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Impact of COVID-19 pandemic on E-participation of Fans in Sports Events

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Abstract. Sports watching both through offline as well as online mode has always been fancied by the sports lovers. We investigate the explicit use of social media by sports enthusiasts to show their support and solidarity for their favorite sports team or a particular sportsperson virtually i.e., via e-participation. For experimentation, we have considered the fourth Test match played between India versus Australia from 15-19 January, 2021 during Border-Gavaskar Trophy 2020-2021. During these five days period, a total of 69,965 tweets on Twitter were collected by us favoring both teams. Various statistical techniques coupled with social media analytics such as polarity and emotion analysis have been applied on the collected data to get valuable insights for our results. Our experimental results unambiguously indicate that sports enthusiast globally is using social media as important alternate media to show their support towards their favorite sports team virtually, via e-participation. The emergence and amalgamation of social media and marketing has provided newer horizons to various stakeholders i.e., both viewers and broadcasters to maximize e-participation.

Keywords: Covid-19, E-Participation, Fans, Pandemic, Social Media Analytics, Sports Marketing.

1 Introduction

The Internet has brought the world together. In the 21st century, the Internet has played a pivotal role in technological advances across various sectors such as education, business, healthcare, government, and many more. India, a developing nation, for example, has taken a massive leap in developing infrastructure for the Internet and paving its way to urban, semi-urban, and rural regions and has become one of the largest consumers of digital content across the globe. "Sports" is one such sector that has witnessed immense growth in audience and business with information available to fans

in real-time through the plethora of platforms accessible via the Internet. Social Media has brought fans closer to their favorite players and teams (Seong, 2021). Whether it's about collecting information or performing a communication (through video-call, voice-call, direct messaging, etc.) with social media, it's easy and fun. For example, the 2016 IPL match that reached out to around 110 million audiences witnessed a jump of 40 percent compared to previous years (Raheja, 2019). At the global level, about 60 percent of people who have an interest in sports use Facebook. Nearly 3 in 4 of these sports fans say that the main reason to use social media is to follow sports events coverage (Facebook-IQ, 2019). Social Media has provided players of less established sports such as Kabaddi, Hockey, Football, and many other sports globally to showcase their talent (Singh et al., 2019a; Trivedi et al., 2020). Sports marketers benefit from social media by promoting and marketing their sports events, franchises, related merchandise at minimal costs (Mahan, 2011; Meng et al., 2015; Vale and Fernandes, 2018). It has been seen that most professional teams maintain their presence on various social media platforms and adopt new ones. Instagram is one such platform used as a Brand Management Tool by Professional Team Sports Organizations (Anagnostopoulos et al., 2018), along with Facebook and Twitter as notable mentions (Vale and Fernandes, 2018; Williams et al., 2014). Facebook, Twitter, YouTube, among many famous social media platforms, can increase and maintain fan's commitment and engagement with sporting events (Meng et al., 2015).

2 Literature Review

COVID-19 pandemic took the entire world by storm, and a large population from 213 countries have been infected by this deadly disease (Brahmi et al., 2020; Dwivedi et al., 2020). Even after more than a year, many countries have still imposed full or partial lockdown (Singh et al., 2020c), restricting outdoor activities like sports and entertainment. The magnitude of this pandemic was so high that even the Olympic Games scheduled to be held in Tokyo in 2020 were postponed to 2021 to safeguard the athletes' health and everyone involved (Olympic, 2020). Online sports have emerged stronger during a pandemic, and the following are the perspectives from various stakeholders with respect to online sports.

2.1 Fans or General Audience Perspective

The term involvement can be defined as "a person's perceived relevance of the object based on inherent needs, values, and interests" (Zaichkowsky, 1985). Laurent and Kepferer (1985) defined the term Sports involvement as "an unobservable state of motivation, arousal, or interest in viewing a game or participating in a sport-related activity that results in searching, information processing, and decision-making." The involvement of "Fans" or audience is a critical factor for the success of any sports event (Kim et al., 2020). Women harness the power of social media to follow sports. Nearly 80 percent of women surveyed globally say that they watch live sports online or in person. In Latin America, female viewers' percentage to male viewers is almost identical (Facebook-IQ, 2019).

2.2 Sports Authorities Perspective

From existing fan bases and the level of their sports fandom, it can be inferred that sports organizations are positioned ideally to benefit from social media platform (McCarthy et al., 2014; Williams and Chinn, 2010). Sports Authorities should plan mobile and TV ads together to target a larger audience (Facebook-IQ, 2019). The researchers (Anderson, 2018) have shown that sports clubs can increase viewership by leveraging live tweets during a match. Researchers (O'Shea and Alonso, 2014) have shown that fans and sport club enthusiasts dictate professional sports organizations' managers the way to market and brand their products. Professional Sports clubs harness social media's power to add value to their brands and strengthen the bond with viewers and fans with their teams. They also provide fans with 'insider' information through social media channels (Williams et al., 2014).

2.3 Business Perspective

According to a report by KPMG, to escalate the engagement of fans in online sports events, league marketers are investing heavily on social media platforms to gather audience and benefits to the sponsor. In the developed markets, we have successful sports leagues like NBA, which have utilized social media to increase their fan base and game attendance (KPMG, 2016). Researchers (Rosenbloom and Larsen, 2003) have suggested that as businesses move into the e-commerce era, culture may exhibit a significant role in business marketing communication. The chief operating officer (COO) has to crucial part in making decisions about the franchises' social media policies and govern those (Prakash and Majumdar, 2021). As the content generation strategy is an essential aspect for any sports event or franchise (Bennett and Miles, 2006; Marcel, 2009), the role of COO becomes even more critical.

2.4 Government Perspective

The viewers can be targeted using demographic and behavioral data (Cox Media, 2020). The Government of India has liberalized the use and aims to enable Geospatial Data availability for applications across various sectors like e-commerce, delivery, and logistics, agriculture, etc. (NASSCOM, 2021). The initiative has been taken to realize the vision of Prime Minister Narendra Modi-led Government of "AATMANIRBHAR BHARAT" and a \$5 Trillion economy. The guidelines state that "Individuals, companies, organizations, and government agencies, shall be free to process the acquired geospatial data, build applications and develop solutions about such data and use such data products, applications, solutions, etc. By way of selling, distributing, sharing, swapping, disseminating, publishing, deprecating and destructing." Self-certification will be required for compliance (Dasgupta, 2021). In England, a significant proportion of participants belongs to sports clubs run by their members and play a central role in the formulation of policies by the government to grow participation (Nichols et al., 2012).

2.4 Current Scenario & Social Media Adoption

Many International Federations and Sports Committees have started organizing sports events with limited or no audience (Bryson et al., 2021; Fischer and Haucap, 2020) and hence leaving sports enthusiasts to look for some alternate options to show their support towards their favorite sports team and a sportsperson in particular. Social media (especially Twitter) is one such alternative that has emerged as a front-runner in these challenging times of the Covid-19 pandemic (Singh et al., 2020c; Sturm, 2020). Social media is a virtual platform that allows people from all around the world to communicate without any geographical barrier that too is free of cost (Kapoor et al., 2018; Singh et al., 2020a; Singh et al., 2020b). These factors make social media a perfect fan favorite and effective alternate to virtually show their love and support towards their favorite sports team or sportsperson.

Since multiple countries, International Federations, and Sports Committees have decided to organize future sports events without an audience behind closed doors till the pandemic is not over (Guardian, 2021), this opens up an all-new area of research for the researchers to explore. Hence, in this study, we explore the use of Twitter by fans/ sports enthusiasts to show their support towards their favorite sports team and sportsperson

3 Research Objectives and Questions

Our research explores the use of social media by fans/sports enthusiasts to show their support towards their favorite sports team and sportsperson. We take the example of the fourth Test match between India and Australia played at Gaba during 15-19 January, 2021 of Border-Gavaskar Trophy 2020-2021 (ESPN-Crinfo, 2021). The reason for choosing this particular sports event is that this game was evenly contested between both teams for the entire duration of five days and it was anybody's game till the penultimate over was bowled. Besides, it wasn't sure till the last session of the previous day i.e. 4th day (18th January, 2021) who could be the winner, making it a perfect case study to carry out our research objectives. The study focuses on the four research questions (RQ):

RQ1: *How sports enthusiasts use social media to show their support?*

H1a: *The mean of discussion regarding Test Match for all five days is the same on social media.*

H1b: *The mean of discussion regarding Indian and Australian cricket Teams is the same on social media.*

RQ2: *How were the globally dispersed sports enthusiasts discussing about the cricket matches?*

RQ3: *What is the overall sentiment of the discussion on social media regarding the Test Match?*

RQ4: *What factors influence the discussion regarding the Test Match on social media?*

4 Methodology

For fulfillment of our goals, data was collected from Twitter using Twitter API. Hashtag like #AUSvsIND, #AUSvIND, #INDvsAUS, #INDvsAUS, #GabbaTest, #BorderGavaskarTrophy etc were used as search terms in order to extract data from Twitter from Jan 15, 2021 to Jan 19, 2021 on daily basis. A total of 69,965 were collected from 37,453 users globally. Since the collected data contains a lot of noise, we performed data pre-processing to remove any ambiguities that could have led to conflicting results (García et al., 2015; Singh et al., 2018a). Once data was prepared for analysis, various statistical techniques and social media analytics (Sarin P. et al., 2020; Stieglitz and Dang-Xuan, 2013) were applied to fulfill our goals and answer the research questions.

5 Results and Discussions

In RQ1, we try to analyze the use social media by fans/ sports enthusiast to show their support virtually by e-participation. To validate our claim, we statistically validate H1a and H1b.

H1a: The means of discussion regarding Test Match for all five days is same on social media.

For H1a, we applied one-way ANOVA on session-wise tweet collected for all five days. The results of ANOVA at 95% confidence, is F-Value=6.656 and P=0.000111. According to the decision rule since, the value of $P < 0.05$, hence, H1a is rejected. This means that there exists significant difference between one or more groups of days with regards to discussion on Twitter. In order to get further insights, we plot the results of Tukey Honest Significant Differences (Tukey HSD) (See Figure 1).

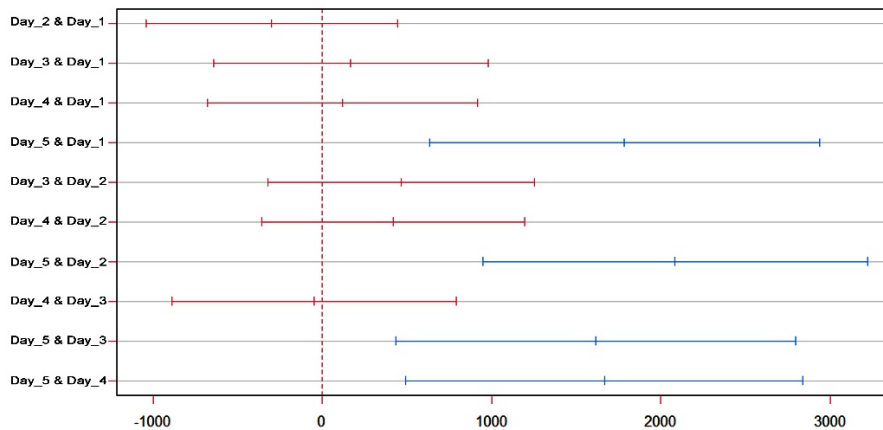


Figure 1: Results of Tukey HSD

Inference: The results clearly indicate that the discussion on Twitter varies and is not similar across all three sessions of all five days of the Test Match. The results of Tukey HSD indicates that means of day_5 & day_1, day_5 & day_2, day_5 & day_3 and day_5 & day_4, varies as compared to other groups.

H1b: *The mean of discussion regarding Indian and Australian cricket Team is same on social media.*

For H1b, two-tail independent t-test was applied to the tweets. The results of two-tail independent t-test at 95% confidence, is T-Value=12.713 and P=0.7593. According to the decision rule since, the value of $P > 0.05$, hence, H1b is accepted. This means that there does not exist any significant difference between the discussion regarding Indian and Australian cricket Team is same on social media.

Inference: The results of H1b, clearly indicate that both India and Australia are discussed statistically equally on Twitter. Statistically, both the countries are finding support from fans/sports enthusiasts via Twitter in equal numbers.

For RQ2, we try to find the country wise origin of tweet from where the fans/sports enthusiasts are showing their support via e-participation. Since, most of the tweets are geo-tagged, hence, we apply geo-location analysis. Location based analysis is considered the most critical tool for mapping public response in an area of large demography towards an entity (Singh et al., 2019b; Singh et al., 2018b). Based upon our analysis, India and Australia were the main contributors in the discussion, however, many other countries actively took part in the discussion. This active participation by people all around the world showed that people globally were taking part in this discussion and showing their support their favorite team. The result of geo-location analysis is shown in Figure 2.

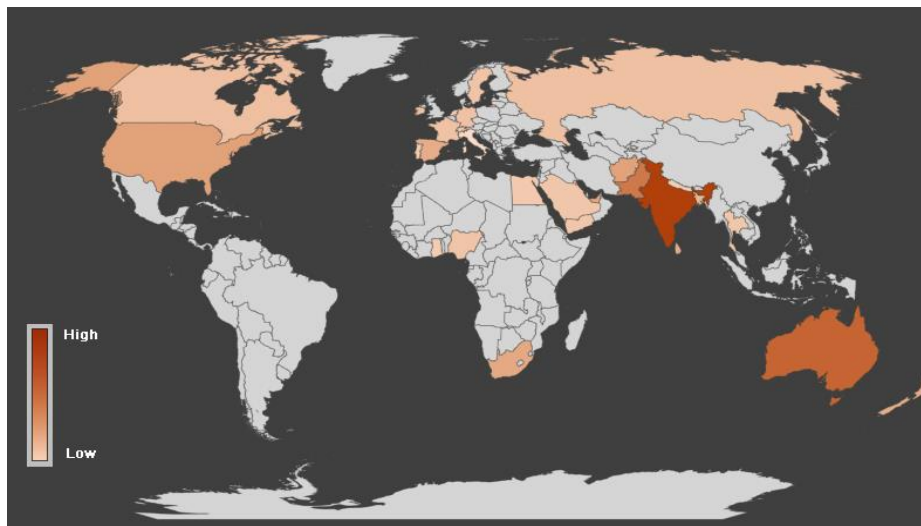


Figure 2: Geo-location Analysis

Inference: The results in Figure 2, show that people globally were actively taking part in these discussions and showing their support for their favorite cricket team via Twitter through e-participation.

For RQ3, we have applied sentiment analysis, which is a text mining technique that depicts the sentiment from given piece of text (Mohammad and Turney, 2010; Ou et al., 2014; Singh et al., 2017). Sentiment analysis is often classified into (a) Polarity Analysis (b) Emotion Analysis (Grover et al., 2019; Singh et al., 2020a). Polarity analysis defines the polarity (Positive, Neutral, Negative) of text, while, emotion analysis classifies the text based upon eight e-motions. Figure 3, show the results of polarity analysis while Figure 4 shows the results of e-motion analysis.

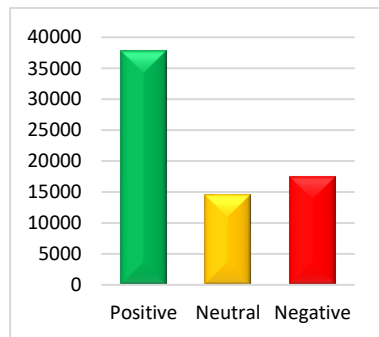


Figure 3: Polarity Analysis

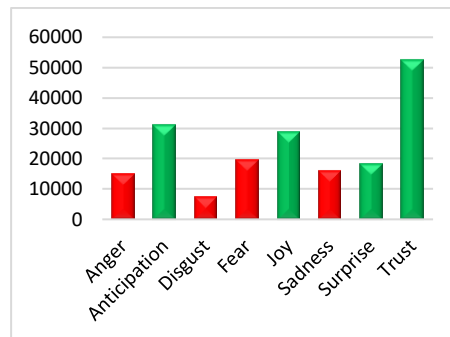


Figure 4: Emotion Analysis

Inference: The results of polarity analysis, indicates that overall discussion is taking place on Twitter regarding the test match is positive. Even the results of e-motion analysis indicate that the people show more anticipation, joy and trust in discussion as compared to other e-motions. Overall, fans are enjoying the discussion on Twitter while showing their support towards their favorite team. Further, fans do not hesitate to show their negative emotion, when they feel that certain players are not performing as per their reputation, which even led to online trolling (Kumari et al., 2020; Lundberg and Laitinen, 2020).

For RQ4, we plotted a correlation plot in order to study what all factors affect the online discussion regarding the Test Match. For this we considered factors such as runs scored, wickets fallen, any batsman scoring a century or half century (Milestone_Batting), any bowler taking a five-wicket haul (Milestone_Bowler) and rain which interrupted the Test Match on two different days. The result of correlation analysis is shown in Figure 5.

Inference: The results of correlation plots indicates that discussion is positively affected with number of runs scored, showing a strong positive correlation of 0.9. Similarly, rain negatively affects the online discussion, showing a moderate negative correlation of -0.6. Further, milestones by batsmen or bowler also positively affect the discussion, show a moderate positive correlation of 0.4.

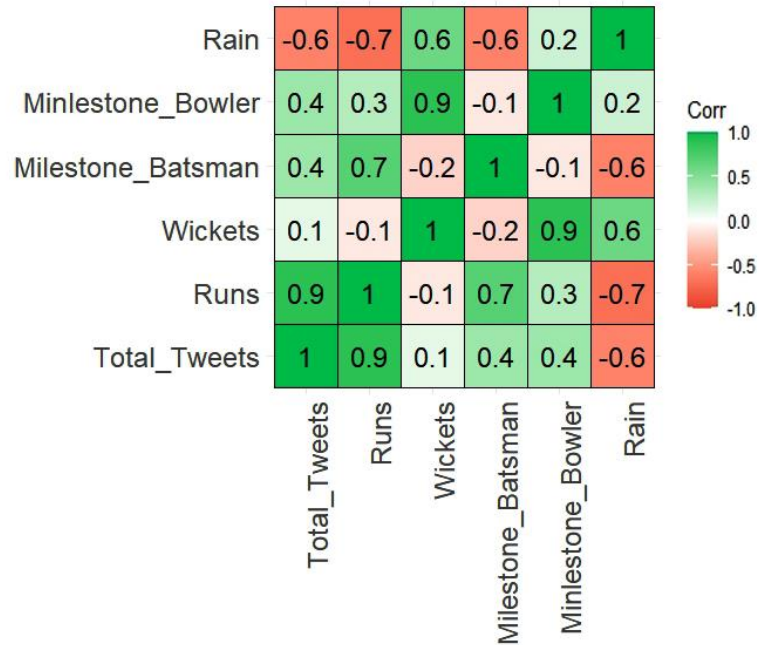


Figure 5: Results of Correlation plot

The way social media and marketing strategy has emerged, and provided a newer evolving dimension to social media marketing (Li, et al., 2021) during pandemic will have its impact for longer duration and is forming the future base of e-participation as compared with traditional ways (See Figure 6). There are several motivating factors i.e., Information Motivation (IM), Pass-Time Motivation (PTM), Fanship Motivation (FM) and Entertainment Motivation (EM) which has led to more e-participation of fans in sports. The research provided by Crawford and Godbey (1987) has become the backbone for today's leisure constraint research by proposing three types of constraints which help us to understand whether a viewer participate or not: Intrapersonal or individual psychological states and attributes, such as stress or anxiety; Interpersonal or the results of interpersonal interaction, such as social interaction with family and friends; and Structural or Intervening factors between preference and participation, such as financial resources, time and accessibility. Covid-19 pandemic has facilitated all sorts of constraints for maximizing e-user participation as work from home culture elevated in the tough times. Participation can be seen as the process of overcoming these three constraints and each is applicable to Sport Twitter Consumption. (Witkemper, C., et al, 2012).

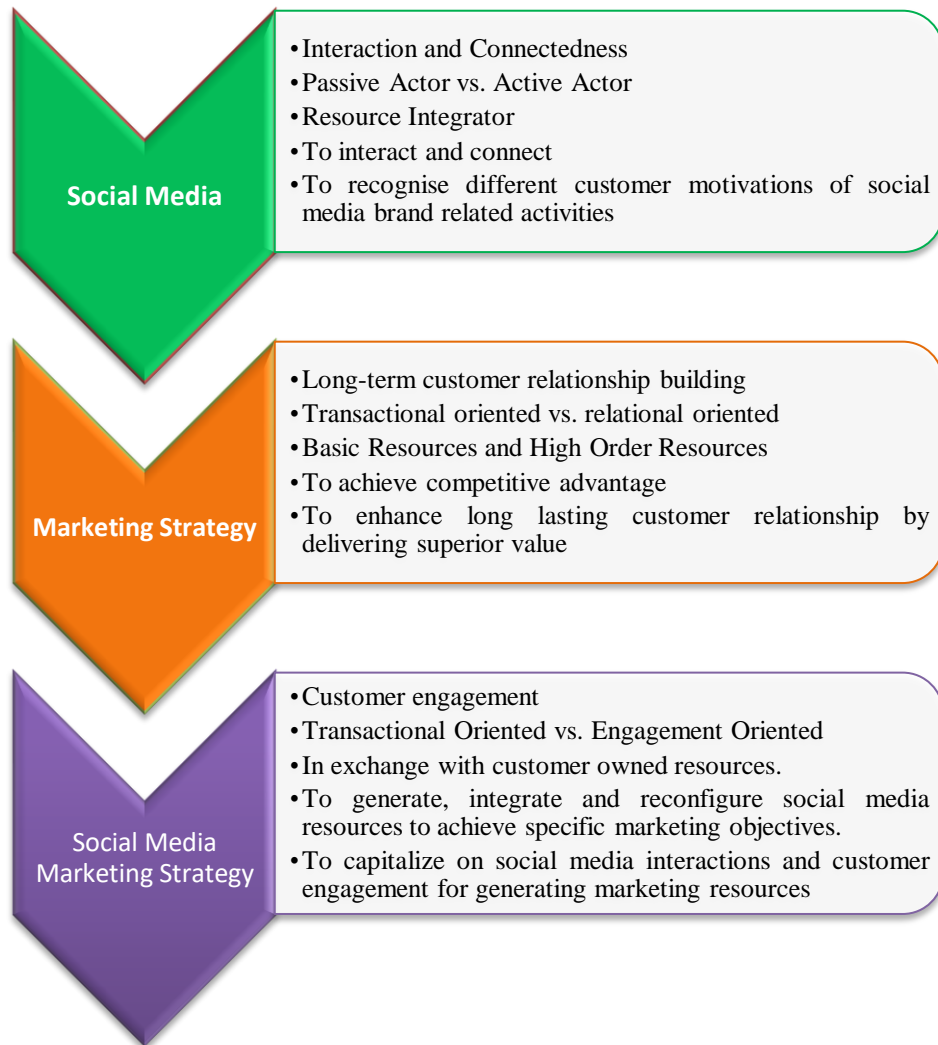


Figure 6: Comparison of social media, marketing strategy, and social media marketing strategy (adapted from Li et al., 2021)

The evolution of social media involves several factors such as how the users interact and connectedness; passive versus active actor, how the resources are integrated, being interacted and connected which further helps to enhance brand related activities (Figure. 6), similarly, in this paper we are discussing online users as sports fans and the associated brand management which would further enhance the marketing strategy considering social media as a prime medium during the pandemic times and stay home culture.

6 Conclusions

The interaction, communication and value-based concepts of prosumers and exchanging social media interaction focuses on expanded version of Gronroos's (2004) relationship-building. The evolution of the Internet, social media, and Mobile technology (Holland, Christopher P, 2015; Sarin, P et al., 2021) has been transcendent and evolved newer avenues how the sports fans consume sports contents generally. During this pandemic time, internet penetration and home stay approach as well as government restrictions led to higher e-participation of sports fans. Even as the Tokyo Olympics are getting planned to take place in absence of foreign crowds (India Today, 2021); sports ecosystem model, event-driven marketing, star marketing, and international differences in sports viewing for specific sports have emerged significantly through social media platforms. For Broadcasters and advertisers, the empty space in the stands present more visibility window for the advertisement to generate revenues and thus opening new doors to attract more targeted audience.

References

- Anagnostopoulos, C., Parganas, P., Chadwick, S., & Fenton, A. (2018). Branding in pictures: using Instagram as a brand management tool in professional team sport organisations. *European Sport Management Quarterly*, 18(4), 413-438.
- Anderson, B. (2018). Winning over Fans: How Sports Teams Use Live-Tweeting to Maximize Engagement. *ELON JOURNAL*, 54.
- Bennett, N., & Miles, S. (2006). Second in command: the misunderstood role of the chief operating officer. *harvard business review*, 84(5).
- Brahmi, N., Singh, P., Sohal, M., & Sawhney, R. S. (2020). Psychological trauma among the healthcare professionals dealing with COVID-19. *Asian Journal of Psychiatry*, 54, 102241-102241.
- Bryson, A., Dolton, P., Reade, J. J., Schreyer, D., & Singleton, C. (2021). Causal effects of an absent crowd on performances and refereeing decisions during Covid-19. *Economics Letters*, 198, 109664.
- Cox Media (2020, March 25), <https://hub.coxmedia.com/sports-advertising/how-to-reach-a-sports-audience-even-when-live-events-are-postponed-or-cancelled>
- Crawford, D. W., & Godbey, G. (1987). Reconceptualizing barriers to family leisure. *Leisure sciences*, 9(2), 119-127.
- Dasgupta S. (2021, February 18), <https://theprint.in/theprint-essential/why-modi-govt-is-liberalising-mapping-policies-what-free-access-to-geospatial-data-means/606574/>
- Dwivedi, Y. K., Hughes, D. L., Coombs, C., Constantiou, I., Duan, Y., Edwards, J. S., ... & Upadhyay, N. (2020). Impact of COVID-19 pandemic on information management research and practice: Transforming education, work and life. *International Journal of Information Management*, 55, 102211.
- ESPN-Crinfo (2021), <https://www.espn.com/series/india-in-australia-2020-21-1223867/australia-vs-india-4th-test-1223872/full-scorecard>

- Facebook-IQ (2019, January 29), <https://en-gb.facebook.com/business/news/insights/the-changing-profile-of-sports-fans-around-the-world>
- Fischer, K., & Haucap, J. (2020). Does crowd support drive the home advantage in professional soccer? Evidence from German ghost games during the COVID-19 pandemic.
- García, S., Luengo, J., & Herrera, F. (2015). *Data preprocessing in data mining* (Vol. 72). Cham, Switzerland: Springer International Publishing. <https://doi.org/10.1007/978-3-319-10247-4>
- Grover, P., Kar, A. K., Dwivedi, Y. K., & Janssen, M. (2019). Polarization and acculturation in US Election 2016 outcomes—Can twitter analytics predict changes in voting preferences. *Technological Forecasting and Social Change*, 145, 438-460.
- Grönroos, C. (2004). The relationship marketing process: communication, interaction, dialogue, value. *Journal of business & industrial marketing*.
- Guardian (2021), <https://www.theguardian.com/sport/2021/mar/03/tokyo-olympics-will-be-closed-to-fans-from-abroad-hints-games-organiser>
- Holland, C. P. (2015). Internet and social media strategy in sports marketing.
- India Today (2021), <https://www.indiatoday.in/sports/other-sports/story/tokyo-olympics-2021-to-be-staged-without-overseas-spectators-no-audience-during-torch-relay-1777365-2021-03-09>
- Kapoor, K. K., Tamilmani, K., Rana, N. P., Patil, P., Dwivedi, Y. K., & Nerur, S. (2018). Advances in social media research: Past, present and future. *Information Systems Frontiers*, 20(3), 531-558.
- Kim, S., Morgan, A., & Assaker, G. (2020). Examining the relationship between sport spectator motivation, involvement, and loyalty: A structural model in the context of Australian Rules football. *Sport in Society*, 1–26.
- KPMG (2016), <https://assets.kpmg/content/dam/kpmg/in/pdf/2016/09/the-business-of-sports.pdf>
- Kumari, K., Singh, J. P., Dwivedi, Y. K., & Rana, N. P. (2020). Towards Cyberbullying-free social media in smart cities: a unified multi-modal approach. *Soft Computing*, 24(15), 11059-11070.
- Laurent, G., & Kapferer, J. N. (1985). Measuring consumer involvement profiles. *Journal of Marketing Research*, 22(1), 41–53. <https://doi.org/10.1177/002224378502200104>
- Li, F., Larimo, J., & Leonidou, L. C. (2021). Social media marketing strategy: definition, conceptualization, taxonomy, validation, and future agenda. *Journal of the Academy of Marketing Science*, 49(1), 51-70. <https://doi.org/10.1007/s11747-020-00733-3>
- Lundberg, J., & Laitinen, M. (2020). Twitter trolls: a linguistic profile of anti-democratic discourse. *Language Sciences*, 79, 101268.
- Mahan, J. E. (2011). Examining the predictors of consumer response to sport marketing via digital social media. *International Journal of Sport Management and Marketing*, 9(3-4), 254–267.
- Marcel, J. J. (2009). Why top management team characteristics matter when employing a chief operating officer: A strategic contingency perspective. *Strategic Management Journal*, 30(6), 647-658.
- McCarthy, J., Rowley, J., Ashworth, C., & Pioch, E. (2014). Managing brand presence through social media: The case of UK football clubs. *Internet Research*, 24, 181–204. doi:10.1108/IntR-08-2012-0154
- Meng, M. D., Stavros, C., & Westberg, K. (2015). Engaging fans through social media: implications for team identification. *Sport, Business and Management: an international journal*.
- Mohammad, S., & Turney, P. (2010, June). Emotions evoked by common words and phrases:

- Using mechanical turk to create an emotion lexicon. In Proceedings of the NAACL HLT 2010 workshop on computational approaches to analysis and generation of emotion in text (pp. 26-34).
- NASSCOM (2021, February 15), <https://community.nasscom.in/communities/policy-advocacy/department-of-science-and-technology-releases-new-guidelines-for-geospatial-data-and-geospatial-data-services.html>
- Nichols, G., Padmore, J., Taylor, P., & Barrett, D. (2012). The relationship between types of sports club and English government policy to grow participation. *International journal of sport policy and politics*, 4(2), 187-200.
- Olympic (2020), <https://www.olympic.org/news/ioc-ipc-tokyo-2020-organising-committee-and-tokyo-metropolitan-government-announce-new-dates-for-the-olympic-and-paralympic-games-tokyo-2020>
- O'Shea, M., & Alonso, A. D. (2012). Opportunity or obstacle? A preliminary study of professional sport organisations in the age of social media. *International Journal of Sport Management and Marketing*, 10(3-4), 196-212.
- Ou, G., Chen, W., Wang, T., Wei, Z., Li, B., Yang, D., & Wong, K. F. (2014, October). Exploiting Community Emotion for Microblog Event Detection. In *EMNLP* (pp. 1159-1168).
- Prakash, C. D., & Majumdar, A. (2021). Analyzing the role of national culture on content creation and user engagement on Twitter: The case of Indian Premier League cricket franchises. *International Journal of Information Management*, 57, 102268.
- Raheja R. (2019, March 26) 'Sportstainment': How Internet changed the way audience watches sports. *Financial Express*. <https://www.financialexpress.com/industry/technology/sportstainment-how-internet-changed-the-way-audience-watches-sports/1528040/>
- Rosenbloom, B., & Larsen, T. (2003). Communication in international business-tobusiness marketing channels: Does culture matter? *Industrial Marketing Management*, 32(4), 309–315. [https://doi.org/10.1016/S0019-8501\(01\)00202-4](https://doi.org/10.1016/S0019-8501(01)00202-4).
- SEONG, D.-H. (2021). How to Utilize Sports Psychology for Better Customer Experience in Sports Retail Store as a Distribution Content Perspective. *Journal of Distribution Science*, 19(2), 45–52. <https://doi.org/10.15722/JDS.19.2.202102.45>
- Sarin, P., Arpan Kumar Kar, Kiran Kewat, P. Vigneswara Ilavarasan, (2020) "Factors affecting future of work: Insights from Social Media Analytics, *Procedia Computer Science*, 67,1880-1888, <https://doi.org/10.1016/j.procs.2020.03.207>.
- Sarin, P., Kar, A.K. and Ilavarasan, V.P. (2021), "Exploring engagement among mobile app developers – Insights from mining big data in user generated content", *Journal of Advances in Management Research*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/JAMR-06-2020-0128>
- Singh, J. P., Dwivedi, Y. K., Rana, N. P., Kumar, A., & Kapoor, K. K. (2019b). Event classification and location prediction from tweets during disasters. *Annals of Operations Research*, 283(1), 737-757.
- Singh, P., Dwivedi, Y. K., Kahlon, K. S., Pathania, A., & Sawhney, R. S. (2020a). Can twitter analytics predict election outcome? An insight from 2017 Punjab assembly elections. *Government Information Quarterly*, 37(2), 101444.
- Singh, P., Dwivedi, Y. K., Kahlon, K. S., Sawhney, R. S., Alalwan, A. A., & Rana, N. P. (2020b). Smart monitoring and controlling of government policies using social media and cloud computing. *Information Systems Frontiers*, 22(2), 315-337.
- Singh, P., Kahlon, K. S., Sawhney, R. S., Vohra, R., & Kaur, S. (2018a). Social media buzz created by# nanotechnology: insights from Twitter analytics. *Nanotechnology Reviews*, 7(6), 521-528.

- Singh, P., Kaur, H., Kahlon, K. S., & Sawhney, R. S. (2019a, June). Do people virtually support their favorite cricket team? insights from 2018 Asia cup. In Proceedings of the Third International Conference on Advanced Informatics for Computing Research (pp. 1-8).
- Singh, P., Sawhney, R. S., & Kahlon, K. S. (2017, November). Forecasting the 2016 US presidential elections using sentiment analysis. In Conference on e-Business, e-Services and e-Society (pp. 412-423). Springer, Cham.
- Singh, P., Sawhney, R. S., & Kahlon, K. S. (2018b). Sentiment analysis of demonetization of 500 & 1000 rupee banknotes by Indian government. *ICT Express*, 4(3), 124-129.
- Singh, P., Singh, S., Sohal, M., Dwivedi, Y. K., Kahlon, K. S., & Sawhney, R. S. (2020c). Psychological fear and anxiety caused by COVID-19: Insights from Twitter analytics. *Asian Journal of Psychiatry*, 54, 102280.
- Stieglitz, S., & Dang-Xuan, L. (2013). Emotions and information diffusion in social media—sentiment of microblogs and sharing behavior. *Journal of management information systems*, 29(4), 217-248.
- Sturm, D. (2020). Fans as e-participants? Utopia/dystopia visions for the future of digital sport fandom. *Convergence*, 26(4), 841-856.
- Trivedi, J., Soni, S., & Kishore, A. (2020). Exploring the Role of Social Media Communications in the Success of Professional Sports Leagues: An Emerging Market Perspective. *Journal of Promotion Management*, 27(2), 306-331.
- Vale, L., & Fernandes, T. (2018). Social media and sports: Driving fan engagement with football clubs on Facebook. *Journal of Strategic Marketing*, 26(1), 37–55. <https://doi.org/10.1080/0965254X.2017.1359655>
- Williams, J., & Chinn, S. (2010). Meeting relationship-marketing goals through social media: A conceptual model for sport marketers. *International Journal of Sport Communications*, 3, 422–437. doi:10.1123/ijsc.3.4.422
- Williams, J., Chinn, S. J., & Suleiman, J. (2014). The value of Twitter for sports fans. *Journal of Direct, Data and Digital Marketing Practice*, 16(1), 36-50.
- Witkemper, C., Lim, C.H., and Waldburger, A., “Social Media and Sports Marketing: Examining the Motivations and Constraints of Twitter Users” *Sport Marketing Quarterly*, 21, 170-183 (2012)
- Zaichkowsky, J. L. (1985). Measuring the involvement construct. *Journal of Consumer Research*, 12(3), 341–352. <https://doi.org/10.1086/208520>