# Chapter 5 : Discussion & Recommendations

According to the survey results, the multi-layers subcontracting practice has been extreme adopted in the current construction market. The contractors would sublet a minimum of 30 to 50% of their works to other subcontractors, majority of them would sublet over 80% of the works out and the subcontracting layers usually would not be controlled or limited. This finding was in line with the research for the Construction Site Safety in Hong Kong which conducted by Lingard and Rowlinson (1994) that there were extreme numbers of small size subcontractors survives in the industry and therefore majority of construction workers in the market have employed by subcontractors. Meanwhile, majority contractors considered that the multi-layers subcontracting practice as the most effective way for cost control, and it was almost impracticable to monitor the subcontracting levels. Adoption of the proposed strategy of restricting the multi-layers subcontracting practice might have great impacts to the whole industry and the society. Prior the Government adopts this new strategy, a detail consideration and a common understanding with the construction industry should be achieved first.

However, observed from the survey results that the multi-layers subcontracting practice were proved to have correlation with the safety performance. That is, higher the percentage of works being sublet, or higher percentage the subcontractors' employees employed at a project, higher the accident rate was resulted. This finding was found in line with the research result of Salminen (1995) that the accident risk of subcontractors' workers was higher than of principal contractors. Rowlinson (2000) found in his Accident Report for Housing Authority that majority of the injured workers being subcontractors' employees, accounting for 95% of the samples in the report. It proved a fact that the multi-layers subcontracting practice might be one of the major factors caused poor safety

performance of the construction industry. Improving the safety problem of the industry could be proceeded in this direction.

Upon completion of the questionnaire survey and determined the survey results, interviews have been carried out: project managers, consulting engineers and safety practitioners who were independent from the questionnaire survey were invited to provide professional opinions for discussion and recommendation as follows.

## 5.1 Why Multi-layers Subcontracting Causes Problems

5.1.1 From the questionnaire survey results, majority of the participants considered that the multi-layers subcontracting practice was one of the major reasons caused poor safety performance. The interviewees explained that the subcontractor companies were normally small size and simple structure, they were usually lack of safety commitment because of limited budget, time and human resources. It resulted in insufficient provision of on-the-job safety training to the employees, which caused they have poor knowledge to deal with safety matters. Tam & Fung (1998) found that there was a significant difference between the trained and un-trained employees in related to the accident rate, safety training was an important tool in mitigating site accidents. Carter (1995) concluded that training in health and safety was essential for all workforces, without training they could not be expected to know what was the required of them, what was safe and what was unsafe. It is therefore recommended that sufficient safety training should be provided to all employee levels.

5.1.2 Furthermore, the subcontractors would not employ safety professional to managing risk at work and they had even no interest to care about safety matters because they believed that safety should be solely responsible by the principal contractor. It could be explained by a fact in Hong Kong that subcontractors would not held accountable although they had serious accident occurred or violation of the safety regulations, the losses from workmen compensation and the fine of safety offenses by court would usually absorbed by the principal contractors. It concluded that subcontractors should be encouraged to employ safety professionals for them to solve the safety problems at work.

5.1.3 The short contract period and multi-layers unproductive subcontracting of works which resulted in the final subcontractor yielding no realistic profit, hence they have to resort to sub-standard works subsequent increasing the possibility of accident from occur (Leung 1997). High mobility of construction workers was also the major cause of poor safety performance. There was similar opinion among the interviewees and Simo (1995) that the subcontractors usually employed short-term workers. These short-term workers were stranger to the hazard condition of the site, and they would not take care of other workers because they did not know or familiar with each other, which causes accident from occur easier. It is therefore recommended the industry to employ as much long-term employees as possible.

## 5.2 Why the Quality and Performance of Subcontractors are Difficult to Control

5.2.1 Majority of the participants considered that the subcontractors' quality and performance were difficult to control. The interviewees explained that each subcontractor was an individual firm, they would have their own culture, structure, management style and business strategies that it was difficult to control and inappropriate to interfere. Most of the small size subcontractors have not been

formed formally which were partnered by a few persons or workers only, the organization was not so completed and therefore communication between the principal contractor and subcontractors might have problem. Meanwhile, if the principal contractor provides too much effort on supervising subcontractors, the objective of subcontracting in order to minimizing resources was lost (Sozen & Kucuk 1999).

5.2.2 Under the current subcontracting practice, the lowest price bidder got the contract caused the contract became extreme competitive as a result that the financial return was trivial but the risk was huge. Subcontractors have to shorten the job completion time into minimum and resort to lower standard materials or unskilled or semi-skilled labour in order to save construction cost, consequently the quality and performance were affected accordingly. Therefore, it is recommended to replace the existing practice that the lowest bidder got the contract.

5.2.3 In the other hand, some interviewees opined that if the expected standards could be listed out clearly onto the subcontract documents, assurance of the quality and performance would not be in trouble. Furthermore, a suitable selection procedure for subcontractors such as pre-tender qualification and pre-contract award briefing were considered as effective method to control the subcontractors' quality and performance. Cheung (2000) also considered that an effective way to make contractors focus on safety was to correlate their safety performance with their tendering opportunities for new contracts. A report from the Housing Authority (2000) suggested to assess and weigh each contractor's past safety performance in tender evaluation and award assessment

## 5.3 Why Restricting the Multi-layers Subcontracting was Considered Impracticable

5.3.1 While concerned about the practicability of restricting the multi-layers subcontracting practice in order to improve the safety performance for the industry, half of the questionnaire participants considered that was practicable but another half expressed impracticable. The interviewees explained the reasons for impracticable that even if the proposed strategy of restricting the multi-layers subcontracting practice was adopted, there would have no effective and reliable method to monitor whether the contractors have sublet the work out or how many layers of subcontract being sublet actually.

5.3.2 The multi-layers subcontracting practice was adopted by the construction industry with a long history, people usually did not like to have change and they were too reliant upon subcontractors to perform construction works in the pass, restriction of the multi-layers subcontracting might not be supported by majority of them. In addition, the financial impact and risk to the contractors would be expected too great to afford. Although the multi-layers subcontracting practice might be regulated later, majority of the participants considered that it would be much reasonable to allow the degree of subcontracting limit to a minimum of two layers.

## 5.4 What are the Expected Impacts

5.4.1 Over 80% of the questionnaire participants expressed that impact to the industry was expected if the multi-layers subcontracting practice has been restricted. The interviewees explained that both of the industry and society would have impacts.

When the subcontracting practice was restricted or the subcontracting levels was

regulated, the principal contractor have to employ extensive direct employees so that a large amount of routine turnover was required, the operation cost would be greatly increased subsequent affect to the tender price. Some weak contractors might collapse at last due to weaken of competition and failed to award sufficient contracts.

5.4.2 The society would also be affected accordingly, the overall construction cost would be increased and the raised cost would transfer to customers at last. However, some interviewees opined that positive impact for improving the industry's safety performance could be achieved.

## 5.5 How the Free Market Principle be Damaged

5.5.1 Based on the questionnaire survey result, It was considered that the free market principle in Hong Kong would be damaged by restricting the multi-layers subcontracting practice. The interviewees explained that most of the medium and small size contractors could not survive, the large size contractors might monopolize the market as a result that the free competitive market was lost of balance. In opposite, if the multi-layers subcontracting were allowed, it could provide more tender opportunities and allow more subcontractors join the construction work with the principal contractors. So that the tender price would be more competitive and the construction cost could be greatly reduced.

## 5.6 Alternative Measures to Improve Safety Performance

5.6.1 Although majority of the participants disagreed that restricting the multi-layers subcontracting was the best solution for improving the safety performance of the industry but almost half of them expressed to support of restricting the multi-layers

subcontracting practice. The interviewees explained that restricting the multi-layers subcontracting would not be the best solution for improving safety performance, however, it reflected that the industry had a progressive determination to improve the safety performance.

The interviewees had further provided recommendations for improving the safety performance of the construction industry as below:-

i) Tighten the requirement for contractor to employ registered safety officer. It was suggested that at least one registered safety officer should be employed for each construction site no matter how small the size of the site. The current legal requirement of the Factories and Industrial Undertakings (Safety Officer and Safety Supervisor) Regulation (1997) requires that one safety officer shall be employed when the total workforce numbers of the site or sites were exceeded 100 or more. The small size construction sites usually have no supervision of the safety officer, some contractors only appoint one safety officer to take care several sites. Mak (1998) pointed out that based on the record of the Labour Department, the sites which had 50 or below employees had worse safety records. The safety officer play a vital role in improving health and safety performance of an organization, Nattrass (1994) believed that line managers could not do their job well without the safety officer's help.

ii) It was suggested to replace the current practice that the lowest price bidder wins the contract. The tender price was suggested to assess with special criteria, and only award contracts to the contractors or subcontractors with reasonable tender price. The former chairman of the Hong Kong Housing Authority Mr. Chung (2000), and Rowlinson (1997) agreed that the system of lowest price bidder wins the contract was a serious problem caused poor safety performance

of the construction industry.

iii) Some interviewees suggested that the industry should be encouraged to widely adopt of pre-cast construction technique instead of the traditional labour intensive construction method. Chudley (1985) found that the tradition cast-in-situ concrete construction method used to occupy large working area, labour forces and construction materials and than to produced large amount of construction wastes. It caused the construction site became too congested to manage, much accidents were caused due to the serious housekeeping problems.

iv) The enforcement of occupational health and safety regulations was suggested to approach to personnel held accountable. The enforcing department should prosecute the safety offenders directly whatever he or she was a subcontractor or an individual. For example that if the principal contractor had provided safety helmet to every workers on site and requested them to put it on, any workers who was found failed to wear safety helmet should be prosecuted directly.

v) The interviewees expressed that the current Pay for Safety Scheme operates by the Works Bureau was an effective way to improve construction safety. It was an incentive scheme to compensate the safety cost for contractors. Under the conditions of contract, the contractors were entitled to pay every month if they have completed the specified safety items stated in the contract. It was suggested to extend this incentive scheme to others Government and private contracts. Wong (1997b) also opined that the pay for safety scheme runs by the Works Bureau was an essential part of motivating contractors to achieve higher occupational health and safety standards.

5.6.2 Wong (2000c) made a point that occupational health and safety issues were often the results of lacking safety as an element or inadequate safety consideration in the design of buildings and planning of building works. Remedial safety measures are often technically more difficult, less ideal, less acceptable to employees, and cost more money than the well-planned safety measures which have been considered at the design and planning stage. Tang (2000) recommended to establish a safe construction culture from work design, he stated that the safety performance of the construction industry could not be improved unless safety was carefully considered at the design and planning stage of the works. He further recommended leading the Construction Design Management concept into the Hong Kong construction industry from the European; to request architects put the consideration of design safety, construction safety and the safety of subsequent maintenance into account at the design and planning stage. It was believed that this new management concept could help improving the occupational safety and health problems.

5.6.3 Linehan (2000b) made a point that much can be achieved in quality, costs and safety through attempting to develop longer term partnership between contractors and subcontractors rather than depending on the ad hoc coming together for one contract. Longer term partnership between them enable both parties to work to good safety standards, to formulate effective means of working safely, and to develop a proper understanding of the reciprocal duties and responsibilities which exist on site.

5.6.4 Lau (1996) recommended that implementation of tradesman licensing system was a good method to reduce site accidents. He suggested to request some special tradesmen must gain recognized licenses before they were allowed to carry out high risk activities such as operation of plant, bend and fix steel bar, gases welding, scaffolding work and enter into confined spaces. The licensing system could ensure

the high-risk tradesmen have received sufficient safety training before they start the work.

5.6.5 Chan said "there was a very little social security to workers, everyone puts in extra to ensure they can feed their family. These causes workers oversee or ignore or accept the danger and in some cases forces them to take risk" (2000, p.8). Reform the safety culture of the construction industry was required, it was recommended that the Government should enhance the legal status and the negotiation ability of the labour unions, representatives or organizations, to encourage workers struggle against employers for more safer equipment, plant and working environment. The new Factories and Industrial Undertakings (Safety Management) Regulation (1999) would be enforced at the end of this year, which requires the contractors to establish safety committee within their organization to review the safety matters, at least half of the committee members shall be the worker's representative. These worker's representatives would be protected by the legislation that they could not be terminated or threaten to terminated the employment or discriminated by reason of the fact that they have performed their function as a member of safety committee.

## 5.7 Summary of Recommendations

According to the above discussion, there were alternative measures recommended for improving the safety performance of the Hong Kong construction industry, which were categorized and summarized as follows :-

### 5.7.1 Strengthen the control of subcontractors

i) Provide sufficient health and safety training to all levels of employees.

ii) Encourage subcontractors employ safety personnel to managing risk at work.

iii) Make subcontractors held accountable for safety.

iv) List the safety requirements as detailed as possible into the subcontract documents.

v) Encourage principal contractors to adopt pre-tender qualification procedures for selection of quality subcontractors.

vi) Both the developers and principal contractors should assess the received tender with special criteria, award contracts or subcontracts to the bidder with reasonable tender price rather than the lowest price only.

vii) Avoid excessive subcontracting

### 5.7.2 Legislation and Enforcement

i) Tighten the legal requirement for the employment of registered safety officer.

ii) Enforcement of the health and safety related regulations should be approached to personal held accountable.

iii) Maintain and extend the existing Pay for Safety Scheme to others Government and private contracts.

iv) Apply licensing system for high-risk nature tradesmen.

v) Government to enhance the legal status and negotiation ability of the labour unions, representatives or organizations.

5.7.3 Technological changes

i) Encourage subcontractors to employ as much long-term employees as possible.

ii) Enhance the use of the pre-cast concrete construction technique.

iii) Lead the Construction Design Management technique into the Hong Kong construction industry.

iv) Encourage to developing long-term partnership between principal contractors and subcontractors.