Correlations among selection criteria, recruitment plans, and recruitment performance: a case study of hospitality-related departments of vocational schools in Taiwan

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ABSTRACT: This study verified the effect of selection criteria on recruitment performance in hospitality-related departments of vocational schools in Taiwan, with recruitment plans as the moderator. Members of the recruitment committee of these departments were selected using simple random sampling of the respondents of interviews. Structural equation modelling (SEM) was applied to verify the overall model of this study. The structural model and measurement model were used to determine the goodness of fit. The Soble test, bootstrapping and Mackinnon PRODCLIN2 were applied to examine the effect of the moderator. The results of this study showed that: 1) the effect of selection criteria on recruitment plans is positive and significant; 2) the effect of recruitment plans on recruitment performance is positive and significant; and 3) the effect of selection criteria on recruitment performance is positive but insignificant. Hence, recruitment plans only have the *full* moderation effect.

RESEARCH BACKGROUND AND OBJECTIVES

The joint entrance examination was the main channel for student recruitment. When the multiple-entrance programme was adopted to cope with educational reform, vocational schools began analysing the four constructs of candidate performance: academic intelligence, aptitude and interest, learning attitude and concept identification. These were analysed in terms of admission by application, admission by recommendation and screening, admission by technical screening test and admission by joint examination in the multiple-entrance programme. This was used by schools to determine recruitment plans and to enhance school competitiveness.

In addition, when promoting the multiple-entrance programme, do schools fairly recruit students that best utilise education resources, establish the most suitable teaching strategy to stimulate student learning and, thereby, allow students to extend their potential and demonstrate excellent personality development?

Also, recruitment committee members of schools should fully understand the selection criteria and explore the methods for the fair recruitment of students with the traits expected by schools. Also, it should be investigated if there are trait differences between students recruited from different channels and how to accommodate such differences, thereby, allowing students to learn and grow through appropriate channels regardless of such differences [1][2].

The government's open policy on education has reduced limitations on education and increased diversity. On the other hand, competition for students has become increasingly intense among universities and colleges in Taiwan as the supply (vacancies) was higher than the demand (students) due to Taiwan's low fertility rate. Education quality has become one of the major factors affecting school selection, given the increasing demand for education quality by parents and students.

Recruitment plans and requirements, as well as teaching strategies, affect a school's survival. Therefore, an improved quality of education attracts students with enhanced recruitment performances and is the best way to ensure the sustainable operation of a school. Travel has begun to thrive as a result of the gradual opening up of tourism and, in particular, the relaxation of restrictions on cross-strait tourism and travel. Besides boosting tourism development and construction in Taiwan, there is a need for more tour guides, tour leaders, and hotel and restaurant operating personnel. As a result, hospitality-related departments of Taiwan's vocational schools are very popular.

The aim of this study was to verify and investigate the effect of recruitment criteria on recruitment performance of the hospitality-related departments of Taiwan's vocational schools, with recruitment plans as the moderator. The research objectives of this study were to:

1. Verify if the effect of selection criteria on recruitment plans is positive and significant;
2. Verify if the effect of recruitment plans on recruitment performance is positive and significant;
3. Verify if the effect of selection criteria on recruitment performance is positive and significant.

LITERATURE REVIEW

The literature related to the main constructs of this study, including selection criteria, recruitment plans and recruitment performance, is described below.

Literature Related to Selection Criteria

Hsu considered that after understanding the selection criteria, based on the weighting of selection plans from high to low, the choice of recruitment plans falls into four constructs: academic intelligence, aptitude and interest, learning attitude and concept identification [1]. As these four constructs have been widely explored, they were variables for part of this study.

Chen found 18 core competences for information science students, including:

- reading relevant English technical data;
- understanding business administration concepts;
- basic programming; basic network administration and applications;
- database design, building and application;
- IT system maintenance;
- business process analysis and design;
- problem analysis, induction and integration;
- team co-operation; logical inference and analysis;
- spontaneous learning of new knowledge and technologies;
- emotional control and work stress commitment;
- good interpersonal communication and co-ordination;
- an aggressive, serious and responsible attitude;
- project schedule and resource management and control;
- guidance of team division of labour;
- mutual support and achievement integration;
- independent mission accomplishment; and professional ethics [3].

As Chen obtained these competences from the research of information science students, it needs further analysis and verification to confirm their applicability to hospitality students.

Kuo confirmed that a well-planned internal transfer system favours personnel selection and allows employees to apply for the job that interests them through this transparent and confidential mechanism, and ensures the right person is in the right place [4]. As Kuo conducted the study on high-tech industries, further analysis and verification is needed to find out if student interests were considered in student recruitment systems.

Hsu investigated the effect of a balanced scorecard on personnel selection and personnel training performance, the differential effect of environmental and personal variables, and the factors attributed to such differences [5]. Lastly, he made recommendations for measuring personnel training performance as a guide for the implementation and improvement of plans relating to personnel cultivation and personnel training.

Wang analysed the workplace demand for professional skills for personnel using information collected from human resource Web sites considering management and decision-making, as well as system and service [6]. These included:

- use of OS platform type;
- office word-processing ability;
- database type;
- programming languages;
- Web software development skills (including CAD);
- professional IT licences;
- Chinese and foreign language proficiency;
- related competences.

From the above literature, it is clear that different businesses or even different departments of the same business set different criteria or standards for personnel selection. In this study, selection criteria are defined as *the criteria for selecting candidates from the school's point of view*. Based on the selection criteria of student recruitment in vocational

schools, this study selected the constructs proposed by Hsu as the measuring constructs of this study [1]. These constructs are: academic intelligence; aptitude and interest; learning attitude; and concept identification.

Literature Related to Recruitment Plans

According to Yang, student recruitment plans by applicant status include four constructs: admission by recommendation and screening; admission by application; admission by technical screening test; and admission by joint examination [2]. As these four constructs were obtained from exploratory research, it is worth investigating their effectiveness as confirmatory constructs.

Chen pointed out that admission by application, admission by recommendation and screening, and admission by registration are three parallel admission channels in student recruitment plans [7]. As different channels attract students of different traits, the choice of recruitment plans deeply affects students' educational quality. As schools can estimate and control recruitment channels in advance, suitable recruitment plans allow schools to recruit desirable students, and unsuitable recruitment plans are a waste of education resources. Therefore, the choice of recruitment plans has an absolute effect on student quality.

Hsu, Chou and Shen introduced the recruitment strategy of worldwide universities and colleges [8]. According to them, UK and US universities and colleges usually organise *education fairs* in Taiwan to attract Taiwanese students. Taiwan universities and colleges also organise marketing events, such as university fairs, and technological and vocational school fairs. To attract excellent students to their schools, benefits are offered such as free tuition and fees, highly paid scholarships, subsidies for overseas study tours and work guarantee after graduation.

In this study, *recruitment plan* is defined as *the design plan of admission channels from the school's point of* view. Based on the recruitment plan of vocational schools, this study adopted the four constructs proposed by Yang as the measuring constructs: admission by recommendation and screening; admission by application; admission by technical screening test; and admission by joint examination [2].

Literature Related to Recruitment Performance

Dess and Robinson suggested that when conducting studies relating to recruitment performance in the management field, researchers often face the problem of inconsistency or inaccessibility of financial data for comparison purposes [9]. Therefore, they can use *subjective performance standards* as the alternative measuring tools [10].

Tsai found that besides *reviewing* or *evaluating* individual units, the performance of organisational members or important stakeholders should be judged when measuring recruitment performance [11]. As Tsai concluded this measuring method from her study of Kuo Chi Senior High Vocational School of Commerce and Technology, the applicability of the same method for hospitality students needs further verification.

Lin adopted the subjective measuring method proposed by Dess and Robinson when measuring the recruitment performance of senior high vocational schools [12]. First, the performance-related literature was reviewed to study in depth the multiple recruitment methods for senior high vocational schools. Experts and scholars in this field and experienced school marketers were consulted to develop constructs for measuring the recruitment performance of senior high vocational schools. Lastly, an analysis was undertaken of the recruitment performance of samples based on their recruitment data and after interviewing the members of the recruitment committees or important stakeholders of the samples.

Chao classified the indicators of enterprise recruitment performance into: recruitment sources and channels; recruitment cost; recruitment time; selection accomplishment rate; and new employee attrition rate [13]. As they are indicators measuring enterprise recruitment performance, further verification is needed to confirm their applicability to student recruitment performance of schools.

Lin proposed the following three constructs: acceptance rate, reporting rate and registration rate [12]. After detailed investigation, they were found to be suitable for use in part of this study.

Concluding the above, recruitment performance in this study is defined as *the acceptance score and reporting rate of applicants*. This study also adopted the view of Lin and applied *acceptance score* and *reporting rate* as the two indicators for measuring recruitment performance of vocational schools [12].

Literature Related to Selection Criteria and Recruitment Plans

According to Hsu, after understanding the selection criteria, based on the weighting of selection plans from high to low, the choice of recruitment plans falls into four constructs: academic intelligence; aptitude and interest; learning attitude; and concept identification [1]. The scope of Hsu's study did not cover the hospitality-related departments of vocational

schools. However, these four constructs are worthy of consideration given the similarity of student quality and departments. Thus this study involves the following hypothesis:

H1: The effect of the selection criteria on recruitment plans of the hospitality-related departments of vocational schools in Taiwan is positive and significant.

Literature Related to Recruitment Plans and Recruitment Performance

Hsu believed that the recruitment strategy affects the quality of the students recruited, and teaching strategy affects the learning efficacy of graduates. Implementing these strategies can substantially enhance students' learning efficacy [1]. This subsequently affects the social judgment of schools and encourages excellent students (with potential or excellent performance) to further their study at universities. Hsu also believed that the recruitment strategy affects the quality of students recruited, teaching direction and the targets of recruitment publicity. According to Chen, by implementing marketing strategies, schools can enhance recruitment performance [14].

Although the hospitality-related departments of vocational schools are not the subject of research in the above literature, there are similar views worthy of reference. This study involves the following hypothesis:

H2: The effect of recruitment plans on recruitment performance of the hospitality-related departments of vocational schools in Taiwan is positive and significant.

Literature Related to Selection Criteria and Recruitment Performance

According to Chan, there are seven key success factors enhancing the recruitment performance of a part-time Master's programme of an information management department [15]. These include recruitment source, school reputation, external environment, internal environment, good incentives, personal reasons and publicity skills. Neither Lin [12] nor Chan [15] focused on the hospitality-related departments of vocational schools but, as there are things in common between these departments and the subjects of the above studies, this study involves the following hypothesis:

H3: The effect of selection criteria on recruitment performance of the hospitality-related departments of vocational schools in Taiwan is neither positive nor significant.

As such, the research framework developed based on the research objectives, literature review and hypotheses of this study is shown in Figure 1.
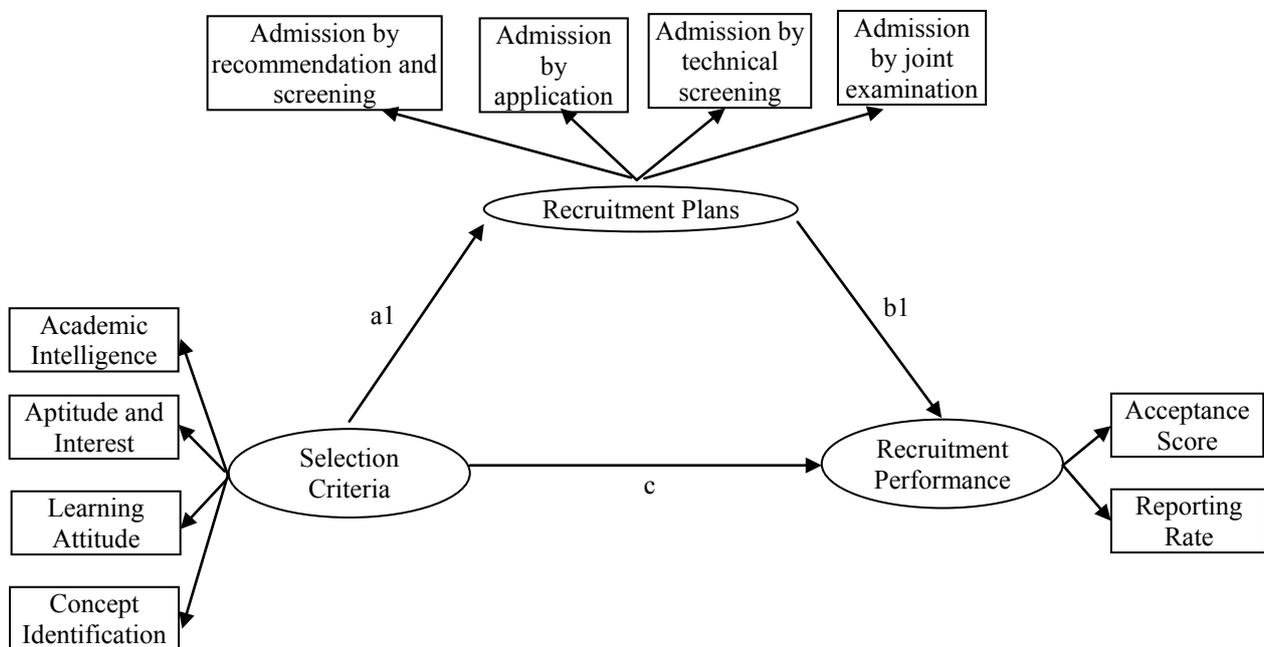

Figure1: Research framework.

RESEARCH METHODS

Respondent Selection and Questionnaire Design

Members of the recruitment committee of hospitality-related departments of vocational schools in Taiwan were selected for this study, using simple random sampling. To enhance the content validity of the questionnaire, the researcher

conducted an expert survey before and after questionnaire design and before the pilot test, in order to modify or eliminate inappropriate items.

Lastly, the researcher conducted a post-test review on members of the recruitment committee of hospitality-related departments of vocational schools in Taiwan. Of the 500 copies of questionnaires distributed, 151 valid copies were received, with the response rate of 30.2%.

In questionnaire design, the researcher applied *single-item measurement* to all manifest constructs and used the seven-point Likert scale to measure the level of agreement or disagreement expressed in scores from 7 to 1, where 7 represented *strongly agree* and 1 *strongly disagree*. That is to say, the higher the score, the higher the level of agreement; and vice versa.

When designing the questionnaire, the researcher designed 16 items for selection criteria based on the four constructs proposed by Hsu; i.e. academic intelligence, aptitude and interest, learning attitude and concept identification [1]. Next, the researcher also designed 16 items for the recruitment plan based on Yang [2]. Lastly, the researcher designed eight items for recruitment performance containing two indicators, acceptance score and reporting rate, in accordance with Lin [12].

SEM and Measuring System

The researcher verified the research framework by conducting a confirmatory factor analysis (CFA) with structure equation modelling (SEM) on the framework. This study classified the questionnaire into three latent variables: selection criteria; recruitment plan; and recruitment performance. Under each latent variable, there are several secondary variables. Under each secondary variable, there are several items that are the survey's items. Next, the researcher processed the data collected from the survey to create the raw data file of the questionnaire.

In establishing the measuring system for this study, although the researcher designed the questionnaire with single-item measurement, dual measurement was chosen for the measuring system to facilitate computer processing [16]. The questionnaire item structure of this study, including the number of questionnaire items and references of the implicit variables and explicit variables, is shown in Table 1 [17].

Table 1: Questionnaire item structure.

Major Constructs	Secondary Constructs or Measuring Indicators	Items	Questionnaire References
Selection Criteria	Academic Intelligence	4	Hsu [1]
	Aptitude and Interest	4	
	Learning Attitude	4	
	Concept Identification	4	
Recruitment Plan	Admission by Recommendation and Screening	4	Yang [2]
	Admission by Application	4	
	Admission by Technical Screening	4	
	Admission by Joint Examination	4	
Recruitment Performance	Acceptance Score	4	Lin [12]
	Reporting Rate	4	

Linear Structural Modelling

Confirmatory factor analysis (CFA) is an analysis method corresponding to exploratory factor analysis (EFA). This study conducted a CFA on the three major constructs: selection criteria; recruitment plan; and recruitment performance, by means of the pair comparisons test. The structural model and measurement model of SEM can effectively solve the cause-and-end relationships of the implicit variables. Also, the model verified in this study contained three parts: 1) verification that the overall goodness of fit complies with the goodness of fit index; 2) the goodness of fit of the measurement model; and 3) the goodness of fit of the structural model [18].

RESEARCH ANALYSIS AND RESULTS

Research Analysis

Test of the Overall Goodness of Fit

The overall research model was established after literature review and the factor analysis of sample data. Based on the advice of Hair et al, the goodness of fit of the overall model can be measured in three different ways: measures of

absolute fit; incremental fit measures; and parsimonious fit measures [19]. The results of the goodness of fit measurement of the research model are shown in Table 2 [20].

Table 2: Goodness of Fit Test of overall model.

Goodness of Fit Index		Criteria	Results of this study
Measures of absolute fit	GFI	>0.9	0.906
	AGFI	>0.8	0.898
	RMR	<0.05	0.023
Incremental fit measures	NFI	>0.9	0.905
	CFI	>0.9	0.903
Parsimonious fit measures	PNFI	>0.5	0.635
	PGFI	>0.5	0.674

Measurement Model

The factor loading of the individual items in latent (implicit) variables (major constructs) and manifest (explicit) variables (secondary constructs) aims at measuring the strength of the linear relations of individual items and latent variables. If the value of factor loading is close to 1, then the measuring variable or secondary construct variable can better measure the major constructs.

As the factor loading of all secondary constructs in this study is greater than 0.7, this means they are highly reliable. Therefore, all secondary constructs (all manifest variables) in the measuring system of this study are fit to measure the major constructs (all latent variables).

Also, the Average Variance Extracted (AVE) is a vehicle calculation of the explanatory power of variance of all measuring variables; the higher the EV value, the higher the reliability and convergence validity of latent variables. In general, the Volatility Ratio (VR) must be greater than 0.5. That is to say, all latent variables are highly variable and convergence is valid (see Table 3 and Figure 2).

Table 3: Determination index in the model's measuring system.

Major Construct	Secondary Construct or Measuring Indicator	Factor loading	Cronbach's α	Average Variance Extracted
Selection Criteria	Academic Intelligence	0.863	0.853	0.687
	Aptitude and Interest	0.862		
	Learning Attitude	0.843		
	Concept Identification	0.835		
Recruitment Plan	Admission by Recommendation and Screening	0.821	0.827	0.636
	Admission by Application	0.823		
	Admission by Technical Screening	0.816		
	Admission by Joint Examination	0.856		
Recruitment Performance	Acceptance Score	0.862	0.874	0.693
	Reporting Rate	0.894		

Coefficient of Determination

The coefficient of determination is also called squared multiple correlations (SMC); that is, it is a measure of the explanatory power of the independent variable of all latent variables from the dependent variable of all latent variables. In other words, the R2 values in Table 4 indicate that the implicit independent variable has adequate explanatory ability on the implicit dependent variables respectively [17].

Table 4: Path's coefficient of determination.

Coefficients of Determination	R^2
Selection criteria (X)→Recruitment plan (Me)	0.77
Recruitment plan (Me)→Recruitment performance (Y)	0.81
Selection criteria (X)→Recruitment performance (Y)	0.73

Path Coefficient of Model Latent Variables

After the model passed the internal goodness of fit test, the estimate of the standardised coefficient and CR value of all latent variables in this study are shown in Table 5, with a path analysis shown in Figure 2 [17].

Table 5: Parameters of latent variable estimates.

	Estimate	SE	CR	P
Selection criteria (X)➔Recruitment plan (Me)	0.832	0.168	4.952	***
Recruitment plan (Me)➔Recruitment performance (Y)	0.813	0.151	5.384	***
Selection criteria (X)➔Recruitment performance (Y)	0.234	0.124	1.887	

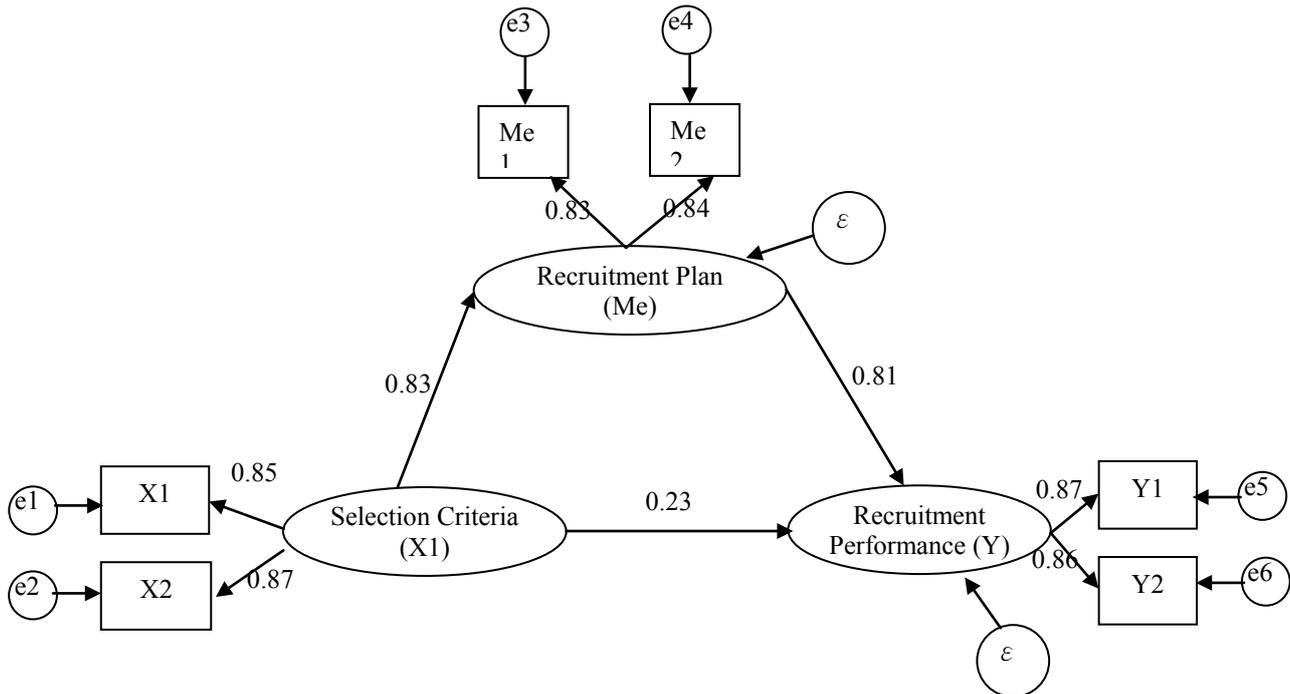***CR value is significant (α=0.001)

Figure 2: Standardised SEM analysis results.

Analysis of the Path Effect of Structural Modelling

This study applied the Soble test, bootstrapping, and Mackinnon PRODCLIN2 to analyse the effect of the path coefficient among the latent variables (or implicit variables) in the structural modelling, with recruitment performance (Me) as the moderator, as shown in Table 6 [21][22].

Table 6: Moderator report forms of this study.

Variable	Point of Estimates	Product of Coefficients		Bootstrapping				MacKinnon PRODCLIN2 95% CI	
				Bias-Corrected 95% CI		Percentile 95% C			
	(Est.)	SE	Z	Lower	Upper	Lower	Upper	Lower	Upper
				Total Effects					
X→Me	0.832	0.168	4.952	0.533	0.983	0.341	0.928	0.396	0.947
				Indirect Effects					
Me→Y	0.813	0.151	5.384	0.156	0.845	0.121	0.632	0.275	0.763
				Direct Effects					
X→Y	0.234	0.124	1.887	-0.143	0.723	-0.048	0.839	-0.104	0.731

The following conclusions were drawn, according to the results in Table 6:

1. The effect of the selection criteria on recruitment plans of the hospitality-related departments of vocational schools in Taiwan is positive and significant. As SE is 0.83, H1 is supported (sustains).
2. The effect of recruitment plans on recruitment performance of the hospitality-related departments of vocational

schools in Taiwan is positive and significant. As SE is 0.81, H2 is supported (sustains).
3. The effect of selection criteria on recruitment performance of the hospitality-related departments of vocational schools in Taiwan is neither positive nor significant. As SE is 0.23, H3 is partially supported (partially sustains).

These three conclusions suggest that the fitting effect of the research model is quite good, and the recruitment plan of the hospitality-related departments of vocational schools in Taiwan has a partial moderation effect. These results are consistent with Baron and Kenny [23]. That is to say, *partial moderation effect* refers to the weakening or diminishing of the relation between independent and dependent variables by adding the moderator [17].

CONCLUSIONS AND SUGGESTIONS

In this section, conclusions are presented according to the above analyses and results. In addition, the contribution of this study to knowledge in the area was mentioned; limitations of the present study and recommendations for future studies are made.

Conclusions

Overall, members of the recruitment committee of the hospitality-related departments of vocational schools in Taiwan were the respondents of the interview. Structural equation modelling was applied to verify the subject matter. The conclusions of this study are presented below:

Effect of Selection Criteria on Recruitment Plans

As shown in the results of this study, H1 is supported and sustained. That is to say, the effect of selection criteria on recruitment plans is positive and significant. This result is consistent with the findings of Hsu [1].

Effect of Recruitment Plans on Recruitment Performance

As shown in the results of this study, H2 is supported and sustained. That is to say, the effect of recruitment plans on recruitment performance is positive and significant. This result is consistent with the findings of Chen [14].

Effect of Selection Criteria on Recruitment Performance

As shown in the results of this study, H3 is partially supported and partially sustained. That is to say, the effect of selection criteria on recruitment performance is positive, but insignificant. This result is consistent with the findings of Lin [12] and Chan [15].

Concluding the results of the above three research results, recruitment plans have full moderation effect.

Contribution

1. Most past studies investigated the effect of selection criteria on recruitment performance of the hospitality-related departments of vocational schools in Taiwan, with EFA. Based on the results of past studies, this study constructed a model and verified the goodness of fit of the model, in order to find out if the model has good goodness-of-fit effects. For this reason, the topic of this study is an important and practical CFA attempt, which is an innovative application of CFA in this area. Therefore, future studies in this area can make reference to this study.
2. The results of this study can provide a reference for recruitment teams or committees of technological and vocational universities, and colleges at home and abroad, to draw up their recruitment strategies.

Limitations of the Present Study

With limited resources, although the researcher completed the research work at different stages as carefully as possible, the limitations of the present study are as follows:

1. Due to resource limitation, this study extracted samples from the population with simple random sampling. As a result, the percentage of valid samples is so low, hence, they are unable to represent the population, which is the biggest limitation of this study.
2. As there were not many past studies at home or abroad investigating the subject of this study, and there were even fewer using the pair comparisons test, there is comparatively less evidence supporting the hypotheses in this study.

Recommendations for Future Studies

The researcher may have used various indicators to measure vocational schools in Taiwan. For this study, only members of the recruitment committees of hospitality-related departments of vocational schools in Taiwan, were used.

In the future, researchers may investigate the effect on recruitment performance of different departments in order to collect more comprehensive data, to innovate and compare the effect on different departments.

When reviewing past studies on the recruitment strategies of vocational schools in Taiwan, it was found that student demand planning and marketing were the trends at that time. Schools wishing to stand out in the highly competitive education service market will need to understand the required image, strategy and advantage of schools in a highly competitive era through the evaluation of the demand of customers (students and parents). This way, they can accurately assess their image to develop better operational and recruitment strategies and make better planning for school funds and human resources.

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