

# Quality in Construction: Identifying the Gaps

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**Abstract** Purpose - This paper aims to examine the quality gaps in construction projects by expanding on the previous gap analysis studies by Parasuraman, et al., 1985. This study offers a more granular assessment of the gaps which includes the various encounter points during the project's life cycle. Design/methodology/approach – Data is gathered through a series of unstructured interviews involving 11 construction services' clients and four construction firms. Findings – There are significant disparities between construction firms and construction services clients in terms of their perceptions about the importance of industry knowledge, architectural drawings, and codes & ordinances. The findings also demonstrate that there are differences in the perceived level of satisfaction between both groups. These findings led to the expansion of the gap analysis model proposed by Parasuraman et al., 1985. Research Limitations/implications – This study is based on 11 construction services' clients and four construction firms. Practical implications – The findings of this study make a case for the need to define construction quality in the context of an expanded list of gaps in the client-firm service encounter, with a complementary list of the mitigating factors for practitioners. Originality/value – This study identifies construction services' quality gaps that are more nuanced than previous studies, in their attempts to explain the crossroads between importance and satisfaction as they relate to construction services encounters.

**Keywords** Construction quality, Quality gaps, Service quality, Gap analysis

## 1. Introduction

According to the U.S. Census Bureau, the construction industry is a \$930.5 billion industry with spending on private construction accounting for about two-thirds of this amount (U.S. Census Bureau, 2014). Construction is one of the largest individual contributors to GDP. According to the Associated General Contractors of America (AGC), private nonresidential investment grew at a faster pace than GDP for 11 straight quarters through mid-2008. The construction industry's value-added contribution totaled more than \$562 billion in 2007, as reported by the U.S. Bureau of Economic Analysis (BEA). The industry accounts for about 4% of GDP. The construction industry in the United States is recovering from the worst recession in a generation. As the industry emerges from the recession, it must do so with a new vision toward identifying and managing the quality gaps that have plagued the industry for decades. The staggering unemployment levels at double the national average have led to an exodus of workers in design and construction to seek opportunities in other industries. The result is a growing concern about the erosion of experience, skills and quality. The architecture firm and student studies conducted by McGraw-Hill Construction (MHC) for the American

Institute of Architects finds that 79% of architect practitioners expecting a shortage are unsure whether the student pipeline will be sufficient to prevent shortages. The same study finds that 78% of U.S. architecture students and recent graduates express interest in working abroad, with over half motivated by the perception that more work is available outside the U.S. Other relevant findings of the MHC study include the following:

- Almost one third (23%) of Architecture and Engineering (A/E) firms and general contractors are concerned about a shortage of specialty trade contractors by 2014.
- Nearly half (49%) of general contractors are concerned about finding experienced craft workers by 2014, and well over one third (37%) of A/E firms are concerned about finding workers with 10 years of experience or more.

Even with its ups and downs, the construction industry continues to play a vital role in sustaining economic growth. Commercial and residential buildings will always be required to support productivity and accommodate emerging and fast-growing populations.

Several studies have examined the subject of quality in the professional services industry (Lewis and Brown, 2012, Heineke, 1995, Harvey, 1992, Harte and Dale, 1995, Brown and Swartz, 1989, and Swartz and Brown, 1989). Many of the studies have been focused on the clients' expectations, perception, and service delivery. An equally significant number of studies have examined the issues of quality from a

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Published online at <http://journal.sapub.org/ijcem>

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practical as well as theoretical perspective, (Harte and Dale, 1995, Ritsema van Eck-van Peet, et al., 1992). Parasuraman et al., (1985) identified four main quality gaps:

1. The difference between what the customer expected and what management perceived were the customer's expectations.
2. The gap between management's perception of customer expectations and the translation of those perceptions into service quality specifications and designs.
3. The difference between standards of service quality and the actual service delivered to customers.
4. The difference between the service delivered to the customer and the promise of the firm to the customer about its service quality.

In terms of measuring quality in the services sector, Zeithaml et al. (1990) developed SERVQUAL, highlighting the main components of high quality service. The SERVQUAL authors originally identified 10 elements of service quality. (1) reliability; (2) responsiveness; (3) competence; (4) access; (5) courtesy; (6) communication; (7) credibility; (8) security; (9) understanding/knowing the customer; (10) tangibles. "According to this model, service quality or the service quality gap, results from customers comparing their expectations prior to receiving the service to the perceptions of the service experience itself. Three outcomes are possible from this comparison: i) confirmation of whether or not the customers' perceptions are matched by their expectations, then the customers are satisfied with the service received; ii) positive disconfirmation if the experience is better than expected, then perceived service quality is high, and the customers are satisfied and delighted; iii) negative disconfirmation, if the experience does not meet expectations, then the service quality is perceived to be poor and the customers are dissatisfied" (Muthasamy 2011). Along with this, it has been discovered that overall satisfaction is affected asymmetrically by attribute-level performance. That is, a negative performance on an attribute has a greater impact than a positive performance does. Furthermore, there exist diminishing returns in the domain of positive performance, but not for negative performance. This asymmetric impact was first discovered in Herzberg's study on the motivation to work. Herzberg identified that there are motivational factors (satisfiers) and hygiene factors (dissatisfies) on a job (Muthasamy 2011). Knowing about this theory, it is important to understand the gaps that exist between the customer and the service delivery, so that attribute-level performance can be at its maximum.

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This paper extends Parasuraman's model beyond the high level gaps to include more specific gaps that fully delineate the quality elements inherent in a construction project. Sometimes, the reason for the gaps is that the customer enters the experience with a set of expectations, derived from past encounters, word of mouth, and personal needs. On the other hand, the supplier delivers the service based on their own past encounters. Rifts between these two create the four gaps noted earlier. Furthermore, a positive gap is one in which perceptions are better than expectations. On the other hand, a negative gap is one in which perceptions are worse than expectations (Forsythe). Most importantly, the size of the gap is vital in determining how poor or good the overall service quality is. A large positive gap means that the supplier did a very good job in exceeding the expectations of the customer. The gap model is important in the construction industry, because "customers experience briefing, design, execution of construction, and conformance problems regularly" (Forsythe 2008). The construction industry differs in the sense that many times construction is broken into different phases. As a result, this gives the customer a myriad of chances to judge the service quality. "It is conceivable that evaluations at one stage - say design stage - may impact the expectations for the execution of the construction stage. The perception of a poorly documented design may change expectations about how well the construction contractor will need to perform to deal with the design's shortcomings" (Forsythe 2008). In the construction industry, reputation, knowledge of building codes, as well as advertising are three other factors that impact expectations.

Construction management involves the execution of a number of objectives with regard to scope, cost, time safety, and quality (refer to figure 1). A typical construction project calls for the interaction between a client and the Construction Manager (CM); the construction firm for which the CM works; and the construction industry. These complex interactions between the construction client and the construction enterprise produce quality gaps that ultimately affect the outcome of a construction project.

In the context of construction, quality has a three-fold

meaning: it means getting the job done on time; ensuring that the basic characteristics of the final project fall within the required specifications; and getting the job done within budget, (Mahmood 2008). Any attempt to analyze quality in construction must examine the interactions between the client and the other three components in the Venn diagram in figure 1. These interactions are referred to as the “Voices in the Construction Service Encounter.”

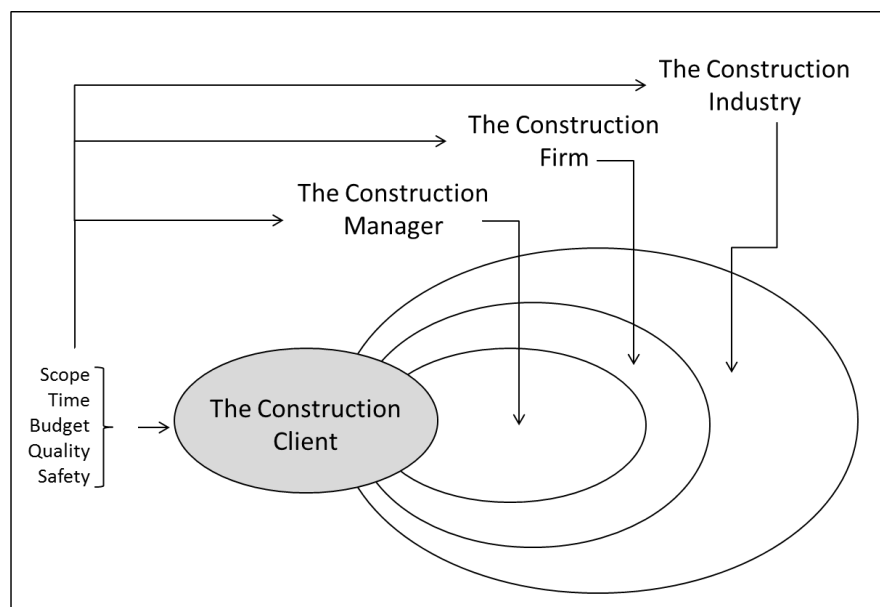
Quality is also measured by the ability to get the job done right the first time, which in turn decreases costs, which invariably leads to owner satisfaction (Mahmood 2008).

Safety is one of the most important issues at a job site. Establishing continuous site-wide safety has to begin with commitment from the highest level (McDonald 2009). The construction company, with supervision from the Construction Manager (CM), is responsible for promoting safety by supplying sufficient tools, realistic scheduling, training, and information. Staying within the designated budget is one of the hardest things to do when dealing with a large project. It is an extremely difficult task to hold a project to the initial value accepted in the bid, while keeping the quality of the work high. When the work commences, new areas for improvement come up on a daily basis. When addendums are added to a job, this increases the costs of the construction project, and therefore introduces the risk of going over budget (Dell’Isola 1997). Moreover, according to (Forbes 1999), construction managers have found that “Cost increases influence owner satisfaction more than schedule delays, for the same degree of deviation.” Construction managers can guarantee that customers will be satisfied as long as they ensure that deviations with respect to cost will be minimized, and only cost increases that are absolutely necessary will be implemented. Owners become very dissatisfied when the number of change orders builds up

(Forbes 1999).

One of the most challenging aspects of a construction project is getting the job done on time. Project schedules are thoroughly scrutinized, thus ensuring the timely completion of the job. Construction Managers continuously work to optimize the schedule in a way that reduces cost, (Chassiakos 2005). Furthermore, according to Forbes, customer satisfaction in the construction management industry is impacted directly by scheduling delays. There is a correlation between increased scheduling delays and a decrease in customer satisfaction. For example, scheduling delays of 15 to 30 percent are rated as influencing customer satisfaction “somewhat” and scheduling delays of over 30 percent are thought to impact customer satisfaction “moderately” to “very much” (Forbes 1999). One of the characteristics used by owners to judge the construction managers is the ability to get the job done within the stipulated time (Forbes 1999). As a result, taking the necessary steps to scrutinize the schedule and make any necessary adjustments beforehand will ensure a smoother process and a happier owner.

One of the main reasons for owner dissatisfaction is the lack of detail in the drawings and/or specification of products. The specification book and the drawings both contain every detail about the products and methods used for construction (Forbes 1999). Following the specification book ensures that all aspects of materials handling are correctly met on the job site. The specification book spells out the correct materials, quantity, as well as costs associated with the project. Moreover, the drawings demonstrate the correct place, time, sequence and orientation of these materials. As a result, it is imperative that all of these dimensions are evaluated in order to ensure the success of the job (Tompkins 2010).



**Figure 1.** Voices in the Construction Service Encounter

Another important element of construction quality is the quality of communication. Communication between the construction manager and the owner is essential for the successful completion of a job. “The most common reason for construction disputes is a breach in communication and expectations” (Wolf 2013). The construction manager is the liaison between the owner and contractor. Communication is crucial on a construction site not only with the owner, but also with other contractors. Without proper communication, coordination between prime contractors cannot occur. Having the proper communication stream promotes a positive work environment.

It is important for the construction firm to recognize what the customer wants, and to ensure that what the organization does will meet these needs. As a result, it is essential that the voice of the customer and the voice of the construction manager are in agreement. There are several gaps that exist regarding customer expectations and perceptions in conjunction with the service that is actually delivered. Failure to manage these gaps can result in the demise of a project. As a result, exploring these gaps between the customer’s needs and the construction manager’s interpretation is crucial to understanding quality in the industry.

## 2. An Expanded Construction Quality Gap Model

Motivated by Parasuraman’s Theory, we propose an expanded quality gap model for the construction industry (refer to figure 2).

We identify 12 quality gaps for the construction industry,

as displayed in Figure 2. These gaps have been developed based on interviews with four construction firms in South Florida, two architectural firms, five commercial and six residential clients, and cover a variety of issues in the construction industry, ranging from client expectations to architectural drawings. The construction firms were represented by their Construction Managers or Assistant Construction Managers. The semi structured interviews were for between 45 minutes to 90 minutes each, and were aimed at understanding the factors that influence quality in the eyes of the stakeholders in a construction project. The interview discussion points were based on the following questions:

### Construction Firm-Centered Questions:

- I. What factors have the greatest impact on the outcomes of the services received by the client?
- II. How much does the clients’ knowledge affect the service outcome?
- III. What are some of the expectations the clients bring to the service encounter? How are they managed?
- IV. How does client satisfaction vary among the individual CMs who work for the same construction firm? How does the firm address these disparities?

### Construction Client-Centered Questions:

- I. How do the client’s expectations affect construction service delivery outcomes?
- II. How do the client’s perception affect construction service delivery outcome?
- III. What were the clients’ expectations about his/her role in the service sought before and after (especially at the start)?

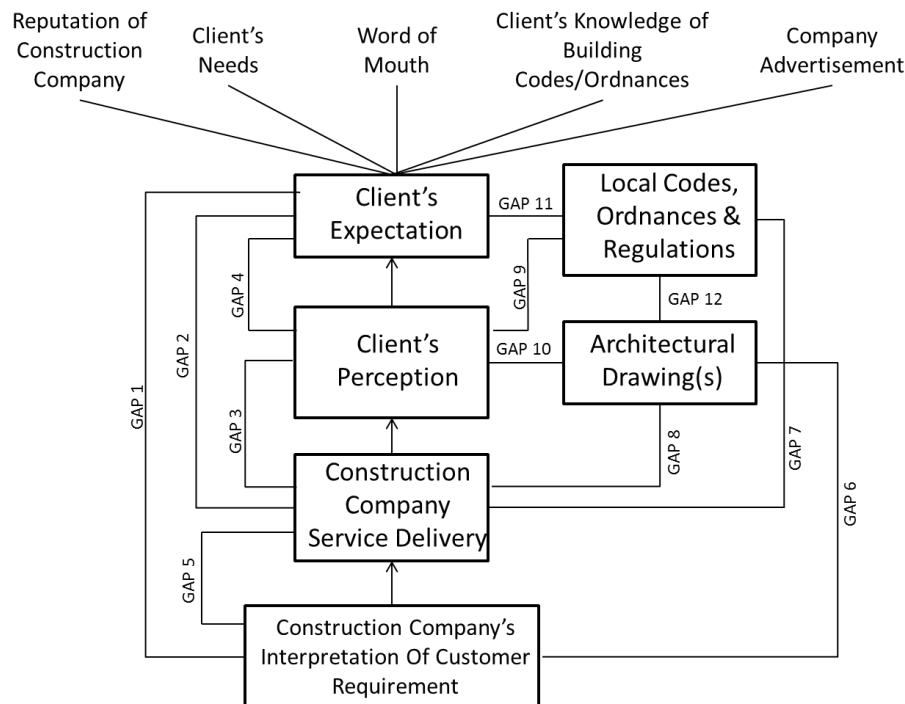


Figure 2. An Expanded Construction Quality Gap Model

### 3. Theoretical Framework

We hypothesize that the quality outcomes of a construction project is a function of these gaps as follows:

$$Q_i = f(X_1, X_2, X_3, \dots, X_n)$$

Where  $Q_i$  = Construction Quality Outcome

$X_i$  = Independent Variables Identified by the Gaps

The term service encounter has long been used to denote the interplay between the customer and the service provider (Bitner, Booms, and Tetreault 1990). It is a central concept within service research, as it provides the basic situation whereby the customer coproduces value through interaction with the organization's service delivery systems. In the often-cited definition, Surprenant and Solomon (1987) described the service encounter as "the dyadic interaction between the customer and the service provider firm." The related concept of the customer experience has also been frequently defined to only include direct and indirect contact between the customer and the service provider (e.g., Meyer and Schwager 2007). The central assumption underlying these conceptualizations is that the service encounter is dyadic in nature and that the customer assesses the firm in isolation.

Looking at the expectations and experiences of providers and consumers can provide special insight into the services evaluation process and perceived service quality. By evaluating both professionals' and consumers' perspectives, differences in perceptions can be identified and characterized (Swartz and Brown, 1989).

The first service quality analysis model was produced in the 1980s (Grönroos, 1984). It was a *total perceived quality model*, based on the individual's perception of the quality of a service. The customer compares his or her expectations with his or her experience of the service, meaning "technical quality" (that obtained by the user) and "functional quality" (how the service is provided), perceived through the filter of the company's image.

Subsequently, the *Gap Analysis Model*, developed from exploratory investigations conducted by the North American scholars Parasuraman, Zeithaml and Berry (1985), emerged from the supposition that the quality of a service is expressed according to a disconfirmation paradigm (Oliver, 1980; Churchill and Surprenant, 1982).

The Gap Analysis Model is in its turn revisited and extended to embrace seven gaps (knowledge, standards, delivery, internal communications moment or stage in service planning and performance (Lovelock, 1994). Tables 1 and 2 below show summaries of the interview data.

**Table 1.** Summary of Client Interview Data

	Project	Importance to Client's vs. Clients' Satisfaction					
		Architectural Drawing		Industry Knowledge		Codes & Ordinances	
		Importance	Satisfaction	Importance	Satisfaction	Importance	Satisfaction
Client 1	Commercial	4	7	9	8	3	8
Client 2	Commercial	5	8	10	7	2	8
Client 3	Commercial	3	8	10	9	7	7
Client 4	Residential	10	8	10	8	8	9
Client 5	Commercial	2	7	10	6	5	9
Client 6	Residential	9	6	10	7	3	10
Client 7	Residential	10	7	10	9	7	9
Client 8	Commercial	5	8	10	9	6	9
Client 9	Residential	8	6	10	8	4	7
Client 10	Residential	9	5	10	9	8	8
Client 11	Residential	10	9	10	5	9	10
	Average	6.82	7.18	9.91	7.73	5.64	8.55
	Standard Deviation	3.06	1.17	0.30	1.35	2.38	1.04

**Table 2.** Summary of Construction Firm Interview Data

	Importance vs. Firm's Satisfaction with Client Understanding/Knowledge					
	Architectural Drawing		Industry Knowledge		Codes & Ordinances	
	Importance	Satisfaction	Importance	Satisfaction	Importance	Satisfaction
Construction Firm 1	9	2	7	2	5	2
Construction Firm 2	10	3	8	1	6	3
Construction Firm 3	9	1	6	1	5	4
Construction Firm 4	10	4	9	2	7	1
Average	9.5	2.5	7.5	1.5	5.75	2.5
Standard Deviation	0.58	1.29	1.29	0.58	0.96	1.29

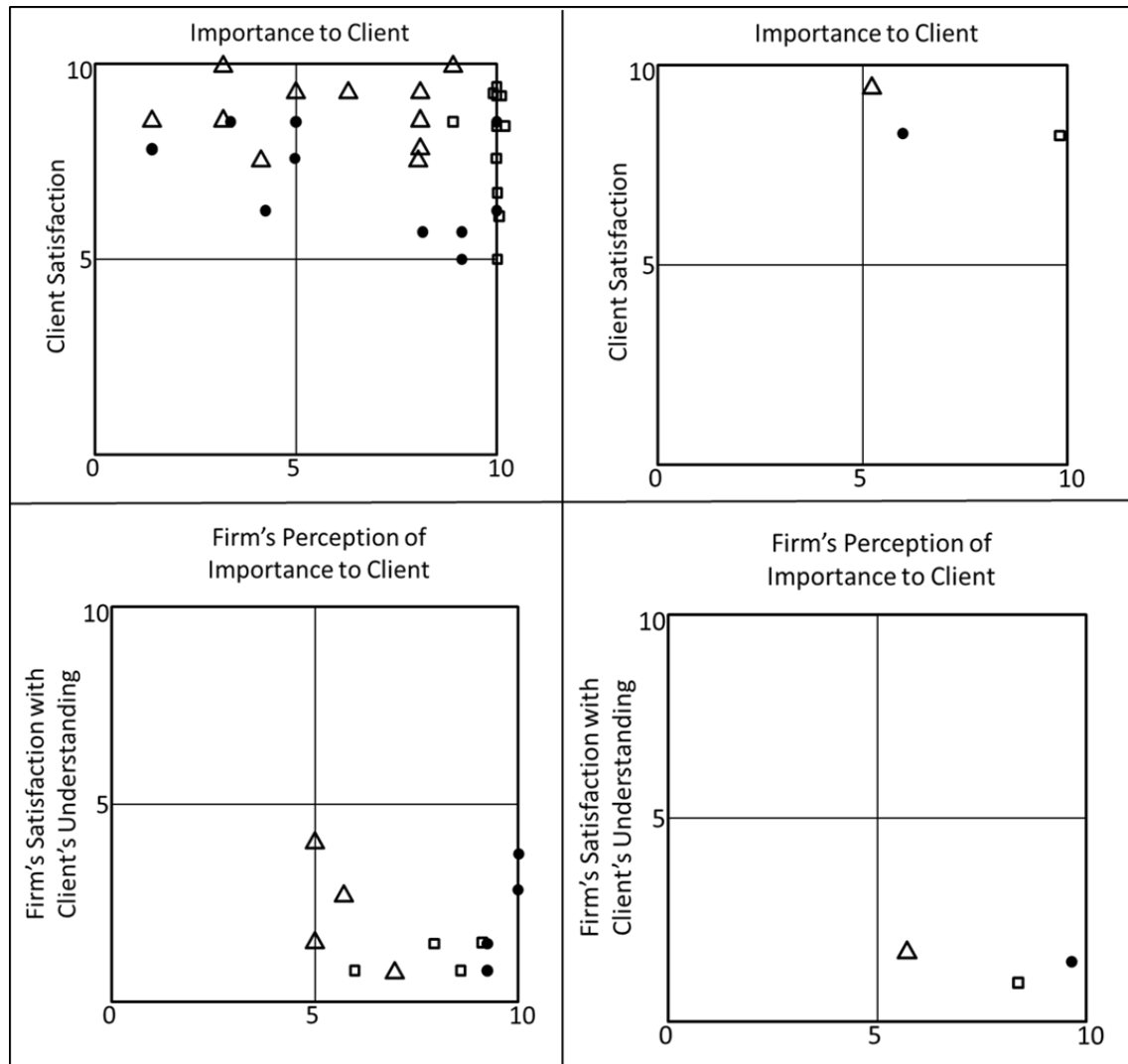


Figure 3. Importance vs. Satisfaction

#### 4. Interview Data Highlights

Some of the highlights of the interview data include the following:

- Clients give a lower average rating to the importance of *Architectural Drawings* (6.8), compared to a rating of 9.5 given by the construction firms indicating their perception of the importance of *Architectural Drawings* to the clients. However, the construction firms are significantly dissatisfied with the clients' understanding of architectural drawings, compared to clients' reported level of satisfaction with their understanding of architectural drawings at 7.18.
- Clients give *Industry Knowledge* an average importance rating of 9.91, and rate their satisfaction with that knowledge at 7.73. However, construction firms rate their perception of the importance of *Industry Knowledge* to the clients at an average of 7.5, and their satisfaction with the clients' knowledge at 1.5.
- Both clients and the representatives of the construction firms have approximately the same average

rating for the importance of codes and ordinances. However, construction firms rate their satisfaction with the clients' knowledge as 2.5 as compared to clients' own rating of their satisfaction at 8.55.

Note: All ratings are based on a scale of 0-10, where "0" represents the lowest and "10" represents the highest rating.

The incongruities between the ratings given by the clients and the construction firms provide a basis for assessing the factors of perception and expectations as they affect the clients and the firms. Figures 3 display the data summarized in Tables 1 and 2 using a two dimensional grid.

In the remaining portion of this paper, we will discuss each of these gaps as well as suggest some general mitigation factors. A summary of the findings can be found in Table 3. To illustrate some of the gaps, we use a very common source of concern for both the client and the construction enterprise – *Scope Change*. For example, suppose the expected service calls for the completion of an elevator installation work by December 31<sup>st</sup>. However, once the construction commenced, it was determined that the actual conditions on-site were much different than the drawings, therefore calling for a

couple of addendums to the work. The perceived service is now pushed back until June 31<sup>st</sup>, due to the change in scope. We will now use this simple example to illustrate some of the gaps.

**Table 3.** Gap Model for the Construction Industry

Gap	Reason	Factors Influential in Closing the Gap
1	The CM believes that client understands addendums means higher cost	Communication between CM and client; Client education
2	The CM believes that client understands that addendums mean delays	Communication between CM and client; Client education
3	Client is not familiar with how job site operates	Client education; Clarify Client expectations
4	The CM believes that client understands that addendums mean delays	Communication between CM and client; Client education
5	CM is not familiar with which dimension of quality is most important to client	Clarify client's expectations; Improve communication
6	CM and architect fail to properly communicate	Improve communication among ALL stakeholders
7	CM not familiar with all building codes related to the project	CM education, training, certifications and knowledge acquisition
8	CM is not familiar with all drawings	Improve communication among ALL stakeholders
9	Client is not familiar with codes	Improve client education
10	Client is not familiar with how to read drawings	Improve client education
11	Client is not familiar with codes	Improve client education
12	Architect is not familiar with all codes	Improve education of all stakeholder

Gap one is the gap between the expected service and management's perceptions of the customer's exceptions. We will use the expected service to be December 31<sup>st</sup> for the completion of the elevator. The gap occurs most likely because the CM believed that the client should know that because addendums were made to correct for unforeseen conditions, the job would take longer and cost more money. The construction manager believes that they do not need to explicitly state this to the client. The belief lies in the implication that when changes are made, delays will occur and more money will be needed for completion.

Gap two is the gap between the client's expectations and the construction company's service delivery. In this example, the client expects the elevator to be completed on June 31<sup>st</sup>, regardless of the addendums. On the other hand, the construction company believes that the client is aware that due to the change in scope, the completion date has now been pushed back. As a result, the construction company delivers the service on June 31<sup>st</sup>, the schedule completion date after

the addendum was approved.

Gap three is the gap between the client's perceptions and the construction company's service delivery. An example of this gap would be that four weeks before June 31<sup>st</sup>, the new expected completion date, the client visits the worksite to see how everything is going. The client becomes extremely agitated when he/she sees how chaotic the construction site looks, thus creating the perception that the job could not be completed by the promised date.

Gap four is the gap between the client's expectations and the client's perceptions. The client's expectation is that the elevator will get completed on June 31<sup>st</sup>, and will be ready for full use. Once the scope change has been added, the client's perception is that the elevator is late six months, and they do not care the reason why. They are still set on the initial June 31<sup>st</sup> deadline, and therefore believe that the service delivery did not meet these expectations. However, it is clear that since there was an addendum, it is nearly impossible for this original deadline to be met.

Gap five is the gap between the construction company's service delivery and the construction company's interpretation of the customer requirements. Even after countless number of meetings, it is still possible for the construction company to misinterpret the client's requirements. For example, due to the addendums to the job, the construction manager believes that now cutting costs is the most critical aspect to the client, in order to bring the final cost as close to the original budget as possible. As a result, the construction manager directs the contractors to cut some corners in order to save some money. Here, the construction manager believes that sticking to budget is most important dimension of quality, when in fact getting the job done as bided may be.

Gap six is the gap between the construction company's interpretation of the customer requirement and the specifications of the architectural drawings. Often times, the architects create the drawings based on their interpretation of what the client wants, and the construction manager executes the job based on their interpretation of what the client wants. It is not uncommon to find that sometimes these interpretations may be incongruent. Tai and Inanici (2009) and Patel (2014) discuss the issues of perception originating from architectural drawings.

Gap seven is the gap between the construction company's service delivery and the local codes, ordinances and regulations as dictated by the industry or State. According to Booker (2009), the local codes and ordinances can impose a significant constraint on a construction project. These codes and ordinances also vary from state to state, and even counties within a state. The expectation is that the Construction Manager would be well aware of the codes required in buildings; however, many times the CMs are not aware of some minor and infrequently used codes.

Gap eight is the gap between the construction company's service delivery and the specifications of the architectural drawings. One of the challenges facing clients and construction firms is the accuracy of interpretation of

architectural drawings. There are several studies that examine this problem, including a 2009 study by Tai and Inanici which examined depth perception in architectural drawings. Their study examined the complex interrelationships between architectural configurations, luminance distribution patterns, and the perception of spatial depth. Other studies include the work of Patel (2014) on graphical perception. The expectation is that the CM would be familiar with all of the drawings for the job; however, it is sometimes impossible for them to know all of intricacies of the job as they relate to the work of the architect. Because every job is nuanced in its own way, the CM might be inclined to direct the contractors to work in a way which may be a departure from the drawings.

Gap nine is the gap between the client's perception and the stipulations by local ordinances and codes. Many times construction activities may not occur after 8 P.M. on a weekday. In addition, after an inspection occurs, an adequate amount of time must elapse before construction can resume on that part of the job site. However, the client may perceive this as a form of delay or lack of motivation. In some cases, the client may insist that workers not follow the rules and work during non-working hours or when testing is still occurring.

Gap ten explores the gap between the client's perception and the demands of the architectural drawings. It is safe to say that most clients do not have an architectural background, and the concepts of drawing scales may be confounding. As a result, when they look at the drawings, they may be confused, and their perception may not be accurate (Tai and Inanici, 2009; Patel, 2014). The client may believe that the bathroom looks too small, or his/her office is not adequately sized.

Gap eleven explores the gap between the client's expectations and the requirements of the local codes. In the U.S., Building codes are published to meet the needs of local jurisdictions charged with enforcement of building standards for construction and use, and are updated to reflect the latest standards of life-safety and construction technology. The codes cover areas such as fire, electrical, plumbing, existing building, fuel gas, green construction, mechanical, residential, etc. There are also many ordinances with diverse implications for the quality of a construction project. The ordinances include zoning, parking, historic preservation, grading and drainage, floodplain, city charter, storm water design, sprinkler, and subdivision ordinance. Zoning regulations are rules that determine how parcels of land may be used or developed. Booker, 2003 notes that in some countries, zoning laws will dictate how land may be divided or who may own land. Laws may prevent a landowner, for example, from subdividing his or her land in order to keep a certain appearance of a neighborhood or subdivision. Due to the multitude of codes and the waiting periods needed after inspections, the down times on some of the areas on the job site are a requirement. The client expects the completion date to be met, and that the workers would be on site working diligently and making good use of time and money. However,

because of codes this cannot be the case. Furthermore, if there are addendums in the construction scope and there is the need to make up for lost time, the client expects the completion date to be the same as what was previously stated. As a result, the construction manager may request that the contractors work overtime. However, local codes may not allow for work to be done on weekends or at night. As a result, even though the client expects the workers to be on site at all times to make up time, this in reality cannot occur.

Gap twelve investigates the gap between the local codes and the demands of the architectural drawings. A 2009 article by Booker explains how zoning laws can significantly impact the perception of quality in a construction project. One would expect architects to be familiar with all codes when designing buildings, phasing and timelines. However, this is not always the case. It is not practical to expect every architect to be familiar with every code available with respect to construction. As a result, the architect may for example, call for one type of material, or require that a process should occur two days after inspection, when in reality both of these requests do not meet the local building codes.

## 5. Conclusions

Although much has been written about quality in the construction industry, this study delves into some previously unexplored aspects of the interactions among the different stakeholders of a construction project. Some clients believe that their expectations regarding construction service outcomes would be better placed had they had some knowledge of the industry. Construction services firms also agree that service outcomes would be improved if their clients had more knowledge of the construction industry. While construction services' clients may understand their needs, what is not clear is how well they explain their needs to the representatives of the construction firms. The disparities between what the construction firms and the clients deem to be important and their perceptions regarding satisfaction may allude to some of the quality gaps in the encounters between the clients and the construction enterprise. The definition and measurement of quality in the construction services industry should take into account the gaps discussed in this paper. We do not make the claim that this is an exhaustive list of gaps, but rather that quality should be defined and evaluated in the context of these and other quality gaps inherent in the management of construction projects. We encourage future researchers to examine the presence of other gaps in the client-construction firm encounter that may be pertinent to our understanding of quality in this industry, as well as the impact of the gaps. The gaps identified in this study can be further analyzed with the aid of a comprehensive survey tool based on a larger sample size. In relying on interview data for this study, our primary goal was to encourage a discussion on construction quality gaps.



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