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Li-Chih Yu

Tzung-I Tang

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A VISUAL ANALYTIC STUDY OF ARTICLES IN ENTREPRENEURSHIP RESEARCH

Li-Chih Yu, National Chengchi University, Taiwan, 100356502@nccu.edu.tw
 Tzung-I Tang, National Chengchi University, Taiwan, mtang@nccu.edu.tw

ABSTRACT

The entrepreneurship research grows continuously in this century; this study utilized the visual analytic method to depict literature characteristics of entrepreneurship research, including publication countries, subject area, most cited references and so on. The analytical data was collected from database of Social Science Citation Index (SSCI) of ISI Web of knowledge. This study provided the several findings to describe the academic trend in entrepreneurship research.

Keywords: Visual Analytic, entrepreneurship research, academic trend

INTRODUCTION

The first journal paper related to entrepreneurship, *War Demand, Entrepreneurship and the Distributive Problem* [1], was published on *Economica* in 1941. From this century, the entrepreneurship research had been increasing rapidly. Shane and Venkataraman [2] pointed out that why researchers should study entrepreneurship: (1) *Much technical information is ultimately embodied in products and services, and entrepreneurship is a mechanism by which society converts technical information into these products and services;* (2) *Entrepreneurship is a mechanism through which temporal and spatial inefficiencies in an economy are discovered and mitigated;* (3) *The absence of entrepreneurship from our collective theories of markets, firms, organizations, and change makes our understanding of the business landscape incomplete.* Therefore, this study utilized visual analytic method to show the trend and the important characteristics of entrepreneurship research. This study performed entrepreneurship as a keyword to search the paper title in the Thomson Reuters' Citation database of Social Sciences Citation Index (SSCI) and 2167 journal paper records were retrieved from 1941 to 2013. This study would like: (1) to find out the trend of entrepreneurship research; (2) to identify core journals that contain most part of entrepreneurship research literature; (3) to list the several important references in entrepreneurship research literature.

THE GROWTH OF ENTREPRENEURSHIP RESEARCH LITERATURE

There were 2167 journal papers of entrepreneurship research collected from 1941 to 2013, and Figure 1 showed the publication growth of entrepreneurship research from 1980 to 2013. The academic trend of entrepreneurship research increased rapidly from 2000, and there were more 400 journal papers published yearly from 2010.

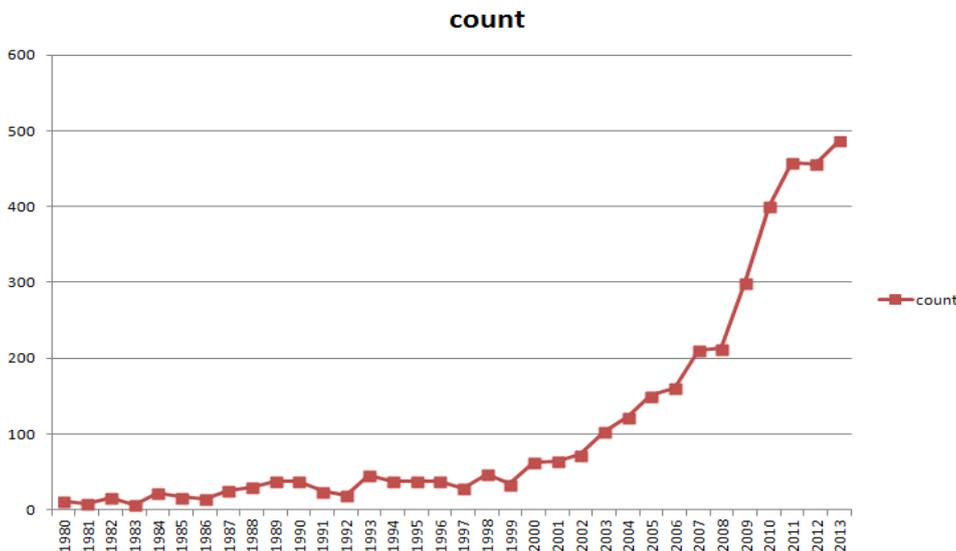


Figure 1 The published papers of entrepreneurship research

Country distribution

USA published around 35.77% of entrepreneurship research literature, and the rest of the country distribution was listed as England (10.49%), Canada (5.58%), Germany (5.31%), Spain (4.09%), Netherlands (3.95%), Sweden (3.63%), Australia (2.36%), France (1.91%) and China (1.63%) (Shown in table 1).

Table 1 Country distribution

Country	Record Count	Percent
USA	788	35.77%
England	231	10.49%
Canada	123	5.58%
Germany	117	5.31%
Spain	90	4.09%
Netherlands	87	3.95%
Sweden	80	3.63%
Australia	52	2.36%
France	42	1.91%
China	36	1.63%
Others	557	25.28%

The visual analytic tool, CiteSpace [3], was adopted to depict the relationship of country distribution in figure 2. The node was formulated in different cycles to distinguish the record count.

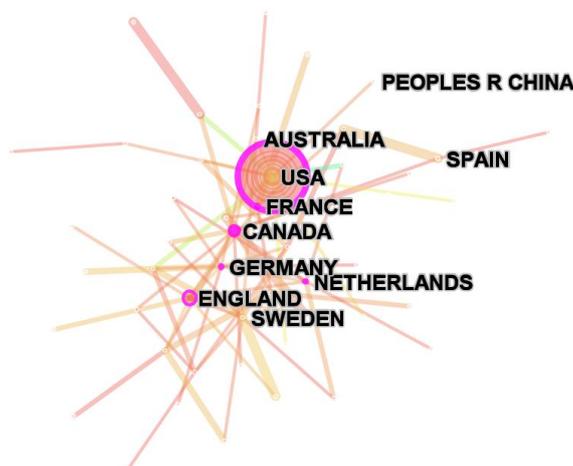


Figure 2 The visualization of country distribution of entrepreneurship research

Keywords

This study executed the keyword analysis and demonstrated the top 10 popular research issues from published researches. Conveniently, to retrieve data for studying a research domain is to search research keywords. Figure 3 showed the relationship among keywords in entrepreneurship research, and revealed that the high frequent keywords were distributed in the centre area, including entrepreneurship, innovation, performance, growth, firms, self-employment, knowledge, business, industry, management and so on (Shown in table 2).

Table 2 Top 10 high frequency keywords in entrepreneurship research literature

Country	Record Count	Percent
entrepreneurship	528	7.50%
innovation	253	3.60%
performance	241	3.43%
growth	166	2.36%
firms	143	2.03%
self-employment	141	2.00%
knowledge	113	1.61%
business	103	1.46%
industry	102	1.45%

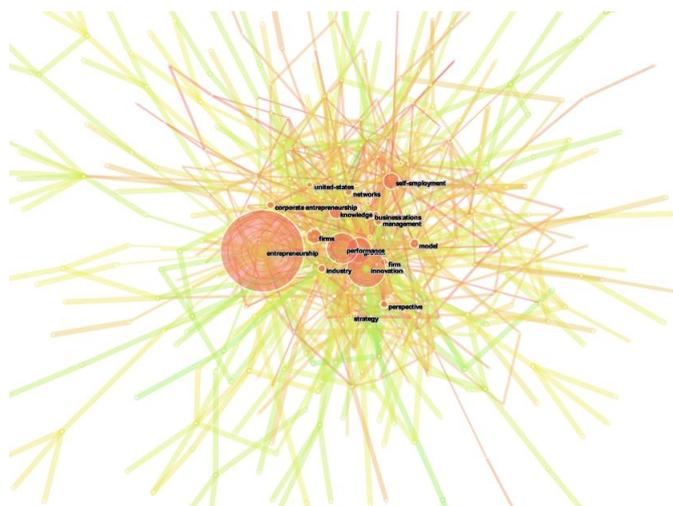


Figure 3. The visualization of research keywords in entrepreneurship research literature

Subject area

The top 5 concerned area of entrepreneurship research literature included “Business & economics”, “Business”, “Management”, “Economics” and “Public Administration”. Table 3 lists the most concerned subject area of entrepreneurship research literature. Figure 3 also demonstrated the relationship among these subject areas in entrepreneurship research, and revealed that all subject areas were not independent, but related.

Table 3 Subject area of entrepreneurship research literature

Rank	Subject area	Count	Percent
1	BUSINESS & ECONOMICS	1568	26.76%
2	BUSINESS	860	14.68%
3	MANAGEMENT	715	12.20%
4	ECONOMICS	589	10.05%
5	PUBLIC ADMINISTRATION	277	4.73%
6	PLANNING & DEVELOPMENT	217	3.70%
7	SOCIAL SCIENCES - OTHER TOPICS	160	2.73%
8	GOVERNMENT & LAW	98	1.67%
9	PSYCHOLOGY	96	1.64%
10	SOCIOLOGY	94	1.60%

Figure 4 also depicted the relationship among these subject areas of entrepreneurship research, and revealed that all subject areas were related.

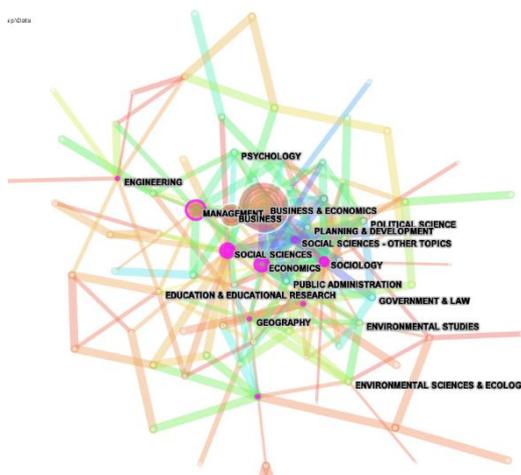


Figure 4. The visualization of subject area in entrepreneurship research literature

CO-CITATION REFERENCES

After analyzing the co-citation references, Figure 5 showed the relationship among research references in entrepreneurship research from CiteSpace. Table 4 listed the top 10 co-cited references in entrepreneurship research, that might show insights for those, investigating the entrepreneurship research.

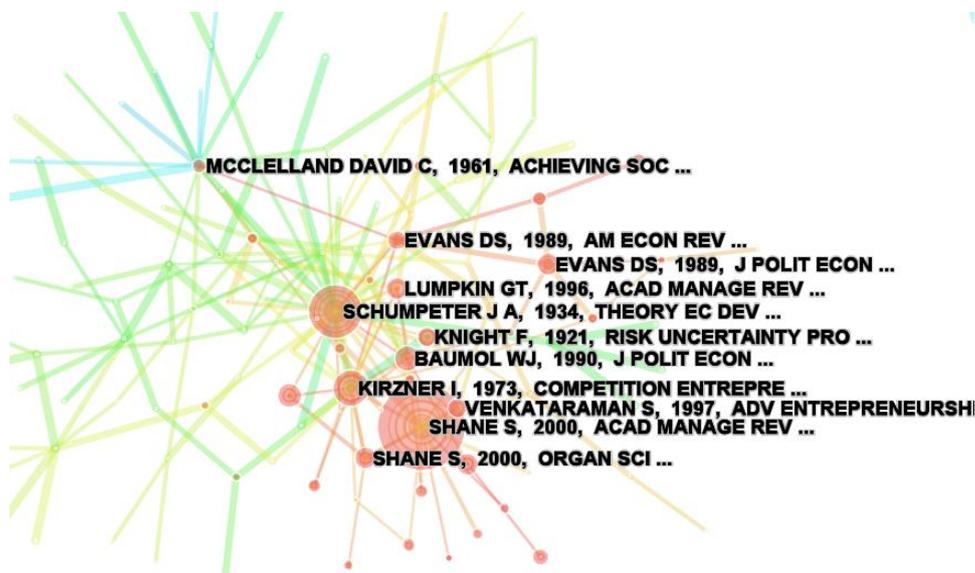


Figure 5. The visualization of co-citation references in entrepreneurship research literature

Table 4 Most Co-citation references in entrepreneurship research literature

Authors	reference title	year
Shane, S., & Venkataraman, S. [2]	The promise of entrepreneurship as a field of research	2000
Schumpeter, J. A. [4]	<i>The theory of economic development: An inquiry into profits, capital, credit, interest, and the business cycle</i> (Vol. 55)	1934
Kirzner, I. M. [5]	Entrepreneurship and competition	1978
Lumpkin, G. T., & Dess, G. G. [6]	Clarifying the entrepreneurial orientation construct and linking it to performance	1996
McClelland, D. C. [7]	The achievement society	1961
Knight, F. H. [8]	Risk, uncertainty and profit	1921
Goldfeld, S. M., Gordon, L. A., & Koehn, M. F. [9]	<i>The economics of mutual fund markets: Competition versus regulation</i>	1990
Evans, D. S., &	An estimated model of entrepreneurial choice under liquidity	1989

Jovanovic, B. [10]	constraints	
Shane, S. [11]	Prior knowledge and the discovery of entrepreneurial opportunities	2000
Evans, D. S., & Jovanovic, B. [12]	An estimated model of entrepreneurial choice under liquidity constraints	1989

CONCLUSION

This paper investigated the academic trend in entrepreneurship research by depicting the characteristics of entrepreneurship research literature from visual analytic method. This paper proposed several findings as followings: (1) the research in entrepreneurship research is increasing rapidly in this century. (2) This study listed the key references (most co-citation references) to show the overall picture in entrepreneurship research.

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