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Satisfaction Scores of Contractors for
Controlling Construction Costs:
A Preliminary Survey in Thonburi Area
คะแนนความพึงพอใจของผู้รับเหมาก่อสร้าง
ในการควบคุมต้นทุนการก่อสร้าง:
การสำรวจเบื้องต้นในพื้นที่ฝั่งธนบุรี

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Abstract

This research surveyed satisfaction scores of new building construction work contractors and renovation work contractors in Thonburi area in controlling 4 construction costs, labor cost, material cost, equipment and machinery cost, and operation cost. On average, the satisfaction scores ranged from 7.493 to 8.377. These scores implied good cost control that supported profitability. The hypothesis testing gave 2 significant results, labor cost and operation cost. The results suggested that the new building construction work contractors were likely to control labor cost and operation cost significantly better than the renovation work contractors did.

Keywords: *Satisfaction Scores, Cost Control, Construction Costs*

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บทคัดย่อ

การวิจัยนี้สำรวจคะแนนความพึงพอใจของผู้รับเหมาก่อสร้างงานใหม่และผู้รับเหมาตกแต่งซ่อมแซมในพื้นที่ฝั่งธนบุรีในการควบคุมต้นทุนการก่อสร้าง 4 ด้าน คือ ต้นทุนด้านแรงงาน ต้นทุนด้านวัสดุ ต้นทุนด้านเครื่องมือเครื่องจักร และต้นทุนด้านการดำเนินการ คะแนนความพึงพอใจโดยเฉลี่ยอยู่ระหว่าง 7.493 ถึง 8.377 ซึ่งให้นัยของการควบคุมต้นทุนที่สนับสนุนการทำการกำไรที่ดี การทดสอบสมมติฐานมีนัยสำคัญ 2 ด้าน คือ ต้นทุนด้านแรงงาน และต้นทุนด้านการดำเนินการ โดยผู้รับเหมาก่อสร้างงานใหม่มีแนวโน้มที่จะควบคุม ต้นทุนด้านแรงงาน และต้นทุนด้านการดำเนินการ ได้ดีกว่าผู้รับเหมาตกแต่งซ่อมแซมอย่างมีนัยสำคัญ

คำสำคัญ: คะแนนความพึงพอใจ, การควบคุมต้นทุน, ต้นทุนการก่อสร้าง

Introduction

One of the success factors of construction projects is to control construction cost within the budget and at the lowest. In this study, we are interested in 4 cost controls, i.e., cost of labor, cost of materials, cost of equipment and machinery, and cost of operation. With the assumption that the contractor's satisfaction score reflects the efficiency of cost control, that is, the contractor scores high satisfaction if the construction cost is controlled to be low but the satisfaction score is low when the construction cost is poorly controlled (the cost is high) (Kunin, 1955; Schwab and Cummings, 1970; Siegel and Bowen, 1971; Pfeffer, 1998). By and large, these satisfaction scores could be beneficial because they point to the weaknesses of construction cost management and can be used as a gate way to search for activities that cause high costs.

Research Objectives

1. To preliminarily study the control of construction costs of new building construction work contractors and renovation work contractors.
2. To compare satisfaction scores of the contractors in controlling the costs of construction, cost of labor, cost of materials, cost of equipment and machinery, and cost of operation.

Research Method

We surveyed contractors who worked in Thonburi Area at their construction sites during November-December 2018. The locations of the construction sites were guided by the civil work officers of the Bangkok Metropolitan Administration's District Offices. Two works were interested, new building construction work and renovation work. We simply asked the contractors to score their satisfaction in construction costs that they controlled. The costs were cost of labor, cost of materials, cost of equipment and machinery, and cost of operation. The contractor score could range from 0 to 10 with higher scores indicating higher satisfaction received (be able to keep construction costs low). We specified meanings of scores in word as (Likert, 1932; Cox, 1980; Dunn-Rankin, 1983; Miller, 1991; Krebs and Schmidt, 1993; Di Palo, 1997; Auer, Hampel, Moeller, and Reisberg, 2000):

Score of 9 to 10 : Excellent level of satisfaction in cost control. The score in this range implied that the contractor had excellent cost control.

Score of 8 to 8.999 : Very good level of satisfaction in cost control. The score in this range implied that the contractor controlled his cost very well.

Score of 7 to 7.999 : Good level of satisfaction in cost control. The score in this range implied that the contractor controlled his cost well.

Score of 6 to 6.999 : Fair level of satisfaction in cost control. The score in this range implied that the contractor had unremarkable cost control.

Score of 5 to 5.999 : Poor level of satisfaction in cost control. The score in this range implied that the contractor began to have problems in controlling costs.

4.999 and below : Bad level of satisfaction in cost control. The score in this range implied that the contractor had problems in controlling costs that it seemed to hinder the profitability of the business.

In addition, the scores of the two groups were tested for the difference of means to see which group performed better in cost control. The hypotheses were set as (Bowerman, O'Connell, Murphree, and Orris, 2015):

$$H_0 : \mu_{NBuil} - \mu_{Renov} = 0$$

$$H_1 : \mu_{NBuil} - \mu_{Renov} \neq 0 ; \text{ where}$$

μ_{NBuil} is the mean of satisfaction scores of the new building construction work contractors and

μ_{Renov} is the mean of satisfaction scores of the renovation work contractors

Results

There were 122 new building construction contractors participated in the survey. They were categorized by Districts in Thonburi area as:

Thonburi District	9
Khlongsarn District	7
Chomthong District	8
Bangkoyai District	8
Bangkoknoi District	8
Bangphlat District	8
Talingchan District	6
Thawiwatthana District	7
Phasicharoen District	10
Bangkhae District	9
Nongkhame District	7
Bangkhunthian District	8
Bangbon District	10
Ratburana District	9
Thungkhru District	8

and there were 134 renovation work contractors:

Thonburi District	12
Khlongsarn District	9
Chomthong District	7
Bangkokyai District	9
Bangkoknoi District	10
Bangphlat District	7
Talingchan District	8
Thawiwatthana District	6
Phasicharoen District	11
Bangkhae District	9
Nongkhame District	8
Bangkhunthian District	10
Bangbon District	11
Ratburana District	9
Thungkhru District	8

Tables below show the hypothesis test results for each category of the cost control.

Table 1 Result of Labor Cost Control Satisfaction Score

$$H_0 : \mu_{NBuil} - \mu_{Renov} = 0$$

$$H_1 : \mu_{NBuil} - \mu_{Renov} \neq 0$$

	New Building Construction	Renovation
Mean of Satisfaction Score in Labor Cost Control	8.189	7.493
Variance	0.650	0.989
Observations	122	134
Pooled Variance	0.827	
Hypothesized Mean Difference	0	
Degree of Freedom	254	
t-Stat	6.114***	
Critical t	1.651	

*** indicates significance level of 0.01 or better.

Table 2 Result of Material Cost Control Satisfaction Score

$$H_0 : \mu_{NBuil} - \mu_{Renov} = 0$$

$$H_1 : \mu_{NBuil} - \mu_{Renov} \neq 0$$

	New Building Construction	Renovation
Mean of Satisfaction Score in Material Cost Control	8.377	8.246
Variance	0.584	0.849
Observations	122	134
Pooled Variance	0.723	
Hypothesized Mean Difference	0	
Degree of Freedom	254	
t-Stat	1.229	
Critical t	1.651	

Table 3 Result of Equipment and Machinery Cost Control Satisfaction Score

$$H_0 : \mu_{NBuil} - \mu_{Renov} = 0$$

$$H_1 : \mu_{NBuil} - \mu_{Renov} \neq 0$$

	New Building Construction	Renovation
Mean of Satisfaction Score in Equipment and Machinery Cost Control	7.852	7.933
Variance	1.135	1.176
Observations	122	134
Pooled Variance	1.156	
Hypothesized Mean Difference	0	
Degree of Freedom	254	
t-Stat	-0.597	
Critical t	1.651	

Table 4 Result of Operation Cost Control Satisfaction Score

$$H_0 : \mu_{NBuil} - \mu_{Renov} = 0$$

$$H_1 : \mu_{NBuil} - \mu_{Renov} \neq 0$$

	New Building Construction	Renovation
Mean of Satisfaction Score in Operation Cost Control	8.270	8.037
Variance	0.463	0.908
Observations	122	134
Pooled Variance	0.696	
Hypothesized Mean Difference	0	
Degree of Freedom	254	
t-Stat	2.233**	
Critical t	1.651	

** indicates significance level of 0.05 or better.

Conclusion

We found that the contractors controlled costs quite well. The means of the satisfaction scores range from 7.493 to 8.377 indicating high quality of cost control the contractors performed. There were 2 significant results in hypothesis testing, labor cost control and operation cost control. It seemed that on average, the new building construction work contractors performed significantly better than their counterpart did. For the labor cost control, it is understandable that the renovation work contractors deal more with high skill craftsmen than the new building construction work contractors do. High skill craftsmen easily urge cost of construction high because of their high wages and shortage of the craftsmen. For the operation cost control, it makes sense to have the significant difference of the means. It is also renovation work contractors who tend to have more complicated works, especially demolition and modification. These kinds of works are difficult to control costs. If contractors do not have expertise, the works can cause costs to increase beyond estimates.

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