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A Literature Study in Network Science with Social Media

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Abstract: *This is the beginning of Network Science. The journal has been created as a result network Science is exploding. Elated to social media and information systems as two independent, continuous and interdependent concepts. The analysis information is from the survey for two social media keywords and information systems from the Scopus web site, which is one of the main scientific search engines. With the utilization of bibliometric library of R software, scientific products in the field of social media applications in business from 2005 to the end of January 2019, the study overviews trends and achievements of this field. The results show that from the beginning of 2005 through January 2019, 2682 articles have been indexed in Web of Science in the field of social media and business; however, since 2009, scientific productions during this topic have grownup apace and in 2017, there was a substantial increase in the number of studies Human organizations are networks, often captured graphically with organization charts. In our daily lives we tend to encounter health-care supplier networks, purchase goods from firms that acquired them from supply networks, and gets victimization using networks of banks and master card firms.*

Keywords: *Network Science, Social Media, Health Promotion and Marketing Promotion*

I. Introduction

Network is an object composed of (not essentially equal) components and interactions or connections between these components. Examples: web (servers-routers-computers/fiber-optic –wireless connections), epidemiology (people-places/contacts). Network science, the field, permeates a wide range of traditional disciplines, and Network Science, the journal, will welcome contributions from all of them. In addition, we will indeed publish foundational research on theory, principles, Philosophy and arithmetic of networks.

Our major statement is that we tend to read network science because the study of the collection, management, analysis, interpretation, and presentation of relational information. But first, a few remarks on our perceptions of the current state of the sector. The claim that "networks are everywhere" has become almost routine. Frequently mentioned examples of "everywhere networks" embrace the net and alternative infrastructure networks, social, political and economic networks, scientometric and text-representational networks, as well as food webs and molecular-level biological networks. And there is a host of other, less commonly mentioned networks in many more research areas. If anything, network science is a revolution a long time in the making. Despite frequent claims by some, network science did not suddenly appear when it was realized in the mid-1990s that networks could be models of complex systems. Such a limited definition of network science is simply inappropriate-it is important to recognize the many scientific antecedents of what we do. Network approaches have· developed in several areas over the past two decades (physics, biology, economics, for (example) because a relative perspective clearly added relevance to the discipline.

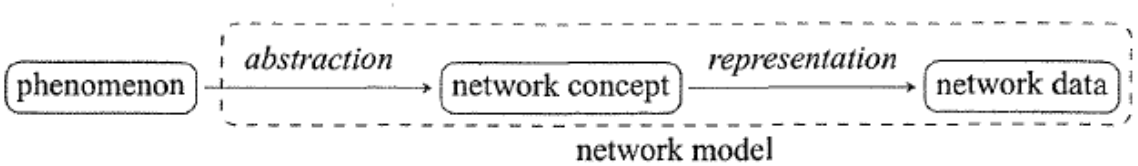

Figure 1: *The elements if network models.*

1. A specification of how the phenomenon (in general, i.e., more generally than this particular instantiation) is abstracted to a network.
2. A specification of how this conceptual network is represented in data (e.g., measured or observed). [1]

II. Social Media In Network Science

Social network analysis (SNA) is the process of investigating social structures through the use of networks and graph theory. It characterizes networked structures in terms of nodes (individual actors,

people, or things within the network) and the ties, edges, or links (relationships or interactions) that connect them.

Social Networking Potential (SNP) is a numeric coefficient, derived through algorithms[42][43] to represent both the size of an individual's social network and their ability to influence that network. SNP coefficients were first defined and used by Bob Gerstley in 2002. A closely related term is Alpha User, defined as a person with a high SNP.

SNP coefficients have two primary functions:

1. The classification of individuals based on their social networking potential, and
2. The weighting of respondents in quantitative marketing research studies.[2]

III. Social Media And Information Systems

Media is like any medium that transports cultures and thoughts such as newspapers, magazines, radio, television, satellite, internet, etc. In this definition, it should be added: Media is a vehicle that plays the role of information bearer and it is a pre-designed message and is an intermediary between the transmitter and receiver of the message that has evolved over time (Ahmadzadeh Kermani, 2012: 551). Media plays a variety of roles in the community, which can be related to the role of news, education, guidance, leadership and entertainment. Today, with the growth of scientific and research activities, a wealth of information has emerged, partly due to the existence of the media itself. "Social media is composed of democratic content, and understanding the role of the media is not just the dissemination of information, but also the production of information and share it," said Brien Solis in describing social media. Social media describes online tools that people use to share content, profiles, views, experiences, and thoughts.

Social media is the innovation and initiative of systems that connect people to one another, provide opportunities for providing and presenting content among them, and extract and process social knowledge and knowledge (Kay Lewis, 2010). The benefits of using social media in research activities are high visibility in search engines. Social networking sites, blogs, wikis, cookies, and forums are among the following social media categories.

Table 1 shows the main information found by Scopus, including the number of entries, the search time zone, the related key words, the author-specific features, and the type of material found on the keywords of social media and information systems.

Table: 1 The Main Findings of Scopus Data Related To The Keywords of Social Media and Information Systems

Description	**Results**
Documents	1999
Sources (Journals, Books, etc.)	913
Keywords Plus (ID)	9319
Author's Keywords (DE)	4458
Period	2003 – 2018
Average citations per documents	17.47
Authors	5947
Author Appearances	7317
Authors of single-authored documents	180
Authors of multi-authored documents	5767
Single-authored documents	189

Documents per Author	0.336
Authors per Document	2.97
Co-Authors per Documents	3.66
Collaboration Index	3.19
Document Types	0
Article	827
Article in Press	3
Book	3
Book Chapter	8
Conference Paper	984
Editorial	31
Letter	8
Note	30
Review	93
Short Survey	12

IV. Annual Science Production

In the production shows the contents of articles, books, and various researches conducted in the years from 2003 to 2018. In the trend of the occurrence of the keywords and we can observe that social media and information systems have appeared mostly in 2016.

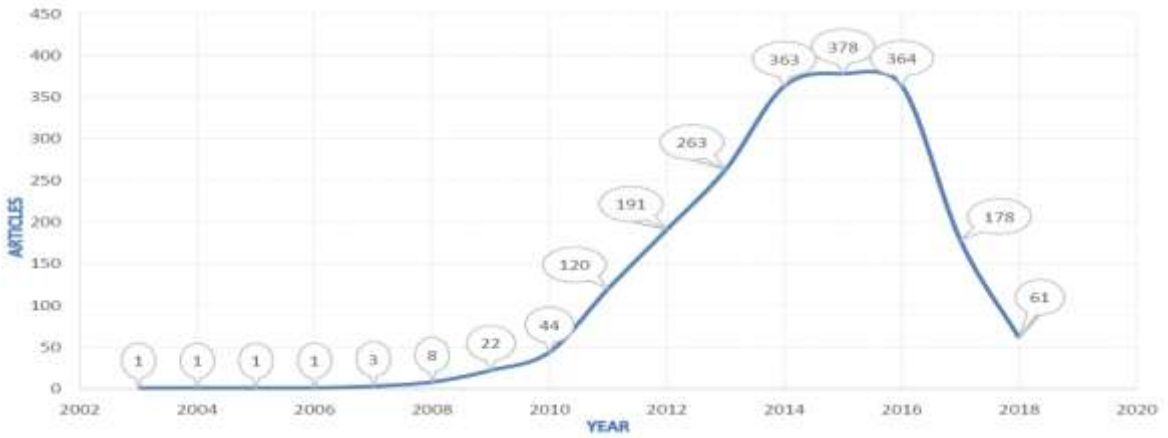

Figure.2: Generating annual science related to social media keywords and information systems [3]

V. Conceptual Structure, Co-Occurrence Network

A keywords co-occurrence network (KCN) focuses on understanding the knowledge components and knowledge structure of a scientific/technical field by examining the links between the keywords in the literature. it focuses on the analysis methods based on KCNs, which have been used in theoretical and empirical studies to explore research topics and their relationships in selecting scientific fields. If keywords are grouped into the same cluster, they are more likely to reflect identical topics. Each cluster has different number of subject keyword. As can be seen from the social networking platform, data and its use, and social media applications are the main clusters of this research.

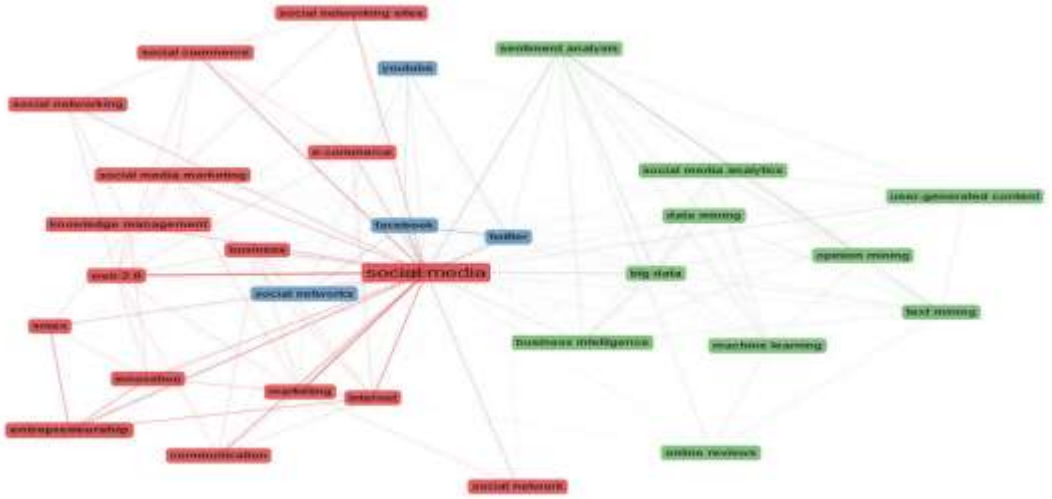

Figure.3: Co-occurrence network (2005-2019) [4]

VI. LITERATURE REVIEW

Top keywords include "Social Media" with 150 articles, "Health Promotion" with 101 articles, "Human" with 98 articles and "Marketing" with 86 articles. So we divide articles into four groups:

- Effects and Functions of Social Media
- The impact of social media on health promotion
- The impact of social media on human
- The impact of social media on marketing promotion

Effects and Functions of Social Media

Face book, Twitter, and YouTube are three most important channels for creating content and receiving information from organizations (Luo et al., 2014; Peoples et al., 2016). Face book is used by organizations as a tool for disseminating information, employees, and promotion of organization and their applications (MacKey & Liang 2013). Face book is one of the social media which is widely used in the world. Face book is used to attract social support in a variety of topics such as marketing, health promotion, the tourism industry, privacy, and electoral campaigns (Cavallo et al., 2012; Livingston et al., 2013; Byron et al. 2013). YouTube can provide educational films and content to the public (Long et al., 2012). Internet-based recruiting; technology publication and research are new Internet gains (Morgan et al., 2013; Benevento et al., 2009; Balatsoukas et al., 2015). One of the characteristics of Virtual media is more and easier access to information types that can create awareness and changing behavior (Laranjo et al., 2014; Moorhead et al., 2013). Web 2.0 and social media create a new kind of communication among people with any nationality or ethnicity (Niger et al., 2012; Gibbons et al., 2011; Acord & Harley 2013). Mobile phones and video films are also a kind of technology that is used to change behavior, but sometimes causes a negative effect among young people (Müller et al., 2016; Montague & Perchonok 2012; Cho & Park 2012; Harris et al., 2014; Gruzd & Haythornthwaite, 2013; Chou et al., 2013).

The impact of social media on health promotion

Social media can inform teenagers and young people about the dangers of sexually transmitted diseases, sexually transmitted infections, HIV, unwanted pregnancies and common illnesses among homosexuals (Lee Ventola, 2014; Bull et al., 2012; Rhodes et al., 2011; Jones et al., 2012; Young et al., 2014). Search engines and social networking sites like Facebook are used to promote sexual health. Teenagers show signs of dangerous behaviors such as drugs abuse, unhealthy sex and violence on public websites (Gold et al., 2011; Kaplan 2012). Mobile technology, Facebook and Twitter can help reduce alcohol consumption (Lobstein et al., 2017; Moreno & Whitehill 2014; Cavazos-Rehg et al., 2015; Patrick et al., 2014; Cohn et al., 2011). There are tobacco control policies and reduction in smoking and Fight against cigarettes on the Web 2.0 and social media, especially Facebook. These efforts are being made to promote mental health among young people (Mozaffarian et al., 2012; Freeman 2012; Akl et al., 2015; Gittelsohn et al., 2013; Struik & Baskerville, 2014; Gornall 2015).

Social media and Web 2.0 play an important role in health communication and mental health promotion and may change communication patterns in age groups. Today, the Internet and patient-focused

healthcare are cheap ways of promoting health among all levels of society (Chou et al., 2009; Rozenblum & Bates 2013; Nuutinen et al., 2013; Lu et al., 2014; Robinson et al., 2014). Developed countries reduce health inequities through the Internet and social media.

The impact of social media on marketing promotion

Facebook can create economic values by creating fan groups for brands and ads and online surveys. Facebook is also used to promote the tourism industry (Nelson et al., 2014; Nguyen et al., 2013; Xie & Lee, 2015; Stankov et al., 2010; Goh et al., 2013). On Twitter, there are customer service, LCCs lowcost carrier tickets promotions, flight cancellations or delays, and post-booking management in Airlines. Twitter is used for promotion and political marketing (Sobaci & Karkin, 2013; Struik & Baskerville, 2014; Greaves et al., 2014). Social media has facilitated communication between organizations and customers. Word of mouth marketing and mobile marketing help to build loyal customers (Mangold & Faulds, 2009; Kozinets et al., 2010; Lee Ventola, 2014; Schultz & Peltier 2013). Advantages of using the Internet are including to be cheap, instant access to the international community, connecting with millions of people and receiving real feedback from them. Social media is also used to manage customer relationships and create value along the value chain (Papasolomou & Melanthiou 2012; Hoffman et al., 2014; Rohm et al., 2013; Sugimoto et al., 2017; Parveen et al., 2014; Woodcock et al., 2011).

Table 2: The Most Popular Keywords Used in Studies Associated with Social Media and Promotions

Words	Occurrences	Words	Occurrences
social media	1545	review	87
health promotion	1190	methodology	84
human	926	major clinical study	82
humans	785	consumer health information	81
female	684	education	80
male	641	interpersonal communication	79
adult	494	mass medium	76
internet	482	program evaluation	76
adolescent	423	qualitative research	75
article	418	health care personnel	73
young adult	333	pregnancy	72
procedures	300	telemedicine	72
united states	260	health care policy	70
health education	231	diet	69
priority journal	228	advertising	68
social networking (online)	208	sexual behavior	68
middle aged	203	infant	67
social network	189	social networking	67
health behavior	187	surveys and questionnaires	63
public health	186	health care delivery	62
child	166	HIV infections	62
information dissemination	162	adolescent behavior	61

VII. Recent Network Research Is Leading To New And Growing Businesses

In summary, human understanding of networks has the potential to play a vital role in the 21st century, which is witnessing the rise of the Connected Age. There is an enormous demand for information on how to design and operate large global networks in a robust, stable, and secure fashion. In subsequent chapters, the committee discusses the dearth of fundamental scientific knowledge that would ensure that outcome. In Chapter 3, the committee looks at the use of networks in the military, and the special attention given in the statement of task to their role in network-centric warfare. [6]

VIII. Conclusion

The Network Science system is developing field in universe regular its faces new issues and challenges. In this network science to simply solve the networking issues and frauds, cracking is definitely determine by victimization this system. Now days the social media is one of the high extreme application which is used user friendly and extremely useful in society. The social media is biggest network to run in worldwide level the network science technology to handle this application works without any burden. The programming tools and languages are used to monitoring, analyzing, processing the info in social media.

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