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Research the factors of different road runners to evaluate participation in the Total Quality Management competition

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ABSTRACT: *This study mainly investigates the factors involved in the participation of different road players in the Total Quality Management competition. Total Quality Management distinguishes customer relationship management, personnel training, product design management, quality information, continuous improvement, procedure management. The findings demonstrated that different genders showed significant differences in various factors. In the age, education level, average monthly income and TQM variance analysis, there were significant differences.*
KEYWORDS: *Total Quality Management, Customer relationship management, Continuous improvement*

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I. INTRODUCTION

Sports events are one of the key driving forces to the sports industry, which can create much economic value and peripheral economic benefits (Su, 2015). Service quality is a vital factor in the operation and management of sports and leisure service industry (Kao, 2013). Wu and Leu (2008) argued that, total quality management means that, all the units and members of an organization continuously devote to the production and improvement of products, endeavor to offer products with high quality and services, meet customer requirements, and achieve sustainable operation of the organization. Wang (2005) stressed that customer orientation is an essential condition for the success of competitions. The most important idea to promote TQM is to improve constantly to improve the quality of service. Sports events are usually cyclical. Except that location, organizer, and some competition items are different, the organization process is almost the same. It is worthwhile probing into how to enhance the quality of sports events (Liu,Huang and Yang, 2014).

Road running is the most popular sports in Taiwan with surging participants (Liu, 2012). Road running becomes popular in recent years in Taiwan. The public become more aware of road running. More venues are available, making it one of the major leisure sports of Taiwanese (Lien, Tang, &Teng, 2015).Sports are good for health. Participants can have the sense of happiness in sports (Wang, 2015). Road running is extremely popular in Taiwan with many participants (Wu, 2014). Wiley, Shaw, and Haviz (2000) thought that people with different involvement in sports have different behavioral results. Thus, the development of persistent sports habit can not only improve one's physical and mental health and achieve career goals but also improve living quality (Yang, Liu, & Tang, 2015).

II. LITERATURE REVIEW-TOTAL QUALITY MANAGEMENT

Total quality management (TQM) is a systematic activity, centering on customer satisfaction, focusing on social responsibility, and stressing constant improvement and innovation (Lam, Lee, Ooi, & Lin, 2011).Goetsch and Davis (1994) argued that TQM is a management approach that is customer oriented, adheres to quality, makes good use of scientific methods, and stresses long-term commitment to quality, continuous improvement, education and training, self-management, long-term and consistent goals, all staff participation, and autonomous right. Richardson (1997) assumed that, the spirit of TQM focuses on continuous improvement in quality and requires managers to constantly improve.

Besterfield, Besterfield-Michna, Besterfield, and BesterfieldSacre (2003) asserted that, the core values and concepts of TQM shall include vision leadership, customer-driven excellence, organization and personal

learning, attention to employees and partners, sensitivity, concentration on the future, management for innovation, management based on facts, emphasis of results and creation of value, and systematic view. Benavides Velasco, Quintana-Garcia and Marchante-Lara (2014) argued that TQM is the continuous process improvement of the organization's internal leadership model, action strategy, employee training, partnership,and production and sales processes, organization management providing superior added value and high-quality production kinetic energy. Bolatan, Gozlu, Alpkan and Zaim (2016) found that a positive and strong relationship was determined between total quality management and quality performance.

III. METHODOLOGY

3.1 Research framework

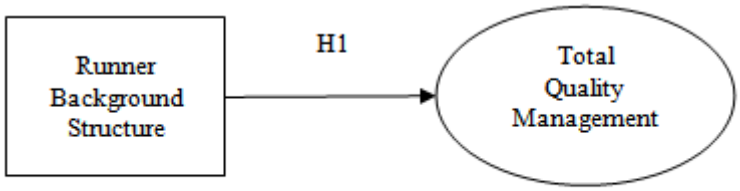

Fig.1. Research Framework

3.2 Measurement of research variables

The TQM scale is mainly based on the structure proposed by Yang (2005). It contains seven dimensions (including customer relationship management, personnel training, product design management, quality information, continuous improvement, and procedure management) and 24 questions to assess road runners after the introduction of TQM.

3.3 Research scope and samples

This study regarded people who had participated in running race as its subjects. Limited by this way of survey, it required the high cooperation of consumers. Convenience sampling was adopted. With the consent of the subjects, the investigation was conducted from September to November 2017. It was expected to distribute 550 copies of questionnaire. Road races take recreational sports participants as the main research object.

IV. RESULTS

4.1 Description of the sample structure

Convenience sampling was employed in this study. It had distributed 550 copies of questionnaire and collected 522 copies, wherein 11 copies were invalid, while 511 copies were valid. Hence, the recovery rate was92.90%.The basic data of samples covered four aspects, including gender, age, educational level, and average monthly income, whose distributions are described below in detail, shown in Table 1.

Table1. Sample structure analysis table

Demographic variables		Time	Percentage
Gender	Males	294	57.53%
	Females	217	42.57%
Age	21–30 years old	136	26.61%
	31–40 years old	205	40.12%
	41–50 years old	99	19.37%
	51–60 years old	32	6.26%
	61–65 years old	29	5.68%
	Above 65 years old (inclusive)	10	1.96%
Educational level	Senior (vocational) schools	45	8.80%
	Junior colleges	157	30.72%
	Colleges and universities	193	37.77%
	Post-graduate schools	116	22.71%
Average monthly income	NTD20,001-NTD35,000	81	15.85%
	NTD35,001-NTD50,000	127	24.85%
	NTD50,001-NTD65,000	182	35.61%
	NTD65,001-NTD80,000	97	18.98%
	NTD65,001-NTD80,000	20	3.91%
	NTD95,001 (inclusive)	5	0.80%

4.2 Date analyzing

This study uses T-test and variance analysis to detect.In the analysis of the variance, after the first phase of the test, Duncan was used for post-mortem verification. The relevant information was shown in Table 2, 3, 4,5.The results of the T-test analysis showed that different genders showed significant differences in various factors. Overall, male participants were significantly more prominent than females.In the age and total quality management variance analysis, there were significant differences, among which customer relationship management, product design management, continuous improvement.In post hoc comparison, there were some significant differences, as shown in Table 3.In the analysis of education level and total quality management variance, there were significant differences, among which customer relationship management, product design, quality information, continuous improvement.In the post hoc comparison, there were some significant differences, as shown in Table 4.In the analysis of average income and total quality management variance, there were significant differences, among which customer relationship management, product design, continuous improvement.In post hoc comparison, there were some significant differences, as shown in Table 5.

Table 2.Gender T test analysis table

Variables	Gender	Average	T-value	Variables	Gender	Average	T-value
Customer relationship management	Males	3.94	3.84**	Quality information	Males	3.85	4.15**
	Females	3.76			Females	3.65	
Personnel training	Males	3.83	5.64**	Continuous improvement	Males	3.93	5.83**
	Females	3.56			Females	3.66	
Product design management	Males	3.90	4.69**	Procedure management	Males	3.72	4.66**
	Females	3.68			Females	3.55	

Note: * p＜.05, **p＜.01

Table 3.Age of variance analysis table

Variables	Age	Average	Age	Average	P-value	Post hoc comparison
Customer relationship management	(1)	3.95	(4)	3.67	5.53**	(1) > (3) (2) > (3)
	(2)	3.91	(5)	3.66		
	(3)	3.58	(6)	3.73		
Personnel training	(1)	3.71	(4)	3.51	5.04**	N/A
	(2)	3.71	(5)	3.57		
	(3)	3.47	(6)	3.60		
Product design management	(1)	3.73	(4)	3.60	6.11**	(1) > (3) (2) > (5)
	(2)	3.82	(5)	3.55		
	(3)	3.55	(6)	3.51		
Quality information	(1)	3.99	(4)	3.70	5.99**	N/A
	(2)	3.93	(5)	3.87		
	(3)	3.67	(6)	4.08		
Continuous improvement	(1)	3.69	(4)	3.53	3.07**	(1) > (3) (3) > (4)
	(2)	3.81	(5)	3.59		
	(3)	3.43	(6)	3.79		
Procedure management	(1)	3.94	(4)	3.84	7.85**	N/A
	(2)	3.92	(5)	3.68		
	(3)	3.62	(6)	3.80		

Note:1.(1) 21-30 years old ；(2)31-40 years old ；(3) 41-50 years old ；(4) 51-60 years old；(5)61-65 years old；
(6) Above 65 years old (inclusive)
2.* p＜.05, **p＜.01
3. N/A: No results after the event.

Table 4.Educational level of variance analysis table

Variables	Educational level	Average	Educational level	Average	F-value	Post hoc comparison
Customer relationship management	(1)	3.54	(3)	3.34	3.04**	(3) > (2)
	(2)	3.48	(4)	3.21		
Personnel training	(1)	3.69	(3)	3.41	3.07**	N/A
	(2)	3.81	(4)	3.53		
Product design management	(1)	3.81	(3)	3.56	2.64**	(3) > (2)
	(2)	3.90	(4)	3.67		
Quality information	(1)	3.72	(3)	3.35	4.25**	(3) > (1) (4) > (2)
	(2)	3.78	(4)	3.54		
Continuous	(1)	3.50	(3)	3.20	3.86**	(4) > (1)

improvement	(2)	3.57	(4)	3.27		(4) > (2)
Procedure management	(1)	3.95	(3)	3.61	7.18**	N/A
	(2)	3.98	(4)	3.80		

Note:1.(1) Senior (vocational) schools；(2)Junior colleges；(3)Colleges and universities；(4)Post-graduate schools.
2.* p＜.05, **p＜.01
3.N/A: No results after the event.

Table 5.Average monthly incomeof variance analysis table

Variables	Average monthly income	Average	Average monthly income	Average	F-value	Post hoc comparison
Customer relationship management	(1)	3.74	(4)	3.92	4.08**	(2) > (5) (1) > (4)
	(2)	3.73	(5)	4.21		
	(3)	3.86	(6)	4.02		
Personnel training	(1)	3.64	(4)	3.65	1.47	N/A
	(2)	3.60	(5)	3.86		
	(3)	3.64	(6)	3.74		
Productdesign management	(1)	3.63	(4)	3.75	4.68**	(2) > (5)
	(2)	3.59	(5)	4.18		
	(3)	3.72	(6)	4.06		
Quality information	(1)	3.89	(4)	3.93	3.43**	N/A
	(2)	3.80	(5)	4.19		
	(3)	3.81	(6)	4.12		
Continuous improvement	(1)	3.69	(4)	3.76	2.51*	(2) > (5) (4) > (2)
	(2)	3.63	(5)	4.08		
	(3)	3.71	(6)	3.88		
Procedure management	(1)	3.77	(4)	3.94	5.38**	N/A
	(2)	3.70	(5)	4.25		
	(3)	3.83	(6)	4.17		

Note:1.(1) NTD20,001-NTD35,000 ； (2)NTD35,001-NTD50,000 ； (3)NTD50,001-NTD65,000 ； (4) NTD65,001-NTD80,000；
(5)NTD65,001-NTD80,000；(6)NTD95,001 (inclusive)
2.* p＜.05, **p＜.01
3.N/A: No results after the event.

V. CONCLUSIONS

According to the results of this study, gender has a significant impact on overall quality management, which means that both males and females pay considerable attention to the Total Quality Management of road races. Age has a significant impact on Total Quality Management. In Post hoc comparison, customer relationship management, product design management and continuous improvement, 21-30 years old participants are more important than 41-50 years old participants.In addition, 31-40 years old participants paid more attention to the customer relationship management than 41-50 years old. 31-40 years old Participants paid more attention to product design management than 61-65 years old. 41- 50 years old participants valued more than 51-60 years old in the continuous improvement facet.

Educational level has a significant impact on Total Quality Management. In the post hoc comparison, customer relationship management and product design management section, the colleges and universities participants are more important than the junior colleges participants. Quality information and continuous improvement, post-graduate schools participants are more important than junior colleges participants.The average monthly income has a significant impact on the overall quality management component. In the post hoc comparison, customer relationship management continuous improvement, and product design management section, the NTD35,001-NTD50,000 participants valued the NTD65,001-NTD80,000 participants.

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