



Student Satisfaction Scale Development and Application for Sport Management in China

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ABSTRACT

Student satisfaction is a primary indicator for college and university organizational self-assessment in European and American countries. Professional sport universities are the major institution cultivating sports talents in China. Nevertheless, it appears the problem in past years that the talent cultivation and management is not suitable for the development of society and sports in China. Such a problem could be solved from various dimensions. From the aspect of management, the reinforcement of self-assessment is practicable. Aiming at such a problem, the professional sport university student satisfaction evaluation scale is constructed for developing the self-assessment of professional sport universities in China. The students in a professional sport university in China are taken as the respondents of survey in this study. Total 2715 students are surveyed, including 796 females and 1919 males. The questionnaire is tested three times in the design process. First, the pre-survey for the initial scale is preceded. Second, Threshold Analysis, Item-Total Correlation, and Exploratory Factor Analysis (EFA) are applied to classify the scale and construct the professional sport university student satisfaction scale, covering 6 dimensions and 58 questions. Third, Structural Equation Modeling (SEM) is utilized for analyzing the collected data. The development and application of satisfaction scale develop a practicable tool of self-assessment for professional sport universities as well as assist in promoting the teaching service quality of universities in China and enhancing the continual improvement.

Keywords: sport universities, organizational self-assessment, student satisfaction, scale, management quality of universities

INTRODUCTION

Since the middle and late 80s in the twentieth century, colleges and universities in American and European countries started to introduce “self-assessment” in Total Quality Management for enterprises in order to enhance school instruction and management quality services (Peter,

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State of the literature

- Most researchers comprehend student satisfaction based on the idea of “customer satisfaction”, and “satisfaction” stresses on the psychological experiences of people.
- student satisfaction survey has become an important strategy for universities in the world, especially in developed countries, improving the relationship between schools and students, enhancing school development, monitoring teaching quality.
- College student satisfaction scales developed by most researchers in China have general university students as the respondents of survey, while the research on universities with nature of industry is rare, and there is no research on professional sport universities.

Contribution of this paper to the literature

- Student Satisfaction could be an important index of organizational self-assessment of Sport University in China.
- Sport University could regular survey the student satisfaction and continually improve teaching, service and management in China
- Sport University should focus on the staff satisfaction and department working efficiency in organizational self-assessment in China.
- The establishment of sound evaluation systems and linkage mechanisms of higher education could be promoted in the future research action.

1997; Runcan & Mihai-Bogdan, 2013; Wu & Tai, 2016). Because the manager could find the shortage of teaching and service base on the students' satisfaction survey (Douglas, J, Douglas, A & Barnes, 2006). In the assessment process, interested party “satisfaction”, especially “student satisfaction”, became the common assessment indicator for such universities and was a primary composition of international research on higher education (Wu & Xue, 2007). After being practiced for years, student satisfaction-based college and university self-assessment became an important tool to guarantee the teaching quality of colleges and universities in European and American countries (Hides, Davies, & Jackson, 2004; Ruben, Russ, & Smulowitz, 2007), a primary strategy for developed countries improving the relationship between schools and students, enhancing school development, monitoring teaching quality, and guiding freshmen selecting schools (Yang, Chen & Wu, 2011; Wu & Tai, 2016), and the primary composition of higher education assessment systems in such countries. Meanwhile, the practice of higher education in the US also proved the key factors of concerning about student needs, constantly improving the quality of students' education experiences, and adjusting future directions with the student satisfaction survey in the success of universities (National Student Satisfaction Report, 2003). Chinese researchers also considered that introducing student satisfaction to the school assessment process could be effective. Currently, most domestic researchers comprehend student satisfaction based on the idea of “customer satisfaction”, and “satisfaction” stresses on the psychological experiences of people. Domestic researchers therefore define higher education student satisfaction from the aspect of psychology that college student satisfaction, with strong individual differences, is referred to

college students' psychological perception and personal opinions about university learning and life (Tian & Wang, 2007; Runcan & Mihai-Bogdan, 2013).

During the decade in the 21st century, research on university student satisfaction concentrated on the concept understanding and meaning interpretation of student satisfaction and the measurement model and empirical research related to satisfaction (Douglas, Douglas, McClelland & Davies, 2015). However, from the literature analyses in past three years, it is found that the research trend is changing. Although most literatures focus on the empirical research and structural research of student satisfaction, some researchers have started to transfer from the nature of "student satisfaction" to the effect of "student satisfaction" on higher education management. It supports the theory in this study.

It is mentioned that student satisfaction survey has become an important strategy for universities in the world, especially in developed countries, improving the relationship between schools and students, enhancing school development, monitoring teaching quality, and guiding freshmen selecting schools (Hides, Davies, & Jackson, 2004; Ruben, Russ, & Smulowitz, 2007; Ali, Zhou, Hussain, Nair, & Ragavan, 2016). "Monitoring teaching (service) quality" has also presented the most function on domestic research on student satisfaction in past three years. Some early researches have indicated that introducing "student satisfaction" to the teaching quality assessment of universities could enhance students' learning quality, promote continuous learning, and graduation rate (Cabrera, Nora, & Castaneda, 1999; Pascarella, Smart, & Ethington, 1986; Zhu, 2012). Meanwhile, it could benefit the sustainable development of colleges and universities and satisfy the social demands for high-quality talents (Chen & Su, 2015). Domestic universities and the government should stress on student satisfaction assessment, especially pay attention to the function of student satisfaction on the teaching and service quality of schools to further regard it as a key standard for measuring university running quality. Domestic researchers have perceived and started to study the function of student satisfaction on higher education quality assessment. However, such research is just started; researchers currently stress on the description of theories, but lack of empirical research. In other words, there is still a long way to go, in technology and policies, to have "student satisfaction" really become the key indicator of higher education quality assessment in China.

Furthermore, from the collection and organization of literatures, college student satisfaction scales developed by most researchers in China have general university students as the respondents of survey, while the research on universities with nature of industry is rare, and there is no research on professional sport universities. General university student satisfaction scales are not suitable for the survey of professional sport university students. Especially, it appears larger differences when satisfaction is regarded as a university developing self-assessment tools. Based on the function of college student satisfaction on the promotion of student management, a sport university is selected as the respondent of survey to study the college and university student satisfaction scale development in China. It attempts to assist professional sport universities in China in improving the teaching and service quality

through the scale design and application research as well as to provide the thinking for professional sport universities in China developing self-assessment, enhance the realization of college functions (Qi, 2014).

METHODOLOGY

Research method and respondent of survey

Questionnaire survey is mainly applied to this study. According to existing research and Professional Sport University Student Satisfaction Survey in China, Professional Sport University Student Satisfaction Pretest Scale in China is developed for the survey, and Professional Sport University Student Satisfaction Survey Scale in China is eventually confirmed after the test. Total 2715 students, including 796 females and 1919 males, in a sport university in China are the respondents of survey.

Questionnaire response to student satisfaction

Total 960 copies of paper-based questionnaire (including 900 copies of Professional Sport University Student Satisfaction Survey in China and 60 copies of Professional Sport University Student Satisfaction Pre-survey Scale in China) are distributed, and 939 copies, including 35 invalid ones, are collected, with the valid rate 96.27%.

Total 1755 students are surveyed through the Internet (including 847 copies of Professional Sport University Student Satisfaction Pretest Scale in China and 908 copies of Professional Sport University Student Satisfaction Survey Scale in China), with the average use of time 567 seconds. 173 invalid copies are included to make the valid rate 90.14%.

RESULTS

Development of Student Satisfaction Scale

Development of Professional Sport University Student Satisfaction Pre-test Scale in China

By organizing the result of Professional Sport University Student Satisfaction Survey in China and combining the analysis of relevant literatures, total 319 key indicators are extracted. Five researchers familiar to satisfaction and three experts on higher education generalize and combine the indicators to acquire 70 key indicators. Moreover, all indicators, according to literature analyses and relative expert discussions, are classified into 7 dimensions, namely teaching and learning, student management and guidance, logistics services, academic and cultural activities, learning and scientific research environment, school reputation and development, and internship and career. To guarantee the comprehensiveness and reasonability of questions of the dimensions in the scale, the 70 key indicators are sent to 5 psychology experts for evaluating the face validity, logical validity, and language of the entries in the pretest scale. 60 copies of Professional Sport University Student Satisfaction Pre-survey Scale in China are randomly distributed to the students in a sport university. After analyzing

the collected questionnaires, 21 students propose opinions and point out questions which cannot be understood.

Based on the opinions and suggestions for the questions in the scale from experts and the pre-survey, the scale is further added and selected. Two graduates from Department of Chinese (Chinese School in Southwest University in China) are invited to revise the language statement in the scale. Eventually, 67 entries are selected from the initial scale, including 16 from “teaching and learning”, 13 from “student management and guidance”, 11 from “logistics services”, 6 from “academic and cultural activities”, 9 from “learning and scientific research environment”, 4 from “school reputation and development”, and 8 from “internship and career” (Appendix). The scale is scored with Likert 7-point scale, where 1 stands for “extremely unmatched” and 7 for “extremely matched”.

Item Analysis of Professional Sport University Student Satisfaction Pre-test Scale in China

With Reliability Analysis, α coefficient of the dimensions in the pretest scale appears .967, .952, .925, .940, .946, .926, .970 and α coefficient of the scale reveals .987, both larger than .80, that the pretest scale and the dimensions present favorable reliability.

By calculating the total scores of samples, ones with the total score of 281 and below are the low-score group (bottom 27%) and those with the total score of 395 and above are the high-score group (top 27%). The scores of both low-score group and high-score group are proceeded Independent-Samples t Test, which reveals that all questions in high- and low-score groups appear on the standard .01, presenting the significant difference. The critical ratio difference therefore shows the statistical meaning, and no question is removed. From Item-Total Correlation Analysis, the minimum correlation coefficient of all questions appears .658, higher than 0.30 that Item-Total Correlation conforms to the request, and no question is removed. From Item-Other Analysis, Item-Total Correlation of all questions is higher than Item-Other Correlation that it is not necessary to remove questions.

The analyzed questionnaires are proceeded Exploratory Factor Analysis (EFA) (Principal Axis Factoring is applied to Oblique Rotation with Kaiser Standardization). The first Exploratory Factor Analysis (KMO=.973; Bartlett test of sphericity $P=.00$) appears 4 two-factor loadings (V48, V57, V58, and V59) and 1 small factor loading (V23) (lower than .030). Such 5 entries are therefore removed. After removing such 5 entries, the seventh factor merely contains an entry (V56) that it is better removed. The second Exploratory Factor Analysis (KMO=.973; Bartlett test of sphericity $P=.00$) appears 2 two-factor loadings (V22 and V39) and 1 small factor loading (V47) (lower than .030). Such 3 entries are therefore removed. After the rotation in the third Exploratory Factor Analysis (KMO=.972; Bartlett test of sphericity $P=.00$), 6 factors show the eigenvalue higher than 1 (**Table 1**) and the variance explained 54.466%, 4.677%, 3.065%, 2.545%, 2.266%, and 1.527%, with the accumulated contribution 68.545%. All questions in different dimensions present the loading above 0.3. From the scree plot (**Figure 1**)

Table 1. Total variance explained of the third Exploratory Factor Analysis

Factor	Initial eigenvalue			Extracting square and load			Rotating square and load
	Sum	Variance	Accumulated	Sum	Variance	Accumulated	Sum
		%	%		%	%	
1	31.893	54.989	54.989	31.590	54.466	54.466	25.499
2	3.040	5.241	60.230	2.712	4.677	59.142	17.779
3	2.029	3.498	63.728	1.778	3.065	62.208	23.600
4	1.752	3.021	66.748	1.476	2.545	64.752	13.770
5	1.606	2.770	69.518	1.314	2.266	67.018	21.058
6	1.170	2.017	71.535	0.885	1.527	68.545	17.961

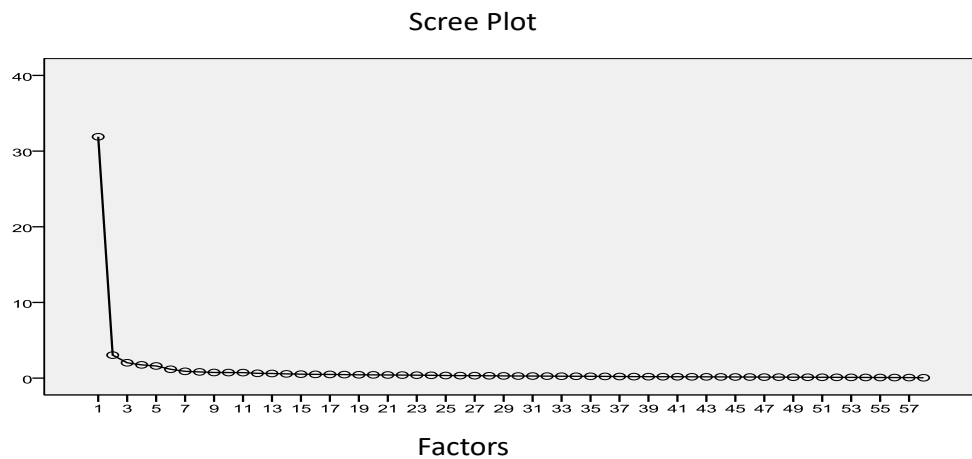


Figure 1. Scree plot of the third Factor Analysis of student satisfaction pretest scale

of the third Factor Analysis, it changes from slope to flat after the sixth factor that the factors after being flat are removed; and, 6 suitable factors are kept.

After the rotation, the component matrix shows that all 58 questions are orderly arranged under the 6 factors, containing 16 questions in factor 1, 11 questions in factor 2, 9 questions in factor 3, 6 questions in factor 4, 6 questions in factor 5, and 10 questions in factor 6. The dimensions of such 6 factors cover teaching and learning, logistics services, internship and career, learning and scientific research environment, academic and cultural life, and student management and guidance, in which “school reputation and development” is removed after being compared with the pretest scale.

Confirmatory Factor Analysis (CFA) of revised student satisfaction scale

Confirmatory Factor Analysis is preceded in this study to further verify the developed Professional Sport University Student Satisfaction Survey Scale in China. After Reliability Analysis, α coefficient of the dimensions appears .955, .908, .953, .927, .929, and .930, and α

Table 2. Goodness of fit of Professional Sport University Student Satisfaction Survey Scale in China

Fit index	χ^2	DF	χ^2/DF	NNFI	GFI	AGFI	NFI	CFI	RMSEA
	343.120	129	2.66	.968	.911	.881	.957	.973	.066

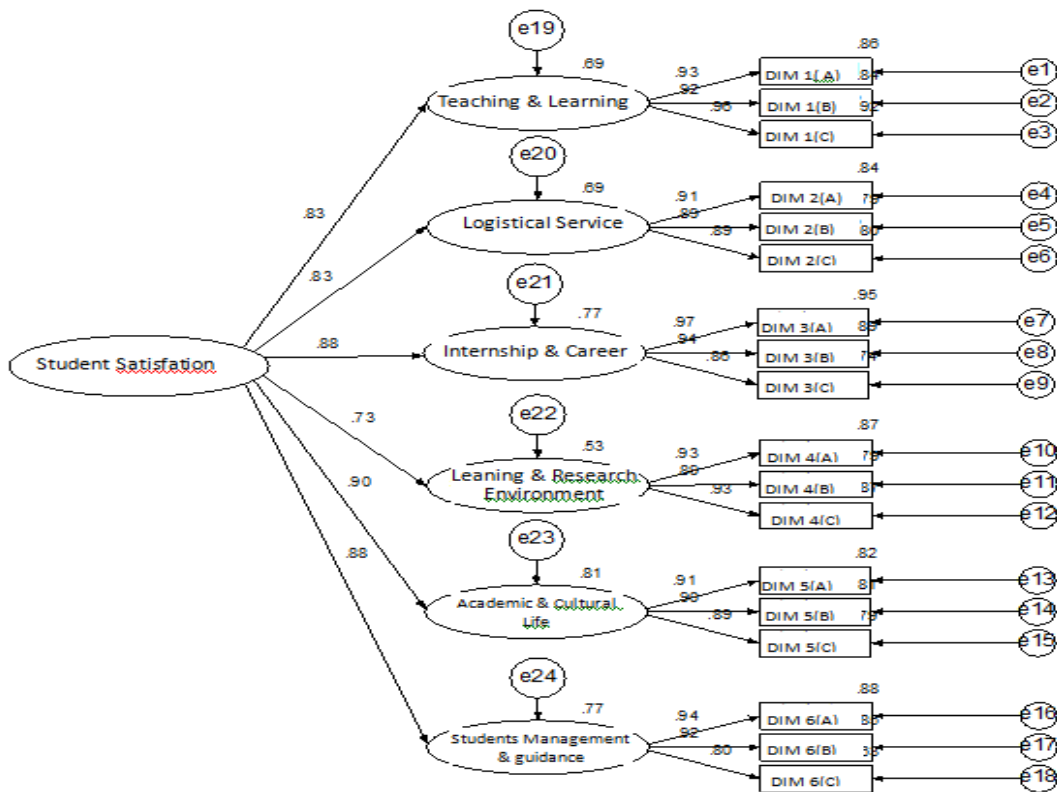


Figure 2. Standardized estimate model of Professional Sport University Student Satisfaction Scale in China

coefficient of the scale is .979, both higher than .80, that they present favorable reliability and the indicators in the dimensions are favorable, with absolute stability and reliability. What is more, the correlation strength of dimensions appears in .534–.744, revealing higher correlations between dimensions and certain relative independence.

The formal scale, which reserves 58 entries, is preceded Confirmatory Factor Analysis. AMOS17.0 is applied to Confirmatory Factor Analysis, Maximum Likelihood is utilized for the model estimation, and Variance Matrix is used. In consideration of many entries in this study, the questions of each dimension are combined (with serpentine arrangement according to the Exploratory Factor Analysis loading), in order to reduce the computation, and 18 new indicators are acquired for the analysis.

The results are shown in **Table 2**. χ^2/DF reveals 2.66 (343.120/129), $p=.000<.01$, conforming to the standard; non-normed fit index (NNFI) .968, goodness of fit (GFI) .911, adjusted goodness of fit (AGFI) .881, and comparative fit index (CFI) .973 reach or are close to

the standard .90; and, root mean square error of approximation (RMSE) .066, lower than the standard .08, achieves the acceptable goodness of fit. As a result, the goodness of fit of the scale is acceptable, with better construct validity.

The standardized estimate model is shown in **Figure 2**. The questions (combined questions) present higher loading on the correspondent dimensions, and all item loadings are higher than 0.8. The factor loading of the 6 dimensions show 0.83, 0.83, 0.88, 0.73, 0.90, and 0.88, and the predictive power of the 6 dimensions to college student satisfaction reveals 0.69, 0.69, 0.77, 0.53, 0.81, and 0.77.

Empirical Research

Total 908 students are proceeded Professional Sport University Student Satisfaction Survey Scale in China. After Reliability Analysis, α coefficient of the dimensions presents .953, .912, .953, .932, .928, and .920, and α coefficient of the scale reveals .980, both higher than .90, that the scale shows favorable reliability. Moreover, the correlation strength of the dimensions appears in .611 – .766, presenting higher correlations between dimensions and certain relative independence.

According to the analysis of student satisfaction survey (the score of each question and dimension is not announced in order to protect the privacy of the surveyed school), dimension 4: Learning and scientific research environment receives the highest score, while dimension 2: Logistics services acquires the lowest score. From the scores of the questions, “School solution for students’ heating and cooling” in “logistics services” appears the lowest score, while “teachers’ theoretical knowledge and practical experiences” in “teaching and learning” shows the highest score. From the data analysis, two questions related to students’ accommodation conditions in “logistics services” reach the standard deviation above 2, with lower scores and large dispersion of data. Such results explain that the respondents show low satisfaction with such two questions (related to heating and cooling question and water and electricity management question) and present larger differences. Accordingly, the surveyed school should reform the “logistics services” in the recent management and focus on students’ accommodation quality problems.

Students in different years, because of distinct length entering the school, would present different acquaintance and comprehension on various management policies, measures, and software/hardware conditions in the school. For this reason, the satisfaction of students in different years would affect school management and self-assessment.

One-way Analysis of Variance appears significant differences on “teaching and learning” among students in 4 years ($P=.025<.05$); the post hoc test reveals that the major difference appears between juniors and seniors ($P=.029<.05$), where seniors show remarkably higher satisfaction than juniors do on “teaching and learning”, and the data analysis shows the highest satisfaction of seniors on “teaching and learning”. Such situations might be caused by seniors presenting new acquaintance with the software/hardware conditions in the school

after the experiences in internship, postgraduate examinations, and search for jobs. Meanwhile, it also explains that the students approve the management related to “teaching and learning” of the surveyed school.

From One-way Analysis of Variance, the score of “logistics services” reveals notable difference among students in 4 years ($P=.000<.01$). With the post hoc test, the major difference appears between sophomores and seniors ($P=.040<.05$) and between juniors and seniors ($P=.000<.01$). Besides, seniors show significantly higher satisfaction on “logistics services” than sophomores and juniors do. Such situations might be resulted from different dormitories for students in various years in the surveyed school; seniors dwell in newly built dormitories with better conditions. As mentioned earlier, students present the lowest satisfaction on “logistics services”. When the data of seniors are removed, the score of “logistics services” would be even lower. Such a situation should induce the concern of school managers; that is, the improvement of “logistics services” is urgent for the surveyed school.

From One-way Analysis of Variance, the score of “internship and career” does not show remarkable difference among students in 4 years ($P=.102>.05$); the scores appear between 4.4 and 4.7. It is possibly because students, except seniors, do not have direct experiences in the dimension, while more experiences come from the introduction of seniors and teachers, so that students in 4 years present consistent evaluation on the dimension.

One-way Analysis of Variance shows no notable difference on “learning and scientific research environment” among students in 4 years ($P=.093>.05$). The scores appear around 5, revealing that students generally approve the current learning and scientific research environment in the school. It is possibly because “learning and scientific research environment” is the evaluation of hardware; the surveyed school has devoted to improve the learning and scientific research environment in past years that the evaluation of students in 4 years is relatively stable.

One-way Analysis of Variance presents the significant difference on “academic and cultural life” among students in 4 years ($P=.001<.01$). The post hoc test shows the major difference between juniors and seniors ($P=.001<.01$), and seniors reveal higher satisfaction on “academic and cultural life” than juniors do. The specific cause of such a result is not clear. And it shows the remarkable difference on “student management and guidance” among students in 4 years ($P=.001<.01$). The post hoc test reveals the major difference between juniors and seniors ($P=.001<.01$), and seniors appear higher satisfaction on “student management and guidance” than juniors do. Since the dimension is closely related to student management, the difference presents certain correlations with student management teachers. In this case, reinforcing the training of student management teachers is also a priority for the school.

DISCUSSION

The research use psychological scale development process develops a Professional Sport University Student Satisfaction Survey Scale in China base on survey. The scale includes 6

dimensions, includes teaching and learning, logistics services, internship and career, learning and scientific research environment, academic and cultural life, and student management and guidance. These dimensions of “academic and cultural life”, “student management and guidance” and “internship and career” are best important influence to students’ satisfaction in sport universities in China. The result is different from result of Xu Xiaohui’s (2010) and Ford (1999) research, and they believe “university image (Academic Reputation)” is the best important influence to students’ satisfaction and service quality of university. Nevertheless, the dimension has been removed.

“Academic and cultural life” is the important part of students’ life. These students come from sport universities like communication, performance and display myself and interested in club activities, perform and sport game because of major feature and personality. The management of sport universities has to allow these students’ character. One-way develop some events to meet students’ demand, and another way prevent excessive events disturb the education. In other words, the management should to handle the relationship between events and education.

“Student management and guidance” is closely related students’ management in university. Because these students of sport major are different from students of other majors, management should hunt the character of students and choose a appropriate method to manage and communicate. Finally, the problem of graduates’ career of Major of Physical Education in sport universities became more and more serious. Then, the dimension of “internship and career” is emphasized by students.

CONCLUSIONS

The development of Professional Sport University Student Satisfaction Survey Scale in China provides the reference for professional sport universities in China developing self-assessment of organization. A school could realize the intuitive opinions and perception of the most important interested party, students, about instruction, logistics, student management, software/hardware conditions, and student activities related to the school by using the tool. Based on the survey result, managers of the school could clarify the dimensions which need urgent improvement to directly serve the management of the school. However, student satisfaction is merely a part of school assessment; satisfaction of interested parties, such as teachers and employers, should also be concerned. According to Tito Conti’s (1999) theory of “self-assessment of organization”, the management process and leadership of an organization, in addition to satisfaction of interested parties (outcome variable), should be included in the self-assessment of organization. It is considered as the future research topic on college and university self-assessment in China.

RECOMMENDATIONS

Student satisfaction is a primary indicator for sports colleges measuring the quality of school management and developing organizational self-evaluation. It therefore presents

important meaning on the promotion of the sustainable development and management of schools. The self-evaluation development of sports colleges in China is still in the beginning stage. Most of the quality considerations depend on external evaluation, and the improvement and development are passive. Developing the student satisfaction scale based on the organizational self-evaluation of higher education is merely a small step for the self-evaluation development of sports colleges in China.

Future research should pay attention to: 1. Student Satisfaction could be an important index of organizational self-assessment of Sport University in China. 2. Sport University could regular survey the student satisfaction and continually improve teaching, service and management in China. 3 In the future research, Sport University should focus on the staff satisfaction and department working efficiency in organizational self-assessment in China. 4 The establishment of sound evaluation systems and linkage mechanisms of higher education could be promoted in the future research, i.e. constructing a complete system of government evaluation, self-evaluation, and third-party evaluation, clarifying the duty, purpose, and function of evaluations, considering the effective combination and promotion of the three, and comprehensively enhancing the quality of higher education in China.

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REFERENCES

- Ali, F., Zhou, Y., Hussain, K., Nair, P. K., & Ragavan, N.A. (2016). Does higher education service quality effect student satisfaction, image and loyalty? A study of international students in Malaysian public universities. *Quality Assurance in Education*, 24(1), 70-94.
- Bao, W. (2014). The measurement and determinants of student satisfaction in higher education institution. *Research in Education Development*, 3, 22-29.
- Cabrera, A. E., Nora, A., & Castaneda, M. B. (1993). College Persistence: Structural Equations Modeling Test of an Integrated Model of Student Retention. *Journal of Higher Education*, 64(2), 123-139.
- Chen, Z., & Su, P. (2015). Assessment of students' satisfaction of the quality of classroom teaching in colleges. *Education Research Monthly*, 5, 57-62.
- Conti, T. (1999). Organizational self-assessment. New York: Springer-Verlag.
- Douglas, J., Douglas, A., & Barens, B. (2006). Measuring student satisfaction at a UK university. *Quality Assurance in Education*, 14(3), 251-267.
- Douglas, J. A., Douglas, A., McClelland, R. J., & Davies, J. (2015). Understanding student satisfaction and dissatisfaction: an interpretive study in the UK higher education context. *Student in Higher Education*, 40(2), 329-349.
- Ford, J. B. (1999). SERVQUAL Analysis as a Strategic Tool for Service Marketers: the Case of Service Quality Perceptions of Business Students in New Zealand and US. *Journal of Services Marketing*, 13(2), 171-186.

- Han, Y. (2006). The functions of student satisfaction in U.S. university management. *Research in Education Development*, 3, 63.
- Hides, M. T., Davies, J., & Jackson, S. (2004). Implementation of EFQM excellence model self-assessment in the UK higher education sector- lessons learned from other sectors. *The TQM Magazine*, 16(3), 194-201.
- National Student Satisfaction Report 2005. <http://www.noellevitz.com/NR/rdonlyres/0438FAA8-D50F-4F56-83RD-769C308BF203/0/2003-SSI-Report>, pp: 11.
- Pascarella, E. T., Smart, J. C., & Ethington, C. A. (1989). Long-term persistence of two year students. *Research in Higher Education*, 24(1), 47-71.
- Peter, A. M. (1997). Quality in European higher education: recent trend and their historical roots. *European Journal of Education*, 32(2), 111-127.
- Qi, W. (2014). Students' satisfaction is the best important dimensionality of higher education teaching quality. *Education Theory Research*, 23, 175-176.
- Ruben, B. D., Russ, T., & Smulowitz, S. M. (2007). Evaluating the impact of organizational self-assessment in higher education: the malcolm baldrige/excellence in higher education framework. *Leadership & Organization Development Journal*, 28(3), 230-250.
- Runcan, P. L., & Mihai-Bogdan, I. O. V. U. (2013). Emotional intelligence and life satisfaction in Romanian university students: The mediating role of self-esteem and social support. *Revista De Cercetare Si Intervenție Sociala*, 40(2), 137-148.
- Tian, X., & Wang, X. (2007). A survey and analysis of university students. *High Education Explore*, 5, 126-128.
- Wang, G., & Sha, J. (2002). Study on application of student satisfaction evaluation in university. *China Quality*, 12, 54-57.
- Wu, L., & Xue, Y. (2007). Explorative research on customer satisfaction index model of Chinese higher education. *Journal of Public Management*, 1(4), 84-88.
- Wu, T. J., & Tai, Y. N. (2016). Effects of multimedia information technology integrated multi-sensory instruction on students' learning motivation and outcome. *Eurasia Journal of Mathematics, Science and Technology Education*, 12(4), 1065-1074
- Xu, X., Zhao, G., & Liu, M. (2010). Construction of evaluating scale for college students' satisfaction. *Higher Education Development Evaluation*, 6, 55-61.
- Yang, L., Chen, W., & Wu, Q. (2011). Study on the status of students' satisfaction for the quality of higher education service and its influencing factors: based on a survey analysis of undergraduates in eight colleges of Jiangsu. *Value Engineering*, 34, 1-4. (In Chinese)
- Zhu, C. (2012). Student satisfaction, performance, and knowledge construction in online collaborative learning. *Education Technology & Society*, 15(1), 127-136.

APPENDICES

Appendix 1

Dimensions in Professional Sport University Student Satisfaction Pre-test Scale in China and selected questions

Dimension and question	Revision condition	Source	Selection	
Dimension 1: Teaching and learning				
V1	You are satisfied with the learning atmosphere in the school.	Reserved	Qualitative research	Selected
V2	You are satisfied with teachers' teaching methods.	Reserved	Qualitative research	Selected
V3	School teachers present adequate knowledge and skills to solve student problems.	Reserved	Qualitative research	Selected
V4	Teachers reasonably select and use teaching materials.	Reserved	Qualitative research	Selected
V5	Knowledge taught in the school shows strong practicability.	Reserved	Qualitative research	Selected
V6	You are satisfied with learning guidance offered by the school.	Reserved	Qualitative research	Selected
V7	School teachers teach students according to their aptitude and develop directed teaching.	Reserved	Qualitative research	Selected
V8	School teachers present rich theoretical knowledge and practical experiences	Reserved	Qualitative research	Selected
V9	You are satisfied with the way school teachers evaluating students.	Reserved	Qualitative research	Selected
V10	You are satisfied with the updating speed of teaching knowledge offered by the school.	Reserved	Qualitative research	Selected
V11	You are satisfied with the time arrangement of school curricula.	Revised	Qualitative research	Selected
V12	You are satisfied with the percentage of practice and theory courses arranged by the school.	Reserved	Qualitative research	Selected
V13	You are satisfied with the practicability of courses arranged by the school.	Reserved	Qualitative research	Selected
V14	You are satisfied with the learning styles and school spirit.	Reserved	Qualitative research	Selected
V15	You are satisfied with the lesson plans practiced by the school.	Reserved	Wang, 2002	Selected
V16	You are satisfied with the evaluation method of courses.	Added	Qualitative research	Selected
Dimension 2: Student management and guidance				
V17	You are satisfied with the reward system of the school.	Reserved	Qualitative research	Selected
V18	You are satisfied with the punishment system of the school.	Reserved	Qualitative research	Selected
V19	You are satisfied with the procedures for school students joining in the party.	Revised	Qualitative research	Selected

V20	You are satisfied with the system of morning exercise (morning reading).	Revised	Qualitative research	Selected
V21	You are satisfied with the postgraduate examination guidance offered by the school.	Moved	Qualitative research	
V22	You are satisfied with the budget the school investing in students.	Reserved	Wang, 2002	Selected
V23	You are satisfied with the examination management of the school.	Reserved	Qualitative research	Selected
V24	You are satisfied with the student loan system of the school.	Reserved	Qualitative research	Selected
V25	You are satisfied with the administrators' attitudes towards students.	Reserved	Qualitative research	Selected
V26	You are satisfied with the part-time positions and information offered by the school.	Reserved	Qualitative research	Selected
V27	You are satisfied with the school support to students.	Reserved	Bao, 2014	Selected
V28	When students encounter difficulties, the school would do the best to help students solve problems.	Reserved	Qualitative research	Selected
V29	You are satisfied with the opinion and complaint channels for students	Reserved		Selected
V30	You are satisfied with the school solving students' emotional problems.	Added	Qualitative research	Selected
Dimension 3: Logistics services				
V31	You are satisfied with the prices in the school restaurant.	Reserved	Qualitative research	Selected
V32	You are satisfied with the food quality in the school restaurant.	Reserved	Qualitative research	Selected
V33	You are satisfied with the service personnel in the restaurant.	Reserved	Qualitative research	Selected
V34	You are satisfied with the school solving heating and cooling problems in dormitories.	Reserved	Qualitative research	Selected
V35	You are satisfied with the network in the school.	Reserved	Qualitative research	Selected
V36	You are satisfied with the water and electricity management of the school.	Reserved	Qualitative research	Selected
V37	You are satisfied with the security in the school.	Reserved	Qualitative research	Selected
V38	You are satisfied with the shopping and entertainment equipment offered in the school.	Reserved	Qualitative research	Selected
V39	You are satisfied with the school bathrooms.	Reserved		Selected
V40	You are satisfied with the facilities and services of the school hospital.	Reserved	Qualitative research	Selected
V41	You are satisfied with the facilities and services of the mailroom.	Revised		Selected
Dimension 4: Academic and cultural life				
V42	You are satisfied with the academic activities organized by the school.	Reserved	Qualitative research	Selected
V43	You are satisfied with the art activities organized by the school.	Reserved	Qualitative research	Selected
V44	You are satisfied with the activities organized by the school for developing friendship with other schools.	Revised	Qualitative research	Selected

V45	You are satisfied with the social activities in the school.	Reserved	Qualitative research	Selected
V46	You are satisfied with the physical activities organized by the school.	Reserved	Qualitative research	Selected
V47	You are satisfied with the social practice activities organized by the school.	Revised	Qualitative research	Selected
Dimension 5: Learning and scientific research environment				
V48	You are satisfied with the school campus.	Reserved	Qualitative research	Selected
V49	You are satisfied with the physical facilities in the school.	Reserved	Qualitative research	Selected
V50	You are satisfied with the openness of physical facilities in the school.	Reserved	Qualitative research	Selected
V51	You are satisfied with classroom facilities.	Reserved	Qualitative research	Selected
V52	You are satisfied with the classroom management.	Reserved	Qualitative research	Selected
V53	You are satisfied with library facilities.	Reserved	Qualitative research	Selected
V54	You are satisfied with library archives and the update of books.	Revised	Qualitative research	Selected
V55	You are satisfied with the update of library archives.	Removed	Qualitative research	
V56	You are satisfied with the learning sites offered by the library.	Reserved	Qualitative research	Selected
V57	You are satisfied with the library management	Reserved	Qualitative research	Selected
V58	You are satisfied with the facilities in school labs.	Removed		
V59	You are satisfied with the openness of school labs.	Removed	Han. 2006	
V60	You are satisfied with the management of school labs.	Removed		
Dimension 6: School reputation and development				
V61	You are satisfied with external reputation about the school.	Reserved	Qualitative research	Selected
V62	You are satisfied with the exchange between the school and other schools.	Reserved	Qualitative research	Selected
V63	You are satisfied with the construction and development of the school.	Reserved	Qualitative research	Selected
V64	You are satisfied with the construction and development of your department.	Revised	Qualitative research	Selected
V65	You are satisfied with the core competitiveness of the school.	Removed	Qualitative research	
Dimension 7: Internship and career				
V66	You are satisfied with the career guidance offered by the school.	Reserved	Qualitative research	Selected
V67	You are satisfied with the personal career guidance offered by the school.	Reserved	Qualitative research	Selected
V68	You are satisfied with the employment prospect of your profession.	Reserved	Qualitative research	Selected

V69	You are satisfied with the career enquiries offered by the school.	Reserved	Qualitative research	Selected
V70	You are satisfied with the career information announced by the school.	Reserved	Qualitative research	Selected
V71	You are satisfied with the postgraduate examination guidance offered by the school.	Moved	Qualitative research	Selected
V72	You are satisfied with the internship and training offered by the school.	Revised	Qualitative research	Selected
V73	You are satisfied with the internship system of the school.	Revised	Qualitative research	Selected

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