so that it results in the improvement of the physical, psychological, and social well-being of social media users across the globe. Mentally and physically healthy people of any country can improve the society so with such intention this paper may prove to be beneficial for most of the stakeholders. Apart from the social media addiction, the research paper is based on the bibliometrics analysis so the scholar and researchers who are naïve to this technique may gain insights from this study. The present study is not free from limitations. Firstly, the study has been limited to research articles published in journals so future researchers may extract information from books, conference papers etc. Further other databases like web of science, google scholar, dimensions may be used for having a diverse view on the domain social media addiction. Secondly, the current study employed software like Biblioshiny and VOSViewer. Therefore, the future scholars may use Gephi for modularity. Additionally, the current study primarily focused on analyzing publication growth rather than the evolution of thematic clusters so, future researchers may target this aspect for social media addiction.

References

Andreassen CS, Billieux J, Griffiths MD, Kuss DJ, Demetrovics Z, Mazzoni E, Pallesen S. The relationship between addictive use of social media and video games and symptoms of psychiatric disorders: A large-scale cross-sectional study. *Psychology of addictive behaviors*, 2016 Mar; 30(2): 252.

Andreassen CS. Online social network site addiction: A comprehensive review. *Current addiction reports*. 2015 Jun; 2(2):175-184.

Aria M, Cuccurullo C. Bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of informetrics*. 2017 Nov 1; 11(4):959-975.

Baker HK, Kumar S, Pandey N. Forty years of the journal of futures markets: a bibliometric overview. *Journal of Futures Markets*. 2021 Jul; 41(7):1027-1054.

Balcerowska JM, Bereznowski P, Biernatowska A, Atroszko PA, Pallesen S, Andreassen CS. Is it meaningful to distinguish between Facebook addiction and social networking sites addiction? Psychometric analysis of Facebook addiction and social networking sites addiction scales. *Current Psychology*. 2020 Jan 28:1-4.

Billieux J, Maurage P, Lopez-Fernandez O, Kuss DJ, Griffiths MD. Can disordered mobile phone use be considered a behavioral addiction? An update on current evidence and a comprehensive model for future research. *Current Addiction Reports*. 2015 Jun; 2(2):156-162.

Casey BJ, Tottenham N, Liston C, Durston S. Imaging the developing brain: what have we learned about cognitive development?. *Trends in cognitive sciences*. 2005 Mar 1; 9(3):104-110.

Cheung LM, Wong WS. The effects of insomnia and internet addiction on depression in Hong Kong Chinese adolescents: an exploratory cross-sectional analysis. *Journal of sleep research*. 2011 Jun; 20(2):311-317.

Cobo MJ, López-Herrera AG, Herrera-Viedma E, Herrera F. Science mapping software tools: Review, analysis, and cooperative study among tools. *Journal of the American Society for information Science and Technology*. 2011 Jul; 62(7):1382-1402.

Dervis H. Bibliometric analysis using Bibliometrix an R Package. *Journal of Scientometric Research*. 2019 Sep; 8(3):156-160.

Dong G, Potenza MN. A cognitive-behavioral model of internet gaming disorder: Theoretical underpinnings and clinical implications. *Journal of psychiatric research* 2014 Nov 1; 58:7-11.

Donnelly E, Kuss DJ. Depression among users of social networking sites (SNSs): The role of SNS addiction and increased usage. *Journal of Addiction and Preventive Medicine*. 2016; 1(2):107.

Donthu N, Kumar S, Mukherjee D, Pandey N, Lim WM. How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*. 2021 Sep 1; 133:285-96.

Donthu N, Kumar S, Pattnaik D. Forty-five years of journal of business research: a bibliometric analysis. *Journal of Business Research*. 2020 Mar 1; 109:1-14.

Ellison NB, Steinfield C, Lampe C. The benefits of Facebook "friends:" Social capital and college students' use of online social network sites. *Journal of computer-mediated communication*. 2007 Jul; 12(4):1143-1168.

Enrique E. Addiction to new technologies and to online social networking in young people: A new challenge. *Adicciones*. 2010 Apr 1; 22(2).

Foroughi B, Griffiths MD, Iranmanesh M, Salamzadeh Y. Associations between Instagram addiction, academic performance, social anxiety, depression, and life satisfaction among university students. *International Journal of Mental Health and Addiction*. 2022 Aug; 20(4):2221-42.

Fu KW, Chan WS, Wong PW, Yip PS. Internet addiction: prevalence, discriminant validity and correlates among adolescents in Hong Kong. *The British Journal of Psychiatry*. 2010 Jun; 196(6): 486-492.

Gill PS, Kamath A, Gill TS. Distraction: an assessment of smartphone usage in health care work settings. *Risk management and healthcare policy*. 2012 Aug 27:105-14.

Gong J, Chen X, Zeng J, Li F, Zhou D, Wang Z. Adolescent addictive Internet use and drug abuse in Wuhan, China. *Addiction Research & Theory*. 2009 Jan 1; 17(3): 291-305.

Griffiths M. Internet addiction-time to be taken seriously?. *Addiction research*. 2000 Jan 1; 8(5): 413-418.

Ho SS, Lwin MO, Lee EW. Till logout do us part? Comparison of factors predicting excessive social network sites use and addiction between Singaporean adolescents and adults. *Computers in Human Behavior*. 2017 Oct 1; 75:632-642.

Kessler MM. Bibliographic coupling between scientific papers. *American documentation*. 1963 Jan; 14(1):10-25.

Ko CH, Yen JY, Liu SC, Huang CF, Yen CF. The associations between aggressive behaviors and Internet addiction and online activities in adolescents. *Journal of Adolescent Health*, 2009 Jun 1; 44(6): 598-605.

Ko CH, Yen JY, Yen CF, Chen CS, Weng CC, Chen CC. The association between Internet addiction and problematic alcohol use in adolescents: the problem behavior model. *CyberPsychology & Behavior*. 2008 Oct 1; 11(5):571-576.

Kuss DJ, Griffiths MD, Binder JF. Internet addiction in students: Prevalence and risk factors. *Computers in Human Behavior*. 2013 May 1; 29(3): 959-966.

Kuss DJ, Griffiths MD. Online social networking and addiction-a review of the psychological literature. *International journal of environmental research and public health*. 2011 Sep; 8(9):3528-3552.

Kuss DJ, Griffiths MD. Social networking sites and addiction: Ten lessons learned. *International journal of environmental research and public health*, 2017 Mar; 14(3): 311.

Kwon M, Lee JY, Won, WY, Park JW, Min JA, Hahn C, Gu X, Choi JH, Kim DJ. Development and validation of a smartphone addiction scale (SAS). *PloS one*. 2013 Feb 27; 8(2):56936.

Lam LT. Parental mental health and internet addiction in adolescents. *Addictive behaviors*. 2015 Mar 1; 42: 20-23.

Lam LT. Risk factors of Internet addiction and the health effect of internet addiction on adolescents: a systematic review of longitudinal and prospective studies. *Current psychiatry reports*. 2014 Nov; 16(11):1-9.

Leung L. Stressful life events, motives for Internet use, and social support among digital kids. *Cyberpsychology & behaviour*. 2006 Apr 1; 10(2):204-214.

Liu T, Potenza MN. Problematic Internet use: clinical implications. *CNS spectrums*, 2007 Jun; 12(6):453-466.

Lortie CL, Guitton MJ. Internet addiction assessment tools: Dimensional structure and methodological status. *Addiction*. 2013 Jul; 108(7):1207-1216.

-
-
- Mohammadi M, Al-Fuqaha A, Sorour S, Guizani M. Deep learning for IoT big data and streaming analytics: A survey. *IEEE Communications Surveys & Tutorials*. 2018 Jun 6; 20(4):2923-2960.
- Müller KW, Dreier M, Beutel ME, Duven E, Giralt S, Wölfling K. A hidden type of internet addiction? Intense and addictive use of social networking sites in adolescents. *Computers in Human Behavior*. 2016 Feb 1; 55:172-177.
- Pantic I, Damjanovic A, Todorovic J, Topalovic D, Bojovic-Jovic D, Ristic S, Pantic S. Association between online social networking and depression in high school students: behavioral physiology viewpoint. *Psychiatria Danubina*. 2012 Mar 25; 24(1):90-93.
- Pantic I. Online social networking and mental health. *Cyberpsychology, Behavior, and Social Networking*. 2014 Oct 1; 17(10): 652-657.
- Park N, Lee H. Social implications of smartphone use: Korean college students' smartphone use and psychological well-being. *Cyberpsychology, Behavior, and Social Networking*. 2012 Sep 1; 15(9): 491-497.
- Park WK. Mobile phone addiction In *Mobile Communications* (pp. 253-272).
- Pontes HM, Griffiths MD. Internet addiction disorder and internet gaming disorder are not the same. *Journal of Addiction Research & Therapy*. 2014; 5(4).
- Pradhan P, Zala LN. Bibliometrics Analysis and Comparison of Global Research Literatures on Research Data Management extracted from Scopus and Web of Science during 2000-2019.
- Przybylski AK, Murayama K, DeHaan CR, Gladwell V. Motivational, emotional, and behavioral correlates of fear of missing out. *Computers in human behaviour*. 2013 Jul 1; 29(4):1841-1848.
- Salehan M, Negahban A. Social networking on smartphones: When mobile phones become addictive. *Computers in human behavior*. 2013 Nov 1; 29(6):2632-9.
- Samaha M, Hawi NS. Relationships among smartphone addiction, stress, academic performance, and satisfaction with life. *Computers in human behaviour*. 2016 Apr 1; 57:321-325.
- Schou Andreassen C, Pallesen S. Social network site addiction-an overview. *Current pharmaceutical design*. 2014 Aug 1; 20(25):4053-61.
- Seki T, Hamazaki K, Natori T, Inadera, H. Relationship between internet addiction and depression among Japanese university students. *Journal of affective disorders*. 2019 Sep 1; 256: 668-672.
- Singhal K, Banshal SK, Uddin A, Singh VK. The Information Technology Knowledge Infrastructure and Research in South Asia. *Journal of Scientometric Research* 2014 Sep 1; 3(3):134-42.
- Soh PCH, Charlton J, Chew KW. The influence of parental and peer attachment on Internet usage motives and addiction. *First Monday*. 2014 Jul 8.
- Stahlschmidt S, Stephen D. Comparison of Web of Science, Scopus and Dimensions databases. KB Forschungspoolprojekt; DZHW: Hannover, Germany. 2020 Oct.
- Starcevic V. Is Internet addiction a useful concept?. *Australian & New Zealand Journal of Psychiatry*. 2013 Jan; 47(1):16-9.
- Statista. "Social media statistics & facts", available at Social Media Statistics & Facts, Statista. 2020
- Sussman S, Lisha N, Griffiths M. Prevalence of the addictions: a problem of the majority or the minority?. *Evaluation & the health professions*. 2011 Mar; 34(1): 3-56.
- Valenzuela-Fernandez L, Merigó JM, Lichtenthal JD, Nicolas C. A bibliometric analysis of the first 25 years of the *Journal of Business-to-Business Marketing*. *Journal of Business-to-Business Marketing*. 2019 Jan; 26(1): 75-94.
- Van Raan AF. Advances in bibliometric analysis: research performance assessment and science mapping. *Bibliometrics Use and Abuse in the Review of Research Performance*. 2014 Dec; 87: 17-28.
- Verma S, Gustafsson A. Investigating the emerging COVID-19 research trends in the field of business and management: A bibliometric analysis approach. *Journal of Business Research*. 2020 Sep 1; 118:253-261.
- Weinberg BH. Bibliographic coupling: A review. *Information Storage and Retrieval*. 1974 May; 10(5-6): 189-196.
- Wen H, Huang Y. Trends and performance of oxidative stress research from 1991 to 2010. *Scientometrics*. 2012 Apr 1; 91(1):51-63.

Widyanto L, Griffiths M. 'Internet addiction': a critical review. *International Journal of mental health and Addiction*. 2006 Jan; 4(1): 31-51.

Wolniczak I, Cáceres-DelAguila JA, Palma-Ardiles G, Arroyo KJ, Solís-Visscher R, Paredes-Yauri S, Mego-Aquije K, Bernabe-Ortiz A. Association between Facebook dependence and poor sleep quality: a study in a sample of undergraduate students in Peru. *PloS one*. 2013 Mar 12; 8(3):59087.

Xanidis N, Brignell CM. The association between the use of social network sites, sleep quality and cognitive function during the day. *Computers in human behaviour*. 2016 Feb 1; 55: 121-126.

Young KS. Internet addiction: The emergence of a new clinical disorder. *CyberPsychology & Behavior*. 1998; 1:237-244.

Yuan Y, Gretzel U, Tseng YH. Revealing the nature of contemporary tourism research: Extracting common subject areas through bibliographic coupling. *International Journal of Tourism Research*. 2015 Sep; 17(5):417-431.

Zivnуска S, Carlson JR, Carlson DS, Harris RB, Harris KJ. Social media addiction and social media reactions: The implications for job performance. *The Journal of social psychology*. 2019 Nov 2; 159(6):746-760.