

## Discussion and Overview: Post-graduate and Master Degree Programmes in Logistics and Supply Chain Management

Simon S.M. Yuen<sup>1</sup>, Matthew T.C.<sup>2</sup> Liu, H. Y. Tong<sup>3</sup>

<sup>1</sup> School of Professional Education and Executive Development,

The Hong Kong Polytechnic University, Hong Kong, China

<sup>2</sup> Faculty of Business Administration, University of Macau, Macau

<sup>3</sup> Division of Science and Technology, PolyU Hong Kong Community College,

West Kowloon, Kowloon, Hong Kong, China

EMAIL: spsmyuen@speed-polyu.edu.hk

**Abstract:** Without doubt, logistics and supply chain management (SCM) education and personnel training are vital and it is a key of success for logistics business. By analyzing courses, experiences, and references of post-graduate and MBA courses of universities which are in both Hong Kong and overseas, we can identify that logistics personnel are basically divided into two types: (1) Management Personnel and (2) Engineering and Technical Personnel.

In fact, professional and advanced academic training are decisive in operating performance and sustainable development of logistics industry. Manpower is one of the essential components of the logistics industry. Practical logistics operations and management require innovative and well-trained professionals. In order to compete and survive, universities should provide innovative trainings to our industry. Therefore, universities can implement different strategies to train-up different logistics professionals to serve our economy. Future research can be conducted by focusing on Southern China and Asia Pacific region about their post-graduate and practical manpower training of the industry.

**Keywords:** Logistics; Manpower; Training and Education; Hong Kong

### I. The importance of the master degree of logistics

It is important to establish a postgraduate or master degree programme in the area of logistics management. Apart from characteristics and requirements of ordinary MBA programmes (for example, Master of Business Administration, MBA), the importance the logistics related postgraduate programme should also be reflected in three areas: (1) from the social and the logistics industry perspectives, logistics management personnel are the professionals occupying senior positions in the logistics industry or at the level of senior managers. Their ability and diathesis not only have a decisive impact on the innovation and increment, but also on the operating performance and sustainable development of the industry. These depend heavily on their education and training; (2) from the

perspectives of the university development and personnel training, the establishment and quality of programmes will impact the reputation and the brand of the university, huge intangible assets and capital of the college, as well as the social enrolment and employment of graduates; (3) for the students themselves, the curriculum theory which include quality, characteristics, professional development and so on, will keep potential and lasting effects on their career development and achievements. Therefore, the establishment, design, objectives and the content of the postgraduate logistics programmes are very important.

### II. The proportion of master of logistics management or equivalent talents

According to the industry positions in developed overseas countries and cities, personnel in the logistics industry can generally be classified into four categories: (1) Top-level executives, including the president of logistics firms, senior logistics master, general managers and so on. They are responsible for the formulation of the industry or enterprises, determination of business development policy and direction, as well as the overall coordination and deployment of resources and administration functions; (2) The class of research and development managers. They are responsible for the exploitation of business, management and application of technology, innovation and increment, as well as the improvement and upgrading of existing services; (3) Middle management, including logistics managers and executives. They are responsible for the implementation and monitoring of the logistics functions. They need to optimize the use of limited resources and to improve business processes and performance; (4) Front-line operating staff such as logistics and operations clerk. They are in charge of the actual implementation and operations of the logistics business. Their performance would directly affect the company image and the customer relationships.

With reference to the experience from overseas countries and cities which have a knowledge-based economy and well developed logistics industries, a more describing the preferred education level for personnel in a logistics company is proposed as follows: About 5% of staff should

have a doctorate degree in logistics management (i.e. PhD and DBA); about 10% with a master degree or equivalent in logistics management (i.e. MSc, MBA and MPhil) and about 20% with a bachelor degree or equivalent in logistics management (i.e. BSc and BBA). Physical management of tertiary and vocational education or training qualifications owners should account for about 20%. The remaining 45% would be for the corresponding logistics engineering technology degrees and qualifications owners.

### III. About training objectives

The training programmes are usually set up with three goals. The first goal is for practical application. The objective is to equip graduates with certain mathematical basis and capabilities for conducting analysis and research activities. More focuses should be put on the actual logistics management practices, problem-solving skills and the management capacity of certain businesses or industries which have unique characteristics. For example, international logistics operations management, logistics management for air cargo and so on. In this regard, the programme should be established for practicability purposes which could be a combination of theories and practical experiences. It enhances the training on management skills, such as leadership and communication skills. This type of postgraduate programme mainly manages master curriculum usually for the business management (logistics or supply chain), but sometimes also adopts other forms, such as electronic commerce master (logistics) or technical management (logistics) and so on. The target students for this type of programme are managers who are at work and possess a certain level of management experiences, as well as with a long term orientation of career development is in logistics management. As far as the academic requirements are concerned, a more open-minded approach should be adopted to absorb multi-faceted students. However, more emphasis should be put on students' motivation and commitment.

The second goal is for balancing. The objective is to strengthen students' theoretical knowledge basis so as to enable them to manage the programs and processes in logistics, services and technique. In order to achieve this objective, the programme would be set up to emphasize the master of professional knowledge and methods. The content should be taught with examples, experiments, examinations, talks and other manners. This type of programme should be conducted in the form of a master degree in logistics or supply chain management, by the colleges and departments which are related to logistics and under the faculty of business and administration, even if cross-disciplinary effort may be involved. Target students are mainly younglings with a junior college degree in logistics, which provided the students with a solid foundation for multi-faceted development.

The third goal is for further study. The objective is to nurture students so as to achieve a solid theoretical knowledge in logistics management, be able to devise various methods for conducting qualitative and quantitative research, and possess the capabilities in data processing and analysis. The requirements for the scope of the knowledge are mainly professional knowledge supplemented with skills from other related subjects, but deeper understanding is required and be able to provide individual and critical opinions. The types of programme to achieve this objective are often delivered through the major mode of teaching, in the forms of collective theory classes, group or individual special classes, industries and enterprises in research, and the guidance of instructors. This type of programme is aimed at training graduates for professional research institutions, and people who wish to become logistics management scholars. Because of the extension of British university educational structures and systems, there is still a type of postgraduate programme named "Master of Philosophy" in some universities in Hong Kong.

### IV. Logistics related master degree programmes in overseas universities

After confirming the training objectives of postgraduate logistics programmes, the situation of the programmes from overseas universities will first be analysed. Early overseas universities' curriculum in the logistics management can be traced back to the last century, in the 1970s. Several universities in the United States (US) are pioneers in this regard, such as Michigan State University, Ohio State University, Pennsylvania State University, University of Maryland, the University of Tennessee. Lately, more than 50 US universities have set up postgraduate programmes in logistics and supply chain management. The latest list of logistics and supply chain disciplines [1] for the top ten universities are as follows: Massachusetts Institute of Technology (Sloan), Michigan State University (Broad), University of Pennsylvania (Wharton), Stanford University (CA), Arizona State University (Carey), Carnegie Mellon University (PA), Pennsylvania State University (Smeal), Ohio State University (Fisher), Purdue University (Krannert), Northwestern University (Kellogg).

In addition to the US, by far, the universities in many other countries have set up master degree in logistics management. For comparison purpose, logistics MBA programmes from seven universities are selected for analysis, which are representative of the US, Britain, Australia and Singapore. Table 1 shows several benchmarks of overseas postgraduate and master degree programmes in logistics and supply chain management.

[Insert Table 1 here](#)

Michigan State University has set up master degree programmes in logistics management and supply chain. Teaching arrangements and logistics management programmes are reflected in the balance-oriented set up while the MBA (supply chain management) are related to application-oriented. The degree in Arizona State University and the Massachusetts Institute of Technology has a form of Masters Degree in Business Administration. Application-oriented focus is on supply chain design, philosophy management and the main supply chain logistics courses. A review of related master programmes from these three American Universities indicates that: (1) MBA programmes in logistics supply chain management are mainly applications-oriented. Because they have become popular in the US, there is no surprise for their graduates to be logistics industry professionals; (2) the programmes have changed from the traditional logistics management to supply chain management. This follows the trend of the globalization of business. This is reflected in the introduction of some new subjects, such as change management, service management, and logistics operating strategy; (3) the courses of manufacture and supply are still remained. These reflect the nature of American logistics business and economic situation. The subjects should be wide span, with survivability and adaptability features.

Curriculum in the British Cranfield University is a relatively balanced postgraduate programme. Its characteristics are that it emphasizes on traditional logistics management together with a modern supply chain management, and relates to disciplines subjects. It provides a wide range of choices for students to support their personal career growth and development. On the other hand, the MBA curriculum in the Sydney University focuses on the management of transport logistics and international logistics. But, generally speaking, it is still a balanced design. It is mainly on account of the increasing needs of overseas talented students. The programme includes subjects about People, Work and Organizations. So it should be regarded as human resources logistics subject.

The Asia-Pacific Institute of Logistics and Supply Chain (APILSC) is set up by the joint efforts of the National University of Singapore and the Georgia Institute of Technology. It offers a rare double master degree programme. Students admitted to this programme can have a wide range of subjects to choose. They may get two master degrees from separate universities after successfully completing sufficient graduate credits. This programme appears to be a balanced stability design which consists of both the traditional logistics management subjects and modern supply chain features. It includes subjects related to basic mathematics, logistics engineering operations and management of the enterprise. However, subjects concerning innovative content, innovative value-added logistics management feature subjects and courses are scarce.

The Nanyang Technological University's master degree programme is clear in the application of technology in logistics and supply chain management approaches. It is joined with a number of innovative courses, such as third-party logistics, entrepreneurial spirit and service management. Basically, this programme has put less focus on the study and development of thematic subjects.

## **V. Logistics related masters degree programmes in Universities in Hong Kong**

This topic is set up by several leading universities in Hong Kong. Five courses offered by the Hong Kong Polytechnic University show the features of Hong Kong's economy and the development of the logistics industry. They are applied to the front-practical courses. The goal is to train senior enterprises. The advantage of these programmes is that the graduates, after successfully completing these programmes, can quickly adapt to the working environment and requirements for jobs in the fields of shipping, ports, trade and so on. As small and medium-sized logistics enterprises in Hong Kong usually have limited resources for providing in-house training, the growth of personnel is largely dependent on external education and training providers. However, the weakness of this programme is also obvious that there is a gap between the theoretical knowledge and mathematical method. Logistics personnel's knowledge is updated short, their self-updating knowledge and the ability to solve problems are not strong enough.

The other postgraduate programmes offered in other universities in Hong Kong are set up relatively later than the Hong Kong Polytechnic University. These programmes use a balanced and practical approach. They offer basic subjects such as management science, management, and research methods. Meanwhile, students can also choose some new and modern logistics management subjects such as supply chain management, innovation management, resource planning, data mining and relationship management. The more important thing is that the curriculum does not focus or emphasis only on certain logistics industry, contrarily, it is set up to provide a common platform of knowledge, technology, capabilities and methods for logistics personnel who can have a certain degree of balance of generic.

Generally speaking, the curriculum in Hong Kong's universities reflect the needs of the logistics management trends, which is gradually catching up with overseas universities, at the same time, joining the local and Chinese characteristics. The programmes offered have been changing from a practical approach to a more balanced approach. The programme structure exhibits a trend of increasing consolidation of basic theoretical knowledge and methods, and better connects the subject offered with the latest development of logistics management industries. So it

can meet the needs of economic development. In addition, a major feature of the MBA courses in the Universities in Hong Kong is the form of cooperation between different universities. The Hong Kong Polytechnic University, the City University of Hong Kong, and the Chinese University of Hong Kong together with a number of overseas universities to jointly develop tertiary education and training institutions in mainland. The Hong Kong Baptist University, the United Kingdom University and the Australia University also established joint postgraduate programmes. The advantages and benefits of these joint efforts are obvious.

Insert Table 2 here

Another important feature of these programmes is the general adoption of market principles. According to the current state of Hong Kong's higher education policy and funding, the universities themselves should be conceited win or loss with the programmes. The providers have to consider students, fees, jobs for the graduates and the response of the industry. They also need to consider the content cost, features, competition, sustainability and so on. These factors, to a certain extent, affect the academic and depth of curriculum together with the pursuit of the objectives of education. Even worse, it will affect students' learning motivation and attitude, as well as the relationship between teaching and learning.

## **VI. The development of domestic programmes**

Logistics management postgraduate degree programmes offered in Mainland China have started late, though there are over 50 universities providing postgraduate programmes about logistics management and supply chain management. However, the number of graduates is still insufficient to meet the industrial and academic needs. This forms a favourable condition for the formation of a master degree programmes in logistics management. The successful experiences from Hong Kong and overseas universities in offering such programmes could serve as a good reference for this purpose. According to the actual teaching situations in domestic universities in the mainland, such as establishment, policy, teachers, facilities, funding, the industry needs etc., the following suggestions on programme planning can be considered:

(1) Both long- and short-terms academic development needs and the related disciplines in a college or university should be considered when planning a postgraduate programme. Even before or after approbation of the Academic Degrees

Committee of the Board of Education, inspection of experience of the relevant college or other relevant departments should be taken. Then the programme could be developed according to the short-term and long-term goals, practical training needs, as well as the focus of the programme (i.e. application type or balance talent). However, it is important to distinguish the developed programmes from those offered by other providers and becoming brand-name products.

(2) The appropriate subjects should be chosen according to the short- and long-term goals. The curriculum should address the needs of the expected graduates, skills of high demand, and the integration with the changes in the economy and the industry. Our opinion is that the combination of universities or colleges should refer to Cranfield University, National University of Singapore and Michigan State University. The subjects should mainly have application and universal. Then it can be adapted to a wide range of different logistics sectors (such as manufacturing and logistics services industry), and thus meeting the short-term market needs of the high logistics management personnel, to increase basic theory and methods gradually (including research methods, communication skills in business negotiations) and high-level subjects such as knowledge management, service management, outsourcing management and research subjects. Professional and engineering Universities can refer to the models in the Hong Kong Polytechnic University and Nanyang Technological University. A more practical and application-oriented approach should be adopted to train senior professionals.

(3) Schools can adopt flexible forms of cooperation, horizontal and complementary, complementation of the advantages and enhance synergies. In this respect, some of the universities in Hong Kong can be served as a good model. The subjects offered in the programme should be made more diversify. A partnership should not be only confined to a particular university, but be open-minded. We should introduce overseas universities' methods, just like the characteristics of the curriculum, teaching methods and staff. Among these courses, there is no competition but coordination. It can make more profit and achieve common development goals.

(4) The mainland domestic logistics masters programmes should exhibit Chinese characteristics. The programme curriculum should include a logistics centre and distribution centre management, policy study and construction, planning and macro-control, foreign logistics management assessment, standardized logistics management and so on. It meets the needs of macroeconomic logistics management. In addition, it should increase the elements of innovation and technology management to realize the energy of management and technical application of value-added logistics management knowledge and skills of reserves.

(5) The master programmes should be set up closely with logistics industry and enterprises, and consulting enterprises. We can carry experts' speaking and forums, sparkplug direct and two-way communication among entrepreneur, research personnel and students. Research should touch on practical problems in logistics industries and enterprises, and thus to introduce the latest development and trend of logistics management. Then we should improve and consolidate the existing management system and the good teaching processes.

## VII. Conclusion

Logistics management is one of the disciplines in offering postgraduate degree programs. It has the common characteristics and its personalities. According to the analysis of programmes offered in Hong Kong and overseas universities, it can be seen that when offering the programmes, we should have a clear objective in the design of curriculum and development orientation. It should be much different in terms of the structure and curriculum, as well as the form of provision. Because of these different settings, it makes the programmes have different special features, and meet the needs of the community.

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Table 1 Several Benchmarks of Overseas Post-graduate and Master Degree Programs in Logistics and Supply Chain Management\*

Name of University	Degree granted	College/ Department in charge	Related Supporting Facilities	Corresponding Research Centre
Michigan State University (US)	MSc (Logistics and Supply Chain)	The Eli Board Graduate School of Management	The James B Henry Centre for Executive Development	MSU Logistics and Supply Chain Collaboration
	MBA (Supply Chain)	The Eli Board Graduate School of Management, and Department of Marketing and Supply Chain		
Arizona State University (US)	MBA (Supply Chain)	W. P. Carey School of Business	---	CAPS Research Centre
MIT (US)	MBA	Sloan Management School	Sloan Management Review	Logistics Management Research Centre
Cranfield University (UK)	MSc (Logistics and Supply Chain)	Cranfield School of Management)	---	Research Center of Logistics and Supply Chain Management
University of Sydney (Australia)	MBA (Logistics and Transportation Management)	Institute of Transport Studies, Business School	---	Institute of Transport Studies
National University of Singapore and Georgia Institute of Technology	MBA (Logistics and Supply Chain) and MSc (Industrial Engineering and Management) **	The Asia-Pacific Institute of Logistics and Supply Chain	College of Business, College of Information Technology, College of Industrial Engineering	Logistics and Supply Chain Management Research Centre
Nanyang Technological University (Singapore)	MBA	Nanyang Business School	Information Management Research Centre	---
	NTU-Waseda Double MBA in Management of Technology			

\* Seven common courses of mentioned seven programs are supply chain management, logistics management, information technology, operation management, manufacturing system and management, decision modelling.

\*\* Double degrees

Table 2 Major Post-graduate and Master Degree Programs in Logistics and Supply Chain Management in Hong Kong

Name of University	Degree granted	College/ Department in charge	Related Supporting Facilities	Corresponding Research Centre
Hong Kong Polytechnic University	MSc (International Shipping and Transport Logistics)	Department of Logistics and Maritime Studies, Faculty of Business	Marine Simulation Laboratory	C.Y. Tung International Centre for Maritime Studies
	MSc (Global Supply Chain Management)		Maritime Information Technology Laboratory	IMC-Frank Tsao Maritime Library and Research & Development Centre
	MSc (Quality Management)		GMDSS Simulation Laboratory	Logistics Research Centre
	MBA (Operation Management)			
	MSc (Industrial Logistics System)	Department of Engineering and Manufacturing System Engineering, Faculty of Engineering	Microsoft ERP Centre Logistics Simulation Lab Automation Lab	PolyU-Microsoft Enterprise Systems Centre
Hong Kong University	M.Sc.(Eng) in Industrial Engineering and Logistics Management	Department of Industrial and Manufacturing Systems Engineering, Faculty of Engineering	Information Systems Laboratory Intelligent System Lab	---
Hong Kong University of Science and Technology	MSc in Engineering Enterprise Management	Department of Industrial Engineering and Logistics Management, School of Engineering	Transportation Logistics Lab	HKUST Logistics and Supply Chain Management Institute
Chinese University of Hong Kong	MSc in Information and Technology Management	Department of Decision Sciences and Managerial Economics, Faculty of Business Administration	---	Aviation Policy and Research Centre
	MBA			Centre for Supply Chain Management & Logistics  Centre of Cyber Logistics  Li & Fung Institute of Supply Chain Management & Logistics

				Supply Chain Management Research Centre
	MSc in E-Commerce and Logistics Technologies	Department of Systems Engineering and Engineering Management, Faculty of Engineering	Enterprise Resource Planning Laboratory  Operations Research and Management Laboratory	---
Hong Kong Baptist University	MSc in Procurement Management (with University of Strathclyde, UK)*	School of Continuing Education	Online library/ database of HKBU free access	Logistics Management Research Centre

\* Joint programs with different colleges (schools) / overseas university