Curriculum System Construction of Cold Chain Logistics Direction for Applied Undergraduate Based on Post Competency

Yao LIU
Intelligent logistics and Supply Chain Research Centre, Wuhan Business University, Wuhan, Hubei, China
332556138@qq.com

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Abstract. Cold chain logistics is replacing the traditional logistics and becoming a new profit growth point. Therefore, it is urgent to cultivate professional cold chain talents to adapt to the development of the industry. Starting from the competency requirements of cold chain logistics enterprises, this paper constructs the competency model of cold chain logistics basic posts by means of BEI key event interview and questionnaire survey. Based on the application-oriented teaching concept, this paper studies the theory of cold chain logistics characteristic direction of logistics management major and the setting of teaching course system, in order to further improve the teaching effect of cold chain logistics management major courses and ensure the teaching effect to prove the accuracy of personnel training.

Introduction

With the increasing diversity and individualization of people's consumption demand, the segmentation of logistics industry tends to be specialization and refinement, and cold chain logistics and other emerging formats are replacing the traditional logistics, becoming a new profit point. However, huge economic losses have been caused every year due to the improper management of cold chain transportation, even endangering people's health (for example, the "Shandong virus vaccine" case in 2016 was caused by the vaccine was not strictly stored and transported in cold chain). Therefore, it is very urgent to cultivate professional cold chain talents to adapt to the rapid development of cold chain logistics industry.

At present, vocational colleges are the main schools offering cold chain logistics major (or direction) in China. The major teaching focuses on refrigeration technology, food refrigeration and other aspects. The relevant teaching link research also pays more attention to the improvement of the teaching link of refrigeration or refrigeration technology. It has not been combined with the systematic practical activities of the whole process of cold chain logistics, and it does not involve the practical teaching of the whole process of cold chain logistics. The application-oriented undergraduate course involves the whole process of cold chain logistics. Therefore, starting from the competency requirements of knowledge, ability and quality skills of cold chain logistics enterprises, based on the application-oriented teaching concept, this paper studies the theoretical and practical teaching course system of cold chain logistics characteristic direction of logistics management specialty, in order to further improve the teaching effect of cold chain logistics management specialty, cultivate applied cold chain management talents, so as to ensure people The accuracy of training.

Construction of Post Competency Model of Cold Chain Logistics Enterprises

Competency and Competency Model

The concept of competency was first put forward by Robert White (1959). David McClelland (1973) defined the role of competency as the individual conditions and behavior characteristics that can distinguish the good from the bad of work performance in his paper. It is generally accepted in
academic circles that competence refers to the deep-seated personal characteristics that can distinguish outstanding achievers from ordinary people in a certain job. It can be any individual characteristics that can be measured or counted by motivation, trait, self-image, attitude or values, knowledge in a certain field, cognitive or behavioral skills and can distinguish outstanding and general performance significantly.

According to McClelland's description, competency model refers to the combination of a series of different competency elements required by an individual to complete a certain job and achieve a certain performance goal, including different motivation performance, personality and quality requirements, self-image and social role characteristics, knowledge and skill level, etc.

**Establishment Process of Competency Model of Cold Chain Logistics Post**

The first step is to select sample enterprises. Considering that different types of enterprises have different competency elements, we should cover as many types as possible in sample selection. This paper selects eight sample cold chain logistics enterprises, including state-owned, foreign-funded, private or production enterprises with cold chain logistics departments, whose scale is large, medium, small and micro; the second step is to interview the post managers of cold chain logistics with BEI behavior events, analyze the post competency quality of the employees, and initially establish the initial competency index; the third step is to compile Make questionnaire and analysis, carry out questionnaire survey on enterprise personnel, sort out and analyze the survey results, determine the post competency model; finally, test the model.

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Select sample enterprise BEI behavior event interview Determine competency model Model checking
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**Figure 1. Establishment Process of Competency Model of Cold Chain Logistics Post.**

**The Construction of Competency Model**

**BEI Interview to Establish Initial Competency Index.** For 8 sample enterprises, firstly, collect the main responsibilities of the recruitment posts set up by the enterprises for Logistics Majors, summarize the required qualities of the enterprises, then interview the managers of the sample enterprises with key events of BEI, and draw up the key elements of competency indicators from the four dimensions of professional knowledge ability, professional and technical ability, team cooperation and personal characteristics.

**Competency Questionnaire Survey and Analysis.** Combined with the preliminary cold chain logistics post competency index to prepare a questionnaire. Specifically, the importance of indicators is graded and assigned with the five level scale method, that is, "very unimportant," "unimportant," "general," "important," "very important," respectively giving "1, 2, 3, 4, 5" scores. The subjects of the questionnaire are the grass-roots, middle-level and senior managers of 8 sample enterprises. They are invited to grade the preliminary competency index item by item to determine its importance. A total of 110 questionnaires were sent out and 92 valid ones were collected. The CR value is less than 1, which has a satisfactory consistency.

**Build Competency Model.** To establish the final post competency model, the average difference method can be adopted to rank the total score from high to low. The first 25% and the last 25% are high group and low group respectively. The average value of the two groups can be calculated, and the indicators with significant differences can be eliminated to build the cold chain logistics basic post competency model, as shown in Table 1.
Table 1. Competency Model of Basic posts in Cold Chain Logistics.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Index</th>
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<tbody>
<tr>
<td>Benchmark competency</td>
<td>Logistics management knowledge, logistics engineering knowledge, logistics laws and regulations</td>
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<tr>
<td>Professional knowledge and ability</td>
<td>Storage and distribution of refrigerated and frozen goods, Use and maintenance of cold chain logistics equipment, Quality control, Logistics information processing</td>
</tr>
<tr>
<td>Vocational and technical ability</td>
<td>Organization skills, Communication ability, adaptability and independent learning ability</td>
</tr>
<tr>
<td>Discriminative competence</td>
<td>Honesty, responsibility and initiative</td>
</tr>
</tbody>
</table>

**Competency Model Test.** After the establishment of the competency model of cold chain logistics post, the evaluation table can be prepared according to the competency model. The managers of the excellent group and the general group are invited to score for the relevant employees. The evaluation results show that the scores of the excellent group are significantly higher than those of the general group, which means the effectiveness of the competency model of cold chain logistics post is higher.

**Construction of Cold Chain Logistics Course System for Application-oriented Undergraduate Logistics Major**

By building the competency model of cold chain logistics post, the benchmark and discriminative competency in post demand can be transformed into basic knowledge quality, core knowledge quality, auxiliary knowledge quality and expanding knowledge quality. Cold chain logistics belongs to the category of logistics and is a branch of management, so management knowledge, logistics management, logistics engineering, logistics law, etc. are all basic knowledge quality. Core knowledge and quality are the core post knowledge and skills that employees must have to carry out relevant business, including cold storage and distribution of goods, use and maintenance of cold chain logistics equipment, quality monitoring, etc. The auxiliary knowledge quality is the auxiliary technology to train the employees to carry out the cold chain logistics business smoothly, including international trade practice, marketing, logistics economic geography, e-commerce, logistics professional English and other skills. Expanding the knowledge quality is the application ability to train the employees' interdisciplinary knowledge.

Zeng Mengjie (2015) believed that the connotation of the application-oriented education concept should include three aspects: first, market-oriented, to ensure that the trained people can solve the practical technical problems in the industry, and successfully go to work; second, ability oriented, application-oriented education should cultivate students' ability of organization, management, marketing and practical operation; third, quality-oriented, Application-oriented Education, education focuses on improving students' basic civilization quality, cultivating students' good professional ethics and noble sentiment. According to this concept, this paper will transform the job quality requirements of employees from the field of behavior to the field of learning, and transform the four kinds of knowledge quality into the basic courses, core courses, auxiliary courses and expansion courses in the cold chain curriculum system, so that the basic curriculum system constructed covers the knowledge and skills required for cold chain logistics management. Only by building the competency oriented cold chain logistics curriculum system and training the compound cold chain logistics management talents scientifically, can we meet the needs of the rapid development of cold chain logistics industry. The curriculum system of cold chain logistics management is shown in Table 2.
Table 2. Curriculum System of Cold Chain Logistics Management.

<table>
<thead>
<tr>
<th>Curriculum group</th>
<th>Curriculum structure</th>
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</thead>
<tbody>
<tr>
<td>Core Courses</td>
<td>《Application of Food Engineering Technology》、《Cold Chain Logistics Storage and Distribution》、《Operation Management of Cold Chain Logistics Equipment》、《Quality Control Management of Cold Chain Products》、《Cold Chain Logistics Management Information System》、《Refrigerated Container Transportation Practice》、《Cold Chain Logistics Project Planning and Design》等。</td>
</tr>
<tr>
<td>Supplementary Courses</td>
<td>《Logistics Economic Geography》、《International Trade Practice》、《Logistics Marketing》、《Logistics Cost Management》、《Logistics E-commerce》、《Logistics English》等。</td>
</tr>
<tr>
<td>Extended Courses</td>
<td>《Port Logistics》、《ERP Application》、《Third Party Logistics Operation Management》、《Drawing and Application of CAD》等。</td>
</tr>
</tbody>
</table>

Summary

In order to better adapt to the needs of the market and enterprises, adapt to the future development trend of cold chain, and highlight the characteristics of cold chain logistics professional training. Cold chain logistics management personnel must have the basic ability to integrate traditional normal temperature logistics and cold chain logistics, and be familiar with food and drug quality monitoring, cold storage technology, information technology, etc. When setting up the curriculum system of cold chain logistics, the most important consideration is how to integrate these basic abilities in the curriculum. The curriculum system is composed of public basic courses, professional basic courses, professional technology courses and professional practice courses, while the professional basic courses and professional technology courses are mainly composed of three modules: cold chain logistics management module, refrigeration technology module and cold chain product quality monitoring module. Professional practice courses can be set according to different objects of cold chain products, such as fresh food, aquatic products, pharmaceutical cold chain implementation.

Acknowledgement

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References


