

Factors Affecting Small Contractors' Performance in Public Works Projects in Thailand

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This research was conducted to investigate the factors which affecting small contractor' performance in public works projects in Thailand. The research was achieved by means of a questionnaire that was distributed to construction practitioners (public owner, main contractor, small contractor and consultant) in Thailand. These questionnaires were sent out with the return rate of 65.90%. The quantitative method was introduced to obtain data for analysis. The data gathered included in the main six categories of the research. It was found that financial problems was the highest severity index and followed by contractor and specification problems, project control problems, government problems, others problems and environment problems respectively. The conclusion can be made in such a way that small contractors prefer to maintain tight control of all aspects of the company's operation, especially where involves monetary transactions such as negotiating with potential clients or suppliers, or purchasing of materials. Furthermore, it was further found that a major constraint on the growth and development of small contractors are the corporate policies. Addition, it was further found that the most five affecting factors to small contractor performance were: financial difficulties faced by the contractor was the highest affecting factor to small contractor' performance and followed by financial difficulties faced by the public owner, inadequate project feasibility studies, shortage of labour and ambiguities or mistakes in scope of work.

Key Words : *Small contractor, Public works, Failure, Thailand*

1. INTRODUCTION

The performance of construction project can be affected by pre-construction and construction activities. Adding to complexities and uncertainties during operation, it may further cause delay or failure in construction projects. The performance of contractors to complete construction project depends on several factors such as cost performance¹, contract agreement, fraudulent practice², nature of construction environment³, harsh construction sites, site management⁴, hostile political and economic environment⁵. Failure to handover the completion of project is a global norm. Cnuddle⁶ found that the value of poor performance of cost due to non-conformance to specification lies between 10% and 20% of the total estimated project costs. In addition, the study found that 46% of total cost deviation that contributes to the poor cost performances occurred during design stage of the

projects. Hammarlund and Josephson⁷ found that owners had to absorb the poor cost performances which made by their contractor. The figure could go as high as 4% of actual project production. He was also found that 51% of these poor cost performances were design related such as miscalculation on structure materials, design structure was not fit into actual structure. While, 26% was related to poor installation of materials and 10% was material failure. This study will investigate the factors which affecting the performance of small scale contractors.

2. LITERTURA REVIEW

The main characteristics of the small contractor in developing countries are identifiable. It appears to be sole ownership. The founder-proprietor-manager has a variety of educational backgrounds and experience. Many are former tradespersons, trade or labour only subcontractors or supplier. Such persons often have

no technical qualification or practical experience in construction. Lack of knowledge in management has been cited as one of the main causes of failure of small company⁸. Poor management of construction activities can make chaos in planning and controlling budget spending which affect to completion of the project. Mostly small contractors used their own funds and family saving to invest in equipment. A large share of financial resources used for procurement comes from non-construction activities (transport and trade). However, the level of graduation also plays a role in the operation of a company. It has often been found that owners of small construction companies are not always there to monitor and compare between planned and actual construction activities. Therefore, it caused poor communication among internal team which result to poor labour productivity and improvement. Tuner and Muller⁹ also stressed the importance of partnership among project participants. A good two-ways communications were also need to minimise a risk of conflict and ambiguity orders¹⁰. By means of good management, an awareness of all external and internal business risk factors which create a successful business namely good strategy, marketing, pricing and financial control¹¹. Financial mismanagement and management incompetence have also been cited among researchers that lead to the prominence of construction failures¹². The nature of the construction competition has forced small construction company to adopting a policy of sub-contracting where the demand for construction services is less predictable¹³. Furthermore, over-expansion caused a company to a higher-risk investment with financial debt; hence, increasing its change to business failure¹⁴.

3. METHODOLOGY

This study was a quantitative research; a questionnaire survey was conducted through 150 construction companies (public owners, consultants and contractors) which related to public work projects. A total of 305 questionnaires were sent with the return rate of 65.90%. The researchers perception level on these factors were categorised into six main causes into five points scale ranging from factors having no severe impact on the small contractors performance to factors having mostly severe impact on the performance of small contractor in public work projects. Contractors were defined and categorised into two categories. The medium to large contractors who experienced in public work project was worth more than three million baht project. The small contractors who experienced in public work project with less than three million bath project. Those

medium-large and small contractors were randomly selected and a maximum of 50 medium-large contractor and 50 small sized contractors were surveyed. The survey resulted were analysed by using the severity index approach. Based on the response to the survey, a severity index was calculated to interpret the degree of seriousness effect of those problems. This index was calculated as follows¹⁵

$$\text{Severity index (SI)} = \frac{\sum_{i=0}^4 (a_i)(x_i)}{4 \sum x_i} \times 100\% \quad (1)$$

where

a_i = constant expressing weight given to i th response: $i = 0, 1, 2, 3, 4$

x_i = variable expressing frequency of i

The response for $I = 0, 1, 2, 3, 4$ illustrated as follows:

x_0 = frequency of most severe response and corresponds to $a_1 = 4$;

x_1 = frequency of severe response and corresponds to $a_2 = 3$;

x_2 = frequency of moderate severe response and corresponds to $a_3 = 2$;

x_3 = frequency of fairly severe response and corresponds to $a_4 = 1$;

x_4 = frequency of none severe response and corresponds to $a_1 = 0$;

Equation (1) was used to calculate the severity index factor which affected to performance of small contractor. The index was ranked for performance of small contractors in public work projects. The severity index was categorised into five levels. The 0-15.5% was categorised as none severe; 15.5-38.5% was categorised as fairly severe; 38.5-63.5% was categorised as moderately severe; 63.5-88.5% was categorised as severe; and 88.5-100% was categorised as most severe. The severity index of a category was the average severity indexes of all its related problems. The results of the survey were shown in Table 2.

4. RESULTS AND DISCUSSIONS

It was found from Table 2 that the impact of financial problems on the performance of small contractors in public work projects scored the highest severity index followed by contract and specification problem, government problems, project control problems, other problems and environment problems with the level of severity index of 95.50%, 83.67%, 66.00%, 54.50%, 17.33%, and 15.00% respectively.

Table 1 Type of organization with their response rate.

Organization	No. of questionnaires		Return (%)
	Sent	Return	
Public owner	15.00	15.00	100.00
Main contractor	80.00	50.00	62.50
Small contractor	140.00	84.00	60.00
Consultant	70.00	52.00	74.28
Total	305.00	201.00	65.90

Table 2 Comparison severity index factors on performance of small contractor in public work projects.

Causes	SI (%)	Rank	Overall
Financial problems	95.50	1	
Financial difficulties faced by the public owner	93.83	2	2
Financial difficulties faced by the contractor	94.50	1	1
Unexpected bad economic conditions	71.67	3	14
Delays in interim payments	66.50	4	16
Contract and specification problems	83.67	2	
Inadequate project feasibility studies made by contractor	89.00	1	3
Incompetent contractors or subcontractors	79.83	3	6
Ambiguities or mistakes in scope of work	80.50	2	5
Change orders/variation orders	77.50	4	9
Difficulty of design and construction	20.33	6	33
Inappropriate contract arrangements	32.50	5	28
Project control problems	54.50	4	
Inappropriate project planning and scheduling	73.17	1	13
Poor contract administration	46.17	4	23
Inexperienced client/owner	23.33	6	31
Problems of communication and coordination	51.50	3	22
Incompetent consultants	37.17	5	25
Site acquisition problems	14.17	7	33
Poor relationship among project team members	63.67	2	17
Unexpected location difficulty	12.50	8	34
Environment problems	15.00	6	
Adverse weather or acts of God	60.67	1	18
Negative impact of project towards environment	31.83	3	29
Noise pollution	12.33	4	35
Dust pollution	9.833	5	38
Approval environment impact from local authority	36.33	2	26
Others problems	17.33	5	
Not enough work	78.50	3	8
Not hard work	22.00	10	32
Unavailability of materials and equipments	75.33	4	10
Shortage of labour	84.00	1	4
Transportation	59.33	7	20
Slow in making decision from owner	55.83	8	21
Deficiencies in contractor's organization	78.67	2	7
Unexpected social events	24.83	9	30
Third party delays	60.00	6	19
Major accidents	74.333	5	11
Government problems	66.00	3	
Instability in politic	11.83	6	36
Unfavorable government policy	32.67	5	27
Bureaucracy	38.33	4	24
Lack of cooperation from local authorities	45.67	3	23
Litigation	66.67	2	15
Meeting government expectations as small companies	74.00	1	12

(1) Financial problems

In this aspect, it was found that financial difficulties face by the contractor had the highest severity index with 94.50 % in its category which followed by financial difficulties faced by the public owner, unexpected bad economic conditions and delays in interim payments made by owner. It was further found that the public owners experienced financial problems during both political instability period and unexpected bad economic condition. These two factors accelerated the negative effect to the performance of small contractor. It caused delays in payments to small contractor. Consequently, adverse effect on the small contractor's cash flow.

(2) Contract and specification problems

In this aspect, it was found that contract and specification problem was ranked as second highest severity index among six problems categories. The level of severity index was at 83.67%. In this study, an inappropriate contract arrangements factor was found to be less impact to small contractor performance. It often caused the confusion to small contractors. Additional, Interviewees also mentioned that small contractors did not fully understand the government agencies contract agreement even the details of the contract were mainly unchanged a decade. It showed that small contractors did not pay attention enough to study the government contract before enter to the tendering stage.

(3) Project control problems

In this context, inappropriate project planning and scheduling made by contractor was the highest severity index in its category. The severity index was 73.16%. However, it was found that poor relationship among project team members was also high impact to the performance of small contractors. The environment among small contractor, consultant and owner was formally stand against each other. There were no alleviate or compromise if there were few minorities or defects which were not met on the due date or quality standard. The severity index was 63.67%.

(4) Environment problems

In this category, it was found that adverse weather or acts of god was the highest severity index. The severity index was 60.67%. Adverse weather conditions have a well-documented potential to affect the progress of construction operations. Mostly an excessive rainfall tends to disrupt most outdoor operations. Interviewers mentioned that rainfall can be predictable. It was small contractor responsibility to be well-prepared. It was rarely that weather patterns have resulted in a sharp increase intensity of

rainfall which claimed by small contractors for weather-based delay.

(5) Government problems

It was found that meeting government expectations as small companies factor was the highest in its category. The severity index was 74.00%. Public owners expected on both quality and delivery work on-time. Even, a small project from a small contractor. Small contractors could not maintain the quality of work. This was the result of shortage of labour and skilled labour. The skilled labours will leave to the new construction site where pay rate was higher.

(6) Others problems

It was found that shortage of labour was the highest in others problems category. The severity index was 84.00%. Despite having abundant supplies of neighbor countries labours, the skilled labours are still face a scarcity. Training schemes were relatively new, inadequate and expensive. Informal apprenticeship arrangements within the industry were still not well developed. Addition, a career path on the construction site as unskilled labour was not among the most socially desirable. Those who entered construction as unskilled labour, they usually did as a last resort and leave the earliest opportunity.

6. CONCLUSIONS

(1) The impact of financial problems on the performance of small contractors in public work projects was the highest severity index followed by contract and specification problems, government problems, project control problems other problems and environment problems with the level of severity index 95.50%, 83.67%, 66.00%, 54.50%, 17.33%, 15.00% respectively.

(2) In financial problems, it was found that the financial difficulties faced by the contractor factor was the highest severity index in its category. In contract and specification problems, an inadequate project feasibility studies factor had the highest severity index in its category. In Environment problems, it was found that the adverse weather or acts of god was the highest severity index. Others problems, the shortage of labour was the highest in others problems category and Government problems, the meeting government expectations as small companies factor was the highest in its category.

(3) Failure of small contractor performance was a serious problem. From the evidence of the impact factor of performance small contractor, it was clearly shown that the causes of low performance of small contractors in public works projects in Thailand

however, can be avoided or mitigated. It appeared that small contractors were not taking these impact factors seriously. Even impact factor were acknowledged.

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