

Skills standards for the cultural and creative industry of bamboo handicraftsmen in Taiwan

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ABSTRACT: The purpose of this study was to establish skills standards for handicraftsmen in the cultural and creative bamboo industry. In-depth interviews and Delphi techniques were employed in this study to achieve the goal. After three rounds of questionnaire surveys of 10 bamboo handicraft experts, the following conclusions were made: 1) 12 skill items and 63 skills standards can be recommended in this study. They are expected to be applicable to bamboo handicraftsmen training, development and assessment; 2) the bamboo expert-handicraftsmen stated that the most important skills standard should focus on hands-on skills instead of using cultural elements or exploring international trends; 3) the bamboo handicraftsmen prefer to make bamboo handicrafts by using handiwork carving instead of sandblast carving or laser carving.

INTRODUCTION

Job skills standards are needed for a creative workforce. Globalisation and growth in the high-tech sector in Taiwan has left the bamboo handicraft industry less attractive to local talents. *Challenge 2008 National Development Plan* is a policy established by the Taiwan Government to initiate greater movements for the cultural and creative industries, such as the bamboo handicraft industry. This policy sheds some light on the industry, especially in bringing it to attention. However, its future still requires additional effort and supplementary measures. Attracting and incubating new talents into this area is crucial. Bamboo handicraft is a traditional business, but it has to be creative and artistic in order to find its market niche today. Spencer and Spencer indicate that employees' skills are the core competitiveness for business to succeed [1]. As market demands change constantly, job skills shift, too. The identification of skills by occupational staff is becoming an important issue [2]. The bamboo handicraft industry needs to build a new skill-based training model to adapt a new workforce to market conditions and to make education and training more effective. In the model, job skills standards have to be constructed to guide and equip the workforce to excel in the field.

Heritage is too precious to lose. Bamboo is a popular plant growing in Taiwan, China and some other Asian countries. High quality bamboo at one time grew everywhere in Taiwan, and during the 1970s and 1980s, the bamboo handicraft industry boomed and generated great job opportunities for the residents. Nonetheless, it lost its ground to China in recent years, mainly because of the evolution of industry and price competition. Compared to China, Taiwan is no longer able to produce cheap bamboo goods. However, cutting edge bamboo handicraft experts remain; the passion of new generations for experienced traditional bamboo crafting is there, and good-quality bamboo plants are still the most eco-friendly resource for local residents to utilise. If the skills of elderly experts can be passed down and new ideas can be brought in, the industry can be given a new life. The purpose of this study was to uncover the core competencies in today's bamboo handicraft industry and to construct skills standards to be mastered. The standards are expected to be applicable to the training, development and assessment of bamboo handicraftsmen.

LITERATURE REVIEW

Competency is recognised as one of the important performance drivers in an organisation [3]. Competent talent always demonstrates positive performance and brings many values to the organisation. More recent competency studies have found an individual's competency will change over time because of age, career movement and work environment [4]. Competency has been described as a multifaceted concept [3]. A number of studies have shown the traditional competency item list cannot fully describe the skills and abilities a person has developed, the degree to which the person is effective in his/her interactions with the environment, and the level of success of a person's performance [5]. According to Scott, a functional map includes more than one competency category or cluster which is attached to competency items, competency definitions and behaviour, as examples [6]. As is known, most developed countries

adopt a functional analysis methodology to establish a functional map with competency units, skills standards, and even train roadmaps especially for cultivating talents in emerging industries [7][8]. Once the competency units and skills standards were identified through functional analysis, it could serve as the interface between labour markets and educational institutions [9].

The main concept of functional analysis is based on both job responsibility and task identification; the purpose of the position being to analyse all required skills, abilities and competencies to fulfil the main aim and achieve positive performance results [10][11]. In 1986, the British Government adopted functional analysis instead of traditional task analysis to establish National Vocational Qualifications (NVQs). In Singapore, the functional analysis approach was also adopted by the Government to set up the National Skills Recognition System (NSRS). It provides a system for developing functional maps and skills standards, establishing centres to assess workforce competency and issuing of national certificates to recognise skills acquisition. In a functional analysis process, a functional map with a horizontal tree diagram showing the structure of the key purpose, main functions, sub-functions, and functional units is developed (see Figure 1). A four-stage approach to developing functional map was introduced by Draganidis and Mentzas, which includes competency mapping, competency diagnosis, competency development and competency monitoring [12]. In summary, the functional analysis method is based on the industry key purpose to identify critical functional areas, key job functions, units of competency for each function and skills standard for each competency unit. The deduction process will stop when a functional map is complete.

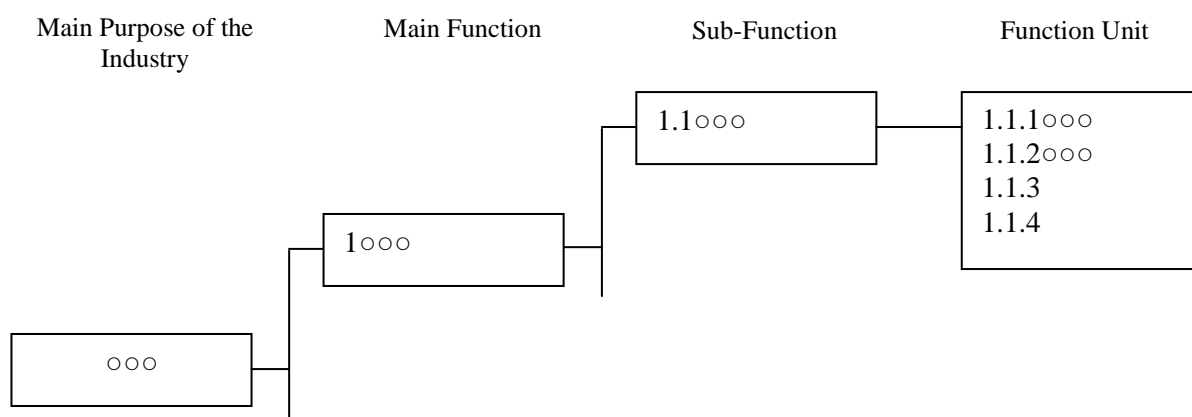


Figure 1: NSRS framework, Singapore [13].

The terms *culture* and *creative industries* were used initially to broadly describe design, advertising, film, fashion, interactive technologies, popular music and a host of other professions. In recent years, cultural theorists have argued that these professions are driving more than simply economic growth, and that they necessarily encompass social and cultural development as well [14]. Most countries in the world recognise culture and the creative industry as an important industry and try to transform the cultural economy into a tangible asset.

Bamboo is one of the fastest growing woody plants in the world and is eco-friendly as well. Taiwan's geographical location is ideal for growing bamboo and its bamboo resources are rich. In the past, bamboo was intimately connected with people's lives through woven objects and furniture; *ghost money* made of bamboo burned as offerings to gods and spirits; divination blocks; and in scaffolding used in the construction of buildings. Government research and the promotion of bamboo cultivation and processing techniques once made bamboo materials and products an important export during Taiwan's rapid economic development [15]. However, Taiwan faces the same problems in developing bamboo handicraft professionals as many other developing countries. Most bamboo handicrafts are made by local indigenous craftsmanship handed down through generations, reflecting the geography of the land, beliefs, tradition and cultural heritage of the people.

Typically, the handicraftsmen have worked almost in a vacuum, enjoying their creativity within niche markets, and with little thought to economic value creation and development. It is difficult for them to increase economic value dramatically due to a failure to follow international trends, meet customer needs in international markets, and a lack of mass production capability and systematic supply chain, even the bamboo craft art industry in Taiwan has been included in the culture and creative industry. The funding support, creativity momentum, sustainable professional skills, supply capability, sales and marketing strategy seems not to be in place yet. A career in the art field sometimes means taking a risk. Young talents tend to devote themselves to the hi-tech industry instead of the bamboo craft art industry since it lacks a comprehensive training and development programme with specific skills standards to support young talents in starting their careers in the field. Hence, how to systematically develop more bamboo craft professionals in Taiwan will impact the long-term growth of the culture and creative industry.

In previous research by the authors, functional analysis, in-depth interviews and focus group approaches have been employed to construct a functional map for bamboo handicraft professionals. The main purpose of the industry; four

critical functional areas; 12 key job functions; and 45 units of competency were identified. Based on the previous research results, this study focuses on exploring the skills standards for three competency units including; *to make good use of local cultural elements*, *to master international trends and information* and *to make bamboo craft products*. Further, these standards are also expected to be applicable to human resource training, development and assessment.

METHODOLOGY

Research Design

The Delphi method was applied in this study to explore the profound core competencies called for. To collect most of the key competencies demanded, the first questionnaire was sent to each participant. After being returned, various anonymous feedback was compiled and consultations with involved experts took place to eventually reach a common agreement. The Delphi method is effective in collecting most of the valuable ideas in a less-conflicting climate among experts.

Participants

Ten bamboo handicraft experts were invited to join the Delphi team. They were originally recommended by two key experts who were still actively engaged in the industry. The selection criteria for carving experts were based on their current expertise in designing, producing and teaching. In addition, they had to be literate. Their specialisations were in the areas of hand-engraving, electric carving, laser-engraving or sandblasting. The 10 experts formed good representation of the field. They know the industry well and are devoted to the perfection of bamboo carving.

Research Procedures

From 4 December 2009 to 15 January 2010, a total of three rounds of survey were performed to achieve the goal of Delphi. The effective response rate of all surveys was 100%. The survey questionnaire of *competency requirements of bamboo carving* was laid out in three key sections and 11 items.

The three key sections were: employing local cultural elements; understanding international art trends and information; and producing bamboo carving artwork. Overall, 63 questions were asked. During the surveys, Delphi team members were requested to evaluate the importance of each competency, which was labelled on 5-level *Likert* scale, from 5 *very high* to 1 *very low*. The experts were encouraged to amend the original questions or even provide extra opinions in the surveys. The second and third survey questionnaires were based on previous outcome and feedback received. As the surveys moved on, previous results were always sent with the new survey for the experts to finalise their beliefs.

Research Instrument

Prior to a formal draft of a questionnaire set, researchers had performed literature analysis, functional analysis and in-depth interviews with bamboo experts to construct a *functional map for the cultural and creative bamboo crafts industry*. Using the map structure, questions were developed and then amended by two key bamboo experts.

Data Analysis

A statistical approach was applied after data collection from the surveys. Means and mediums were calculated to evaluate the importance of each competency among the experts. The standard deviation was used to understand the spread in the results of each question. The mode represents the most popular choice for each question. Percentiles and quartiles were used to judge the consistency of the experts' judgment. A specific question might be deleted. The criterion was based on more than 75% of the experts selecting answers 1 through 3 or quartile deviation greater than 1.

RESULTS

The purpose of this study was to construct the bamboo handicraftsmen's skills standards. In order to achieve this purpose, three rounds of questionnaire surveys were employed, and 11 skill items and 63 skills standards were constructed, as given in Table 1. The following conclusions were reached after data were analysed.

The top three important items of skill for bamboo handicraftsmen are *to choose appropriate tools*, *to explore the nature of bamboo* and *to process with handiwork carving*.

According to the results shown in Table 1, the most important items of skill are *to choose appropriate tools* (M=4.9, SD=0.32); *to explore the nature of bamboo* (M=4.9, SD=0.32); and *to process with handiwork carving* (M=4.8, SD=0.42). All of these items of skills belong to the skill unit of making bamboo handicraft, so it is not hard to see that the bamboo handicraft experts believe hands-on skills are the most important competency. But if this data is looked at from a different viewpoint, and if the development of bamboo handicraftsmen still focuses on the training of hands-on skills, the bamboo handicraft may still encounter the same problems in management and marketing [15]. Therefore,

future handicraftsmen should also develop the skills of learning how to make good use of local cultural elements and of following international trends and information.

Table 1: Bamboo handicraftsmen's skills standards.

Skills	Items of Skill and Standards	M	SD	Mo
1. To make good use of local cultural elements	1.1 To clarify the local cultural elements	4.40	0.70	5
	1.1.1 To understand the development and characteristics of local multiculturalism	4.50	0.71	5
	1.1.2 To analyse successful paradigm of different local life wisdoms	4.10	0.57	4
	1.1.3 To describe local history background and cultural heritage	4.00	0.82	4
	1.1.4 To arrange local culture, history and characteristics	4.00	0.94	5
	1.1.5 To show local cultural elements	4.60	0.52	5
	1.1.6 To innovate local cultural characteristics	4.80	0.42	5
	1.2 To design images by using local cultural elements	4.22	0.67	4
	1.2.1 To master local elements by using language, words, images, activities or other methods	4.40	0.84	5
	1.2.2 To show original creativity by using the local cultural elements	4.40	0.84	5
	1.2.3 To master cultural emotions by combining design images with products	4.50	0.71	5
	1.2.4 To combine local cultural elements with products	4.70	0.48	5
	1.3 To combine images with bamboo craft products	4.50	0.71	5
	1.3.1 To understand the characteristics and working of bamboo	4.90	0.32	5
	1.3.2 To design by using computer-assisted software	3.50	1.27 ^{††}	4
	1.3.3 To explore methods of combining images with products	4.30	0.82	5
	1.3.4 To make good use of tools in adjusting design images	4.50	0.71	5
1.3.5 To finish the sketch of a design product	4.70	0.48	5	
2. To master international trends and information	2.1 To understand developmental trends and information on bamboo craft industries	4.40	0.70	5
	2.1.1 To utilise multiple tools and approaches in collecting information	4.00	1.15	5
	2.1.2 To make good use of different tools and approaches in analysing data	4.30	1.25	5
	2.1.3 To analyse the developmental information of international bamboo craft industries	4.10	1.29	5
	2.1.4 To get familiar with the developmental trends and information on international bamboo craft industries	4.20	1.32	5
	2.2 To make good use of international developmental trends and information on bamboo craft industries	4.33	1.00	5
	2.2.1 To judge the overseas needs in bamboo craft industries' markets	4.33	0.87	5
	2.2.2 To evaluate the economic value of overseas bamboo craft industries	4.22	1.30	5
	2.2.3 To evaluate the international competitiveness, advantages and weakness of local bamboo craft industries	4.56	0.73	5
	2.2.4 To make concrete suggestions for promoting local bamboo craft industries	4.67	0.71	5
3. To make bamboo craft products	3.1 To choose appropriate tools	4.90	0.32	5
	3.1.1 To sharpen the knife	4.90	0.32	5
	3.1.2 To confirm the quality and efficiency of the sharpening stone	4.70	0.48	5
	3.1.3 To confirm the accuracy of knife after sharpening	4.70	0.48	5
	3.1.4 To make good use of different knives	4.70	0.48	5
	3.1.5 To utilise the correct knife in making different sculptures	4.70	0.48	5
	3.1.6 To make special tools for sculptures	4.60	0.70	5
	3.2 To explore the nature of bamboo	4.90	0.32	5
	3.2.1 To realise the relationships between the age of bamboo and the quality of products	4.90	0.32	5
	3.2.2 To realise the position of bamboo and the show of products	5.00	0.00	5
	3.2.3 To realise the importance of the direction of the bamboo fibre	4.90	0.32	5
	3.2.4 To express the gradation of product by using the bamboo fibre	4.70	0.67	5
	3.2.5 To realise the nature of the cracks in bamboo	4.70	0.67	5
	3.2.6 To deal with bamboo moulding	4.80	0.42	5
	3.2.7 To deal with mothproofing of bamboo	4.70	0.67	5
	3.2.8 To express the characteristics of bamboo in products	4.80	0.42	5
	3.2.9 To realise the impacts of sunshine on bamboo	4.70	0.67	5
3.2.10 To combine bamboo with woods, metals or plastics	4.60	0.70	5	
3.3 To proceed with handiwork carving	4.80	0.42	5	
3.3.1 To show the techniques of cutting, sawing and drilling	4.80	0.42	5	

Skills	Items of Skill and Standards	M	SD	Mo
	3.3.2 To transfer 2D sketch to 3D sculpture	4.60	0.70	5
	3.3.3 To draw the sketch of bamboo products in 3 dimensions	4.80	0.63	5
	3.3.4 To make the rough products according to the sketch	4.60	0.70	5
	3.3.5 To express the texture of products by using sanding skills	4.70	0.48	5
	3.3.6 To analyse the characteristics and feelings of colour in identifying the needs of colouring	4.80	0.42	5
	3.3.7 To make the raw materials for painting and carrying out the painting	4.80	0.42	5
	3.4 To process with motor-driven carving	3.89	0.93	3
	3.4.1 To make different characters by using different knives	4.50	0.71	5
	3.4.2 To erase the surface of bamboo by sanding	4.11	0.78	4
	3.4.3 To plaster the scripts accurately	4.40	0.70	5
	3.4.4 To utilise different skills in lettering	4.20	0.79	4
	3.4.5 To erase scripts by using appropriate skills	4.00	0.87	5
	3.4.6 To distinguish gaps between the real situation and ideal and make modifications	4.80	0.42	5
	3.4.7 To paint products	4.50	0.85	5
	3.5 To process by sandblast carving	3.13	1.36 ^{††}	3
	3.5.1 To realise the principle of sandblast carving and to choose the correct sandpaper to express a different feeling	3.56	1.24 ^{††}	3
	3.5.2 To make tools and techniques by using illustrations	3.33	1.32 ^{††}	3
	3.5.3 To cut illustrations appropriately	3.44	1.33 ^{††}	4
	3.5.4 To show the skill of pasting films	3.33	1.32 ^{††}	3
	3.5.5 To utilise the skill of selecting films	3.33	1.32 ^{††}	3
	3.5.6 To show skill of blasting in sandblasting	3.56	1.42 ^{††}	5
	3.5.7 To distinguish the differences of colours and to paint the bamboo	3.78	1.30 ^{††}	5
	3.5.8 To choose the film according to the differences of bamboos or products	3.44	1.42 ^{††}	5
	3.5.9 To proceed with colouring and painting the products	4.11	0.93	5
	3.6 To proceed with laser carving	2.63	0.92	3
	3.6.1 To design a sketch by using computer-assisted software	3.00	1.31 ^{††}	3
	3.6.2 To perform laser carving	2.75	1.04 ^{††}	3
	3.6.3 To perform laser carving in making bamboo products	2.75	1.04 ^{††}	3
	3.6.4 To process the products with colouring and painting	3.56	1.24 ^{††}	3

Note: ^{††} represents the low agreement between the bamboo handicraft experts.

The last three important items of skill for bamboo craftsmen are, *to process with laser carving*, *to process with sandblast carving* and *to process with motor-driven carving*.

From an analysis of Table 1, the last three important items of skills are, *to process with laser carving* (M=2.63, SD=0.92); *to process with sandblast carving* (M=3.13, SD=1.36); and *to process with motor-driven carving* (M=3.89, SD=0.93). All these items of skill belong to the skill unit of making bamboo handicrafts, so this says that these three items of skills need to be examined and reconsidered because of low agreement between bamboo handicraft experts. The possible reason for this result may be due to the fact that bamboo handicraft experts may not be familiar with laser carving and sandblast carving, so they may rate these items of skills, low. If the operation of laser carving and sandblast carving are important for the bamboo handicraft industry, then they should be brought into this industry.

In general, although bamboo handicraft experts agree that making products is an important skill, they do not agree on the use of making bamboo craft with motor-driven carving, sandblast carving or laser carving. In other words, the development of bamboo craft professionals should not focus on their skills in operating automatic equipment, but instead should still emphasise hand carving.

CONCLUSIONS AND SUGGESTIONS

This study focused mainly on constructing the bamboo craftsmen's skills standards. The following conclusions were reached.

Eleven skill items and 63 skill standards were developed in this study. The Delphi technique was employed in this study for developing the 11 skill items and 63 skills standards. These items and standards can be expected to apply to human resource training, development, and assessment of the cultural and creative industry.

The bamboo handicraft experts believe a hands-on skill is the most important thing in cultivating or training bamboo craftsmen.

The bamboo handicraft experts believe that the most important items of skill and standards should focus mostly on hands-on skills. In other words, how to make bamboo craft products is the most important thing for bamboo handicraft experts. But as for meeting future trends in the cultural and creative industry, it is also important that the development of the bamboo handicraftsmen should include making good use of local cultural elements and mastering international trends and information.

The actual operation of laser carving and sandblasting is worthy of further discussion in developing future bamboo handicrafts. The bamboo handicraft experts prefer to make bamboo handicrafts through handiwork carving instead of by sandblast carving or laser carving; the skills standards of, *to process with motor-driven carving*; *to proceed with sandblasting carving*; and *to proceed with laser carving*, which are developed in this study, need to be examined again and reconsidered carefully according to developing trends in the bamboo cultural and creative industry.

Based on previous conclusions, the following suggestions are made for further studies: 1) the 63 skill standards should be utilised in developing the curriculum for training or cultivating more professionals in the bamboo industry; 2) the skills standards for the cultural and creative industry of bamboo handicraftsmen were mainly developed in this study by utilising the Delphi method, but to acquire information more quickly, the Fuzzy Delphi method may be suggested in the future study; 3) the authors of this study are focused on exploring the bamboo handicraftsmen's skills standards, so the future study can broaden the research scope and provide more valuable information to the bamboo industry.

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