AN EXPLORATION ON THE DEVELOPMENT OF MASTER OF LIBRARY AND INFORMATION SCIENCE EDUCATION IN MAINLAND CHINA

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----------------------------------ABSTRACT----------------------------------

This study first gave a brief bibliometrics analysis of Chinese literature regarding MLIS in Mainland China. The results showed that the quantity of literature published in the past decade has remained flat; Keywords "Master of Library and Information Science" and "Graduate education" are significant important; Five author collaboration groups have been found; The rate of institutional cooperation in literature is not high. Further, a tentative exploration for designing surveys on the current situation of talents' cultivation of MLIS program in Mainland China was given for the actual investigation and research.

KEYWORDS: *Master of Library and Information Science; Competency skills; Bibliometrics; CNKI; Library and Information Professional; Mainland China*

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1. INTRODUCTION

On March 18, 2011, the Academic Degrees Committee, the Ministry of Education, and the Ministry of Human Resources and Social Security of People's Republic of China jointly held the inaugural meeting of the National Professional Degree Graduate Education Steering Committee. Since then, National Committee on Masters of Library and Information has been established. The following year, pilot project to begin integrated program of Master of Library and Information Science (MLIS) were launched (Xu & Li, 2011). This is historical turning point for LIS education of Mainland China. To meet current demands of LIS job market as well as in line with the western LIS education system, it appeared to be a kind of degree program emphasizes on professional competences training. By the June of 2019, there are total 30 universities offering MLIS program in Mainland China (Chen, 2020).

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2. ANALYSIS OF CHINESE LITERATURE REGARDING MLIS IN MAINLAND CHINA BASED ON BIBLIOMETRICS

MLIS education in Mainland China has just started and been recruiting students for less than one decade. As a result, there is a serious lack of relevant studies on the MLIS educational program of Mainland China. And the vast majority of the literature regarding above research are in Chinese as the language medium. Therefore, CNKI will be the most desirable academic source database. CNKI (China National Knowledge Infrastructure) is the largest database of academic literature resources in Mainland China and covers almost all Chinese high-quality journals and degree dissertations of higher education (Xv, 2016). The retrieval title keyword for Chinese literature on MLIS studies is set to "图书情报硕士" (Master of Library and Information Science). The history period of retrieved literature is from September 1st, 2009 to September 1st, 2019. Finally, 69 literature were retrieved, and after excluding 11 invalid or irrelevant ones, a total of 58 literature were retained, including 51 journal articles and 7 master's degree thesis. The Figure-1 below presents the distribution of literature over the past ten years.
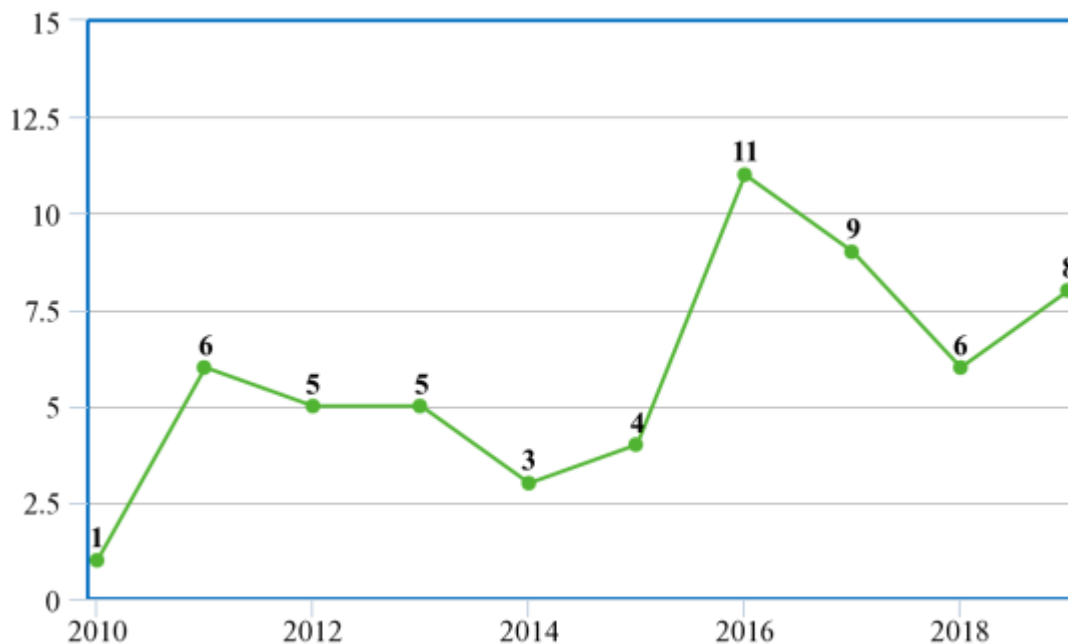

Figure-1 Statistical trend of literature quantity

2.1 Keywords analysis of literature

After merging some synonymous keywords, a total number of 106 keywords items are obtained, following is the list of keywords with frequency above "2". Keywords in Chinese language has been translated into English version accordingly.

关键词	Translation (Keywords)	No.
图书情报硕士	Master of Library and Information Science	37
研究生教育	Graduate education	13
图书情报	Library and Information Science	6
专业学位	Professional degree	6
调查报告	Investigation report	5
图书馆学	Library Science	4
情报学	Informatics	4
专业硕士	Professional Master	4
学位教育	Degree education	4
图书情报专业教育	Library and Information Professional Education	4
培养模式	Training mode	4
课程设置	Curriculum	3
硕士论文	Master Thesis	3
图书情报教育	LIS Education	3
专业学位教育	Professional degree education	3
案例教学	Case teaching	3
培养策略	Training strategy	2
研究生培养	Postgraduate training	2
图书情报与档案管理	Library Information and Archive Management	2
图书情报教学改革	Library and Information Teaching Reform	2
多层次灰色评价	Multilevel gray evaluation	2
教育质量	Quality of academic	2
学术硕士	Academic Master	2
满意度调查	Satisfaction survey	2
人才培养	Talent development	2
实践教学	Practical teaching	2
人才培养体系	Talent training system	2
案例库	Case base	2
中美比较	China-US comparison	2
培养目标	Training objectives	2
硕士专业学位	Master Degree	2
人才需求	Talent Demand	2
跨专业生源	Interdisciplinary students	2
培养质量	Training quality	2

Table-1 Keywords occurrence frequencies

The following matrix shown in below Table-2 listed the frequency of every two items of keywords with frequency higher than "2" correspondingly. The data need to be imported into the UCINET 6.0 to generate a social network map shown in below Figure-2 based on keyword co-occurrence.

Table-2 Keywords co-occurrence matrix

Figure-2 Network map of keywords of Chinese literature on MLIS

From the above network map, it can be clearly showed that "图书情报硕士(Master of Library and Information Science)" and "研究生教育(Graduate education)" are significant important. In addition, "图书情报硕士(Master of Library and Information Science) & 研究生教育(Graduate education)"; "图书情报硕士(Master of Library and Information Science) & 专业学位(Professional degree)"; "图书情报硕士(Master of Library and Information Science) & 调查报告(Investigation report)"; "图书情报硕士(Master of Library and Information Science) & 图书情报专业教育(Library and Information Education) has most related link.

2.2 Authors analysis of literature

Following Table-3 is the list of authors' names with frequency higher than "2". Authors names in Chinese language has been translated into English version accordingly. The most prolific author is 段宇锋(Duan Yufeng), who produced seven literature.

作者	Translation(Author)	No.
段宇锋	Duan Yufeng	7
鄢嫦	Yan Chang	6
王协舟	Wang Xiezhou	5
尚新丽	Shang Xinli	3
王超亚	Wang Chaoya	3
陆伟	Lu Wei	2
白才进	Bai Caijin	2
吴琼	Wu Qiong	2
王红	Wang Hong	2
尹冠钧	Yin Guanjun	2
马海群	Ma Haiqun	2
黄若尧	Huang Ruoyao	2
曲皎	Qu Jiao	2
吴晨宸	Wu Chenchen	2
马王荣	Ma Wangrong	2
方婧	Fang Jing	2
桂思思	Gui Sisi	2

Table-3 Authors occurrence frequencies

As shown in following Table-4, 32.76% of articles are published by single author, 50% of articles are published by cooperation of two authors, 13.79% of articles are published by cooperation of three authors, and 3.45% of articles are published by cooperation of four authors.

No. of people	1	2	3	4
No. of paper	19	29	8	2
Percentage	32.76%	50%	13.79%	3.45%

Table-4 Cooperation of authors of Chinese literature on MLIS

According to the Price's law, the core authors should produce not less than 2.646, which means concerned author should produce at least 3 articles. Therefore, five authors who have published three or more articles are eligible. The following Table-5 shows the number and proportion of authors who produced literature as first author.

No. of paper	No. of author(First author)	Percentage
0	0	0%
1	1	20%
2	1	20%
3	1	20%
4	1	20%
5	0	0%
6	0	0%
7	1	20%

Table-5 The statistics of authors who produced literature as first author

The following matrix shown in below Table-6 listed the number of occurrences of every two authors with frequency higher than "2" correspondingly. The data need to be imported into the UCINET 6.0 to generate a social network map shown in below Figure-3 based on authors' cooperation co-occurrence. From the Figure-3 shown below, it can be seen that there are five authors group existing, 王协舟(Wang Xiezhou) and 鄢嫦(Yan Chang) has the closest relation in academic cooperation.

	段宇锋	鄢嫦	王协舟	尚新丽	王超亚	黄若尧	吴琼	马王荣	马海群	方倩	桂思思	陆伟	尹冠钧	吴晨宸	曲峻	白才进	王红
段宇锋	0	0	0	0	2	0	0	0	0	0	0	0	2	2	0	0	0
鄢嫦	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
王协舟	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
尚新丽	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
王超亚	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
黄若尧	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
吴琼	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
马王荣	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
马海群	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
方倩	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0
桂思思	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0
陆伟	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0
尹冠钧	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
吴晨宸	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
曲峻	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
白才进	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
王红	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0

Table-6 Authors co-occurrence matrix

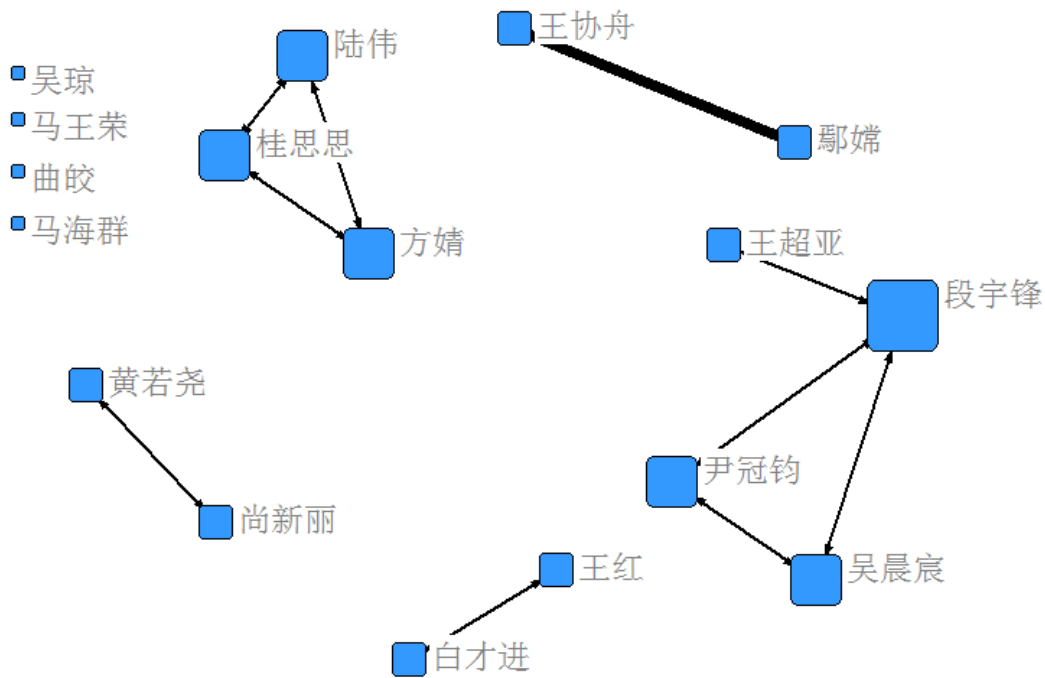

Figure-3 Network map of authors cooperation of Chinese literature on MLIS

2.3 Analysis of authors' organization

There are 15 organizations with frequency above twice in the literature. Following Table-7 is the detailed list with corresponding translation.

机构	Translation (Organization)	No.
湘潭大学公共管理学院	School of Public Administration, Xiangtan University	10
郑州大学信息管理学院	School of Information Management, Zhengzhou University	4
武汉大学信息管理学院	School of Information Management, Wuhan University	3
上海大学图书情报档案系	Department of Library and Information Archives, Shanghai University	3
华东师范大学商学院	East China Normal University Business School	3
黑龙江大学信息管理学院	School of Information Management, Heilongjiang University	3
华东师范大学工商管理学院	School of Business Administration, East China Normal University	2
山西财经大学图书馆	Shanxi University of Finance and Economics Library	2
辽宁师范大学数学学院	School of Mathematics, Liaoning Normal University	2
长沙商贸旅游职业技术学院图书馆	Changsha Vocational College of Commerce and Tourism Library	2
湘潭大学教务处	Xiangtan University Office of Academic Affairs	2
天津师范大学	Tianjin Normal University	2
武汉大学信息资源研究中心	Wuhan University Information Resources Research Center	2
华东师范大学经济与管理学部信息管理系	Department of Information Management, School of Economics and Management, East China Normal University	2
南京大学信息管理系	Department of Information Management, Nanjing University	2

Table-7 Organizations frequencies of Chinese literature

Except for dissertation, there are 78.43% articles are published by single institution; 15.69% articles are published by two institutions; 1.96% articles are published by three institutions; 3.92% articles are published by four institutions.

3. DESIGN OF SURVEY ON THE CURRENT SITUATION OF TALENTS' CULTIVATION OF MLIS PROGRAM IN MAINLAND CHINA

In the process of cultivating MLIS students in educational institutions, teachers are always playing an important role. As the leaders of teaching activities, it is necessary to plan a questionnaire survey for teachers regarding MLIS education. Following views or attitudes in Table-8 can be taken into consideration for framing the concerned questionnaire.

No.		No.	
1	Enrollment of MLIS program	6	Examination mode
2	Curriculum satisfaction	7	Internal assessment
3	MLIS practice session	8	Teaching methods
4	Foundation courses	9	Program length
5	Proportion of IT-based courses	10	Supplement to training scheme

Table-8 Proposed topics of designed questionnaire

Meanwhile, it is also necessary to construct a model for competency skills required for MLIS graduates as well as new library and information professionals. Questionnaire survey will a powerful tool to ensure a well designed and scientific competency skills model.

Based on the above questionnaire survey, the competency skills evaluation shall be carried out to measure current situation of mastery of professional ability possessed by concerned research object group. Analytic Hierarchy Process and Fuzzy Comprehensive Evaluation method are ideal evaluation methods. Analytic Hierarchy Process is a simple, practical and very effective method to deal with the complex problems of multi-objective, multi criterion, multi factor and multi-level. It is a system analysis method combining qualitative analysis and quantitative analysis (Zhang & Kang & Ma, 2015). The fuzzy comprehensive evaluation method is based on the fuzzy processing principle in operational research and the characteristics of fuzzy relation synthesis. It is a comprehensive evaluation method of research objects according to the membership level of multiple factors and indicators. This method has a great advantage in dealing with multi-level and multi factor complex problems (Feng, 2015). In case the competency skills evaluation scale was set as 5 points, the fuzzy comprehensive evaluation model can be created as follows based on the actual needs.

$$u_{v1}(u_i) = \begin{cases} 0.5 & u_i \geq 4 \\ u_i - 3.5 & 3.5 \leq u_i \leq 4 \\ 0 & u_i < 3.5 \end{cases}$$

$$u_{v2}(u_i) = \begin{cases} u_i - 3 & 3 \leq u_i < 3.5 \\ 4 - u_i & 3.5 \leq u_i \leq 4 \\ 0 & u_i \geq 4 或 u_i < 3 \end{cases}$$

$$u_{v3}(u_i) = \begin{cases} u_i - 2.5 & 2.5 \leq u_i < 3 \\ 3.5 - u_i & 3 \leq u_i \leq 3.5 \\ 0 & u_i \geq 3.5 或 u_i < 2.5 \end{cases}$$

$$u_{v4}(u_i) = \begin{cases} u_i - 2 & 2 \leq u_i < 2.5 \\ 3 - u_i & 2.5 \leq u_i \leq 3 \\ 0 & u_i \geq 3 或 u_i < 2 \end{cases}$$

$$u_{v5}(u_i) = \begin{cases} 0 & u_i \geq 2.5 \\ 2.5 - u_i & 2 \leq u_i < 2.5 \\ 0.5 & u_i < 2 \end{cases}$$

The final value of concerned membership for each level should be assigned with the value of

$$\frac{1}{10}\left[\sum_{i=1}^{10} 2u_v(u_i)\right].$$

CONCLUSIONS

This study gave a brief overview of the published literature on MLIS program carried out in Mainland China along with tentatively exploring the route of investigation on current situation of cultivation of LIS talents. Four major points have been observed from the above bibliometrics analysis: The quantity of literature published in the past decade are in low level with flat trends; Keywords "Master of Library and Information Science" and "Graduate education" are significant important; Five author collaboration groups have been found; The degree of institutional cooperation of literature is low with proportion around 20% of published literature. For the design of surveys on MLIS, although there is no specific implementation, the research has very important practical significance. Through questionnaire survey regrading views on MLIS education & competency skills, combined with competency skills evaluation, it can provide reference and assistance for the future LIS education and professional talents team construction in Mainland China.

Author Contributions

First author: Chenwei Chen collected data and finished the research article;

Second author: Prof. Moses M. Naga did modification.

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