

## DEPTH STUDY

# Building Respect: Industry Influences on Subcontractor Markups

### Background

The investigation herein was started during my internship with Gilbane at PSHMC, and directly correlates to the theme of the 2006 PACE Roundtable held in November 2006. The focus for PACE this year was on building respect among construction project entities, including owners, designers, builders, and vendors.

This research topic focuses on the relationship between project managers and subcontractors by examining subcontractor markups on bids for their work. More specifically, it examines the value added above the allowable contract markup, sometimes referred to as a “multiplier.”

### Problem Statement

Bid package markups of individual subcontractors are typically consistent from one project to the next, provided there is similar risk associated to the jobs. However, a much different relationship can exist between a subcontractor’s markup and the construction management (CM) or general contracting (GC) company overseeing the job. This variation results from the practices and structure of different CM and GC companies as perceived by the subcontractor. Not only does this impact the overall bid to an owner, but it also creates tension in the industry when builders have difficulty of subs returning for work. Economics plays a key role in the bid process; still, CM/GC companies need to be aware that maintaining positive relationships with their subs is critical to the markup values.

### Research Goal

To aid CM and GC companies in evaluating their bid package markups, I will attempt to identify the key elements of their organizations that differentiate themselves in the eyes of the subcontractor. Through two different surveys, one tailored to the CM and GC

companies and one to the subcontractors, I expect to discover the defining characteristics that cause subs to vary their markups dependent upon the management team that is on the job. It is my ultimate goal that the industry takes this information to internally examine their subcontractor management methods. Positive relationships result in competitive bids, successful projects, and a level of respect that is paramount in the construction industry.

### **Research Plan & Methodology**

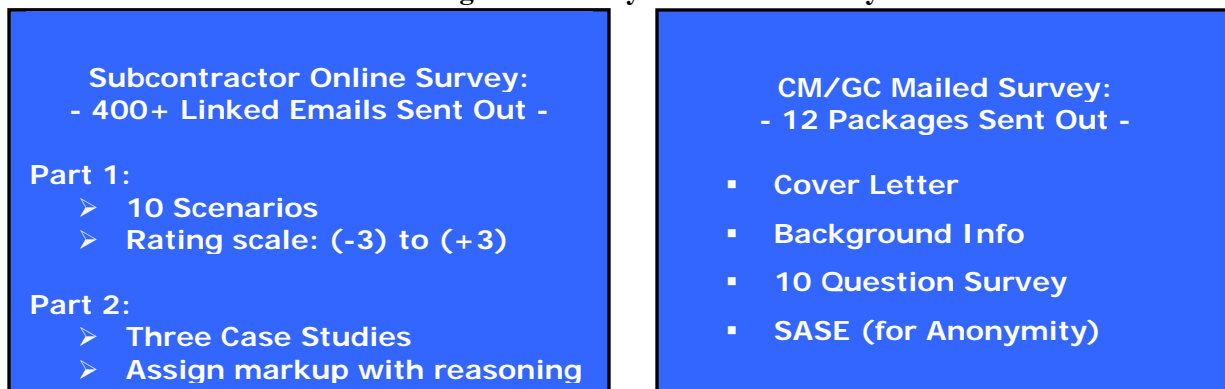
To produce a comprehensive analysis on subcontractor markups, both project management professionals and subcontractors needed to be interviewed during this study. Thus, research began by developing a comprehensive survey for the CM/GC, with questions designed to elicit the aspects of their management methods that ultimately impact a sub's bid package markup. In early February, a dozen project management professionals were provided with a packet of information that included a cover letter, contextual background, a 10-question survey, and a self-addressed stamped envelope. Anonymity was essential for this research so as to avoid bias in my evaluations and to encourage the professionals to respond openly and honestly. The goal was not to make an example of one company over another; rather, it was to identify the common and not-so-common management practices that influence their subcontractor relationships.

After the CM/GC surveys were sent out, a second survey for the subcontractors was developed and programmed so that it could be administered online and consequently allow for a larger response pool. This survey was reworked numerous times so as to maintain clarity and succinctness for the subcontractors. For this reason, it was broken into two parts. Part 1 consisted of ten questions, where brief scenarios were presented and they were asked to rate the impact of each condition on a prospective markup. A seven-point scale was presented with values ranging from -3 (greatly reduce) to +3 (greatly increase). This value system allowed for a statistical analysis to be performed on each scenario after enough surveys were filled out.

Part 2 of the subcontractor survey presented three case studies designed to measure the impact of a combination of factors on their markup. Subcontractors were presented with a fictional management team and project for bid. The CM or GC on the job was given a company history, reputation in the region, and summary of the project team members. Project type and scope were also included so that an objective factor was inherent for each markup; again, these multiplier values are influenced by economics equally if not more so than business relationships. After reading the comprehensive case study, subcontractors were asked to assign a markup or multiplier for their work, as well provide a brief explanation of the major factors affecting the value.

The second part of the sub survey intended to measure how scenarios from Part 1 combined to produce an overall multiplier. Thus, when average values were achieved for the ten scenarios, a matrix could be developed to essentially predict a multiplier based on a given set of conditions on any construction project.

**Figure 1. Survey Content Summary**



The research concluded with a qualitative evaluation of why subcontractors vary their bid markups, and assessed the accuracy of the matrix in determining a markup. The results are highly subjective, and thus it is important to retrieve a large number of results so as to identify the key aspects of a project that influence a subcontractor's markup decision.

A copy of these data collection tools begins on Appendix C1.

### **Analysis- CM/GC Survey**

Early on it was evident that the CM/GC survey results were going to vary dramatically. This was somewhat expected, as the questions were designed to elicit a qualitative self-assessment of their experiences with subcontractors. The remainder of this section will look at select questions from the CM/GC survey and summarize the key responses. For a full list of results, see Appendix C6.

#### **Bid Package Markup vs. Contract Markup**

The first two questions of the survey inquired into the typical markup received from subcontractors on bid packages and contracts. This drew some questions from professionals as to exactly what value was desired, but it soon became clear that the “multiplier” was analogous to the bid package markup. Still, responses were flip-flopped and free interpretation was required.

Typical contracts in the industry today see a markup of 15%, with 10% devoted to overhead costs and 5% profit. The respondents typically agreed with this fact, with values ranging from 10% to 20% O&P. Bid packages, however, are assigned a separate markup, which ranged from -2% to 8% in the survey. This second value is the intended target of the study due to the fact that it ranges from negative to positive values.

Markdowns are thus possible on bid packages, provided the right project conditions and a good standing relationship with the subcontractor.

#### **Determinants of a Bid Package Markup**

This question drew a large variance of responses. Whereas one professional did not have access to this information due to the nature of their contracts, other managers identified a number of influences on bid package markups. This list will be important when comparisons are made to the subcontractor survey results. Some of the more prevalent factors listed are summarized in Figure 2 on the next page:

**Figure 2. CM/GC Survey- Major Determinants of a Markup**

<ul style="list-style-type: none"> <li>▪ Backlog of Subcontractor</li> <li>▪ Schedule Reasonability</li> <li>▪ Knowledge of CM/GC Practices</li> <li>▪ CM/GC Work Experience</li> <li>▪ Competition/ Supply vs. Demand</li> </ul>	<ul style="list-style-type: none"> <li>▪ Definition of Work vs. Overhead</li> <li>▪ Project Size</li> <li>▪ Contract Type/ Risk Allocation</li> <li>▪ Other project entities- A/E/GC/Owner</li> </ul>
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It is clear that, from the eyes of the CM/GC professionals, there is no way to effectively control the markups they receive on bid packages as there are simply too many variables. Further, only one respondent identified the CM/GC personnel as an influence, which can essentially be considered a subjective factor as it is based solely on past experiences and relationships. The majority of responses are objective in nature; the factors identified are concrete values that deal with economics, time tables, and assumed risk.

#### Company Self-Assessment

Several of the questions delved into subcontractor relationships, change order negotiation practices, perceived reputations, and typical client-base. When examined as a whole, one can characterize this group of questions as the bulk of the company self-assessment. First off, one must note that while all of the selected companies have good reputations, those interviewed were chosen for their variance in size, structure, and targeted project or client base. A broad spectrum of both construction management and general contracting firms allows for a diversified opinion base on markup influences.

When looking at subcontractor relationships specifically, all of the CM/GC professionals expressed satisfaction with subs returning for work. When asked how they approached change order negotiations, all responded the same, with half even using the same three word phrase- “fair but firm.” One response expanded on this mantra with a thorough explanation of their standard business practices:

“Our negotiation practices are to pay a fair market value for a change order based upon market conditions. We perform an in-house estimate of every change order and compare with what the trade provides. If we differ, we discuss prior to negotiations.”

- Survey #4, Question 6 (Appendix C7)

From a quantitative perspective and dependent upon the type of trade, subcontractor markups typical fall within the same range. For example, one respondent noted how a sheet metal fabrication sub will have a much higher overhead than a drywall or painting sub. This is simply due to the fact that overhead takes into account not only installation, but also added fabrication, equipment, and labor costs (Survey #5, Question 4.). Other influences on markup consistency matched responses from Question 3 of the survey, such as supply and demand, or the availability of work in the area.

Further, it was interesting to see the stark contrast in perceived reputation versus repeat work with subcontractors and clients. All of the companies have great success with subs returning for work (90% to 100%) and with repeat clients (70% to 90%). Despite this fact, their company descriptions regarding reputation and potential had only one common similarity- their respective companies are relationship driven (see Question 8, Appendix C8). Thus, it can be concluded that while all of these firms have formed their own unique reputations, maintaining relationships is still the key to success. To recall the question on markup determinants, however, it was noted that only two of the surveys identified past working relationships as having an impact on a sub’s markup. Even more surprising is that only 1 out of the 6 respondents felt the specific CM/GC personnel influenced a markup. It is evident that relationships, though important to CM/GC success, are not regarded as highly as basic market drivers when looking at bid package markups.

### Analysis- Subcontractor Survey

Unfortunately the number of responses received was far less than expected. Though more than 400 survey links were emailed to subcontractors across the country, only 25 were filled out. Despite this circumstance, the statistical analysis proceeded. The complete results of the survey, including statistical analyses, begins on Appendix C9. A general analysis is performed below.

#### Part 1

The goal of the online survey was to quantify the results submitted in the CM/GC surveys with respect to markup influences. By statistically analyzing the subs' responses and assigning point values to ten key factors, a matrix would be devised that would essentially predict a multiplier based upon the incidence of the factors for a particular project at bid. Respondents were asked to respond to each of the ten questions by choosing a markup impact factor. The 7-point scale is shown below.

**Figure 3. Markup Impact Scale**

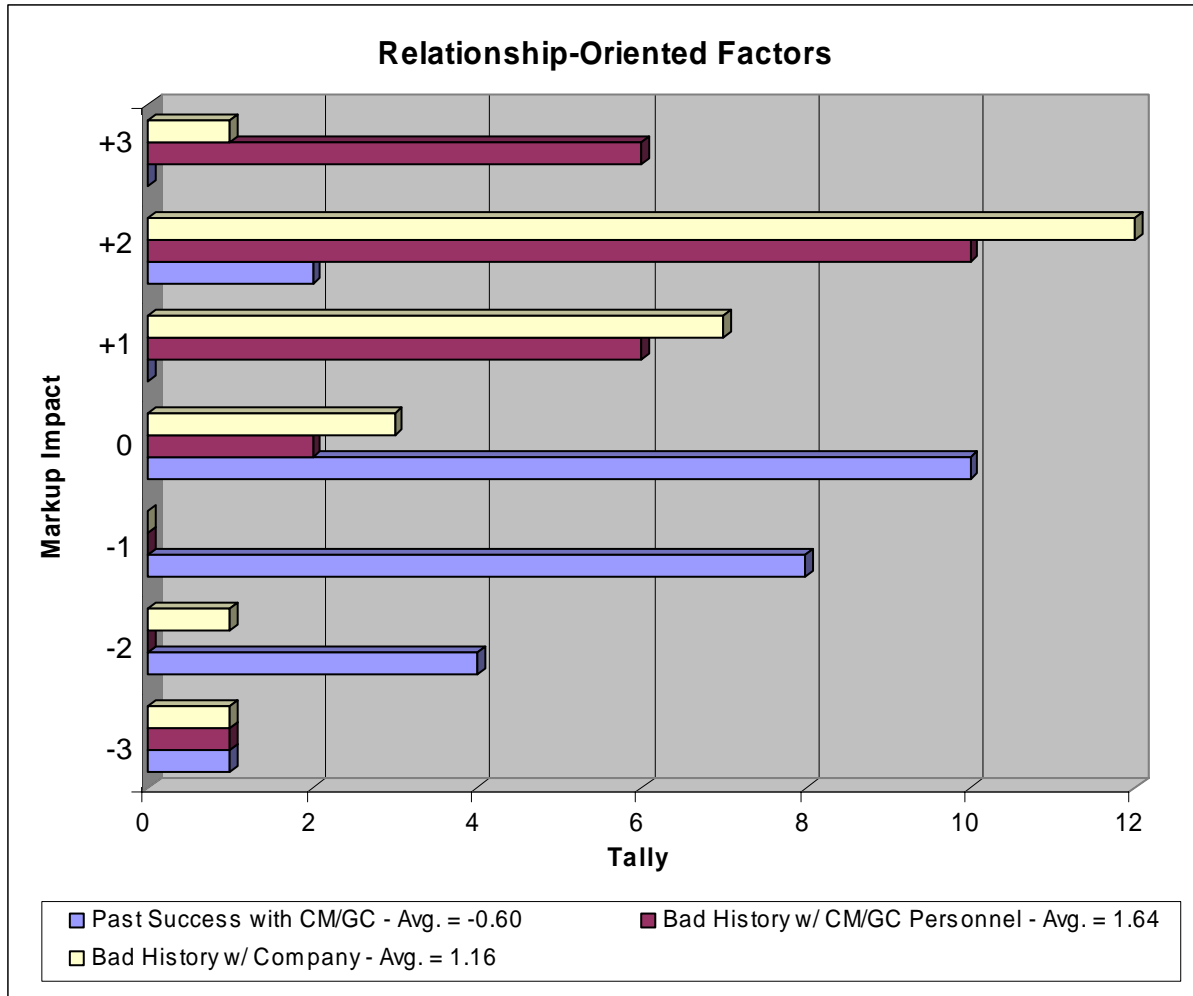
Greatly Reduce	Moderately Reduce	Slightly Reduce	Keep the Same	Slightly Increase	Moderately Increase	Greatly Increase
-3	-2	-1	0	1	2	3

The analysis of Part 1 that follows groups questions into one of three factors: relationship-oriented, business-related, and regional. The charts present response data based on the Markup Impact Scale, with a tally of each response across the x-axis. Each scenario's description also presents the average value as determined by the scale used. This value, though not an actual markup percentage, will be used as the multiplier for the markup prediction matrix.

#### *Relationship-Oriented Factors*

Three of the questions dealt with past relationships with either the CM/GC firm, specific project personnel, or both. Respondents were asked to quantify the impact of these past outcomes on a markup for a project at bid. The results were consistent with the opinion that partnerships have a major influence on future markups (see Fig. 4).

Figure 4. Effect of Past Experiences on Markups



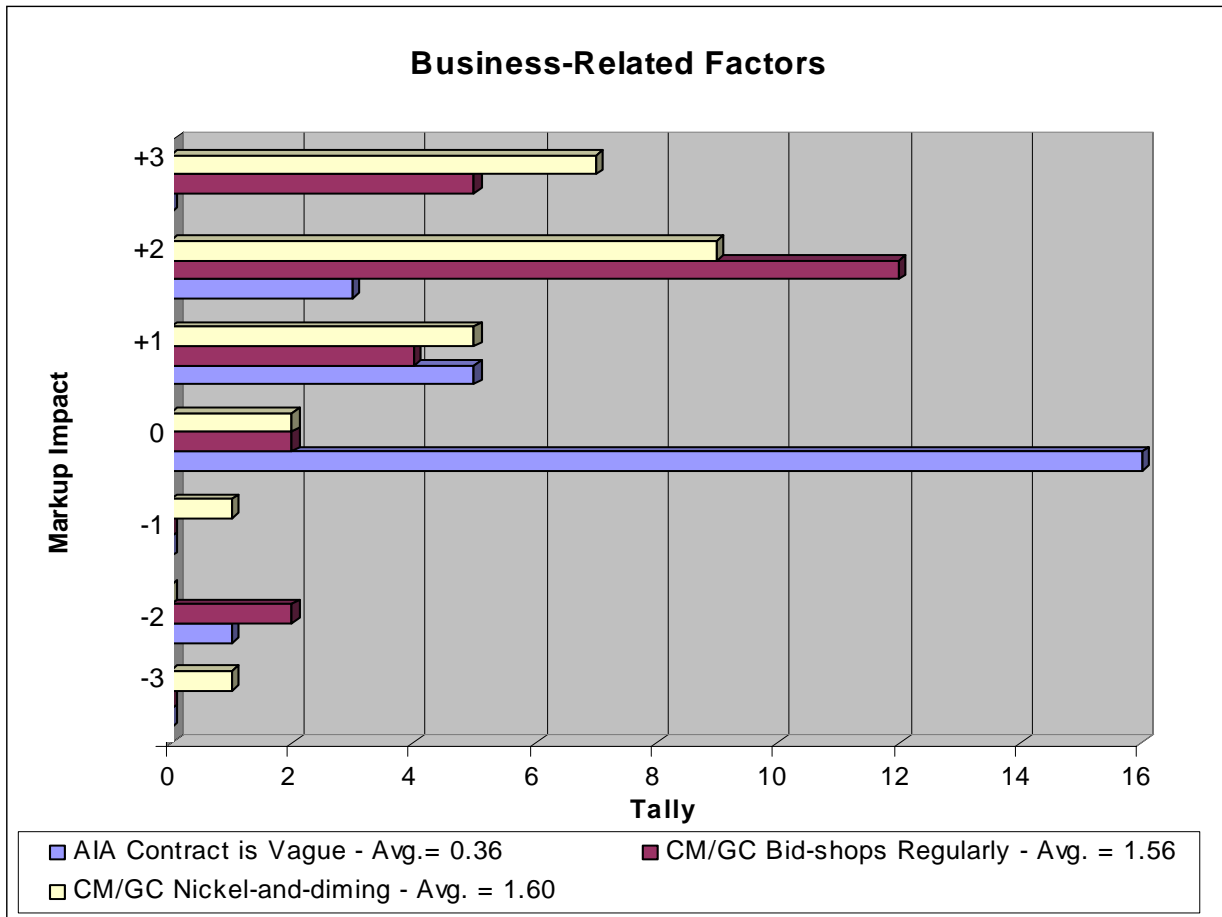
Two of the three series here are negative scenarios for the subcontractor, thus resulting in an increase to the markups. Further, while bad experiences with a project management company result in only a slight increase (1.16), similar situations with individual project team members causes a moderate to high increase in the markup (1.64). Personal relationships are valued greatly in the construction industry, reinforcing the fact that project managers need to be respectful of their subcontractors on a day-to-day basis.



*Business-Related Factors*

Four of the questions covered information about the CM/GC’s typical business practices, including bid-shopping, change order strategies, contract documents, and scheduling. With the exception of the scheduling question, all of these factors were worded so as to elicit a negative response. Bid-shopping, “nickel-and-diming,” and contract vagueness were expected to increase the assigned markup, and for the most part subcontractors responded accordingly. The data is compressed below for these three factors.

**Figure 5. Effect of Detrimental Business Practices on Markups**



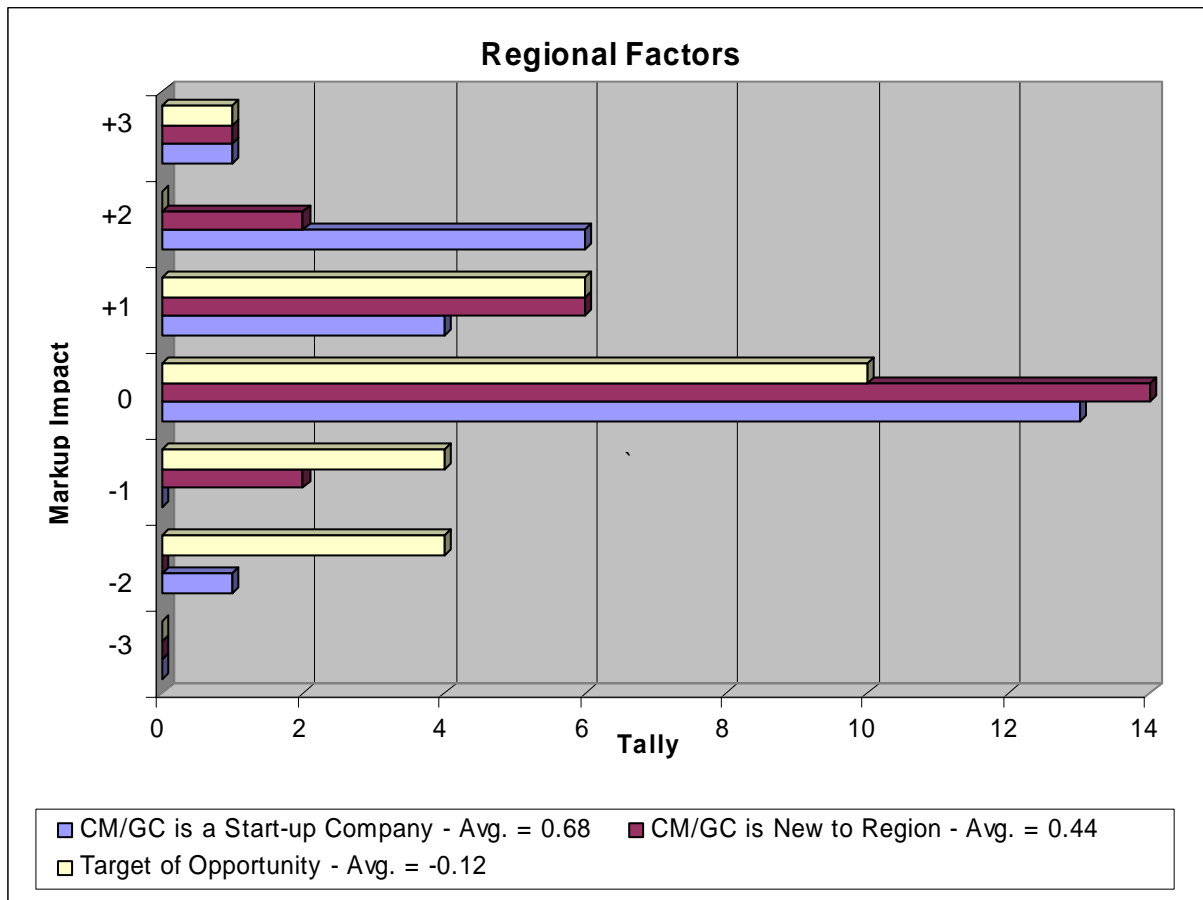
Intentionally detrimental practices of a project team have a substantial impact on a sub’s markup. However, while bid shopping and penny-pinching result in a slight to moderate increase, contract vagueness has little impact on the markup. This could be partly due to

the fact that procedural ambiguity can end up being a good situation for subcontractors when it comes to change order inflations. It is also interesting to note in this graph that several respondents chose to decrease their markups with respect to bid-shopping. This proves that bid-shopping still exists in certain markets since subs were willing to decrease their markups if it means winning the contract.

*Regional Factors*

Lastly, three of the questions dealt with speculative situations involving the CM or GC. These presented a situation where the CM was new to the region, the CM was a start-up company, or the job at hand was a “target of opportunity,” or one-shot deal. These three questions aimed to hit on some of the subjective influences suggested by the CM/GC professionals in the first survey.

**Figure 6. Regional Influences on Markups**



In the “target of opportunity” scenario, the subcontractor was to infer that the job does not present much room to make money. Thus, the question was expected to result in a significant increase in the markup from a CM or GC perspective. However, the result was quite the opposite, with respondents on average keeping the markup the same (-0.12). If you examine the data for this question, there is an evident bell-curve in the markup impact. This suggests that the question left more freedom with its interpretation. It is possible that respondents saw this as a competitive job and thus marked down their bid in order to give them a better shot.

Continuing with the regional data, it is shown that a prominent CM/GC company new to the region is only slightly favored (0.44) over a start-up company (0.68). Regardless, the majority of respondents did not feel either was a significant factor at a glance. This particular result will be contradicted by the results of the case studies. Below are the results tabulated into the Multiplier Matrix, which will be applied to Part 2 of the survey.

**Figure 7. Multiplier Matrix**

FACTOR TYPE	SCENARIO	AVG. VALUE	AVG. IMPACT
Relationship-oriented Factors	You have had difficulty in the past working with some of the CM/GC personnel.	1.64	Moderately Increase
	You have had difficulty in the past working for the CM/GC company.	1.16	Slightly Increase
	You have had past successes with the CM/GC company, including some the current team members.	-0.60	Slightly Reduce
Business-related Factors	“Nickel-and-diming” practices are common for the CM/GC	1.60	Moderately Increase
	The GC has been known to bid shop on a regular basis.	1.56	Moderately Increase
	The AIA Contract is vague with respect to markup percentages, including any sub-sub markups.	0.36	Keep the Same
	The CM/GC is recognized for staying on schedule and meeting milestones.	-0.28	Keep the Same
Regional Factors	The CM/GC is relatively new to the industry.	0.68	Slightly Increase
	Though prominent in other areas of the country, The CM/GC is new to your region.	0.44	Keep the Same
	The job is a “target of opportunity” (one-shot deal).	-0.12	Keep the Same

**→ Using the Matrix: Choose which scenarios apply and calculate an overall average value. Then, use the Markup Impact Scale to determine the magnitude of the expected markup.**

## Part 2

The second half of the survey was intended to test the matrix developed in Part 1 by providing varied combinations of the ten factors in short case-study synopses, and then asking what markup would be assigned. Company history, reputation, team profile, project type and scope were provided for each of the three situations. This mixture of objective and subjective data gave the subcontractor ample enough information to gauge their markup and identify which had the most influence.

### *Alpha Construction Company*

This first case study introduced a generally negative scenario for the subcontractor. Though Alpha was a national firm and had high client satisfaction, their business strategies were often detrimental to their subcontractors' profitability. In addition, the subcontractor was informed that they had difficulty working for some of the CM staff, specifically the Superintendent. Though vague in its presentation of the context, Alpha was expected to result in a generally high increase in the markup simply due to the presence of these three key factors. Extracting the values from Part 1 intrinsic to the Alpha case study and taking an overall average, you get a predicted impact:

**Figure 8. Alpha Construction Company- Multiplier Results**

<b>PRESENT SCENARIOS</b>	<b>AVG. VALUE</b>	<b>AVG. IMPACT</b>
You have had difficulty in the past working with some of the CM/GC personnel.	1.64	Moderately Increase
"Nickel-and-diming" practices are common for the CM/GC	1.60	Moderately Increase
The CM/GC is recognized for staying on schedule and meeting milestones.	-0.28	Keep the Same
Though prominent in other areas of the country, The CM/GC is new to your region.	0.44	Keep the Same
<b>Combined Average, four scenarios</b>	<b>0.85</b>	<b>Slightly Increase</b>

Overall, subcontractors responded to the situation with negative opinion, with a markup average of 3.31% above their Overhead and Profit (see Appendix C12). One can consider this as a generally moderate increase, falling in the range of 2% to 5% above the allowable markup. Though this contradicts the predicted impact in Figure 8, it is a good

sign in reality, as it is evident that some of these characteristics outweigh others with respect to markups. Explanations by the subcontractors reinforce this fact. Alpha’s disregard for the subcontractor’s well-being caused a markup that assured profitability for the sub. Also influential is the fact that the Superintendent “can make or break a job,” and a poor history does not bode well going into a bid.

*Beta Contractors*

Beta, the start-up company scenario, presented an interesting situation. Though they were new to the industry, the principals of the firm had a great deal of experience between them. Thus, reputation was founded on a personal basis rather than through their company’s recognition. Further, a risk factor was made apparent, with the project being the largest job for Beta to date, and the first time working with the subcontractor. Only two of the scenarios from Part 1 were included in this case study:

**Figure 9. Beta Contractors- Multiplier Results**

PRESENT SCENARIOS	AVG. VALUE	AVG. IMPACT
The CM/GC is relatively new to the industry.	0.68	Slightly Increase
The job is a “target of opportunity” (one-shot deal).	-0.12	Keep the Same
<b>Combined Average, two scenarios</b>	<b>0.22</b>	<b>Keep the Same</b>

Results for this second case study slightly exceeded expectations with an average markup of 1.6% (See Appendix C13), showing little impact due to the experience of the principals and their commitment to success. A markup multiplier of 1.6% should be considered a relatively slight increase, again going against the prediction matrix. Still, the risk factor of Beta Contractors being a new company was reflected in several surveys, as noted by one respondent:

“Two factors- new companies have poor cash flow and hence slow pay, [and] new companies try to make their reputation for on time and on budget at the subs expense.”

Sub Survey #8, Beta Case Study (Appendix C9)

Another subcontractor, however, saw Beta’s freshness in a completely opposite sense:

“The focus of individuals with talent, whose reputation is on the line would be a driving force and probably lead to a successful project. Often times, large companies spend more time overstaffed, working on sideline logistics (tracking, reporting, safety, EEOC) than they do building the building. Smaller, more focused companies often get the job done more efficiently.”

Sub Survey #7, Beta Case Study (Appendix C9)

In striving for client satisfaction, this respondent felt Beta would manage the project by streamlining production and minimizing protocols. Though this approach leaves room for potentially damaging consequences, the contrasting opinions show how the same project can be approached from different angles. When it comes to project risk, it all becomes a matter of perspective, experience, and confidence. However, sacrificing critical checks on safety and quality should be considered unethical practice, as it places unnecessary risk on the builders, owners and operators of a building.

### *Choice Management*

The final case study presented a positive situation for the subcontractor. Choice Management is respected by both their clients and subs; they commit themselves to their projects, and they have assembled a project team that worked well with the respondent in the past. The only negative factor in this scenario was that a few jobs in the past did not run smoothly. With a combined three scenarios included from Part 1, Choice has the following predicted markup impact:

**Figure 9. Choice Management- Multiplier Results**

<b>PRESENT SCENARIOS</b>	<b>AVG. VALUE</b>	<b>AVG. IMPACT</b>
You have had difficulty in the past working for the CM/GC company.	1.16	Slightly Increase
You have had past successes with the CM/GC company, including some the current team members.	-0.60	Slightly Reduce
The CM/GC is recognized for staying on schedule and meeting milestones.	-0.28	Keep the Same
<b>Combined Average, three scenarios</b>	<b>0.09</b>	<b>Keep The Same</b>

Respondents on average assigned a markup value of 0.1% above overhead and profit, agreeing with the prediction matrix but contradictory to the majority of the written explanations. Over half of those surveyed either kept the markup the same or reduced it, anywhere from -1.5% to -5%. And while many chose to reduce the markup significantly as a result of their regional notoriety and past successes, others put more emphasis on the few bad experiences in the past or the project’s risk. Another explanation provided was that, “the smaller the job, the greater the markup,” due to the economies of scale and to cover management costs. Like the Beta case study, this scenario involved a situation where perspective came into play- while many value a long history of successful collaboration, there are others who never forget those few breakdowns in the past.

**Sub Survey Commentary**

One thing that must be remembered is that the markup impacts summarized in Part 1 are not reciprocal with respect to a given scenario. A bad experience in the past with a superintendent may cause a significant increase in the multiplier, but a positive experience does not always mean the markup will be decreased by the same magnitude.

Overall, it is evident that while the prediction matrix had good intentions, there are simply too many factors that come into play when subcontractors assign markups on bids for their work. Assigning a weighted system to the ten factors presented in Part 1 of the survey would disregard the variety of other reasons identified in the case study responses.

## Comprehensive Response

The original intent of this research was to measure the impact of certain business practices on a subcontractor's bid package markup, and ultimately attempt to weigh each of these on a multiplier scale. Though the weighted matrix did not turn out as well as planned, much more was achieved in the diversity of answers. A comparative analysis of the CM/GC and subcontractor responses allows for a much more meaningful investigation.

### Major Determinants of a Markup Multiplier

When looking at the responses pertaining to markup determinants, it is evident that construction managers and subcontractors have different opinions on their relative significances. Since it is not possible to rank them in order of importance, the frequency of certain factors becomes the element to consider.

For the purposes of this analysis, factors listed in the subcontractor case study responses all contributed to the tally, regardless if the respondent listed zero or a dozen. Doing otherwise would show bias with respect to the selection. Further, influences were broken down into five basic categories:

- Market Conditions- includes regional economics, competition, work availability, prevailing wages (*does not consider standard overhead and profit*)
- Project Scope- size, type, complexity, location, schedule, & risk
- CM/GC Business Practices and Regional History/ Reputation
- CM/GC Personal Relationship & Past Working Experiences
- Other Entities- Architect, Engineer, Owner; drawing & specification clarity

**Figure 10. Key Influences on Subcontractor Markups (Totals)**

CM/GC Survey Results	Subcontractor Survey Results
1. Market Conditions (9)	1. CM/GC Business/ Reputation (28)
2. Project Scope (7)	2. Market Conditions (26)
3. CM/GC Business/ Reputation (4)	2. CM/GC Relationship/ Past Experiences (19)
3. Other Entities- A/E/Owner (3)	4. Project Scope (17)
5. CM/GC Relationship/ Past Experiences (2)	5. Other Entities- A/E/Owner (10)



Several things become apparent from this table. Before comparing these two lists, it is important to remember that the case studies were formatted to elicit some sort of reaction with respect to each of the three fictional CM/GC companies. Despite this fact, the subcontractors were not limited when it came to the markup influences intrinsic to each case study. The two lists above should be appreciated for their differences. Whereas the CM and GC professionals emphasize objective factors, subcontractors tend to take a more subjective perspective, valuing the reputations and relationships with each of the project entities involved.

### *Objective Factors*

If standard overhead and profit were included in the market conditions category, it would naturally rank first in both surveys. Thus, it can be noted that regional and company economics plays the biggest role in any project out for bid. The availability of work from both perspectives is critical, as competition among subs will always lower a bid. Supply and demand is a basic concept that can not be overlooked in any industry.

Project scope, the second most frequent influence listed by project managers, ranks fourth on the subcontractor list. Again, controlling for the nature of the case studies it is likely that this would rank second among subcontractors as well. Large jobs tend to decrease markups due to economies of scale, while complexity causes the opposite reaction. Further, schedule reasonability is vital for subcontractors with respect to resource availability and expected workload.

### *Subjective Factors*

The real difference between the surveys lies in the relative significance of a company's history, reputation and business practices. Subcontractors overwhelmingly noted the importance of these factors in the case study analyses, despite the fact that they took contrasting opinions on the way it influenced their markups. This is seen in all three scenarios, but especially in the Beta Contractors study. The delivery method and structure of a project plays a crucial role, with many subcontractors increasing markups whenever a construction management company is involved due to lengthier decision processes and more logistical constraint.

Past work experiences and partnerships rank high on the subcontractor list as well, again reinforcing the point that these elements can not be overlooked from a project management standpoint. Going back to the CM/GC survey, all of the companies reported a 90% to 100% rate of subcontractors returning for work. Being highly regarded project management companies, it is evident that they are doing something right, and it directly ties back into this element. Maintaining relationships, being fair, providing last looks- all of these practices build on a company's regional reputation. Most importantly to remember is that respect does not precipitate from the top-down; rather, it requires positive interactions from project to project, and communication between leaders to reinforce these partnerships.

### **Conclusion- Building Respect**

Construction is a unique business in that it is primarily a service industry, despite the fact that it provides a final product, a building, for its customers. Client satisfaction is paramount to a construction manager or general contractor's success, but that does not mean they can disregard their subcontractors' well-being. Since subjective elements such as business relationships cannot be quantified, it is the responsibility of the management professionals to value and actively maintain their subcontracting connections.

The goal of this research topic was to investigate respect among construction managers, general contractors, and subcontractors. If one key point is taken away from this study, it is that the construction industry places great value in a company's reputation. Among owners, it goes a long way- three good projects are required to balance out the impact of a single bad one. From a subcontractor's standpoint, it can be summarized that good reputations are built through conscientious business practice, positive communication, and the daily interactions that take place on a project.