Research on the Reform and Exploration of the "Big Data + Management" Mode of Applied Management Majors

————Take the Management School of City Institute, Dalian University of Technology as an Example

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***Abstract*—A new type of management model and various types of management talents with big data thinking and related technologies are required with the advent of the big data era. In order to comply with the trend of future development and the future talent needs of the market, the reform of applied management majors are and explored, and the concept thinking and methods of big data management are implanted into the curriculum system of various majors so as to form "big data +Management" talent training and application model with the Management School of City Institute, Dalian University of Technology as the background.**

***Index Terms*—management major, big data, big data+ management**

I. Introduction

Internet of Things, information acquisition technology, social networks and other technological development is changing with each passing day, it prompts all kinds of information sensors including1 mobile phones, tablet computers, PCs and etc., can be found everywhere, and while virtual networks are developing rapidly, the real world is rapidly virtualizing, the source of data and its quantity are growing at an unprecedented rate, all show that we have officially entered the era of big data. By processing, analyzing and optimizing massive amounts of data from different sources, and feeding the results back into government, industry, business management and decision-making applications, huge economic and social value will be created [1-3]. Therefore, the big data-driven management model will be the main form of management and decision-making of governments, industries and enterprises in the future.

Based on this, in order to comply with the trend of future development and the future talent demand of the market, we must follow the trend, actively respond, reform the current management majors, such as Business Administration, Marketing, Logistics Management, Public Affairs Administration and other majors, and implant the concept thinking and methods of big data management into the professional curriculum system, so as to form a "big data + management" talent training and application model. At present, domestic scholars' researches in this field mostly put forward some macroscopic suggestions on the big data ability cultivation of economic and management talents based on the era of big data, For example, according to the characteristics of talent demand in the era of big data and take Shanghai University of International Business and Economics as an example, Yang Nianhua introduced and explored the training mode of economic management students' data processing ability and computational thinking habit[2]; Zhang Minna discussed the strategy of DHR talent training in college human resource management major under the background of big data from four aspects: talent training objectives, curriculum system, practical teaching and teaching staff, based on the new challenges facing human resource management professional talent training and enterprises' requirements for the quality of digital human resource management personnel in the context of big data[4]; Zhang Xuemei et al. analyzed the training status and existing problems of applied logistics management professionals under the background of big data, and put forward relevant suggestions on the training mode of applied logistics management professionals under the background of big data from the aspects of training objectives, the combination of theory and practice, and the construction of teaching staff[3]; Although the above research has certain macro-guiding significance, it lacks specific curriculum design, especially the detailed curriculum design for each management major. In addition, Wang Yanping has made a detailed discussion on the big data analysis talents' curriculum system of logistics major, but lacks some in-depth curriculum design deeply integration of big data and logistics management as one[5] , which is also the question and suggestion proposed by Hou Rujing in his research on the problems and causes of economic management talents in the era of big data[6].

Above all, This paper takes Management School of City Institute, Dalian University of Technology as an example to explore the overall thinking and specific curriculum of the "big data + management" model, aiming at the dilemmas and problems faced by applied

Manuscript received August 8, 2022; revised November 1, 2022.

doi: 10.18178/joams.10.4.100-103

management majors under the background of big data, so as to provide some references for the transformation and development of management majors in other applied universities.

II. Dilemmas and Problems Faced by Management Majors in Management School of City Institute, Dalian University of Technology

A. Introduction to Management School of City Institute, Dalian University of Technology

City institute, Dalian University of Technology is an independent institute at undergraduate level jointly established with enterprises which was established in 2003.The Management School is one of the six branches under the City Institute, Dalian University of Technology, which consists of six undergraduate majors in Business Administration(BA), Marketing, Logistics Management(LM), Public Affairs Administration(PAA), Information Management and Information Systems(IMS), and Big Data Management and Application(BDMA), of which the Big Data Management and Application major is a new major approved by the Ministry of Education in 2019, and the Logistics Management major is approved by the Ministry of Education of the People's Republic of China in 2004.Each major has 1-4 undergraduate major fields, as shown in Fig. 1.

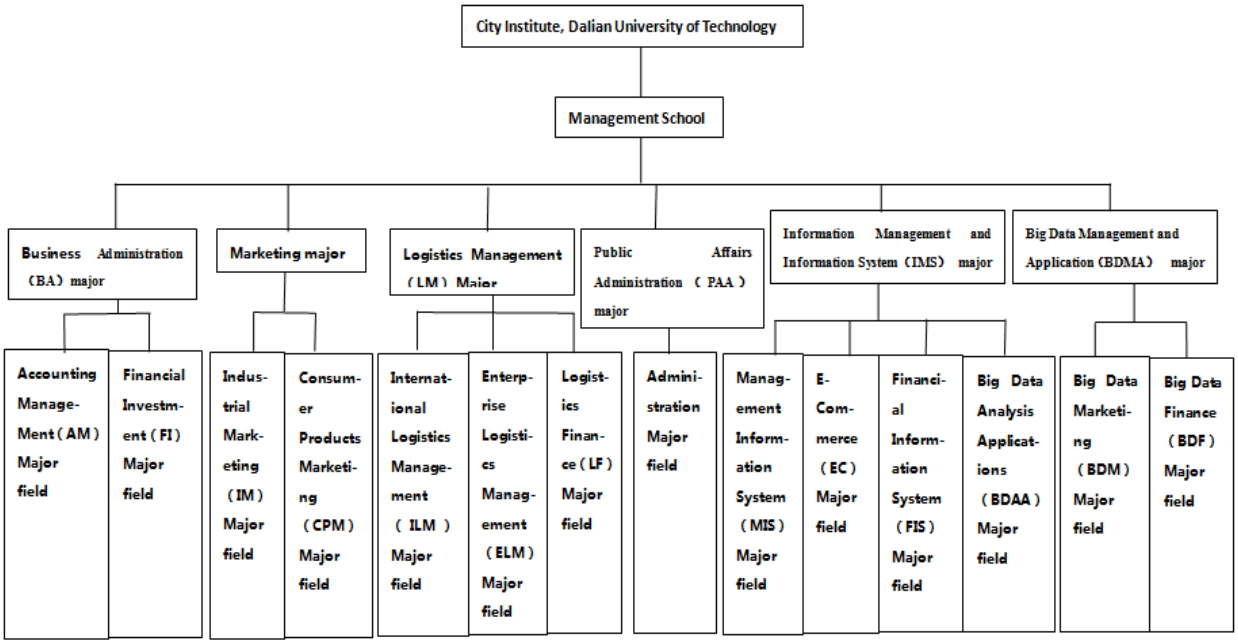

Figure 1. Major Structure of the Management School

B. The Dilemmas and Problems Faced by the Major

At present, the six majors set up below management school of city institute, Dalian University of Technology, in addition to the Big Data Management and Application major , the rest are old majors, while in the professional planning of Ministry of Education and the Education Department of Liaoning Province, Business Administration, Marketing, Public Affairs Administration, Information Management and Information Systems majors are reduced recruit or restricted majors, in addition, Public Affairs Administration, Information Management and Information Systems majors have become one of the most domestic suspended majors in recent years. At the same time, on the one hand, management majors generally have the problem of wide knowledge range, but few hard skills and not strong, resulting in weak employment competitiveness of students in the future. On the other hand, with the advent of the era of big data, it urgently requires a large number of compound and application-oriented management talents who understand both business management and use data analysis to make management decisions[5].

Based on the difficulties and problems faced by the above management majors, it is urgent to keep pace with the times and carry out reform exploration to it.

III. The Reform and Exploration of the "Big Data + Management" Model

As the sources of data become more and more diversified, resulting in more and more data volumes and types, how to extract or mine the information needed for management and decision-making in the complex and large amount of data so as to support the management and decision-making of governments, industries and various types of enterprises? Big data management and application technology is very useful, with algorithms as the core, IT as the tool, industry management theory as the basis, and government, industry and industrial and commercial enterprises as the application scenarios, which IT technology is used to preprocess and store the big data collected from various sources by governments, industries and industrial and commercial enterprises, and then analyze, process, mine and display them using appropriate algorithms, so as to effectively support the government, industry and all kinds of enterprises

management and decision-making, and enhance the competitiveness of enterprises. In summary, the data-driven management model of "big data + management" emerged at the historic moment.

Based on the above and the background of the management school of city institute, Dalian University of Technology, it is proposed to reform and explore the four majors of its subordinate business administration and other four majors under the data-driven management model of "big data + management".

A. Overall Reform Ideas

According to the talent demand characteristics of the current big data era and the transformation of traditional management majors, relying on the major of big data management and application and the major of information management and information systems of management school, the four majors of business administration and other majors under the management school, will each add a big data major field to their majors or add corresponding big data courses to the original major field, especially the deep integration course of big data and related major courses[5][6],for example, we try to add big data financial analysis and big data finance courses respectively under the major field of accounting management and financial investment of Business Administration major. The Marketing major tries to add a big data marketing major field, the Public Affairs Administration major to add a big data governance major field, the Logistics Management major to add a big data supply chain major field. Under the newly added major field of big data, 3-4 major courses will be set up, and pilot construction will be carried out through students' voluntary registration and major selection. At the same time, a comprehensive professional practice courses are set up separately to strengthen the cultivation of various types of compound management talents of "big data + management", as shown in Fig. 2.

B. The Setting of Big Data Courses in Each Major

Because traditional management majors are primarily partial to liberal arts, teachers and students in mathematics and computer science compared with computer majors, skills are much weaker, so in the corresponding professional basic courses, practical courses and major field course settings, it is necessary to fully consider the actual situation of the management majors, with specific statistical software and data platform software without programming, focusing on setting up some "Introduction to Big Data Management" (IBDM)courses that enable students to master the concept and thinking of big data, "Big Data Algorithms" (BDA) courses that understand the corresponding main analysis and mining algorithms, “Big Data Statistics Software" (BDSS) courses that enable students to master relevant big data statistical analysis methods, and composite courses on the specific application of big data in various types of management, such as "Big Data Marketing" (BDM) and "Big Data Finance" (BDF). In the professional basic course, Excel course learning and training can be strengthened, and in the comprehensive professional practice course, students can be trained to use the algorithm and management knowledge they have learned, with the help of big data statistics and platform software, to find various management problems, analyze and propose countermeasures to effectively support enterprise management and decision-making.

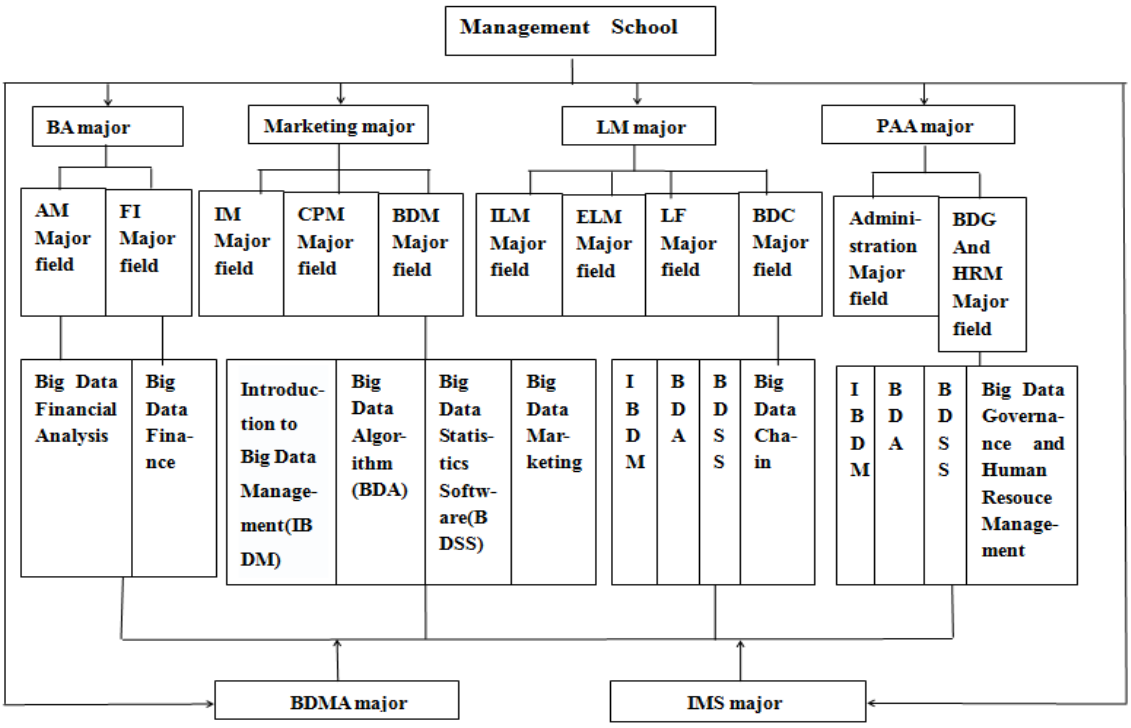

Figure 2. Thinking chart of major overall reform

IV. Conclusion

Traditional management method has been changed in the era of big data, and the data-driven management mode of "big data + management" will replace the original management mode, at the same time, a large number of "big data + management" compound management talents who not only master solid management knowledge, but also master big data analysis technology in the era of big data, so it is imperative for traditional management majors to carry out the reform and exploration of "big data + management".

However, we should also see that in order to realize the cultivation of "big data + management" compound management talents, our teachers are required to become such compound talents first[6], which poses a great challenge to our teaching team. At the same time, because the cultivation of compound talents needs to complete the learning of multi-disciplinary knowledge or courses and master them well within limited class hours, it also poses a great challenge to the students of this major, which is easy to lead to the situation of the "jack of all trades, master of none" situation. In addition, due to the emerging new management methods and technologies, the lack of corresponding suitable teaching materials, professional practice materials or project cases is also a challenge for the cultivation of compound talents.

Although there are many of the above challenges and problems, the time is not waiting, and it is necessary to continue to face and solve it in the construction. It is recommended to achieve school-enterprise cooperation with relevant enterprises, jointly compile teaching materials, produce project cases or practical materials, hire technical backbones of enterprises to participate in teaching and scientific research activities, and jointly build an off-campus practice base for college students and guide students to practice. Teachers should be organized to train so as to construct the compound knowledge quality of one specialization and multiple ability. Actively cultivate students' interest and big data thinking, realize the construction of complex knowledge structure and master the ability of using IT and algorithms to analyze, model, visualize and explain all kinds of management problems through comprehensive courses, professional practice and professional practice, so as to effectively realize data-driven management.

Conflict of Interest

The authors declare no conflict of interest".

Author Contributions

Liang Xu conducted the research, wrote the paper, and approved the final version of the manuscript.

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