Is There a Gap on Female Entrepreneurship Research in China and Worldwide?

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Abstract: This paper, which is based on literature indexed in SSCI and CSSCI related with female entrepreneurship from 1995 to 2015, compares the high-frequency author, research institutions, cited literatures' co-occurrence networks by using social network analysis so as to analyze multidimensional forces on researches in China and worldwide. The study shows that there are also some differences in China and worldwide among influences of high frequency authors, corporations among institutions, research topics, research methods, theoretical foundation and influences of high certainty literatures. The research trend of Chinese women entrepreneurship is following the trend of the world, but it also shows its own characteristics and personality. Furthermore, international research organizations or institutions of high frequency or high centrality have formed agglomeration phenomenon. In addition, scholars indexed by SSCI are more inclined to adopt the positivist research paradigm, and the vast majority of articles are empirical papers. In aggregate, the research direction is closely associated with circumstances.

1. Introduction

Because of gender stereotypes and family division, most married women are also required doing more housework. Moreover, under the dual pressure from work and family, women were likely to face more complex and difficult employment environment than men. Therefore, some women probably flood into the stream of work as employees in enterprises, while quite a few of the others may be entrepreneurs because of other reasons. Undoubtedly, female entrepreneurs, as a minority group, have attracted the attention of scholars all over the world, and scholars have carried out researches and explorations on female entrepreneurship.

In addition, scholars have summarized research status from various angles to better comb contexts so as to form a theoretical system. In 1970s, authors began to pay attention to "female entrepreneur" relevant researches [1, 2]. Nowadays, although female entrepreneurship research is still in the "adolescence" [3], this cannot stop researchers to engage in their studies from different perspectives.

To some extent, research contents can reflect topics interested by scholars [4]. Authors reviewed contents of research on female entrepreneurship from several aspects [5]. However, jumping out of these subjects and overlooking research results of female entrepreneurship at higher level, scholars are likely to be more conducive to form the research framework or system in this field [6]. Additionally, it is helpful to get closer to the nature of things by studying from the perspectives of epistemology and methodology [7].

Furthermore, considering different situations, which have certain impacts on the diversity of researches, especially scholars' own research perspectives will also be affected by situations. And Chinese scholars also have their own observations and research interests in the development of female entrepreneurship research [8, 9].

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In addition to understanding international mainstream researches in the same field, scholars also review domestic researches based on their mother countries' situations [10, 11]. To grasp the contents, worldwide scholars studied the research framework from methodology, while Chinese scholars made comments on research contents. In aggregate, their selections of core literatures are quite different.

What's more, scholars' researches show some differences. Therefore, scholars used the comparative method to study female entrepreneurship under varied situations [12]. In addition, scholars also frequently use gender differences as research angles [13]. But it is not thorough enough in research conclusions, methods, and other comparisons because of the lack of sufficient evidence to support.

Through the analysis of research contents, it is helpful for scholars to promote female entrepreneurship researches, but that probably ignores the influences of scholars, institutions and other factors and the impacts highly associated with them. To some extent, it is because of some of the combined effects of various forces which promote dynamic changes of researches.

In order to further integrate a variety of strengths promoting female entrepreneurship researches, the social network analysis method is used to comparatively analyze worldwide and Chinese researches from the angle of positivism. Through the visualization technology, research hot-spots, directions and theoretical development of female entrepreneurship are visualized so as to further explore the theory evolution and practice of women entrepreneurship.

2. Research Method

2.1. Social Network Analysis

The Citespace III software [14] is highly accurate and efficient in the visual analysis of co-occurrence network, and it is widely used in the visualization of social network analysis [15]. In Citespace III the centrality of the node represents the intermediary role of the node for other nodes, and the frequency of the node represents the number of times that the node appears.

2.2. Comparative Study

According to the data collected, 5 years are chosen as a cycle to conduct the research just as five years are often selected as a period to implement the macro economy plan in many countries.

3. Data Sources

The retrieved English literature data is from SSCI from 1985 to 2016, and two sub databases, which are Science Citation Index Expanded and Social Sciences Citation Index, are included. This paper uses women entrepreneurship, its synonyms and highly related words to retrieve. After that, papers which are not related to that are deleted. As a result, a total of 398 correlated English literatures are obtained, including 751 authors, 14623 references and 1985 keywords.

While Chinese literature mainly comes from CSSCI, which reveals relationships of citing and cited of the Chinese social science journal articles. As a result, a total of 52 Chinese articles are retrieved by using the same retrieval formula, involving 88 authors, 3971 references and 236 key words.

4. Result

4.1. Comparison of Key Words

The colours of inner rings are consistent with colours of the years marked on the top of the figure, which indicates the time and frequency of related nodes, and the purple outer ring represents the centrality of nodes. Moreover, the centrality of the node shows the mediating role of this node for others, indicating the transformation and continuation of the node. Furthermore, a comprehensive analysis of high centrality and frequency node is conducive to better sorting out research focus and

directions.

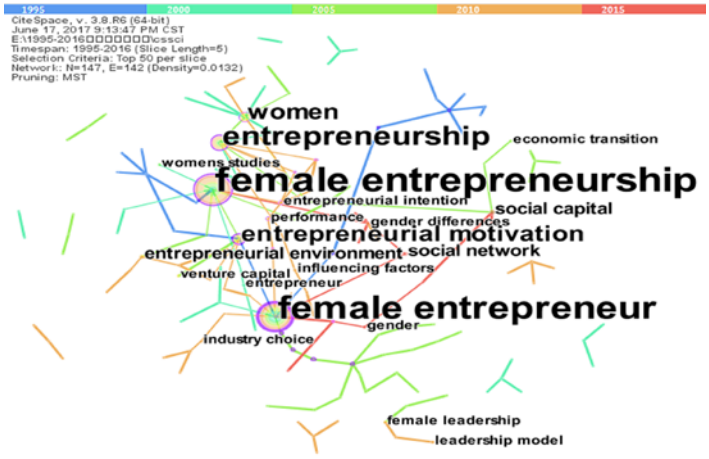

Figure 1 Co-occurring keywords networks in CSSCI.

In Figure3, the keywords which are chosen at least 4 times are shown. Based on data from SSCI, “venture strategies” is ranking No.1 of keywords’ centrality because it, which originated from 1997, has established links with some core words, such as industry, success, survival, entrepreneurship, entrepreneurs and motivation. Additionally, “gender” also gets higher centrality. However, there are distinctive differences between concepts of female and gender, and this is probably related to the history and accumulation of social culture in western countries. In addition, keywords, such as job-satisfaction, models, successes, entries, women/men in leadership positions, gender stereotypes, sex-role stereotypes, and entrepreneurship education and so on, also get higher centrality.

Figure 2 Co-occurring keywords networks in SSCI.

In articles indexed by CSSCI, keywords, such as domestic violence, introduction, entrepreneurial motivation, women and children capacity building, network, entrepreneurial intention and so on, also get relative higher centrality, which indicates these words mediate other keywords better.

Comparing the centrality of key words selected by CSSCI and SSCI in Figure 1 and 2, the number of keywords’ nodes in SSCI is 150, and in CSSCI, the number is 147. While the number of keywords’ links in SSCI is 147, which is a little higher than that in CSSCI, with the number of 142. Coincidentally, the network density of keywords in SSCI is same as that in CSSCI. Nevertheless, it implies that core words in SSCI are more concentrated than in CSSCI.

4.2. Comparative Analysis of High Frequency Authors

Figure 3 Co-authorship networks in CSSCI

In Figure 3 and 4, the font size represents the frequency of the author's publication. The size of the circle on the node indicates authors' centrality.

Figure 4 Co-authorship networks in SSCI.

In Figure 4, in addition to Bojidar S. Gyoshev, R Hisrich and M Lerner collected 1 article in SSCI separately, other scholars whose names are shown have been collected at least 2 articles there. Comparing Figure 4 and 5, it can be seen that SSCI has indexed 238 authors who have formed 81 links. While in CSSCI, there are a total of 88 authors working in this field and forming 50 links, which shows authors' partnerships. The network density of retrieved scholars in SSCI and CSSCI scholars is 0.0029 and 0.0131 respectively, and it indicates that scholars whose articles are included in CSSCI have relatively powerful impacts on the entire network.

From the influence of high-frequency authors, Candida G. Brush and Susan Marlow have published 8 articles which are collected by SSCI respectively, but the centrality of Susan Marlow is not very high. The team, which takes Candida G. Brush as the core, not only forms a network of 15 authors gradually.

Further data shows that authors with higher cited number and centrality are mostly employed in highly recognized research institutions. Their teams are constantly developing, growing and communicating across organizations, borders and regions. Similar to authors retrieved by SSCI, authors with higher cited number, who are indexed by CSSCI, also show higher centrality. As it can be seen from Figure 4, Chongming Wang and Qinfeng Jiang have the highest centrality, and by

their cooperations, two teams are linked together and form a network constituted of 8 authors who mainly study female entrepreneurship from the vision of leadership. From 2005 to 2014, the two academics led their team members to study female entrepreneurship and publish several papers. After 2010, the team, which was led by Xiaofang Yao, formed a network of 7 authors. What's more, their team engaged in the related studies after 2010, and continued to be a major force in female entrepreneurship in China after 2015.

In CSSCI, Xiaofang Yao has been retrieved 4 papers, and Chongming Wang, Qinfeng Jiang and Peilan Guan has been retrieved 3 articles. Baoshan Ge, Minhuai Hu, Chengyan Li and other authors have published 2, and the rest of authors have published 1 paper respectively. In addition, Professor Chongming Wang works in Zhejiang University, which has found the global entrepreneurship research centre. Another high frequency scholar, Qinfeng Jiang. Guan Peilan works in Wuhan University. Huaimin Hu works in China University of Geosciences. Xiaofang Yao works in Hefei University of Technology. Baoshan Ge works in Jilin University.

4.3. Comparative Analysis of Research Institutions' Co-occurrence

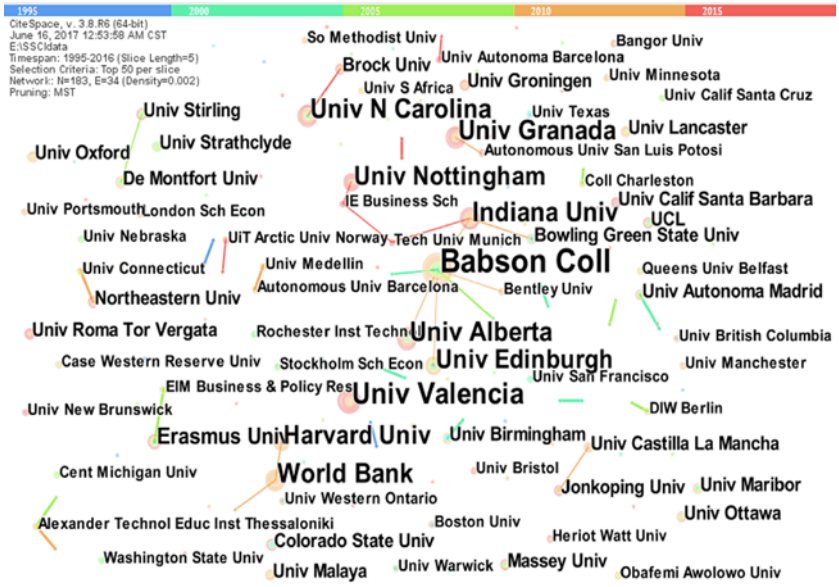

Figure 5 Network of co-authors' institutions in SSCI.

As shown in Figures 5 and 6, different colours within the circle represent the year in which the agency's document is published, and the size of the node represents its frequency. And there are 183 research institutions in SSCI literature, which forms 34 links. While in CSSCI, there are 35 institutions involved, with 11 links there. On the whole, the network density of institutions in SSCI is 0.005, while, in CSSCI that is 0.0185. Although the later is higher than the former, it is the mainly reason that there are fewer organizations in that network.

By comparing the relationships in the two networks, it can be found that scholars in the world are generally engaged in cross-border researches. In China, scholars mainly conduct inter-regional studies, although a few scholars have conducted cross-border studies.

Through Figures 5 and 6, it can be found that high frequency or centrality institutions, which are included, are mainly made up by some famous universities. Among them, Babson College is collected 9 papers, which reaches the largest number of papers collected. It is noteworthy that Valencia University has become a new research gathering centre since 2010. In addition, University of Alberta, University of North Carolina, Indiana University, World Bank and Granada University are indexed 6 papers respectively. In addition to University of Albert and University of North Carolina were included in the papers for the first time in 2001 and 2002 respectively, universities or institutions, including Indiana University, World Bank, Granada University, Harvard University, University of Nottingham, were firstly recorded related topics by SSCI around 2010. What's more, Harvard University and World Bank are collected 7, and they mainly do their researches by collaboration. University of North Carolina is collected 4, and

University of Roma Tor Vergata, University of Medellin, University of Edinburgh, Brock University, Autonomous University of Barcelona, respectively, is indexed 3 papers. University Stirling and other 16 institutions or universities, respectively, are retrieved 2 articles, and the rest of institutions are included 1 separately.

Whether in SSCI or CSSCI, the study of female entrepreneurship has come into the agglomeration of institutions or space. In SSCI, although scholars from 58 countries and regions have engaged, generally speaking, the United States and Europe are the main areas for worldwide researches. Among them, USA is included in SSCI 137 articles, accounting for 30% of the proportion of the number of papers and ranking first in the field. A total of 55 documents in England is recorded in SSCI, and 31 articles in Spain are included, ranking third in literature. In addition, Canada, Scotland, Netherlands, Australia and Germany are all indexed more than 10 papers. England, USA, Austria, Canada, Scotland, Germany began their researches in 1990s.

In CSSCI, as illustrated in Figure 6, Jilin University and Shanghai Jiao Tong University have higher centrality. Jilin University, Hefei University of Technology and Shanghai Jiao Tong University are included in 5, 4 and 3 articles respectively. In addition, Shanghai Jiao Tong University, Zhejiang University, Nanjing University and Wuhan University are included in 3 papers. Hubei University is included 2 papers, and the remaining institutions are included 1 document in CSSCI. Therefore, the research of female entrepreneurship in China is mainly based on 985 and 211 universities.

In China, the agglomeration phenomenon has occurred among research institutes, with the north, the Yangtze River Delta and the central region as three centres. Besides, universities in China have begun their researches with foreign institutions, such as the cooperation engaged by Jilin University with Brock University and Thunderbird School of Global Management in Canada. As a result, the centrality degree of Jilin University is higher. However, Hefei University of Technology has published a large number of papers, but the cooperation with agencies or other institutions does not exist, which leads to the low centrality.

Figure 6 Networks of co-authors' institutions in CSSCI.

What's more, there is a trend of mutual cooperation among universities of Yangtze River Delta region in China, which mainly reflects their relevant researches on women entrepreneurship in universities, such as Shanghai Jiao Tong University, Zhejiang University, Nanjing University and Suzhou University. Of the 35 institutions shown in Figure 6, 11 are from the Yangtze River Delta, up to 31.4%. On the one hand, this phenomenon may be due to the fact that the entrepreneurial environment in eastern China is even better, and women entrepreneurs and their entrepreneurial activities have gradually attracted the attention of researchers. On the other hand, it may be due to the geographical relationship contributing to the research cooperation among universities, such as the cooperation between some universities in Tianjin and Hebei, and cooperation between Wuhan University and Hubei University in central and western regions in China. Overall, the universities

constitute the main force of the research.

4.4. Comparative Analysis of Cited Literature Frequencies

4.4.1. The Global Research Direction

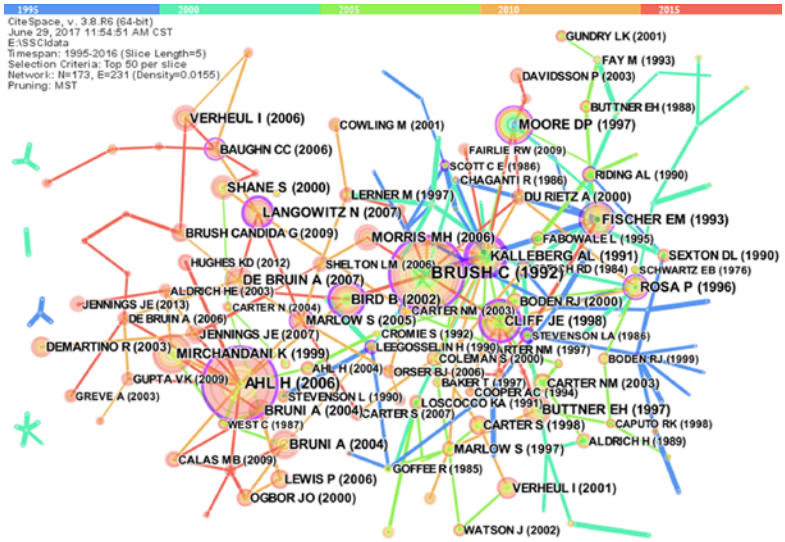

Figure 7 Co-citation Networks in SSCI.

In Figure 7, because of the limitation of image clarity, documents that have been quoted not less than 15 times will be displayed. What's more, among them, the node size represents the frequency of cited articles, and the width of the outer ring represents the centrality of the node. And colours of inner rings which are same with period colour imply the article's citation time. As a result, a total of 173 nodes and 231 connections are formed in literatures cited by SSCI. Hence, as it can be seen that interactions among SSCI' s high frequency cited papers are more complex and many articles are relatively high in the intermediary, indicating that they play certain roles in the study of the turning point and inheritance.

Although women entrepreneurship research began in 1980s, high-frequency cited literatures and high centrality degree literatures are concentrated on articles published after 2005 (Figure 7). It can be seen from the Figure 7 that the frequency of cited documents varies greatly, and the maximum number of cited documents is 71. Nevertheless, the centrality of cited references ranges from 0-0.43, which shows the mediating effects of different literatures on follow-up studies.

To some extent, the frequency quoted by other articles can reflect the influence of literature, and can also reflect the follow-up study of related topics by later scholars. Therefore, in Figure 7, it can be found that literatures cited by worldwide scholars mainly focus on the following 6 directions, which are mainly based on the high frequency literatures:

The review of women entrepreneurship [16]. Just as problems faced by entrepreneurship research, the female entrepreneurship lacks a complete and systematic framework [17, 18]. Scholars sort out research contexts from many perspectives [18, 19]. Additionally, epistemology and methodology are used to grasp methods and rules of studying in essence [4]. Therefore, more research directions have emerged from levels of enterprises, regions and countries. However, the framework of 3M (Money, Market, Management) can not sufficiently embody total contexts. Eventually, the "maternal" and "meso and macro environment" are integrated into that, and finally 5M framework is formed [6]. Overall, these articles have comprehensive and in-depth analysis of research contents and directions, and some of later scholars will continue to explore researches based on these reviews.

The relationship between female entrepreneurship and macro economy. Female entrepreneurship can promote self-employment and employment for others, and their impacts on macro economy cannot be neglected either. As a result, research resources and data are very important for further researches, and Global Entrepreneurship Monitor have built the basis for scholars. Not only do

subjective factors influence female entrepreneurial tendencies in different countries, but also they have impacts on gender differences in entrepreneurial activities [20]. Moreover, the characteristics of entrepreneurs between men and women varies in different countries, and the norms also have impacts on female entrepreneurship [21].

The relationships among entrepreneurial gender, traits and firm performance[16]. The formation of entrepreneurial behaviour is closely related to individual characteristics of entrepreneurs [22]. Entrepreneurs not only have different psychological characteristics, such as attitude [23], role and cognition [22, 24], but also differ in demographic characteristics [25]. Naturally, gender has become an indispensable factor on business performance [23], and feminist theory is a key tool to research and explain the phenomenon [25].

The research on social networks of female entrepreneurs. In 1990s, social network related researches had appeared. And social factors, such as social learning, network affiliation, human capital and environmental influences, affect the performance [19]. Additionally, the differences of networks between countries were also be noticed by scholars [26], and the patriarchal tradition in society is also an important factor affecting women' s social networks. Moreover, gender influences the network of social relations, which in turn affects the acquisition of angel investments[27].

The research on financing [16]. Financing support is one of the most important resources for entrepreneurs to develop or implement their ideas and plans. However, whether female entrepreneurs are more disadvantaged than men in financing has remained controversial. Scholars have engaged in researches from different perspectives to identify that [28]. Moreover, there are also some factors affecting women' s finance, including equity financing strategies, social capital, network, professional adviser relationships, women' s educational levels, types of business, management and experience. And gender differences exist in certain areas of business financing, and gender is only one of factors affect the funding [29].

The research on entrepreneurial motivation. Holly and P [30] studies the motivation of female entrepreneurship, the definition of success and the relationship between them. Cliff [23] studies the differences in motivations and attitudes of between male and female entrepreneurs in business growth. In addition, career motivators, especially marital status and presence of dependent children, are different between female and male entrepreneurs [31]. Moreover, the growth orientation of women owned business is associated with "push" or "pull" into entrepreneurship, and wealth or achievement motivation factors also play some roles [32].

Factors affecting entrepreneurial success. In order to avoid the well-documented inequality in workplace [33], more and more women have began to be entrepreneurs. However, business performance and success rate are different between male owners and female owners [33, 34]. There are gender differences in the industry, organizational structure and founder traits, and female entrepreneurs, who have lower success rates, are more likely to go bankrupt than male entrepreneurs [34].

The research on gender perspective. Although feminist theory is an important theoretical basis for gender issues, "the concept of entrepreneurship is discriminatory, gender-biased, ethnocentrically determined and ideologically controlled" [35]. In the 1990s, based on the liberal feminist theory and social feminist theory, scholars studied differences related to discrimination and socialization so as to discover business performances correlated factors [36, 37]. However, the phenomenon that scholars mostly adopt the masculine research framework in their studies of women entrepreneurship[38], is still not change, no matter in the field of enterprise practice or the academic research [39]. Additionally, the public tend to confuse physical, sexual and social gender [38].

4.4.2. The Chinese Research Direction

As illustrated in Figure 8, the Co-citation network density is 0.0145 in literatures cited by CSSCI. As it can be found that, after 2010, the influence of Chinese scholars' literatures has gradually come into being, which is reflected in important roles of Chinese scholars' high frequency cited documents. In the aspect of research directions, Chinese and international scholars show more

similarities, but Chinese scholars also show their research preferences.

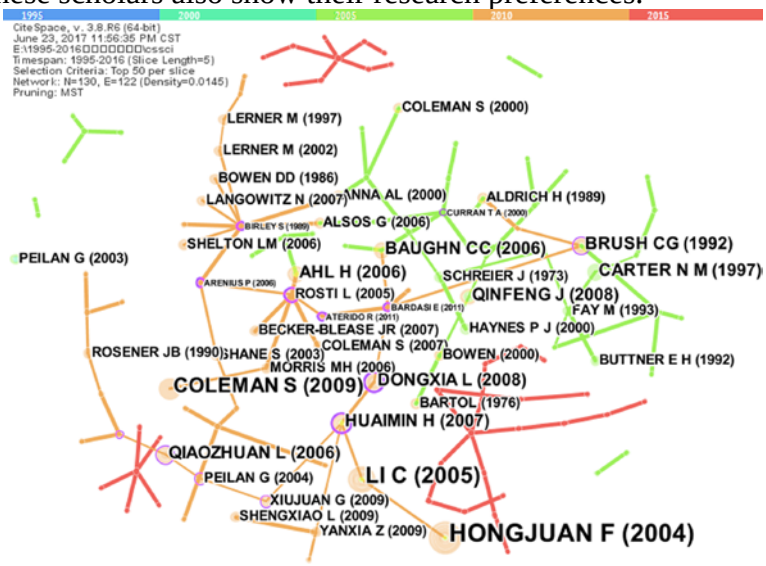

Figure 8 Co-citation Networks in CSSCI.

From the analysis of references cited by CSSCI, Hongjuan [40] and Li, Di [41] are cited 6 and 5 times respectively, ranking 1st and 2nd. Moreover, one article is cited 4 times [42], and several articles are cited 3 times respectively. In general, only 32 references are cited not less than 2 times, and the node, whose threshold is not less than 2, is available in Figure 8. In CSSCI, the references highly cited in articles are mainly embodied in the following 5 aspects:

(1) [16] The research on characteristics of female entrepreneurs. Qualitative research methods, including case studies and interviews, are used to study demographic characteristics, enterprise characteristics and behavioural characteristics of women entrepreneurs [40]. Additionally, quantitative research method is also used from perspectives of education background, enterprise financing, entrepreneurial motivation and basic situation of venture enterprises [41].

(2) The female entrepreneurs' leadership. Chongming Wang and Qinfeng Jiang have higher centrality and frequency, and their teams mainly study female entrepreneurship from the vision of leadership (Figure 3). While in the high cited references (Figure 8), only one article cited by Chinese scholars focuses gender differences and their impacts on leadership styles [43].

(3) [16] The research on capital and finance. The financing problem, which involves the survival and development of enterprises, the new venture financing and sustained economic growth, is always an unavoidable problem [44, 45]. Then, the research is promoted mainly in the view of gender and financing [46], and further researches are focused on financial institutions and influential factors, such as structural factors and credit terms [47]. Additionally, on the basis of questionnaire survey, the comparative method is used as an important method for scholars to study relationships between gender and financing [42, 44]. And female entrepreneurs have expanded their investments from banks [44, 45] to angels capital [48]. And their findings focus on the existence of gender discrimination [44], different expectation [44], and propensity to financing [45]. Besides, some authors research on social capital and financing strategy of Chinese female entrepreneurs in economic transition period [49]. Furthermore, the work-family conflict also becomes a research perspective [50], and so does human capital [51].

(4) The research on entrepreneurial motivation. Although the research on entrepreneurial motivation has long been carried out internationally, papers, which are more frequently cited by Chinese scholars, are published in 2003 [52] and 2006 [32]. What's more, the growth orientation of women owned businesses is associated with "push" or "pull" into entrepreneurship, and the wealth or achievement motivation also play some roles [32]. Refer to Chinese scholars, their articles mainly focus on the female entrepreneurship model under different entrepreneurial motivation[53].

(5) [16] The review about female entrepreneurship. In order to better comb research results of women' s entrepreneurship and to further explore future research directions, the past trends, new

research perspectives and future directions are discussed [18]. Xiujuan [8] reviews researches on characteristics of female entrepreneurs on levels of individual, organization and environment. Ahl [4] studies the content, epistemology and methodology of female entrepreneurship from the perspective of gender theory. Peilan, Xuewu [54] strengthen research work and promote women' s entrepreneurship.

(6) The research on performance. The effect of start-up enterprises is a basic problem for survival, and it will be helpful to find the optimal path which affects innovation performance. And three factors of innovation performance are verified, including financial performance, growth performance and innovation performance [55]. Other factors are analyzed to find their relationships with performance, such as strategic capabilities [56]. In addition, the gender is also an inevitable element influencing business performance [57, 58].

4.4.3. A Comparative Analysis of Citation Literature Centrality

According to centrality degree of cited references, the changes of basic theory can be reflected. Comparing Figure 7 and 8, it is clear that high centrality degree literatures cited by scholars in China and worldwide imply the following information:

Firstly, motivation theory is initially applied to study female entrepreneurship in the world [59, 60], and research foundations of worldwide scholars are wider. The theory adopted by Chinese scholars mainly includes motivation theory, behaviour theory, human capital theory and leadership theory. However, international scholars have adopted gender role theory, institutionalism theory and behaviour economic theory. In aggregate, motivation theory has been attracted scholars' attentions since 1995 [61].

Secondly, scholars worldwide are more inclined to adopt positivism paradigm. In 1995, the earliest female entrepreneurship paper in SSCI used multidimensional scaling analysis [62]. While, in CSSCI, cited scholars of high centrality are apt to use qualitative analysis (Figure 5). In high centrality articles collected by SSCI, quantitative research, regression analysis and structural equation modeling are widely used. This is consistent with existed conclusions, and they found that more than half of literatures use quantitative methods, while qualitative methods only account for 18% [63].

Thirdly, economics methods play important roles in correlated researches in the world, but institutionalism methods have not become main tools for Chinese scholars. In recent years, especially behaviour economics and institutional economics have been used repeatedly in the research of institutional and environmental aspects of female entrepreneurship. Behavioural economics is used to study factors that influence female entrepreneurial tendencies and their entrepreneurial environment by GEM data [20]. Moreover, North Douglass's institutionalism theory is also used to analyze female entrepreneurship [64]. By contrast, Chinese scholars seldom use system theory.

Fourthly, based on the analysis of high centrality documents, literatures cited by Chinese scholars are in line with literatures quoted by international scholars, which shows that Chinese scholars have noticed the research trend on female entrepreneurship in the world, but the existed problem is that the direction of Chinese scholars' research on female entrepreneurship is not so rich as that in global countries. In contrast, worldwide scholars have done more researches from different perspectives, such as motivation [65], gender, the balance of work and family [50], performance [66] and behavioural economics.

Fifthly, the acceptance of Chinese scholars in China is higher than that in international context (Figure 7). However, Chinese scholars really obtained their own academic approval after 2005. After that, the number of citations of Chinese scholars increases gradually in CSSCI. And Chinese scholars have focused on results of financial references when they are citing micro literatures [46, 47].

5. Conclusion

From research contents of female entrepreneurship, the resulted directions, including financing,

capital, social and performance, are consistent with existed conclusions [19]. Generally speaking, research directions both in China and the world are relatively similar, but they still have preferred research objects. Chinese scholars mainly focus on female leadership and financing, but the number of cited results of other research is relatively small. On the contrary, the academic achievements in the world are more prominent, which covers micro, meso and macro levels, while Chinese research is mainly concentrated in the micro level. What's more, the multidimensional factors of female entrepreneurship research are interactive; therefore, some of the results will show the crossover characteristics.

Moreover, the research trend of Chinese women entrepreneurship is following the global trend, but at the same time, it also shows its own characteristics and personality. Scholars in China and worldwide generally agree on the selection of keywords, but there is also different understanding of the core concept - gender. While Chinese scholars' selection of keywords is dispersed, further research direction is also not so concentrated.

Furthermore, international research organizations or institutions of high frequency or high centrality have formed the agglomeration phenomenon, and these institutions include universities with first-class teaching and research ability in the field. The links among research institutions in the world are more closely related and international, and the United States and Europe are main areas for female entrepreneurship. China's research institutions have gathered in the north, the Yangtze River Delta and the central region, and few universities and scholars have shown the cross institutional cooperation with Chinese universities or foreign universities. Scholars play important roles on promoting female entrepreneurship research.

In addition, papers indexed by SSCI are more inclined to adopt the positivist paradigm, and the vast majority of articles are empirical papers. In contrast, after 2008, Chinese scholars began to use quantitative methods more frequently, such as structural equation model, game theory, regression analysis and other quantitative analysis. What's more, economic research methods play an important role for international scholars, while Chinese scholars have less use of institutionalism to study. Although the literatures highly cited in CSSCI, which are consistent with research directions in international community, the number of related topics is relatively small. In SSCI, high centrality references are cited as multi-dimensional networks, and they have strong influences and intermediary. Therefore, more research results have emerged to support and enrich the extension of the research direction.

6. Limitation and implication

In order to ensure the comparability between female entrepreneurship research in China and the world, the same standards are chosen to analyze that. However, that also probably leads to some shortcomings. Firstly, the selected samples with relatively high degree of recognition, which are collected in SSCI and CSSCI papers, may cause the neglection which is caused by not being included in CSSCI or SSCI. Secondly, although those literatures obtain plenty of information, this article selects some of the nodes of high frequency or centrality to be shown in figures above, which may lead to lose some information.

In aggregate, it is shown that scholars have researched from contents, methods, methodology and other angles, and have formed directions and frameworks. Nevertheless, it is a lack that framework for integrating theory or research from the dynamics of women entrepreneurship processes. Therefore, how to use qualitative methods and study women entrepreneurship from the perspective of behaviour is another important way to integrate individual characteristics and different levels of female entrepreneurs.

References

[1] Schrier JW. (1975) Entrepreneurial characteristics of women. Entrepreneurship and enterprise development. A worldwide perspective, 66-70.

[2] Schreier JW. (1975) The female entrepreneur: a pilot study: Center for Venture Management.

[3] Yadav V, Unni J. (2016) Women entrepreneurship: research review and future directions. Journal of Global Entrepreneurship Research, 6(1):12.

[4] Ahl H. (2006) Why research on women entrepreneurs needs new directions. Entrep Theory Pract, 30(5):595-621.

[5] de Bruin A. (2007) Women entrepreneurs across racial lines: Issues of human capital, financial capital and network structures. International Small Business Journal, 25(5):566-568.

[6] Brush CG, de Bruin A, Welter F. (2009) A gender—aware framework for women's entrepreneurship. International Journal of Gender and Entrepreneurship, 1(1):8-24.

[7] Hughes KD, Jennings JE, Brush C, Carter S, Welter F. (2012) Extending women's entrepreneurship research in new directions. Entrepreneurship Theory and Practice, 36(3):429-442.

[8] Xiujuan G. (2009) Characteristics of women entrepreneurs at the levels of individuals, organizations and environments. Collection of Women's Studies, (4):85-90.

[9] Baoshan G, Haiyan J. (2014) Research frontiers of women's entrepreneurial intention: based on the analysis of literatures. Information Science, (5):137-139.

[10] Zijuan D. (2013) Chinese studies of women's entrepreneurship in the past 10 years. Collection of Women's Studies, 1:115-121.

[11] Xiaofang Y, Yu D. (2011) Review of domestic women entrepreneurship research. Inquiry into Economic Issues, 1:94-98.

[12] Chen Y. (2012) Foreign women's entrepreneurship research review and future directions. Collection of Women's Studies, 11:100-106.

[13] Xu Y, Guo D. (2015) A review of literature on gender differences in overseas entrepreneurship in the past 20 years. Collection of Women's Studies, (6):110-117+125.

[14] Chaomei C, Yue C, Jianhua H, Yongxia L. (2009) CiteSpace Ⅱ:detecting and visualizing emerging trends and transient patterns in scientific literature. Journal of the China Society for Scientific and Technical Information, 28(3):401-421.

[15] Liwen T, Jingkun D. (2014) The frontier and evolution of the strategic management theory in 21th century: a scientometric analysis of strategic management journal, from 2001 to 2012. Nankai Business Review, 17(2):84-94.

[16] West MA, Farr JL.(1989) 15–30. Innovation at work: Psychological perspectives. Social Behaviour, 4:15-30.

[17] Shane S, Venkataraman S. (2000) The promise of entrepreneurship as a field of research. Academy of Management Review, 25(1):217-226.

[18] Brush CG. (1992) Research on women business wwners: past trends, future directions, and a new perspective. Entrepreneurship Theory and Practice, 16(4): 5-30.

[19] Bruin AD, Brush CG, Welter F. (2007) Advancing a framework for coherent research on women's entrepreneurship. Entrepreneurship Theory and Practice, 31(3):323-339.

[20] Langowitz N, Minniti M. (2007) The entrepreneurial propensity of women. Entrepreneurship Theory and Practice, 31(3):341-364.

[21] Baughn CC, Chua B-L, Neupert KE. (2006) The normative context for women's participation in entrepreneruship: a multicountry study. Entrepreneurship Theory and Practice, 30(5):687-708.

[22] Lee-Gosselin H, Grisé J. (1990) Are women owner-managers challenging our definitions of entrepreneurship? An in-depth survey. Journal of Business Ethics, 9(4):423-433.

[23] Cliff JE. (1998) Does one size fit all? Exploring the relationship between attitudes towards growth, gender, and business size. Journal of Business Venturing, 13(6):523-542.

[24] Sexton DL, Bowman-Upton N. (1990) Female and male entrepreneurs: psychological characteristics and their role in gender-related discrimination. Journal of Business Venturing, 5(1):29-36.

[25] Mirchandani K. (1999) Feminist insight on gendered work: new directions in research on women and entrepreneurship. Gender, Work & Organization, 6(4):224-235.

[26] Aldrich H, Reese PR, Dubini P. (1998) Women on the verge of a breakthrough: networking among entrepreneurs in the United States and Italy. Entrepreneurship & Regional Development, 1(4):339-356.

[27] Becker-Blease JR, Sohl JE. (2007) Do women-owned businesses have equal access to angel capital? Journal of Business Venturing, 22(4):503-521.

[28] Riding AL, Swift CS. (1990) Women business owners and terms of credit: some empirical findings of the canadian experience. Journal of Business Venturing, 5(5):327-340.

[29] Sara C, Peter R. (1998) The financing of male and female owned businesses. Entrepreneurship and Regional Development, (10):225-241.

[30] Holly BE, P MD. (1997) Women's organizational exodus to entrepreneurship: Self-reported motivations and correlates with success. Journal of Small Business Management, 35(1):34-46.

[31] DeMartino R, Barbato R. (2003) Differences between women and men MBA entrepreneurs: exploring family flexibility and wealth creation as career motivators. Journal of Business Venturing, 18(6):815-832.

[32] Morris MH, Miyasaki NN, Watters CE, Coombes SM. (2006) The dilemma of growth: understanding venture size choices of women entrepreneurs. Journal of Small Business Management, 44(2):221-244.

[33] Loscocco AK, Robinson J. (1991) Barriers to women's small-business success in the united states. Gender & Society, 5(4):511-532.

[34] Kalleberg AL, Leicht KT. (1991) Gender and organizational performance: determinants of small business survival and success. Academy of Management Journal, 34(1):136-161.

[35] Ogbor JO. (2000) Mythicizing and reification in entrepreneurial discourse: ideology‐critique of entrepreneurship studies. Journal of Management Studies, 37(5):605-635.

[36] Fischer EM, Reuber AR, Dyke LS. (1993) A theoretical overview and extension of research on sex, gender, and entrepreneurship. Journal of Business Venturing, 8(2):151-168.

[37] Boden RJ, Nuccib AR. (2005) On the survival prospects of men's and women's new business ventures. Journal of Business Venturing, 15(4):347-362.

[38] Bird B, Brush C. (2002) A gendered perspective on organizational creation. Entrepreneurship Theory and Practice. 2002, 26(3):41-65.

[39] Bruni A, Gherardi S, Poggio B. (2004) Entrepreneur-mentality, gender and the study of women entrepreneurs. J Organ Chang Manage, 17(3):256-268.

[40] Hongjuan F. (2004) A sketch of women's entrepreneurial characteristics—a case study of 30 female owners in private enterprises in Shanghai. Society, (8):51-54.

[41] Li C, Di Z, Xiumei Z. (2005) Research on the characteristics of female entrepreneurs. Science of Science and Management of S&T, 26(9):43-47.

[42] Coleman S, Robb A. (2009) A comparison of new firm financing by gender: evidence from the kauffman firm survey data. Small Business Economics, 33(4):397-411.

[43] Qiaozhuan L, Lin Y, Guifang D. (2006) Research on gender differences in leadership style and personality characteristics of managers. Collection of Women's Studies, (3):9-13.

[44] Buttner EH, Rosen B. (1992) Rejection in the loan application process: male and female entrepreneurs' perceptions and subsequent intentions. Journal of Small Business Management, 30:58.

[45] Haynes PJ, Helms MM. (2000) A profile of the growing female entrepreneur segment. Bank Marketing, 32 (5):28.

[46] Fay M, Williams L. (1993) Gender bias and the availability of business loans. Journal of Business Venturing, 8(4):363-376.

[47] Fabowale L, Orser B, Riding A. (1995) Gender, structural factors, and credit terms between Canadian small businesses and financial institutions. Entrepreneurship Theory and Practice, (4):41-65.

[48] Becker-Bleasea JR, Sohlb JE. (2007) Do women-owned businesses have equal access to angel capital? Journal of Business Venturing, 22(4):503-521.

[49] Luo D, Guan P, Xiong HB, Zeng F. (2008) Empirical research on the relationship between women entrepreneurs' personal traits and venture growth. Wuhan: China Univ Geosciences Press.

[50] Shelton LM. (2006) Female entrepreneurs, work-family conflict, and venture performance: new insights into the work-family interface. J Small Bus Manag, 44(2):285-297.

[51] Susan C. (2007) The role of human and financial capital in the profitability and growth of women-owned small firms. Journal of Small Business Management, 45(3):303-319.

[52] Shane S. LEA, Collins Ch.J. (2003) Entrepreneurial motivation. Human Resource Management Review, 13(2):257-279.

[53] Huaimin H, Jianzhong X. (2007) Research on female entrepreneurship model under different entrepreneurial motivation. Inquriy into Economic Issues, (8):24-26.

[54] Peilan G, Xuewu S, Tao L. (2004) Strengthening research work and promoting women's entrepreneurship - a summary of the 2003 international forum for women entrepreneurs in wuhan university. Collection of Women's Studies, (2):76-78.

[55] Qinfeng J, Xiaoming T. (2008) An empirical research on how enterprises' dynamic capabilities influence entrepreneurial performance. Psychological Science, 31(5):1094-1099.

[56] Lerner M, Almor T. (2002) Relationships among strategic capabilities and the performance of women-owned small ventures. Journal of Small Business Management, 40(2):109-125.

[57] Rosener J. (1990) Ways women lead. Harvard Business Review, 68(68):119-125.

[58] Bowen C-C, Swim JK, Jacobs RR. (2000) Evaluating eender biases on actual job performance of real people: a meta-analysis. Journal of Applied Social Psychology, 30(10):2194-2215.

[59] Goffee R, Scase R. (1983) Business ownership and women's subordination: A preliminary study of female proprietors. The Sociological Review, 31(4):625-648.

[60] Goffee R, Richard S. (1985) Women in charge: the experiences of women entrepreneurs. London: Allen & Irwin.

[61] Langanfox J, Roth S. (1995) Achievement motivation and female entrepreneurs. J Occup Organ Psychol, 68:209-218.

[62] Kruskal JB. (1964) Multidimensional scaling by optimizing goodness of fit to a nonmetric hypothesis. Psychometrika, (29):1-27.

[63] de Bruin A, Brush CG, Welter F. (2006) Introduction to the special issue: Towards building cumulative knowledge on women's entrepreneurship. Entrepreneurship Theory and Practice,

30(5):585-593.

[64] Langevang T, Gough KV, Yankson PWK, Owusu G, Osei R. (2015) Bounded Entrepreneurial Vitality: The Mixed Embeddedness of Female Entrepreneurship. Econ Geogr, 91(4):449-473.

[65] Shane S, Lockea EA, Collinsb CJ. (2003) Entrepreneurial motivation. Human Resource Management Review, (13):257-279.

[66] Bardasi E, Sabarwal S, Terrell K. (2011) How do female entrepreneurs perform? Evidence from three developing regions. Small Business Economics, 37(4):417.