Industry-oriented competency requirements of business administration-majored technological university students in Taiwan

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ABSTRACT: The aim of this study was to investigate the industry-oriented competencies of business administration-majored students from technological universities in Taiwan. The four stage investigation methodology adopted includes literature review, content analysis, specialist forum and a three-round Delphi survey. The specialist forum was composed of 11 specialists and the Delphi technique panel was composed of a total of 17 specialists, including scholars and senior managers from various industries. Three categories of industry-oriented competencies of the business administration-majored technological university students in Taiwan include Generic Competence, Professional Competence and Workforce Competence, and 16 affiliated items of core competencies. These results can be used by the universities and the education authority as important requirements in training and standards.

INTRODUCTION

Under the impact of globalisation and the knowledge-based economy, as well as the influence of rapid change in the labour market, working hard is no longer a guarantee as a way for a youth to gain initial employment. The threshold required to be continually employed for a youth has increased annually and, starting from the 1990s, developed countries in Europe and America have considered the enhancement of the competencies of young people as an important policy in promoting their core skills so that they can adapt to a varied and flexible career development modes.

Small- and medium-sized enterprises (SMEs) consist of 97.70% of the total number of enterprises in Taiwan and they continuously have been the major driving forces for the economic development of Taiwan. They have been playing a significant role within the economic system for several decades in the past, creating numerous economic miracles in Taiwan. Due to the scarcity of resources available for the SMEs, it is vital for them to acquire top administration professionals to help administer their enterprises. The demand for these professionals makes technological education very important. As the culture and language are very similar, and the geographical locations are very close together, China is the first choice of investment of the SMEs of Taiwan. As more and more top administration professionals from Taiwan have joined e-enterprises in China, the GDP of China has increased from 8.2 trillion dollars in 1999 to 33.53 trillion dollars in 2009. This trend has made the economic development of China bloom at a tremendous pace.

Most students in business administration departments are coming from industry and wish to take on further study while working or are ready to be employed in management-related positions after graduation, and so they may have significant influence on the economic development of the society. The present study was aimed at identifying and establishing the benchmarks for practical industry-oriented competencies of business administration-majored technological university students. With the scope of the competencies established, they can be used by the students of the business administration departments in the technological universities in Taiwan as a standard by which to review their own industry-oriented competencies. The results also can be used by the education authority in Taiwan as a reference during policy reviews.

LITERATURE REVIEW

The education sectors in Taiwan providing technological education include senior vocational high schools, vocational institutions, technological colleges and technological universities. There are 41 technological universities, 37 technological colleges, 15 vocational institutions and 156 senior vocational high schools. The aims of technological education in Taiwan are to train human resources needed in national economic development so as to raise the employment rate and supply practical manpower necessary for national development. Its unique function, therefore,

plays an important role within the whole educational system. The scope of business administration departments is to train enterprise administration professionals and dedicated employers in the business sectors [1].

Definition of Industry-Oriented Competencies

The concept of competency was first proposed in 1973 by McClelland, a psychologist at Harvard University, USA [2]. However, different terminologies for competency have been used in different countries. Competency is the external behaviour expressed by a person based on his or her knowledge, skills and attitude and, therefore, is generally reflected in his/her performance in values, attitude, deduction and judgment [3]. Weinert considered competency: *the performance behaviour such as knowledge, sentiment and skills required to undertake and complete a job*. Competencies can be categorised into *general* and *professional* [4].

Industry-oriented competency is the competency of a person to successfully get and keep a job. Technological training should be directed to develop the key competencies and problem-solving abilities of student. Competency standards are considered by the European Training Foundation (ETF) as the interface of technological education and the employment market, i.e. in order to train students to satisfy the needs of an industry, the technological schools should provide appropriate curricula to meet the demands of the employment market. One of the best ways to reduce this discrepancy, so that they are more correlation between them, is through the application of competency standards. The employment problems faced by university students in Taiwan are not unique to Taiwan - the developed and rapidly developing countries in the world are also facing the same situation. The Bologna Declaration adopted by the ministers of education in 29 European countries has pronounced the *enhancement of the employability of students* as one of the main goals of education reform.

According to the characteristics of competencies set out by the United Nations Educational, Scientific and Cultural Organization (UNESCO), Organization for Economic Cooperation and Development (OECD), European Training Foundation (ETF), Conference Board of Canada (CBOC), Australian Department of Education, Employment and Workplace Relations (DEEWR), and the Taiwan National Youth Commission (NYC), employment competencies include general skills, professional skills, employability skills, character skills, teamwork skills, inter-personal relationship skills, self-managing skills and problem-solving skills, as shown in Table 1 below [5-12]:

Table 1: Characteristics of competencies in different countries.

	UNESCO	OECD	ETF	CBOC	DEEWR	NYC
Generic skills	✓	✓	✓	✓	✓	
Professional skills	✓		✓		✓	✓
Employability skills	✓				✓	✓
Character skills				✓		✓
Teamwork skills				✓	✓	✓
Inter-personal relationship skills		✓			✓	
Self-managing skills		✓				✓
Problem-solving skills		✓				

DESIGN AND IMPLEMENTATION

Methods and Tools Employed

Methods such as a literature review, content analysis, a specialist forum and the Delphi technique have been used in the present study to try to understand and establish the characteristics and their levels for industry-oriented competency requirements of the students in business administration departments of the technological institutions in Taiwan. They are described as follows:

1. *Literature review*: Starting with a comprehensive understanding of the scope of technological education, education aims and core competencies of the commerce and administration faculties, as well as the business administration departments, the study then considered the literature and theories related to industry-oriented competencies in Taiwan. The aim was to identify the characteristics of industry-oriented competency requirements for students of the business administration departments of the technological institutions in Taiwan.
2. *Content analysis*: The research was based on the study of the curriculum development plans of the business administration departments in the commerce and administration faculties of five technological institutions; the investigation of the results of the manpower core skills survey in enterprise business administration areas; employability survey reports carried out by the NYC [9]; and the curriculum of the business administration departments of 37 technological institutions in Taiwan. The contents of these 76 documents were analysed holistically and the results used as reference for competency investigations in this study.
3. *Specialists' forum*: Eleven scholars and senior business managers were invited to discuss the *Competency of students in the business administration departments in the technological institutions in Taiwan - questionnaire for*

specialist forum prepared after the completion of the literature review and content analysis. The questionnaires were compiled in a semi-interactive mode, where the framework and contents of the industry-oriented competencies were investigated with the participants. The opinions collected in the forum were organised, integrated and analysed, and the final results used to rectify the original framework established before the forum.

4. *Delphi technique*: the Delphi technique is a decision-making technique, which employs the pooled knowledge, opinions and predictive skills of more than 10 anonymous specialists in an environment with no external interferences. The decision-making process was executed repeatedly to reach a median and middle 50% of the pool through statistical analysis of the responses collected. The aim was to obtain a consensus that can be used to predict possible events and trends in the future [13][14]. This technique has been widely applied in the fields of education, engineering and social sciences [15]. For example, the first research to be carried out, using the Delphi technique, was *the computer skills of medical care educators* published in 1986 [16]. Subsequent researches published other papers [17-24].

Based on the results of a literature review and specialists' forum, a *Delphi technique questionnaire on the industry-oriented competences of students of the business administration departments in the technological institutions in Taiwan* was first compiled. The questionnaire was comprised of four parts: Introduction to the Study; How to complete the Questionnaire; Basic Information; and Items of Industry-oriented Competencies of Students of the Business Administration Departments in the Technological Institutions in Taiwan. Categories of competencies include Generic Competence, Professional Competence and Workforce Competence. Delphi technique panel members assess the criteria according to the five-point Likert's scale, and if a member has further recommendations and comments they were recorded in the Comment Amendments column of the questionnaire. Seventeen experts, comprising four scholars and 13 specialists in business with practical experience, were invited to participate in the Delphi technique discussion in this study. Three rounds of well-planned, well-structured discussion were held by the experts to establish a consensus summarising the framework of the industry-oriented competencies required by the students of the business administration departments in the technological institutions in Taiwan.

Nineteen items of core competencies in the first round of the Delphi technique questionnaire were sent out through registered mail in March 2009 to the Delphi technique expert panel. The returns received were modified to form 16 items of core competencies for the second round of the questionnaire. This was delivered along with the results of the first round of the questionnaire and by registered mail, to the panel members in May. The panel members were reminded by phone calls or emails to return the completed questionnaire. The results of the second survey were attached to the questionnaire for the third round and they were all dispatched to the Delphi technique expert panel for a final survey. At the end of three rounds of surveys, the information retrieved was organised and analysed statistically, and three items of competency and 16 items of core competencies were established.

Data Analysis

The information retrieved from the Delphi technique expert panel was interpreted using the statistics software SPSS 14.0. The Mean (*M*), Mode (*Mo*), Standard Deviation (*Sd*), and the absolute difference of Mode and Mean were then calculated. These data were used to determine the degree of concentration and dispersion of the individual core competencies within the sample data. This analysis also calculated the internal reliability (Cronbach's α coefficient) of all core competencies, which reveals the consistency of the competency items in the questionnaires. Generally speaking, if the mean of a skill item exceeds 3.5, while the mode is greater than 3.5 and the standard deviation is lower than 1.0, the item can be regarded as having reached a consensus. If the mean of a competence item is as high as 4 or above, the item is considered a demanding and important. An item with Mode and Mean signifies that the comments on that item are consistent, and *vice versa* [25][24].

RESULTS

The First Industry-oriented Competencies of the Students of the Business Administration Departments of the Technological Institutions in Taiwan Forum was held in January 2009 and two results were accomplished: 1) Three categories, i.e. generic competence, professional competence and workforce competence were established; 2) the general characteristics requirements of the above competence categories were confirmed. The findings can be used as a robust basis for the establishment of an industry-oriented competency framework.

The Second Industry-oriented Competencies of the Students of the Business Administration Departments of the Technological Institutions in Taiwan Forum was held in February 2009 and three results were achieved. The first result confirmed the framework and the second result confirmed the industry-oriented core competencies. The third result accomplished was the revision of the first draft of the Delphi questionnaires.

Three rounds of the Delphi technique expert panel questionnaire survey participated in by 17 scholars and experts have been carried out. Opinions of the expert panel members have been exchanged and discussed, and the importance of core competencies identified by each member was presented on a five-point scale. The final consensus reached has established the industry-oriented competency of the business administration students of the technological institutions in Taiwan. Results of statistical analysis on the data collected have revealed that there were 16 items of core competencies,

and that the mean (*M*) and mode (*Mo*) of each core competence scored higher than 4. The internal reliability Cronbach's α coefficient is 0.935, which means the consistency of the core skills is rather high. The absolute difference between the mode and mean of each item of core competence is less than 1, and the average of these is 0.27, signifying that all 17 experts agreed in general as to the importance of all the core competence items presented in Table 2.

Table 2: Structure of the industry-oriented competencies.

Category	Core competence	Mode	Mean	Standard deviation
1.0 Generic competence	1.1. Using computers	5	5.00	0.00
	1.2. Communication	5	4.69	0.68
	1.3. Language skills	5	4.81	0.39
	1.4. Problem-analysis and problem-solving	5	4.69	0.46
2.0 Professional competence	2.1. Production and operation management	5	4.69	0.58
	2.2. Marketing management	5	4.81	0.39
	2.3. Customers relationship management	5	4.63	0.99
	2.4. Human resources management	5	4.44	0.61
	2.5. Financial management	5	4.88	0.33
	2.6. Accounting and statistical analysis	5	4.69	0.98
	2.7. E-commerce applications	5	4.63	0.99
3.0 Workforce competence	3.1. Team work	5	4.81	0.53
	3.2. Self-learning	5	4.56	0.61
	3.3. Self-discipline	5	4.75	0.56
	3.4. Leadership	5	4.63	0.78
	3.5. Work ethics	5	4.88	0.33

CONCLUSIONS AND RECOMMENDATIONS

Established in this study were the industry-oriented competencies of students in the business administration departments of the technological institutions in Taiwan through strict investigative processes, including a literature review, content analysis, expert forums, three rounds of the Delphi technique and statistical analysis. As well as establishing the general competencies and professional competencies identified in studies carried out in other countries, it also established the workforce competencies requirements relevant to various industries. The findings have substantiated a more complete industry-oriented competency of students in the business administration departments of the technological institutions in Taiwan and the model can be referenced or adopted by other countries.

The industry-oriented competencies of students in the business administration departments of the technological institutions in Taiwan include three categories of competencies, i.e. generic competence, professional competence and workforce competence, and 16 items of core competencies (Table 2). The definitions of three categories of competence are:

1. Generic Competence: generic competencies originate from the characteristics of individuals and acquired through learning and from past experience. Generic competencies are the most basic skills required to survive in a competitive environment;
2. Professional Competence: professional knowledge, professional technology and the professional attitude required for a certain business or job. The professional competence requirements for business-majored students are determined in five areas, including production and operation management, marketing management, human resources management, research and development, and financial management;
3. Workforce Competence: competencies that are equally applicable in any other business sector, and include a favourable attitude and personal characteristics generally pursued by potential employers, and positive attitude toward learning. These competencies are not acquired directly from a classroom but from an indirect environment such as learning from imitation of his or her mentors, or from the culture of the schools. The students acquire the competencies through observations, values, regulations or attitudes prevailing in their learning environment.

Three recommendations are proposed as a result of the present study. They are:

1. The industry-oriented competencies of the business administration-majored students of the technological institutions in Taiwan should be adopted by industry. The competency requirements should be established or amended by the education authority from time to time to suit a changing society so that a standard that can reflect the needs of a certain period and can be set up as a student reference. The updated standard can enhance the industry-oriented competency of the students to meet the manpower requirements of industry;
2. The industry-oriented competencies of the business administration-majored students in technological institutions in Taiwan should be promoted by the education authority. Students should upgrade their competencies and apply their skills to the jobs market so as to improve their employability;

3. The education authority should pay attention to identifying the curriculum needs to improve the industry-oriented competencies of the students and plan curricula accordingly. The design of a standard curriculum should not only emphasise the education and training in professional skills; it should also stress the cultivation and recognition of the values of general education. Most importantly, the skills required in employment should be applied in teaching, so that the knowledge, technique and attitude of the industry-oriented competencies can be fully developed.

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