

IMPLEMENTATION OF SAFETY POLICY AND SAFETY SYSTEM FOR CONSTRUCTION COMPANIES IN HONG KONG - SENIOR MANAGEMENT'S PERSPECTIVE

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This paper is aimed to identify the stage of development of safety policy and safety system for construction companies in Hong Kong, and to analyze the perception of senior management of these companies towards the implementation of safety policy and safety system. A total of 280 questionnaires were sent to senior management of construction companies in August 1995. A total of 44 responses were received and the responding rate was at 16%. Mailing of the questionnaires was based on the contractors' list published in the Building Directory. Senior management including directors, partners, associates and general managers etc. There were 21 responses from Group C contractors and 23 responses from Non-group C contractors. Feedback including data such as safety targets, communication of safety policy, organization of safety system, safety committee, and safety budget. Group C contractors are eligible to tender for government contracts with unlimited tender price level under the Works Branch of the Hong Kong Government, and they represent those contractors who are better established with proven track records. The responses from Group C and Non-group C contractors were analyzed separately and compared in this study, with the assumption that senior management of Group C contractors are more advanced in the implementation of safety policy and safety system as compared to their counterparts in Non- , group C contractors. SPSS statistical package was used for the analyze in this study. Mean- comparison was used in order to test the hypothesis of significant differences between Group C and Non-group C contractors.

Keywords: Communication, safety budget, safety department & committee, safety policy, safety system, safety target.

INTRODUCTION

The Hong Kong Construction Industry has an exceptionally high accident rate. As one of the four major industries in Hong Kong, the number of accidents for the construction industry was at 15,268 from a working population of 65,000 in 1995. 220 per 1,000 construction workers were injured in 1996 including 51 fatal cases, according to Lee (1997).

Due to the high construction accident rate, the Hong Kong Government is now in the process of tightening the safety monitoring of construction companies. This is being done by amendment of the existing legislation, including the consideration of legislative requirements for the compulsory establishment of safety policy and safety system for construction companies. This paper is intended to analyze the current state of play for the implementation of safety policy an safety system in construction companies in Hong Kong. The perception of senior management is important because

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after all, they are the people who formulate safety policy and safety system in construction companies. Their understanding of the functions of safety policy and safety system, as well as their promotion and support for the development of safety policy and safety system are useful in order to improve the safety record of the Construction Industry in Hong Kong.

SAFETY POLICY

Establishment of the Written Safety Policy

Table 1 indicates when the Written Safety Policy (WSP) of those responding companies were prepared. There is no significant difference between Group C and Non-group C contractors (observed significant level of the test is at 0.508) in terms of duration for the establishment of WSP. However, 20 out of the 34 responses from both groups have their WSP prepared in the last few years (i.e. 7 in 1993, 8 in 1994 and 5 in 1995). The mean value for the establishment of WSP for all responses is at 1991. The 25th percentile is at 1988; the 50th percentile is at 1993 and the 75th percentile is at 1994 respectively. In general, most contractors in Hong Kong do not see the importance of having WSP for their companies and their staff until recent years.

Table 1: Companies Have a WSP Since Which Year

Prepared Since Year	Group C			Non-group C			Pearson Chi-square Test
	WSP	Total	%	WSP	Total	%	
1995	3	18	16.7	2	16	12.5) 0.508
1994	2	18	11.1	6	16	37.5	
1993	4	18	22.2	3	16	18.8	
1992	1	18	5.6	1	16	6.3	
1991	0	18	0	1	16	6.3	
1990	0	18	0	1	16	6.3	
1989	2	18	11.1	0	16	0	
1988	0	18	0	0	16	0	
1987	3	18	16.7	1	16	6.3	
1986	1	18	5.6	0	16	0	
1985	1	18	5.6	0	16	0	
1984	0	18	0	0	16	0	
1983	0	18	0	0	16	0	
1982	1	18	5.6	1	16	6.3	

SAFETY TARGETS

15 out of the 21 (71.4%) responses from Group C contractors commented that they had clearly measurable safety objectives or targets, as compared to 5 out of the 23 (21.7%) responses from Non-group C contractors. Chi-square test indicates the significant level is at 0.01, which implies that there is significant difference between the two groups in terms of setting measurable safety targets.

11 out of the 15 (73.3%) responses from Group C contractors commented that they had 0% Fatal Accident Targets (FAT). 2 Group C contractors set their FAT value at 2%, and another 2 set their FAT value at 3%. Mean value of FAT for Group C contractors equal to 0.67%. Only 1 out of the 23 of Non-group C contractors has indicated a fatality target level at O. All others do not have a fatality target. A high level (25 nos.) of "not applicable (n.a.)" responses (56.8%), particularly for Non-group C contractors. There are 19 "n.a." out of a total of 23 numbers of Non-group C contractors (82.6%). This indicated that most Non-group C contractors do not have a fatality target in their companies.

In a total of 44 responses, only 8 out of the 21 (38%) Group C contractors and 2 out of the 23 (9%) contractors have set non-fatal accident targets for their companies. In Table No.2, Non-fatal Accident Target (NAT) value for Group C contractors ranged from 0% to 10%, with a mean value of 4.2%. NAT value for Non-group C contractors ranged from 10% to 14% with a mean value equal to 12%. Although the significant level is at 0.212, which implies that there is no significant difference between the two groups. Clearly, Group C contractors are setting higher safety targets (i.e. lower NAT) than Non-group C contractors.

Table 2: Companies' Non-fatal Accident Targets (NAT)

Non-fatal Accident Target	Group C			Non-group C			Pearson Chi-square Test
	NAT	Total	%	NAT	Total	%	
0%	3	8	37.5	0	2	0)
0%-1%	0	8	0	0	2	0)
1.1%-2%	0	8	0	0	2	0)
2.1%-3%	2	8	25.0	0	2	0)
3.1%-4%	0	8	0	0	2	0)
4.1%-5%	0	8	0	0	2	0)
5.1%-6%	0	8	0	0	2	0) 0.212
6.1%-7%	0	8	0	0	2	0)
7.1%-8%	1	8	12.5	0	2	0)
8.1%-9%	0	8	0	0	2	0)
9.1%-10%	2	8	25.0	1	2	50.0)
10.1%-11%	0	8	0	0	2	0)
11.1%-12%	0	8	0	0	2	0)
12.1%-13%	0	8	0	0	2	0)
13.1%-14%	0	8	0	1	2	50.0)

COMMUNICATION OF THE COMPANY SAFETY POLICY (CSP)

In Table 3, 12 out of the 18 (66.7%) Group C contractors commented that they had their CSP written in both Chinese and English. Only 6 out of the 17 (35.5%) Non-group C contractors had their CSP written in both languages. The significant level is equal to 0.137. It is interesting to note that there is no Group C contractors to have their CSP written in Chinese alone, and there is only 1 Non-group C contractors has its CSP written in Chinese. The use of Chinese language as a mean of communication for CSP is being substantially under utilized, and its value is being under estimated.

Table 3: Your Company's Safety Policy (CSP) is Written in Which Language?

Medium	Group C			Non-group C			Pearson Chi-square Test
	CSP	Total	%	CSP	Total	%	
3.1 English Only	6	18	33.3	10	17	58.7) 0.137
3.2 Chinese Only	0	18	0	1	17	5.9	
3.3 Both English and Chinese	12	18	66.7	6	17	35.3	

Generally speaking, Group C contractors use various methods to communicate CSP to their workers on site to a greater extent as compared with Non-group C contractors, as indicated in Table 4. The overall average percentage of using any kind of communication methods by Group C contractors is 28.7% and that for Non-group C contractors is 18.8%.

Also, there is a significant difference between the two groups in terms of communication methods of CSP to workers on site. For example, memo/document (observed significant level at 0.01), safety handbook and verbal instruction (observed significant level at 0.025).

It is interesting to note that no Group C contractors use "verbal instruction" as one of their communication methods and no Non-group C contractors use "safety handbook" to communicate their CSP to workers on site. It indicated that Group C contractors often use written documents such as memo and safety handbook and Non-group C contractors prefer to use verbal instruction to communicate their CSP to workers on site. The former is a more formal communication method and the latter is less formal.

Table 4 Communication Methods of CSP to Workers on Site

	Group C			Non-group C			Pearson Chi-square Test
	Use	Total	%	Use	Total	%	
4.1 Poster	11	17	64.7	9	18	50.0	0.380
4.2 Leaflet	4	17	23.5	3	18	16.7	0.612
4.3 Memo/Document	13	17	76.5	6	18	33.3	0.010
4.4 Plastic Card	1	17	5.9	1	18	5.6	0.967

4.5 Others							
Training Course	5	17	29.4	1	18	5.6) 0.025
Safety Handbook	3	17	17.6	0	18	0	
Safety Meeting	2	17	11.8	2	18	11.1	
Verbal Instruction	0	17	0	5	18	27.8	

PRIORITY FOR SAFETY POLICY

In Table 5, the data indicates that the ranking of importance by Group C contractors are (1) safety, (2) quality, (3) anti-corruption and (4) professional ethics. However, the ranking of importance by Non-group C contractors are quite different. They are (1)

quality, (2) safety, (3) anti-corruption and professional ethics. It implies that in general, large contractors are more concerned with safety and smaller contractors are more concerned with quality issues.

Table 5: Rank the Importance of All Policies

Ranking of all policies:	Mean		Variance	
	Group C	Non-group C	Group C	Non-group C
5.1 Quality	1.57*	1.57*	0.557	0.657
5.2 Anti-corruption	2.93*	3.35*	0.638	1.243
5.3 Professional ethics	3.38*	3.35*	0.923	1.243
5.4 Safety	1.29*	1.62*	0.214	0.548

Note: * Ranking from 1 to 5 according to the level of importance. 1 (most important) and 5 (least important). In other words, the smaller the number, the higher is the level of importance.

SAFETY SYSTEM

Safety Department

There is significant difference between the two groups as indicated in Table 6. 71.4% of Group C responses commented that they have a department which is specifically responsible for the implementation of the company's safety system, as compared to only 39.1% from Non-group C contractors. An observed significant level of 0.032 implies that there is significant difference between the two groups in terms of having a department specifically responsible for the safety system. A higher percentage of Group C contractors are having a department specifically responsible for their safety systems as compared with Non-group C contractors.

Table 6: Does Your Company Have a Department Specifically Responsible for the Safety System?

	Group C			Non-group C			Pearson Chi-square Test
	Yes	Total	%	Yes	Total	%	
Department responsible for the safety system	15	21	71.4	9	23	39.1	0.032

SAFETY COMMITTEE

In Table 7, two-thirds (@ 66.7%) of the Group C contractors have safety committees at company level, against only slightly more than one-third (@39.1%) of the Non-group C contractors. Thus large contractors are more likely to have safety committee at company level than contractors of smaller size.

Table 7: Companies Have a Safety Committee at company Level

	Group C			Non-group C			Pearson Chi-square Test
	Nos.	Total	%	Nos.	Total	%	
Have a safety committee at company level	14	21	66.7	9	23	39.1	0.068

SAFETY BUDGET

It is worthwhile noting that in the study by Tang (1992), a minimum amount at 0.55% of construction contract sum is being recommended for the investment on employing safety personnel and purchasing safety equipment. If using 0.55% as the yardstick, more than 30% of Group C and 47.6% of Non-group C contractors are having their safety investment lower than the recommended level, as shown in Table 8.

Table 8: Money Spend on the Safety System As a Percentage of the Company's Annual Turn-over

	Group C			Non-group C			Pearson Chi-square Test
	Nos.	Total	%	Nos.	Total	%	
8.1 Less than 0.1%	3	20	15	10	21	47.6)
8.2 0.1% - 0.4%	3	20	15	0	21	0)
8.3 0.5% - 0.9%	9	20	45	3	21	14.3) 0.026
8.4 1% - 1.9%	5	20	25	7	21	33.3)
8.5 2% - 3.9%	0	20	0	1	21	4.8)

Note: 3 nos. of n.a. are being excluded from the analysis.

TIME SPEND ON SAFETY BY SENIOR MANAGEMENT

In Table 9 and Table 9A, senior management (i.e. safety decision makers) of Group C contractors spent 2% to 3.9% (i.e. 1 hr. to less than 2 hr. per week) (assume an average of 50 working hours per week), and senior management of Non-group C contractors spent 1 % to 1.9% (1/2 hr. to less than 1 hr. per week) on safety related matters.

Table 9: Time Spend on Safety As a Percentage of Your Overall Workload

	Group c			Non-group C			Pearson Chi-square Test
	Nos.	Total	%	Nos.	Total	%	
Less than 1% (less than ½ hr.)	4	19	21.1	7	23	30.4)0.401
1% - 1.9% (1/2 hr. to less than 1 hr.)	6	19	31.6	6	23	26.1	
2% - 3.9% (1 hr to less than 2 hr.)	4	19	21.1	3	23	13.0	
4% - 7.9% (2 hr. to less than 4 hr.)	0	19	0	3	23	13.0	
8% - 11.9% (4 hr. to less than 8 hr.)	0	19	0	1	23	4.3	
12% and above (6 hr. and above)	5	19	26.3	3	23	13.0	

Note: 2 nos. of n.a. are being excluded from the analysis.

Table 9A: Mean Value of Time Spend on Safety As a Percentage of Workload by Senior Management

	Group C	Non-group C
Mean	3.0526	2.7391
Variance	3.719	3.020
Standard Deviation	1.9285	1.7377
Minimum	1	1
Maximum	6	6
Range	5	5

CONCLUSION

The finding of this study confirmed that Group C contractors, which represent large contractors in Hong Kong, are more advanced in the establishment of company safety policy and company safety system as compared with Non-group C contractors. There are also strong indication in this study that Group C contractors are in general better safety performers than Non-group C contractors in terms of implementation of safety policy and safety system.

Significant differences can be found between Group C and Non-group C contractors in the establishment of safety department, and the annual budget allocation for the up-keeping of safety system as a percentage of company's turnover.

Well established safety policies and safety systems from selected Group C contractors can be used as a model for contractors of smaller size to follow.

As stated by Wong et. al. (1996), "Different levels of safety education and training are required for different categories of construction personnel. Construction professional have to be aware of the current legislative requirements on construction safety. Also they have to understand and be able to formulate safety policy, as well as to implement safety systems in their companies and projects ". Obviously, safety education and training of senior management and decision makers of Non-group C contractors are important areas for development by those concerned institutions in Hong Kong, such as the Occupational Safety and Health Council, and the Construction Industry Training Authority.

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