A COMPARISON OF VM TRAINING AND CERTIFICATION SYSTEMS: AN EMPIRICAL STUDY ACROSS DIFFERENT COUNTRIES

Mei-yung LEUNG [1], Xuemei XIE [2]

[1] Department of Building and Construction, City University of Hong Kong, PRC,
[2] School of Management, Shanghai University, PRC
bcmei@cityu.edu.hk

ABSTRACT

Value management (VM) is a multidisciplinary team approach with a structured and analytical process for obtaining the best value. Comprehensive VM training and certification systems will be conducive to the success of future VM practices. On the basis of a sample of 87 valid responses collected by an international questionnaire survey, this study empirically explores the practices of VM training and certification systems in different countries, namely the United States of America, the United Kingdom, Hong Kong, Australia, and other countries. The findings reveal that there are significant differences in the VM training and certification systems of different countries and that the United States of America has the most appropriate training and certification system, while the results confirm that the mean scores of most items for Hong Kong are lower than those for other countries. These results indicate the lack of a comprehensive VM training and certification system for the improvement of VM application in Hong Kong.

Keywords: Certification Systems; Facilitator Standard; Value Management; Training

1. INTRODUCTION

There have been over 60 years of value management (VM) services since VM was established by an American purchase engineer, Lawrence Miles, in 1947 in the United States of America. Generally, VM is defined as "organized methodology applied to the analysis of functions, components, goods and services, from the point of view of the system as a whole, to satisfy the required functions of the project at the lowest total cost without compromising quality and standard performance" (EWTB TC No. 35/2002, Appendix, p.1).

As an important tool for enhancing performance and reducing costs in the construction industry, the application of VM has spread throughout the world, reaching Japan in 1965, France in 1975, China in 1978, Australia in 1978, Canada in 1980, and Italy in 1985 (Fong and Shen 2000; Leung 2002). The major VM initiatives include a VM standard, VM training, and the VM certification systems in practice. However, Hong Kong lacks a comprehensive VM training and certification system, hindering the further development and application of VM in Hong Kong's industries.

To improve VM practice internationally, this paper investigates VM training and certification systems in the United States of America (USA), the United Kingdom (UK), Australia, Hong Kong, and other countries, comparing the differences in their practices.

2. VM TRAINING AND CERTIFICATION SYSTEMS IN DIFFERENT COUNTRIES

VM Training in Different Countries

VM training aims to develop competent VM professionals. During the past few years, some international families of VM institutions have developed their own training and certifications systems (Cleton 2006; Hannan 2002). The international formal training courses in some key countries are summarized in Table 1.

Table 1: Summary of International Formal Training Courses (Australian VM Standard 2007; European Standard 2000; Hannan 1996, 2002; SAVE 2005)

Countries	**USA**	**UK**	**Australia**
Training Course	Module I Module II	Foundation Course Advanced 1 Course Advanced 2 Course Train the Trainer Course	Accredited training program

Table 1 shows that there is a two-level formal training course in the USA. The lower level training course (Module I) introduces the fundamental value concepts to the learner, while the higher level training course (Module II) provides a complete picture of VM application. The accredited training programs in Australia are independent programs comprised of modules providing VM knowledge as well as facilitation skills. There are three levels of training courses, as well as a trainer course, for VM practitioners in the UK, so that these practitioners can uphold and develop high-quality training courses successfully in the real world. Although there is no formal qualification system in Hong Kong, VM courses have been developed at universities since 1995.

VM Certification Systems in Different Countries

Similar to VM training, the aim of VM certification systems is to develop competent VM professionals. The *USA* has adopted a three-level certification system for different levels of practitioners: basic VM practitioners, intermediate VM professionals, and full-qualified VM professionals. Each unique qualifying criterion is composed of a professional certification system, training program approval, and an examination. The certification system in the *UK* is designated for VM analysts, professionals, and trainers, while there are three levels of certification for VM practitioners: Certified Value Analyst, Professional in Value Management, and Trainer in Value Management. In *Australia*, there is only one qualification, and the accreditation is proposed towards the recognition of VM facilitators only. In general, the requirements for certification in the UK and Australia are slightly different from the US system. There is in *Hong Kong*, however, no formal certification system for VM professionals, but facilitators with two levels of recognition, List A and List B facilitators, are adopted. List B facilitators generally involve less VM experience, while the List A facilitators are considered as an experienced VM facilitators, especially for the governmental projects in Hong Kong..

3. RESEARCH METHODOLOGY

Survey Design and Data Source

To investigate international VM training and certification systems, a questionnaire survey was conducted among international VM facilitators and participants in the USA, the UK, Hong Kong, and Australia

between December 2007 and February 2008. In this questionnaire, respondents were asked to indicate their level of agreement with statements given about the VM standard, as well as training and certification systems, in their countries. The items were assessed with a Likert-type scale ranging from 1 to 7 wherein 1 = "Strongly Disagree" and 7 = "Strongly Agree".

The data were collected using a cross-sectional international survey approach by sending questionnaires to 420 VM facilitators and participants. A total of 93 questionnaires were returned, of which 87 were valid, resulting in a response rate of 18.13%.

There were 35 (40.23%), 16 (18.39%), 11 (12.64%), 10 (11.49%), and 15 (17.24%) of the respondents from Hong Kong, the USA, Australia, the UK, and other countries, respectively. In this study, the mean, the standard deviation, and an independent-sample t-test were used to compare the VM training and certification systems in different countries. SPSS 16.0 software was used for the quantitative analysis.

4. RESULTS

The results of the study, which are analyzed using SPSS 16.0, are presented in the following two parts: (1) statistics for the data including the mean and SD, and (2) the comparison of VM training and certification systems in different countries.

Descriptions of VM Training and Certification Systems in Different Countries

Table 2 shows that the mean scores of the total sample for the six items are all higher than the mid-point of the seven-point scale (i.e., 3.5). This indicates that there are active VM training practices and qualification systems in these countries. "Competence of trained VM specialists" (Q4) and "Sufficient certification system" (Q5) are the two highest scoring items of VM training and certification systems with means of 4.989 and 4.655, respectively, while the mean score of "Adequate trained VM specialists" (Q3) is the lowest at 4.000. This result reveals that, in comparison with other items, in general there is a paucity of adequate trained VM specialists.

In general, the results indicate that Q4 obtained the highest scores out of the six items for the UK, Australia, Hong Kong, and other countries groups, while Q1 (standard performance) was the outstanding high item for the US group. Q6 (certification for VM competence) was the lowest scoring item in the US and UK groups. Therefore, the current certification systems of both countries still have room for improvement. Q3 (Adequate VM specialists) was the lowest scoring item in the Australia, Hong Kong, and other countries groups, indicating an insufficient number of VM specialists in these countries.

As the mean score of each item for the US group was significantly higher than that of other countries, we can infer that the USA has the most appropriate training and certification system at present. However, the mean scores of most items for Hong Kong were lower than those for other countries, indicating that Hong Kong still lacks a comprehensive VM training and certification system.

Table 2: VM Training and Certification Systems in Different Countries

Location		Q1	Q2	Q3	Q4	Q5	Q6
		Standard	Training			Certification	
		Established standard performance	VM trainings in local context	Adequate trained VM specialists	Competence of trained VM specialists	Sufficient certification system	Current certification helps VM competence
Total	Mean	4.494	4.264	*4.000*	**4.989**	**4.655**	4.391
	SD	1.454	1.544	1.592	1.289	1.292	1.631
USA	Mean	**6.250**	5.938	5.688	**6.125**	6.000	*5.625*
	SD	1.302	1.062	1.302	1.025	1.21	1.204
UK	Mean	5.000	5.500	**5.600**	**5.800**	5.200	*4.900*
	SD	0.943	1.080	0.843	0.919	0.789	1.101
Australia	Mean	3.909	3.364	*2.818*	**5.090**	**4.546**	3.636
	SD	1.375	1.690	1.328	0.944	1.128	2.157
Hong Kong	Mean	3.629	3.629	*3.429*	**4.143**	**3.943**	3.686
	SD	0.985	1.060	0.948	1.033	1.056	1.323
Other	Mean	**4.930**	3.800	*3.330*	**5.130**	4.600	4.270
	SD	1.580	1.320	1.543	1.246	1.056	1.534

Comparison of VM Training and Certification Systems in Different Countries

The results of independent-sample t test (see Table 3) show that there were significant differences ($p < 0.001$ or $p < 0.01$) for all six items between the USA and Australia, between the USA and Hong Kong, between the UK and Australia, and between the UK and Hong Kong. The mean scores of the six items for the USA were all positively higher than those for Australia and Hong Kong and that the mean scores of all six items for the UK were higher than those for Australia and Hong Kong.

The mean scores of "Sufficient certification system" (Q5) and "Established standard performance" (Q1) for the US group were significantly higher than those for the UK group (t-values of 1.851 for Q5 and 3.038 for Q1; *p*-value < 0.05), while the mean scores of "Adequate trained VM specialists" (Q3) and "Competence of trained VM specialists" (Q4) in the Australia group were significantly higher than those in the Hong Kong group (t-values of -1.687 in Q3 and 2.706 in Q4; *p*-values < 0.05).

Table 3 Comparison of VM Training and Certification Systems in Different Countries

		Standard	Training			Certification	
		Q1	Q2	Q3	Q4	Q5	Q6
Location		Established standard performance	VM trainings in local context	Adequate trained VM specialists	Competence of trained VM specialists	Sufficient certification system	Certification helps VM competence
USA - UK	Mean diff.	**1.250**	0.438	0.088	0.325	0.800	0.725
	t-value	**3.038*** **	1.015	0.188	0.817	1.851*	1.542
	sig.	0.006	0.320	0.852	0.422	0.077	0.136
USA - Aust	Mean diff.	**2.341**	**2.574**	**2.869**	**1.034**	**1.455**	**1.988**
	t-value	**4.987*** **	**4.480*** **	**5.581*** **	**2.658** **	**3.151*** **	**2.774** **
	sig.	0.000	0.000	0.000	0.013	0.004	0.015
USA - HK	Mean diff.	**1.171**	**1.871**	**2.171**	**1.657**	**1.257**	**1.214**
	t-value	3.347***	4.906***	6.531***	4.575***	3.486***	2.646**
	sig.	0.002	0.000	0.000	0.000	0.001	0.011
USA - Other	Mean diff.	**1.983**	**2.138**	**2.354**	**0.992**	**1.400**	0.692
	t-value	**4.206*** **	**4.981*** **	**4.601*** **	**2.427** **	**3.421*** **	1.377
	sig.	0.000	0.000	0.000	0.022	0.002	0.179
UK - Aust	Mean diff.	**1.091**	**2.136**	**2.782**	0.709	0.655	1.264
	t-value	**2.136** **	**3.483*** **	**5.661*** **	1.741*	1.552	1.713
	sig.	0.047	0.003	0.000	0.098	0.138	0.107
UK - HK	Mean diff.	**1.171**	**1.871**	**2.171**	**1.657**	**1.257**	**1.214**
	t-value	**3.347*** **	**4.906*** **	**6.531*** **	**4.575*** **	**3.486*** **	**2.646** **
	sig.	0.002	0.000	0.000	0.000	0.001	0.011
UK - Other	Mean diff.	0.733	**1.700**	**2.267**	0.667	0.600	-0.033
	t-value	1.346	**3.380*** **	**4.224*** **	1.446	1.531	-0.058
	sig.	0.191	0.003	0.000	0.162	0.139	0.954
Aust - HK	Mean diff.	0.081	-2.649	-0.610	0.948	0.603	-0.049
	t-value	0.180	-0.491	-1.687*	2.706*	1.625	-0.072
	sig.	0.860	0.632	0.099	0.010	0.111	0.944
Aust - Other	Mean diff.	-0.358	-0.436	-0.515	-0.042	-0.055	-1.297*
	t-value	-0.613	-0.740	-0.891	-0.095	-0.126	-1.773
	sig.	0.546	0.466	0.382	0.925	0.900	0.089
HK - Other	Mean diff.	-0.438	-0.171	0.095	**0.990**	**-0.657**	**-1.248**
	t-value	-1.212	-0.487	0.267	**-2.919*** **	**-2.017** **	**-2.882*** **
	sig.	0.232	0.629	0.790	0.005	0.049	0.006

Note: * denotes that the mean difference is significant at the 0.10 level.
** denotes that the mean difference is significant at the 0.05 level.
*** denotes that the mean difference is significant at the 0.01 level.

In general, the mean scores of the six items between the USA and the UK, between Australia and Hong Kong, and between Australia and the other countries group were similar. The US group obtained the highest scores in the VM *standard* item, while the Hong Kong group obtained the lowest scores. Both the US and UK groups *trained* VM specialists better than did the other groups (Australia, Hong Kong, and other countries), while the Australia group did so better than the Hong Kong group. The USA has more sufficient VM *certification* systems than does Australia, Hong Kong, and the other countries group, while Australia and the other countries group have more sufficient VM certification systems than does Hong Kong.

In sum, the results confirm that there are significant differences in VM training and certification systems in different countries. In comparison to all other groups, Hong Kong lacks a comprehensive VM training and certification system. Most practitioners in Hong Kong misunderstand and have false

perceptions of VM (Fong and Shen 2000). In the following section, therefore, a few suggestions are made with regard to VM training and certification, especially for industry in Hong Kong.

5. RECOMMENDATIONS

Based on the empirical results of this study, a number of recommendations related to VM standards, VM training, and VM certification are suggested below.

VM Standard

As the VM standard performance item for the USA obtained the highest scores in the study, the *SAVE Standard* is suggested to be used as a base for international application. The SAVE Standard was first published in May 1997 and was revised in June 2007. The Standard basically deals with VM study, including guidance and supporting information for VM practitioners. It adopts an approved job plan, a body of knowledge, and typical profiles of value managers and value specialists, and it designates the duties of a value organization (SAVE 1998; SAVE 2007). It is recommended here that the current SAVE Standard be adopted and amended for countries such as Hong Kong and Australia.

VM Training

Adequate VM training should be advocated by these countries. The study reveals that both the *two levels* of formal training courses used by the SAVE Standard in the USA (i.e., a lower level training course and a higher level training course) and the *three levels* of training courses adopted by the UKIVM in the UK (i.e., two courses for the lower level, one course for the advanced level, and one additional course for the trainer) constitute satisfactory VM training approaches in practice.

VM Certification Systems

On the other hand, the VM certification systems in the USA and the UK are good examples for Hong Kong, Australia, and other countries to follow. It is suggested that in these countries, the *two-level certification system* (a lower level (AVS/CVA) and a higher level (CVS/PVM) in the USA/UK) be applied to VM facilitator qualification. If possible, the TVM qualification used in the UK should also be adopted for VM trainer qualification.

6. CONCLUSION

On the basis of a sample of 87 valid responses collected through an international questionnaire survey, this study has empirically explored the practices of VM training and certification systems in different countries, including the USA, the UK, Hong Kong, Australia, and other countries. The findings reveal that there are significant differences in the VM training and certification systems in different countries. The USA has established the most appropriate VM training and certification system, while Hong Kong lacks a comprehensive VM training and certification system.

The study not only reveals general VM practices in different countries but also indicates global expectations for VM training and certification systems. A number of recommendations are therefore made: (1) that the SAVE Standard in the USA be used as a basic document for the development and modification of VM standards in different countries; (2) that there be two levels (USA) or three levels (UK) of formal training courses for VM facilitators plus an additional course for VM trainers; and (3) that there be a two-level certification system for VM facilitator qualification plus an additional qualification

for VM trainers. A comprehensive VM training and certification system will be conducive to the success of future VM practices. To identify the best VM training and certification system, further study on the relationship between the practices of VM training and certification systems and the outcome performance of VM is recommended.

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REFERENCES

Australian Standard (2007) *Australian Standard: Value Management (AS 4183:2007)*, Australia: Standards Australia.

Cleton, D.A. (2006) Dutch certification and education system, combining the best of SAVE and EGB methods. *Delivering Value Today and Tomorrow Conference*, UK: Institute of Value Management, paper 17.

British Standard (2000a) *Value Management: BS EN 12973:2000*, UK: British Standards Institution.

EWTB (2002) Implementation of value management in public works projects. *Technical Circular (Works) No. 35/2002*, Hong Kong: Environment, Transport and Works Bureau.

Fong, S.W., Shen, Q. (2000) Is the Hong Kong construction industry ready for value management? *International Journal of Project Management*, 18, 317-326.

Hannan, D. (2002) A re-evaluation of our profession: Customized role specific training programs & client specific VE workshops, *SAVE International Annual Conference Proceedings*, volume XXXVI, Fort Lauderdale, Florida.

Hannan, D. (1996) Truncated training for value management team leaders: A 10 week program or a one day seminar? *SAVE International Conference Proceedings*.

HKIVM. Hong Kong Institute of Value Management. http://www.hkivm.com.hk/ accessed 1 June 2007.

Leung, M.Y., Ng, S.T., Cheung, S.O. (2002) Improving satisfaction through conflict stimulation and resolution in value management. *Journal of Management in Engineering*, 18(2), 68-75.

Leung, M.Y., Wong, A.K.M. (2002) Responsibilities of facilitators and participants in the VM process. *The Value Manager*, 8(2), 6-10.

Leung, M.Y. (2006) Why offer VM at universities? The Hong Kong experience. *The Value World*, 29(1), 20-24.

Miles, L.D. (1989) *Techniques of Value Analysis and Engineering*, 3rd edition, Published by Eleanor Miles Walker Executive Director, Lawrence D. Miles Value Foundation, New York.

SAVE. (1998) *Value Methodology Standard*, Society of American Value Engineering, October 1998.

SAVE. (2007) *SAVE International Certification and Recertification Manual*, 8th edition, US: SAVE International "The Value Society."

Shen, Q.P. (2006) VM in Hong Kong: Research and development. *SAVE International Government Value Management Conference Proceedings*, US: SAVE International "The Value Society."