

## The Hotspots and Trends of Research on International The Sports industry from 2010-2019: A Visualization Analysis Based on Citespace

YuZhijiang a,Viktoria Medvid

a Zhijiang Yu, Ph.D. Student, Faculty of Economics and Management, SumyNational Agrarian University, Ukraine.

b Viktoria Medvid, Doctor of Economics, Professor, Faculty of Economics and Management, SumyNational Agrarian University, Ukraine.

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**Abstract:** According to the collect and sort of relevant literature in the field of sports industry, the author found the continuity and correlation of current research themes, and the research trends in the next stage are incomplete and unclear. For the purpose to solve these problems and and explore the new direction of sports industry research, this paper processes the visualization analysis and statistics of co-cited references, co-cited author, keywords co-occurrence network and the bursting keywords through Citespace software and finds that the football industry, the fitness industry, sports media and sports tourism industry are the main hotspots and most of related research are from the prospective of sports marketing and management. More importantly, according to the keyword co-occurrence network and the statistics of the bursting keywords, this paper believes that the research on women's sports is the frontier and will be another hotspot shortly.

**Keywords:** the sports industry, The hotspots and trends, Visualizationanalysis, Citespace

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### 1. Introduction

In recent years, owing to the advantages of low resource consumption, high elasticity of demand, high value-added products and services, and the long chain of industry and high levels of efficiency, the sports industry has become an important symbol and content of national economic construction (Wang and Gu, 2017). Especially in many developed countries, the sports industry has even developed into a pillar industry of economic development. In this context, scholars from all over the world studied the sports industry from a different perspective and achieved fruitful results. However, according to the collect and sort of relevant literature in the field of sports industry, the author finds the continuity and correlation of current research themes and the research trends in the next stage are incomplete and unclear. Notably, with the continuous optimization of algorithms and functions, scholars in library science, computer science, information science, pedagogy, medicine and other disciplines began to solve such similar problems by using Citespace for relevant research (Li and Chen, 2016). Because it can help scholars to solve these problems and explore the hotspots, frontiers and trends of scientific research through the functions of co-cited references, co-cited author, keywords co-occurrence network and so on. Therefore, this paper presents the knowledge structure and the overall prospect of the international sports industry from 2010 to 2019 with the visualization analysis of Citespace, and sort out the intellectual base, the research hotspot and trends of the sports industry by

qualitative analysis method.

## 2. Research methods and data

### 2.1. Methods

Citespace software is a program based on Java which was developed by Professor Chen Chaomei of Drexel University. The software can measure and analyze data of scientific literature, identify and display the new trends and the development direction of scientific research. Based on the basic assumption that "scientific knowledge is constantly changing", the software can visually deduce the data of scientific literature from various fields. The networks formed from text and references of scientific literature are helpful for detecting the whole structure of scientific knowledge and prospect of the research domain. At the same time, the change of the scientific network can also reflect the change of scientific knowledge.

By using Citespace software, this study processes key information of the research on sports industry from 2010 to 2019 which includes authors, institutions, countries, keywords or references in scientific literature and generate several related visual mappings and statistical results. These can help the study to find landmarks, hubs and pivoted nodes, and track the evolutionary path of scientific research of the sports industry in the past ten years effectively (Chen, 2006). Finally, based on critical reading and systematic sort-out of the collected literature, this paper also infers the frontier hotspots, research frontiers and research characteristics of the sports industry further.

### 2.2. Data

The study takes the core data collection of Web of Science (WoS) database (including SCI-expanded, SSCI, A&HCI, CPCI-S, CPCI-SSH) as the source of literature. The search criteria choose "topic: Sport Industry OR topic: Sports Industry". Literature type selects "Article" and period sets as "from 2010 to 2019". Finally, there are 842 references as samples of the study.

## 3. Result

### 3.1. Co-country/regions network analysis

As shown in Table 1, the top 10 countries published a total of 733 articles which account for 87% from 2010 to 2019, and most authors are from western developed countries. What is noteworthy is that China (7th) and Brazil (10th), two emerging economies, also ranked in the top 10, and the first article of Brazil was published in 2015, indicating that the research of Brazil has just made a breakthrough in recent years. Figure 1 also shows the cooperation of science between countries. Among them, Australia had the most extensive collaborations and owing to the consistency of the development and the shareable results of scientific research of EU, European countries which represented by England, have a cohesive corporation with each other. Furthermore, the third-highest collaboration country is the USA.

Generally speaking, both the scientific research level and international exchange and cooperation of western developed countries are relatively leading. However, it is foreseeable that with the continuous development of the economy, scientific research of sports industry in China, Brazil and other emerging economies will play an increasingly important role in the future.

**Table 1. The top 10 highly productive countries in 2010-2019**

Rank	Country/territories	Year of first publication	Quantity
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1	USA	2010	271
2	ENGLAND	2010	109
3	AUSTRALIA	2010	99
4	SPAIN	2011	71
5	CANADA	2010	48
6	GERMANY	2010	40
7	PEOPLES R CHINA	2010	28
8	FRANCE	2010	26
9	SOUTH KOREA	2010	21
10	BRAZIL	2015	20

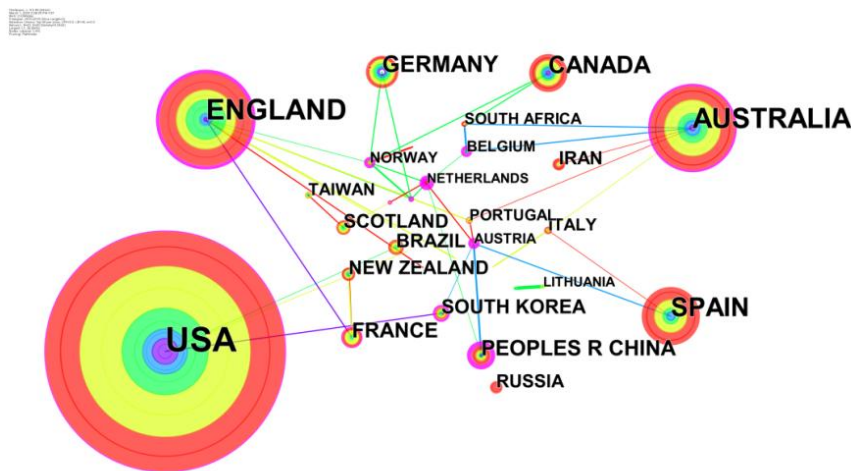


Figure 1. The collaboration network of countries/ regions.

**3.2. Intellectual base of the international sports industry research**

The intellectual base is the concept that can further clarify the nature of the research frontier. If defining the research frontier as the development status of a research field, the citation of this research frontier will form the corresponding intellectual base. In short, intellectual base of the research frontier is the reference trajectory of research frontier in literature.

**3.2.1. Co-cited references analysis**

Co-citation analysis is an analysis method to express the relationship between literature by referring to the citation frequency of other literature simultaneously. In other words, if two kinds of literature are cited by other literature simultaneously, the higher the citation frequency is, the closer the relationship is, which means the more similarities the disciplinary backgrounds of the two literature have. Therefore, the co-citation analysis can help to explain the structure quantitatively, kinship and evolution of disciplines (Chen et al., 2014) and analyze the development and changes of research literature and knowledge flow. In figure 2, the literature co-citation network of the sports industry from 2010 to 2019 is closely linked by relatively large nodes, and forms several natural clusters. The intellectual sequence is clearly visible, and the relationship between the intellectual bases is very close as well. Interestingly, there are 10 of the top 20 cited literature which are related to Twitter, and

the topics mainly involve fans, teams, competitions, coaches, athletes, managers and so on. It reflects the fact that social media has become an emerging force and the hottest topic in sports marketing in recent years. According to the top 20 co-cited references in Table 2, the intellectual base and research frontiers of the sports industry from 2010 to 2019 contains three contents in general: sports media, sports management and sports marketing.

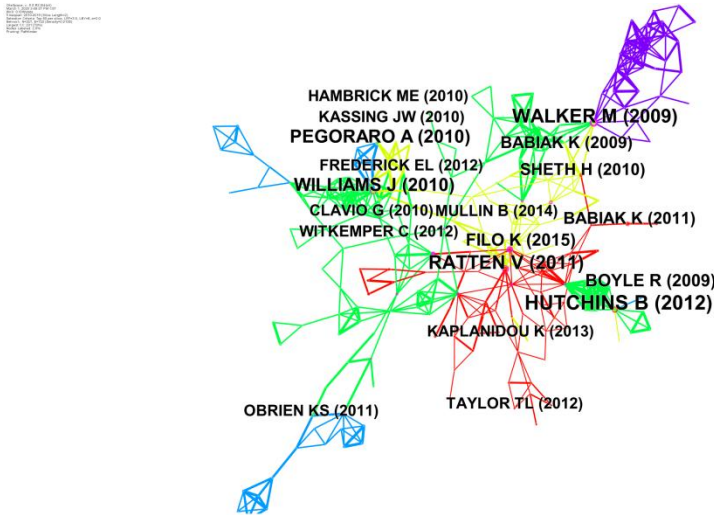


Figure 2.The map of co-cited references.

**Table 2.** The top 20 co-cited references in 2010-2019

Rank	Author	Title	Topic	Frequency
1	HUTCHINS B	Sport beyond Television: The Internet, Digital Media and the Rise of Networked Media Sport	sport media	12
2	WILLIAMS J	Meeting Relationship-Marketing Goals Through Social Media: A Conceptual Model for Sport Marketers	social media	9
3	PEGORARO A	Look who's talking—Athletes on Twitter: A case study.	social media	9
4	RATTEN V	Sport-based entrepreneurship: towards a new theory of entrepreneurship and sport management	sport management	9
5	HAMBRICK ME	Understanding Professional Athletes' Use of Twitter: A Content Analysis of Athlete Tweets	social media	8
6	WALKER M	CSR and environmental responsibility: motives and pressures to adopt green management practices	sport management	8
7	BOYLE R	Power Play: Sport, the Media and Popular Culture	sport media	7
8	BABIAK K	CSR and environmental responsibility: motives and pressures to adopt green management practices	sport management	7
9	FILO K	Sport and social media research: A review	Sport media	7
10	WITKEMPER C	Social media and sports marketing: Examining the motivations and constraints of Twitter users	social media	6
11	SHETH H	Beyond the Game: Perceptions and Practices of Corporate Social Responsibility in the Professional Sport Industry	sport management	6
12	BABIAK K	Determinants of Corporate Social Responsibility in Professional Sport: Internal and External Factors	sport management	6
13	THOMAS SL	The marketing of wagering on social media: An analysis of promotional content on YouTube, Twitter and Facebook	social media	5
14	CLAVIO G	Uses and gratifications of a retired female athlete's Twitter followers	social media	5
15	KASSING JW	Fan–Athlete Interaction and Twitter Tweeting Through the Giro: A Case Study	social media	5
16	MULLIN B	Sport marketing 4th edition	sport marketing	5
17	FREDERICK EL	Why We Follow: An Examination of Parasocial Interaction and Fan Motivations for Following Athlete Archetypes on Twitter	social media	5
18	SANDERSON J	To Tweet or Not to Tweet: Exploring Division I Athletic Departments' Social-Media Policies	social media	4
19	SHAPIRO SL	An examination of dynamic ticket pricing and secondary market price determinants in Major League Baseball	sport marketing	4
20	THIBAUT L	Globalization of sport: An inconvenient truth1	sport management	4

### 3.2.2. Cited authors analysis

First of all, as shown in Table 3, Joseph F. Hair, Joseph F. Hair, Robert K. Yin and Claes Fornell are from the field of marketing. Their representative works provide theoretical support for the study of the sports industry. As a well-known textbook for marketing students and scholars, "Multivariate Data Analysis-- A Global Perspective" of Joseph F. Hair introduces multivariate data analysis technique and provides an applications-oriented approach(Hair et al., 2010). Kevin Lane Keller is also a professor of marketing. His highly cited literature presents a conceptual model of brand equity and discussed the issues of measuring and managing customer-based brand equity(Keller, 1993). Robert K. Yin is a social scientist who is famous for his work on case study research and qualitative research. As a classical book, "Case study research: Design and methods"introduces the design and use of the case study methodcomprehensively(Yin, 2009). Claes Fornell and his most highly cited reference made a contribution to the research of customer satisfaction measurement and asset measurement(Fornell and Larcker, 1981). Additionally, Daniel C. Funk and Jo Williams are two experts in the field of sports marketing. Their representative researches about sports marketing are from the perspectives of consumer loyalty and social media, respectively. In general, the five authors and their most cited references are closely related to the field of sports marketing.

Secondly, as experts in the field of sports economics, Stefan Szymanski mainly reviewed the literature on commercial sports, especially sports competition, and discussed the economic mechanism of sporting events in his research(Szymanski, 2003). The other scholar, Wladimir Andreff and his book "Handbook on the economics of sport" studied the financial issues associated with new sports facilities for universities, cities or countries, and the hosting of large sporting events(Andreff and Szymanski, 2006).

Thirdly, Brett Hutchins and David Rowe are experts in the field of sportsmedia. Furthermore, they also have a close partnership with each other. "Sport beyond television: The Internet, digital media and the rise of networked media sport" is a book which was co-written by Brett Hutchins and David Rowe(Hutchins and Rowe, 2012). It mainly discussed the influence of new media technology on the survival or transformation of sports communication, traditional media which is represented by TV media. David Rowe's "Sport, Culture and the Media: Money, Myth and the Big Match: The Political Economy of the Sports Media" is another classic work about sports media in the West. This book analyzed sports and media as two cultural forces in modern society and puts forward the concept of "Media Sports cultural complex"(Rowe, 1999).

In general, the top 10 cited authors and representative literature roughly belong to three major research fields: sports marketing, sports economy and sports media. At the same time, Bourdieu, P., Joseph F. Hair, Kevin Lane Keller, Claes Fornell, Daniel C. Funk and Jo Williams are from non-sports industry field. To some extent, this reflects the highly interdisciplinary nature of the current research of the sports industry as well.

**Table 3.** The top 10 highly cited authors in 2010-2019

<b>Name</b>	<b>Country</b>	<b>Research Direction</b>	<b>Frequency</b>	<b>Centrality</b>	<b>Most high-cited reference</b>
Stefan szymanski	USA	sports economic	44	0.07	The economic design of sporting contests
Pierre Bourdieu	France	Philosophy and Sociology	42	0.19	Distinction: A Social Critique of the Judgment of Taste
Joseph F. Hair	USA	Marketing Science	40	0.16	Multivariate Data Analysis--a Global Perspective
Richard Giulianotti	UK	Sociology and School of Sport	39	0.1	Football: A Sociology of the Global Game
Robert K. Yin	USA	public policy and social sciences	34	0.03	Case study research: Design and methods
David Rowe	Australia	communication and media, advertising Journalism	34	0.01	Sport, Culture and the Media: Money, Myth and the Big Match: The Political Economy of the Sports Media
Kevin Lane Keller	USA	marketing management	32	0.07	Conceptualizing, Measuring, and Managing Customer-Based Brand Equity
Daniel I. Wann	USA	sport psychology	32	0.12	Sports fans: Measuring degree of identification with their team
Wladimir Andreff	France	public finance, financial economics and conometrics	30	0.02	Handbook on the economics of sport
Daniel C. Funk	USA	Sports Marketing,Sport Management, Consumer Behavior	29	0.02	Consumer loyalty: The meaning of attachment in the development of sport team allegiance
Claes Fornell	USA	marketing	29	0.02	Evaluating Structural Equation Models with Unobservable Variables and Measurement Error
Jo Williams	USA	Sport management and sport marketing	29	0.07	Meeting Relationship-Marketing Goals Through Social Media: A Conceptual Model for Sport Marketers
Brett Hutchins	Australia	Sports media, Mobile media and communications	29	0.15	Sport beyond television: The Internet, digital media and the rise of networked media sport

**4. Keywords co-occurrence network analysis**

Keywords co-occurrence analysis is to process the keywords provided by the 842 articles indatabases on Web of Science platform and obtain a keywords co-occurrence network finally. As shown in figure 3, the color and thickness of the tree rings represent the occurrence time and quantity of keywords, respectively. The size of each node represents the co-occurrence frequency of keywords, the color of the lines between nodes represents the time of the first occurrence of two keywords together, and the thickness of the line represents the co-occurrence frequency of keywords.

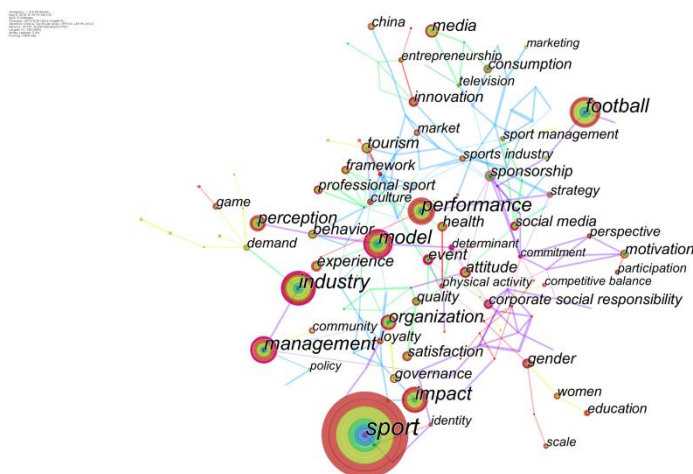
It is important to note that in the statistics of keyword frequency, keywords with the same expression need to be combined. Such as "sport industry" and "sports industry" all belong to the research of sports industry, "football" and "soccer" refers to the football industry, and "fitness", "fitness industry" and "fitness centre" refers to the fitness industry. Finally, table 4 shows us the top 30 keywords in the frequency rank. We can see that the football industry, the fitness industry, sports events, sports media and sports tourism are the hot spots in recent years. Other keywords are related to sports marketing and sports management, such as experience, behavior, attitude, satisfaction, sponsorship, motivation, innovation, consumption, loyalty, performance, management, organization, governance, corporate social responsibility, loyalty, social media. From these keywords we can infer that the hotspots of the field of sports industry were the sub-industries of the sports industry mentioned before and most of these studies are from the perspective of sports marketing and sports management.

In figure 3, the note of "gender" extends to the notes of women, education and scale, and forms a network colored red. More importantly, a purple ring, which indicates that the keyword is a turning point, surrounds it.It reflects that women's sports will become a new hot spot in the next period.

**Table 4.** The top 30 high-frequency keywords.

<b>Rank</b>	<b>Frequency</b>	<b>Keywords</b>	<b>Rank</b>	<b>Frequency</b>	<b>Keywords</b>
<b>1</b>	62	football	<b>16</b>	22	sponsorship
<b>2</b>	57	performance	<b>17</b>	22	motivation
<b>3</b>	57	model	<b>18</b>	22	gender
<b>4</b>	54	management	<b>19</b>	21	innovation
<b>5</b>	53	impact	<b>20</b>	21	health
<b>6</b>	38	Fitness industry	<b>21</b>	20	governance
<b>7</b>	34	organization	<b>22</b>	20	social media
<b>8</b>	32	perception	<b>23</b>	20	consumption
<b>9</b>	27	media	<b>24</b>	19	framework
<b>10</b>	24	experience	<b>25</b>	18	quality
<b>11</b>	24	event	<b>26</b>	18	corporate social responsibility
<b>12</b>	23	behavior	<b>27</b>	18	professional sport
<b>13</b>	23	attitude	<b>28</b>	16	china
<b>14</b>	23	tourism	<b>29</b>	16	loyalty
<b>15</b>	22	satisfaction	<b>30</b>	15	women





**Figure 3.**Keywords co-occurrence network.

**5.keyword burst analysis**



Keyword burst is an indicator of highly active research areas and emerging trends. The burst of different keywords in table 5 indicates different topics have been or are drawing attention from scholars during the corresponding period.

In table5, "football" is the first keyword that burst and last for the longest time. There are also several keywords which are deeply related to sports media as well, such as "cinema" in 2009, "television" in 2013, "Twitter" in 2014 and "media" in 2015. These keywords reflect the hot topics of sports media during different time. From 2016 to 2017, the research on sports tourism broke out. Other keywords, such as "sponsorship", "service quality", "demand "and "determinant" are related to sports marketing and sports management. Furthermore, the bursts of "economy" and "economics" indicate that scholars studied the economic value of the sports industry from the perspective of economics. To sum up, the bursting keywords in table 4 show the research of the sub-industry of the sports industry and different research perspectives. From 2010 to 2019, the sub-industries, which include football, sports media and sports tourism, are the research hotspots and most of the research started the perspectives of sports marketing, sports management and sports economy.

Particularly, combining the burst of “gender” with the gender-centred red network in figure 3, this study argues that the research which are related to “gender” is the frontier and will be a new hotspot shortly.

**Table 5.** The bursting keywords of sports industry from 2010 to 2019

Keywords	Year	Strength	Begin	End	2010 - 2019
football	2010	4.2047	<b>2010</b>	2014	■■■■■
sport	2010	8.7684	<b>2011</b>	2013	■■■■■
cinema	2010	2.4354	<b>2012</b>	2013	■■■■■
sponsorship	2010	3.1422	<b>2012</b>	2012	■■■■■
television	2010	2.5993	<b>2013</b>	2016	■■■■■
service quality	2010	2.3403	<b>2014</b>	2016	■■■■■
determinant	2010	2.2968	<b>2014</b>	2016	■■■■■
economy	2010	2.3403	<b>2014</b>	2016	■■■■■
twitter	2010	2.7007	<b>2014</b>	2015	■■■■■
policy	2010	3.4413	<b>2015</b>	2016	■■■■■
media	2010	3.7897	<b>2015</b>	2016	■■■■■
demand	2010	2.3342	<b>2016</b>	2016	■■■■■
sport tourism	2010	2.5377	<b>2016</b>	2017	■■■■■

economics	2010	2.2809	<b>2016</b>	2016	
gender	2010	4.8432	<b>2017</b>	2019	

**6. Discussion**

Based on the results of visualisation analysis and statistics of Citespace, this study finds that the research hotspots of the international sports industry include the football industry, the sports tourism industry, the fitness industry and the sports media industry, and the research perspective mainly focuses on two aspects: sports marketing and sports management. Furthermore, the research on "gender" in sport will become an important research direction in the future. Through systematic reading and sorting of existing literature further, we can find more details about the hotspots from 2010-2019 and the research trend in the next period.

Research hotspot 1:the football industry

In recent years, the research on the football industry mainly focuses on financial management, player transfer and football marketing.

As for the study of financial management of football, scholars mainly focus on the relationship between sports performance and financial management. For example, Risaliti and Verona studied the financial management of football clubs from multiple dimensions which include sports performance, audience size, reputation in local community and profit(Risaliti and Verona, 2012). Miragaia also discussed the relationship between clubs' athletic performance and financial efficiency(Miragaia et al., 2019). Plumley designed a statistical model (PAM) for measuring the financial and sport performance of professional football clubs(Plumley et al., 2017).

The research on the characteristics and rules of European high-level football players is also another focus. Eremin focused on the investigation and analysis of the economic nature of player transfer in European professional football market and developed the pricing model for the transfer value of professional football players(Eremin, 2018). Giancaspro analyzed the player buyout clause and its significance from the legal perspective(Giancaspro, 2016).

Topics such as football fans' satisfaction(Deheshti et al., 2019), brand loyalty(Maderer et al., 2016) and consumer behavior(Livrini et al., 2019)are related to sports marketing research, werethe focuses as well.

Research hotspot 2: the sports tourism industry

As a sub-industry of the sports industry, from 2010 to 2019, the research on the sports tourism industry is mainly conducted from the perspectives of sports events and sports participation. Firstly, as an important tourism resource, scholars conducted a series of studies on mega sports events, especially the Olympic Games and the FIFA World Cup. Scholars discussed the leverage effect of mega sports events on the tourism industry(Tichaawa and Bob, 2015), and the short-term and long-term benefits of tourism from mega sports events, including the improvement of infrastructure and increase in post-Olympic trade, foreign investment or tourism and the intangible benefits(Baade and Matheson, 2016). By analyzing the relationship among the variables related to improving the image of the destination and sports tourism(Jeong and Kim, 2019), andthe relationship among resource investment, participants and loyalty of sports tourism events(Okayasu et al., 2010), the related research provided suggestions for event organizers and tourism stakeholders.

In addition to sports events, sports tourism participation is another focus that attracts scholars. Albayrak and Caber studied the perceived quality, satisfaction and related determinants of sports tourism customers(Albayrak and Caber, 2016). Furthermore, from the perspective of social demographic characteristics, scholars studied the demand, the practice behavior, motivation and other factors of sports tourism customers(Melo and Gomes, 2017, Falcao et al., 2017). More importantly, Mason constructed models of sports tourism marketing(Mason et al., 2015).

Research hotspot 3: the fitness industry

With the boom and increasing competition of the fitness industry, attracting customers to fitness centres has become more difficult. Scientific research of the fitness industry which from the perspective of marketing and management is consistent with the needs of people engaged in commercial fitness services.

As the most prolific author in the fitness industry from 2010 to 2019, Garcia-Fernandez, Jeronimo focuses on the research on the marketing of low-cost fitness centre. The author and his colleagues explored the relationship between variables of perceived quality(García-Fernández et al., 2018), service convenience, perceived value, satisfaction and customer loyalty in low-cost fitness centre(Garcia-Fernandez et al., 2018).According to different consumer groups, Ferrand studied the impact of service quality improvement on customers' perceived value,

satisfaction and repurchase intentions (Ferrand et al., 2010). Polyakova and Mirza put forward some suggestions for the future development of the service quality model in the fitness industry by reviewing the previous research on the service quality model of the fitness industry (Polyakova and Mirza, 2016).

For the scientific management and growth of fitness services for small and medium-sized enterprises, scholars studied how to accurately measure the brand association of fitness clubs and help managers to formulate promotion and marketing strategies scientifically (Williams et al., 2012a), the relationship between brand association and brand loyalty of fitness centre (Williams et al., 2012b), roles and strategies of social media in recruiting customers and promoting customer loyalty (Garcia-Fernandez et al., 2015, Herrera-Torres et al., 2019), and the research of financial management (Breesch et al., 2015), cash flow, debt, corporate financing (de Carvalho et al., 2013).

#### Research hotspot 4: the sports media industry

In the context that more and more media make structural adjustments for mobile devices, sports media experiences a process of transformation from digital-first to mobile-first (Manfredi Sánchez et al., 2015). These changes attract the attention of scholars constantly. Among them, Brett Hutchins, as a prolific and highly cited author, mainly explored the impact, challenges and strategic value of mobile media and digital media on sports media. For example, the impact on the survival or transformation of traditional media like TV media (Hutchins, 2016a, Hutchins, 2018) and conflicts caused by the widespread and use of the smartphone (Hutchins, 2016b). Beyond that, with the advantages of insight into media and technology market, cultural and social power, politics, the use of communication and information technology, audience and user's behavior, the formation of network discourse, news, the relation of time and space (Hutchins, 2014, Eagleman, 2013), social media such as Twitter attracts scholars either. Watanabe is another expert who has made significant contributions to the research of social media. The author investigated how sports organizations and sports brands effectively use social media, especially Twitter, to attract fans and market have attracted the attention of scholars (Watanabe et al., 2015). From the perspective of sports consumption, Watanabe also used the Twitter platform to examine the interests and consumption behaviors of sports consumers on social media (Watanabe et al., 2017), and combined sports consumer behavior, digital platforms and economic models to analyze the determinants that influence sports consumers' focus on the accounts of social media (Watanabe et al., 2016). In addition to Twitter, Billings surveyed sports fans using Snapchat and found that the APP had occupied a large share in the market of social media and more specific field. The author believed that segments of the sports industry would adopt a friend-policy on Snapchat (Billings et al., 2017).

#### Research frontiers and Trends:

From the statistical results of the co-occurrence network and burst keywords, the research on women's sports has started in an all-round way. According to the analysis of the articles on women or gender published in the WOS database from 2010 to 2019, the study can summarize the following trends of women's sports research:

On the one hand, the research on the issues of gender equality in women's sports events and sports organizations will evolve continuously. Because gender discrimination still deeply exists in the sports industry, such as the lack of women's leadership, differences in the quality and quantity of media coverage (Darvin and Sagas, 2017), negative working conditions or the lack of sponsorship (Morgan, 2019). In particular, the impacts of the inherent gender bias, gender hegemony, or even the existing of sexist language and phenomena during the development of women's sports attract scholars attention (Micelotta et al., 2017). Scholars even found that women inevitably encounter some degree of gender bias during the process of sports management education (Sauder et al., 2018). For example, Leberman and Shaw argued the current curriculum setting of sports management major is seriously out of step with the actual demand of the industry, especially in female students' employability, skills and abilities required for occupational adaptability (Leberman and Shaw, 2015).

On the other hand, the scientific research on the fitness industry will transfer to the topics of women or gender continuously and more detailed. Such as scholars studied the issues about female participation or marketing, such as the mutual influence between women's gender expectation and gym experience (Fisher et al., 2018), women's motivation to participate in fitness activities (Haro-Gonzalez et al., 2018b), and the perceived quality, perceived value and satisfaction of different of female customers (Haro-Gonzalez et al., 2018a). Notably, Summers debunked the misconception that religious beliefs and religious dress were factors in the low participation of Muslim women in physical exercise. Instead, the authors found that Islamic doctrine also emphasizes the importance of health, diet and exercise and that Muslim women's religiosity plays an important role in translating motivation to participate in

sports into behavior (Summers et al., 2018). From this, we can see that the study of different groups of female participants, such as age, income class, race or religion, may become a trend in the future.

To sum up, this study believes that the further detailed and in-depth research which high related to the topics of gender equality, the training of female's leadership, female sports participation and marketing, etc. will become the hot topic shortly.

## 7. Conclusion

Based on literature in the database of Web of Science, this paper makes a visual analysis and statistics of the intellectual base, research hotspots and research fronts of the sports industry. It reveals the situation of the international sports industry research from 2010 to 2019 from the perspective of quantitative and qualitative analysis. Generally speaking, the field of sports industry is relatively mature, with strong interdisciplinary nature and good continuity of research themes. According to the statistics of national publication volume and scientific cooperation, as well as the nationality of highly cited authors, the western developed countries still have the absolute advantage and dominance. Through the statistics of highly cited literature and their representative work, we can find that the theories of marketing, management, economics which highly related to sports marketing, sports management laid the intellectual basis for the research of football, the fitness industry, sports media, sports tourism industry.

Most importantly, through the statistics and analysis of keyword co-occurrence network and burst keywords, this paper finds that the current frontier and development trend of the field of sports industry is related to women's sports research. All we know for sure is that the research about the themes of gender equality, women's leadership, women's sports participation and marketing will be further enriched and improved in the direction of continuous refinement and depth in coming years.

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