

DELIVERY METHODS AND SOCIAL NETWORK ANALYSIS OF UNETHICAL  
BEHAVIOR IN CONSTRUCTION INDUSTRY: AN EXPLORATORY STUDY

A Thesis

by

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## ABSTRACT

The construction industry accounts for about one-third of gross capital formation and is ranked as one of the most corrupt. It is a multifaceted industry with unregulated transactions in which illicit behavior can be difficult to detect. The effects of corruption go beyond demoralization associated with bribery, it can lead to substandard quality of infrastructure and insufficient funds available for project maintenance. There are a multitude of reasons identified as possible causes for unethical conduct. A few researchers cited corruption as a result of an unethical decision. Prior research concerning corruption in construction has called for several main strategies: enhanced transparency, ethical codes, project governance, and audit and information technology. However, strategies to combat corruption may not be sufficient. As Tacitus states, 'The more corrupt the state, more the number of laws'. This research first presents an overview of unethical conduct in the construction industry. Then it examines the ethics in the industry followed by types of relationships and their structure which may be conducive to unethical conduct within the framework of different delivery methods. Further, based on interviews, the opinions of industry professionals pertaining to unethical behavior, its perception and manifestations have been documented. Finally, based on conclusions from the interviews, objective examination of Lean IPD and relational contracting as a delivery method has been made.

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## CHAPTER I

### PROBLEM STATEMENT

#### PURPOSE OF THE STUDY

The purpose of this study is to identify based on interviews of construction industry professionals whether Lean-IPD is a viable solution for addressing occurrence unethical behavior.

#### SIGNIFICANCE OF THE STUDY

This study aims to explore if a collaborative approach in projects will have any effect on unethical conduct in the construction industry.

#### BACKGROUND

Corruption in construction is associated with economic growth and stages of development (Ehrlich and Lui 1999). It is considered a major hurdle to economic and social development. It is estimated that the annual loss from corruption in the global construction market accounts for 10% of global construction market value (Sohail and Cavill 2008).

Unethical decisions may occur at any phase during the project: initiation, planning and design, bidding and construction, and operation and maintenance (Tabish and Jha 2011). Ahmad et al. (1995) and Kenny (2009) suggest that construction observes widespread unethical behavior mainly due to the fragmented nature of the industry. Due to public procurement policies, Design Bid Build has become one of the most widely used delivery methods in the United States (Miller et al. 2000) which has consequently resulted in the fragmentation of the construction industry leading to inefficiency

## CHAPTER II

### RESEARCH GOAL AND OBJECTIVE

The objective of this research is to examine if relational contracting has any effect on unethical conduct in the construction industry. This research creates a dialogue with industry professionals regarding their opinions and views on unethical behavior.

## CHAPTER III

### LITERATURE REVIEW

#### PRIOR WORK ON THE PROBLEM

Le et al. (2014) identified twelve forms of corruption in the industry: bribery, fraud, bid rigging, embezzlement, kickback, conflict of interest, dishonesty, unfair conduct, extortion, negligence, front companies, and nepotism (Table 1). Corruption can hinder the social and economic development of societies worldwide (Snaith and Khan 2008).

So far anti-corruption strategies involve recommendations for enhanced transparency, ethical codes, project governance, auditing, and information technology (Le et al. 2014). But despite these, the severity of corruption has not been alleviated, and construction remains corrupt (Transparency International 2002, 2006, 2008, 2011). The primary causes identified are: excessive competition in the tendering process, insufficient transparency in selection criteria during tendering, inappropriate political interference in cost decisions, the complexity of institutional roles and functions, and asymmetrical information among parties (Le et al. 2014). Several researchers have argued that unethical behavior is one of the causes of corruption in the industry (Zarkada-Fraser and Skitmore 2000; Moodley et al. 2008). In this paper, we focus on unethical behavior as other issues such as asymmetric information and transparency have been studied extensively.

**Table 1. Types of corruption and their manifestations in the construction industry.**  
Adapted from Le et al. (2014)

Type	Definition	Example/Consequences
<b>Bribery</b>	Money or favor given or promised in order to influence the judgment or conduct of a person in a position of trust	Gifts, cash, overseas and holiday trips, special favors/privileges, and affirmative appointments
<b>Fraud</b>	The crime of using dishonest methods to appropriate something valuable from another person	Alteration of documents and deliberate intention to mislead and withhold information, making invoices and payment for materials without being received, theft of materials and equipment
<b>Bid Rigging</b>	Commercial contract is promised to one party even though for the sake of appearance several other parties also present a bid	Cover pricing, bid cutting, hidden fees and commissions, and compensation for tendering costs of unsuccessful tenderers.
<b>Embezzlement</b>	The fraudulent conversion of another's property by a person who is in a position of trust	Payment for a contractor can be defaulted by the client's embezzlement of the project funds, which may delay project delivery or even result in project failure.
<b>Kickback</b>	The payment of something of value to a recipient as compensation or reward for providing favorable	Client's staff may receive an economic reward from a tenderer by helping them win the contract.
<b>Conflict of Interest</b>	A situation in which someone who has to make a decision in an official capacity stands to profit personally from the decision or a situation in which the concerns or aims of two different parties are incompatible.	Can cause an appearance of impropriety and thus undermine confidence in the professional opinions or actions.
<b>Dishonesty</b>	Deceitfulness shown in someone's character or behavior	In these cases for example architect blames contractor, contractors believe that tender is unfair and justify using inferior materials, quantity surveyors believe contractors over claim during the construction phase.
<b>Unfair Conduct</b>	Behavior which is deemed unconscionable and is harsh or oppressive, or beyond commercial bargaining.	Consequences are a mixture of extortion, dishonesty and conflict of interest.
<b>Extortion</b>	Obtaining something through force or threat	Occurs from one party to another involved in the project, client to contractors, major contractor to sub, etc. Extortion results in the misuse of project funds and give some individuals access to illegal income.
<b>Negligence</b>	Failure to observe proper care in doing something	Inadequate quality specifications, poor workmanship, insufficient safety precautions, lack of management skills.
<b>Front Companies</b>	A subsidiary company used to shield another company from liability or scrutiny	Secure construction contracts because of the power of their owners and delegate them to other contractors at a lower price, the price difference constitutes the illegal income.
<b>Nepotism</b>	Person in power giving jobs to relatives or friends	Results in negative impacts on the project, low productivity and low managerial efficiency.

## ETHICS IN THE CONSTRUCTION INDUSTRY

Although employers do not force their employees to initiate or participate in unethical conduct, stakeholders in the construction industry have witnessed or experienced unethical conduct to some degree in the form of unfair conduct, negligence, conflict of interest, collusive tendering, fraud, confidentiality and propriety breach, bribery and violation of environmental ethics (Vee and Skitmore 2003). Workers do enjoy a

fundamental right of professional conscience (Martin and Schinzinger 1996). However, it has been observed that in general, professionals tend to believe their obligations to the client are more important than to others, such as the public (Johnson 1991).

In the US construction industry, architects possess ethical standards (Abramowitz 1998; Pressman 1997) which can be traced back to the American Institute of Architect's code of ethics which prescribes "the common good is right" for issues not governed by laws (Pressman 1997).

Contractors have a reputation for unethical behavior, one reason being a high level of disputes between parties in the project (Pilvang and Sutherland 1998). Another major factor for this observation could be due to the influx of new construction companies that lack necessary skills combined with greed (Ritchey 1990). Similarly, the Project Management Institute (Code of Ethics and Professional Conduct, n.d.) lays down a code of ethics for project managers and the AIC for constructors (Bylaws and Code of Ethics, n.d.). However, contractors have developed a sour reputation for unethical behavior; this may be attributed to the high level of disputes between parties during the project (Pilvang and Sutherland 1998). Another major contributor to this may be the influx of new construction companies that lack necessary skills combined with greed (Ritchey 1990).

Several organizations have access to ethical conduct guidelines to assist with the decision-making process, but the construction industry still suffers from unethical conduct (Vee and Skitmore 2003). Advancement in ethics in the construction industry depends on the implementation of ethical guidelines-- policies of companies combined with leadership in public-sector procurement agencies (Vee and Skitmore 2003). All participants in the

industry, irrespective of guidelines, require an understanding of the meaning of “common good.” Without guidelines, even ethically sound individuals have a hard time maintaining moral standards (Vee and Skitmore 2003).

## RELATIONSHIPS AND UNETHICAL BEHAVIOR

Professionals are defined as a group of individuals organized to serve specialized knowledge in the interest of society (Appelbaum and Lawton 1990). Johnson (1991) states that professionals are not exempt from ethical behavior, duties, and responsibilities that are binding for the common man. He adds that professionals are usually bound by principles and attitudes that control the way a profession is carried out. Johnson also argues that fairness should be extended not only for the benefit of clients but also for the greater good of society.

Previous research into unethical conduct in the construction industry has called for increasing transparency, introducing a code of ethics among other strategies. However, there is little to no research on the nature and type of relationships, which may be conducive to unethical conduct. Since construction is a people business and relies heavily on the dynamics of relationships and people, one should consider this to reduce unethical behavior in the industry (Hollingsworth 2016). Unethical behavior is a social phenomenon; it involves relationships between people and a general consideration for the “other.”

In the following sections, the basic type and structure of relationships typically found in a construction project are examined.

## 1. Types of relationships

The strength of a relationship is defined by the frequency, reciprocity and emotional intensity of the relationship (Granovetter 1973). A weak relationship has a low barrier to unethical conduct while in a strong relationship, the associated costs are high for unethical conduct.

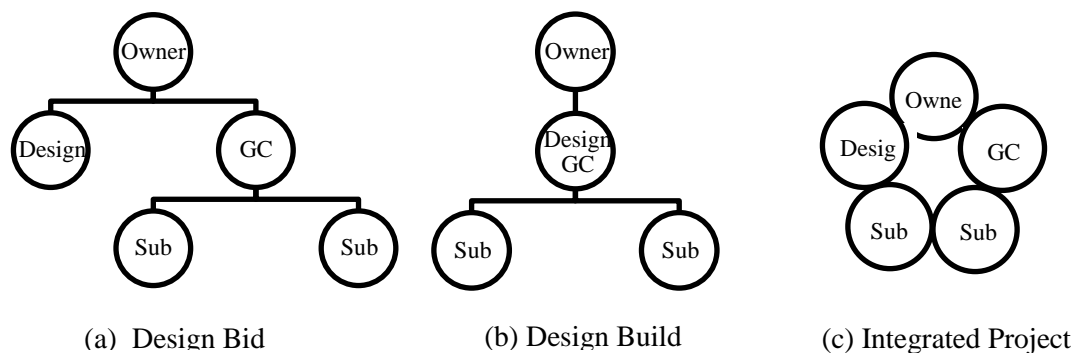
The degree to which two individuals are connected in more than one way is known as multiplexity of the relationship. Multiplexity adds an additional constraint for acting unethically (Brass et al. 1998).

Unethical behavior is most likely to occur in asymmetrical relationships when the trust and emotional involvement of one individual are not reciprocated by the other (Carley and Krackhardt 1990). Asymmetrical ties place one party at an advantage and increase the opportunity and payoffs for that party.

Status is defined as the relative power difference between actors. Asymmetric power in a relationship places the party of lower status at risk of being treated unethically. The lower status party is less likely to engage in unethical conduct as the party with the upper hand can retaliate with more severe consequences. In this situation, the probability of the party with higher status engaging in unethical conduct depends entirely on its moral character (Brass et al. 1998).

## 2. Structure of relationships

The presence of individuals in a strict hierarchal structure found in traditional delivery methods (Figure 1) increases the opportunity for unethical behavior (Zey-Ferrell and Ferrell 1982). Having people in a flat hierarchy increases surveillance and the reputation of the individual is at risk. McCabe and Trevino (1993) found that ethical behavior is influenced by the individual's perception of being caught. The presence of peers, their perceptions, and frequency of contact also influences behavior (Izraeli 1988; McCabe & Trevino 1993; Zey-Ferrell & Ferrell 1982; Zey-Ferrell et al. 1979). Simply adding people unless there is a change in the hierarchy will not stymie unethical conduct. Of more importance is the structure of the relationship. The following examines the basics of structure in a relationship.



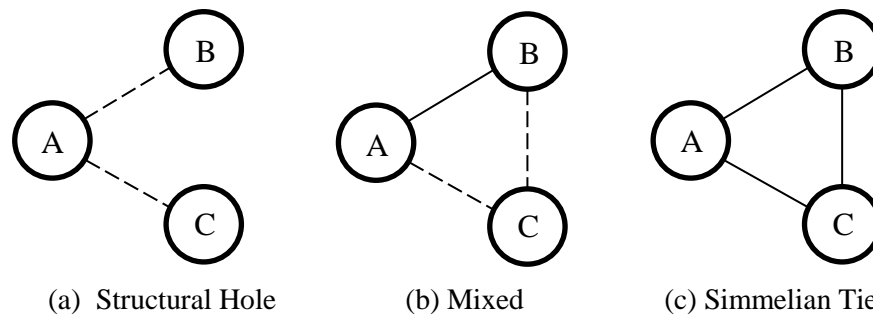
**Figure 1.** Structure of relations in different delivery methods. Adapted from El Asmar et al.

(2013)

Structural holes represent the absence of a link between two individuals or parties (Burt 1992). It is the absence of a relationship and is a hindrance to information sharing.



In such situations, the probability of unethical conduct is high. In Design Bid Build, the owner, architect, and contractor may form a structure similar to 2(a). There is a clear gap in communication and such relations in the industry, for example, leads to an increase in RFIs (El Asmar et al. 2013). The number of RFI's can be considered as a communication performance metric as it contributes to a considerable amount of waste in a project (El Asmar et al. 2013). In such situations, surveillance between participants is low and the probability of unethical conduct is high.



**Figure 2.** Relationships and unethical behavior. Adapted from Brass et al. (1998)

When participants are connected in mixed structures, such as in figure 2(b), it is less likely that actors' A (Owner) and B (Architect) will act unethically towards each other as surveillance is higher. This relationship structure is, arguably, found in Design Bid Build projects (Figure 2(b)). An empirical study by Hale et al. (2009) found Design Build to be superior to Design Bid Build because it facilitates greater levels of collaboration. Fewer contingencies were observed and relationships between participants were stronger.

However, although there is a reduced risk of unethical behavior between parties A & B--because of increased surveillance and risk of damaged reputation--A and B can still form a coalition and act unethically toward C (Murnighan & Brass 1991). Such coalitions

have been observed in Design Bid Build and Design Build projects. Moreover, C (Contractor) might perceive unethical behavior even though A and B do not have any such intention. In this case, the fear of being taken advantage of--or in other words, the mere fear of unethical conduct--may become a motivating factor for C to engage in unethical conduct.

By contrast, Lean-Integrated Project Delivery aims to form structures between participants similar to figure 2(c). This arrangement is called a *simmelian triad*<sup>1</sup> (Krackhardt 1999). In this instance, any noted unethical behavior is transmitted quickly to a third party as surveillance is high and there is a risk of loss of reputation.

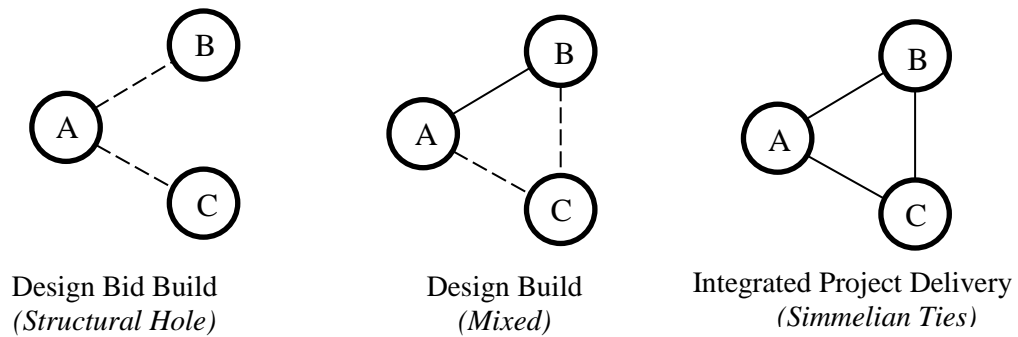
The extent to which an individual can reach to others in the least number of links within the network is defined as *centrality* (Freeman et al. 1979). Direct connections increase surveillance and determine the extent to which news of unethical conduct spreads to others. Hence, actors having high centrality have more to lose from unethical conduct than those who are isolated in the network (Brass et al. 1998).

Density refers to the extent of network ties as opposed to the total number of possible connections (Scott 1991). High-density networks have higher surveillance and high loss of reputation. Conversely, loosely connected ties have the potential to facilitate unethical conduct (Brass et al. 1998).

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<sup>1</sup>Two people are “Simmelian tied” to each other if they are reciprocally and strongly tied to each other and if they are reciprocally and strongly tied to at least one third party in common (Krackhardt 1999).

Comparing the structure of delivery methods and structure of unethical behavior from a social network analysis perspective, the similarity is striking. While it is hard to quantify the amount of unethical conduct in different delivery methods, a more collaborative approach would lead to, arguably, less unethical behavior as suggested by social network analysis of unethical behavior (Figure 3).



**Figure 3.** Comparison of structure of delivery methods and structure of unethical behavior from social network analysis perspective. Adapted from El Asmar et al. (2013) and Brass et al. (1998)

## TRADITIONAL VS RELATIONAL CONTRACTS

The Construction industry relies on contracts that define and administer obligations and rights of the participants. The traditional contracts assume that participants are logical and will try to maximize their own interest. Wholehearted cooperation by the participants in such a context is a challenge (Cheung et al. 2006). Contractors over time have implemented cost-effective, timesaving and quality-improving methods to stay relevant in the market (Cook and Hancher 1990). Methods such as Design Bid Build have proven to be adversarial and not responsive enough to contingencies (Hancher 1989; Goddard 1997). The complexity and uniqueness of construction projects expose participants to a high degree of contingencies. In response, participants may submit high

bid prices or by making claims, as they ‘perceive’ to be on the unfair end (Cheung et al. 2006).

Contracts can be divided into two main categories: traditional and relational contracts (Macneil, 1968, 1973, 1977, 1985; Goetz and Scott, 1981; Harris 1983; Macaulay 1985; Campbell 1992). Further, traditional contracts can be divided into classical and neoclassical (Macneil 1973). Classical contracts were used in the 1920s-1930s (Williston and Lewis 1920; Hughes et al. 1932; Macneil 1977). Neoclassical in general is the current type of contract commonly used in the industry and addresses the shortcoming of the classical type rather than putting forth an entirely new concept (Hillman, 2012). Additionally, neoclassical assumes that participants behave out of self-interest (Hillman, 2012).

Relational contracts revolve around cooperative social behavior which differs from classical contracts by the way that there is no baseline obligation and from neoclassical that there is a core of self-interest affected by custom and regulation (Cheung et al. 2006). Collaborating is seen as a viable solution to problems of adversarial relationships, mistrust and inefficient communication (Bayliss et al. 2004; Wong and Cheung 2005). Defining partnering behavior in terms of contractual requirements is not easy; it should be treated as a moral contract (Barlow 1996). Cooperation, trust, equality are the latent spirits of partnering. Moreover, the ideology of good faith is difficult to define (Colledge 1999).

An empirical study comparing the performance of Design Build and Design Bid Build projects of similar buildings concluded that the former was superior (Hale et al. 2009). While these two methods belong to the neoclassical contract type, it could be

argued that there is more collaboration in Design Build as there is only one procurement step. As a result, contingencies are few, and relationships are stronger due to the design and build being executed by the same entity.

Projects are temporary social systems formed by the groups of individuals that interact. The level of interaction is governed by the characteristics of the project delivery system (Thomsen et al. 2010). Lean Construction aims to form a ‘virtual company’ comprising of representatives from the participating organizations, increasing trust and partnership (Thomsen et al. 2010).

Fragmentation of the construction industry acts as a barrier between participants in a project. The choice of the contract could be a first step to developing long-term relationships. Suggestions have been made for achieving mutual benefit and success through relational contracting, establishing long-term relationships, and reducing adversarial tendencies (Rubin and Lawson, 1988; Provost and Lipscomb, 1989).

#### INTEGRATED PROJECT DELIVERY AND RELATIONAL CONTRACTING

The American Institute of Architects defines IPD as “a project delivery approach that integrates people, systems, business structures, and practices into a process that collaboratively harnesses the talents and insights of all project participants to optimize project results, increase value to the owner, reduce waste, and maximize efficiency through all phases of design, fabrication, and construction”.

There are two fundamentally different types of contracting: transactional and relational (Williamson 1979; Macneil 1973). Lean construction champions the latter, as it is consistent with flow and value generation. Murdoch and Hughes (2002) state that the risk

associated with executing a project and to which the participants are subject is considered separate while risks associated with processes are ignored in traditional delivery methods. The dispute record of the construction industry proves that drafting traditional contracts for complex projects that include all contingencies, risks, limits opportunistic behavior and still maintain efficiency is impossible (Matthews and Howell 2005). A relational contract provides a basis for long-term complex contracts with flexibility so that the participants can express their concerns and knowledge in new environments (Joskow 1987, 1990; Leffler and Ruker 1991, Gundlach and Achrol 1993, Swierczek 1994). According to Cheung et al. (2006), the main characteristics of relational contracts are:

1. personal interactions are crucial;
2. the transaction is usually of long duration;
3. the future cooperation opportunity is large;
4. there is flexibility to cope with unforeseen circumstances; and
5. it is anti-discrete

Relational contracts can be effective in attaining mutual benefit, develop long-term relationships and avoid adversarial tendencies. Relational contracting enhances project performance by sustaining long-term relationships and acts as a buffer to unethical conduct. The idea is to create value beyond the project for the participants and society. Trust and partnership are held in high regard among the project participants rather than the terms of the contract. This results in greater commercial value to participants and effective collaboration through knowledge-sharing.

In lean construction, each representative of a party is present in the Big Room. Lean construction champions a decentralized decision-making process that helps avoid the perception of being taken advantage. It operates on the principle of reliable workflow (Howell et al. 2010). By creating this kind of network, the entire team begins to think alike which sets in motion a snowball effect. This alignment resides at the crux of lean thinking. This model creates a “virtual company” with representatives from each organization who possess strong ties within their company and who share proximity with other representatives (Thomsen et al. 2010). This results in a collaboration which fosters the attitude that the best-qualified individual does a job, regardless of his or her parent organization. Individuals identify and adopt similar attitudes and behavior with others who occupy similar positions in and across groups. This develops empathy toward others, acting as a barrier to unethical conduct. In this way, behavior on a Lean construction job site can exceed the ethical codes prescribed. One underlying assumption of Lean is that every individual innately desires to have a positive effect on society. It is the fear or perception of wrongdoing combined with previous experience that motivates a person to indulge in unethical decision-making.

#### INDUSTRY ATTITUDE TOWARDS LEAN-IPD

In traditional delivery methods, each party undertakes its own steps to minimize risk, whereas Lean-IPD combines the risk and rewards of the participants and incentivizes collaboration to reach a common goal (Kent et al. 2010). Based on a web-based survey by Kent et al. (2010) which documented attitudes towards Lean-IPD in the industry, it was found that trust, respect, and good working relationships are crucial for a successful Lean-

IPD project. Additionally, the survey showed the belief held that Lean-IPD cannot work without relational factors and that monetary incentives are not the most effective at fostering collaboration. Respondents also felt that good leadership is required to encourage a collaborative team environment (Kent et al. 2010). However, on the other hand, the respondents to the survey also expressed uncertainty regarding the possibility of creating such a work environment. There was concern about the about risk and reward sharing, liability insurance and open book accounting as contracts developed for Lean-IPD are not widely used in the industry (Kent et al. 2010). Interestingly, experienced respondents were more positive about the acceptance of Lean-IPD can be applied and felt that Lean-IPD will be more widely accepted in the US construction industry (Kent et al. 2010). However, there were concerns regarding cultural, procedural and organizational barriers to widespread adoption of IPD in the industry (Kent et al. 2010).



## CHAPTER IV

### RESEARCH METHODOLOGY

#### GUIDING QUESTIONS

This research was guided by the following questions;

1. Why does unethical conduct occur in the context of type and structure of relationships in delivery methods?
2. Will a delivery method that focuses on collaboration have any effect on unethical conduct?

#### METHODOLOGY

The method adopted for this study was exploratory and involved four steps.

1. A literature review was conducted on corruption and unethical conduct and the role of ethics in the construction industry;
2. Types/structure of relationships and interplay with unethical behavior was studied
3. Interviews were conducted with construction professionals about their opinions/feelings pertaining to unethical conduct in the industry; and
4. Based on an inductive reasoning of the interviews, a conclusion was made on whether a collaborative approach such as Lean-IPD has any effect on unethical behavior.

#### INTERVIEWS

As part of the pilot study, interviews were conducted to attain the interviewee's experience on unethical conduct in the construction industry and their view on collaborative delivery methods affecting unethical conduct. In addition to general research and literature reviews, results from the pilot study were used to develop questions for the

interviews. This research conducted interviews with 10 industry professionals of varying experience levels. After each interview, the interviewee was invited to refer to other industry professionals to participate in the interview. The interviews were over the phone. Appropriate care was taken to conduct the research according to the IRB guidelines and it was ensured that the interviewee was exposed to no more than minimal risk.

## QUESTIONNAIRE

Interviewees were presented with an Information Sheet and an Informed Consent sheet, and then were asked to respond to the following;

1. What is your opinion or perception of the existence of unethical behavior in the construction industry?
2. Do you think a change in environment by means of more collaboration between participants would help improve the issue of unethical behavior? Yes/No/Maybe. Why or why not? Can you please give some examples?
3. What is your awareness or experience regarding the existence of Lean-IPD?

## LIMITATIONS

Since this was an exploratory research, the responses from the respondents are subjective.

## DELIMITATIONS

The scope of this research was delimited as follows:

1. The effects of decentralized decision making were not considered; and
2. The cultural aspect of the individuals being interviewed was not considered.

## CHAPTER V

### RESULTS

The responses from the interviews are summarized in Table 2(a), 2(b) and 2(c).

**Table 2. Summary of interview responses**

Respondent	1. What is your opinion or perception of the existence of unethical behavior in the construction industry?	2. Do you think a change in environment by means of more collaboration between participants would help improve the issue of unethical behavior? Yes/No/Maybe. Why or why not? Can you please give some	3. What is your awareness or experience regarding the existence of Lean-IPD?	Years of construction industry experience
1	When making quotations, during procuring, paying the laborers, exists in every facet and has become part of the system. And it is not easy to correct it.	Maybe. Won't say no because we want to have a positive attitude for a solution to the issue. Acknowledge that a problem exists and would like the industry to come up with ideas for change. This may be an option, in support of it. Lean can reduce time to process RFI, however lean is more of a principle than a method. The more people are educated about lean, there may be more acceptance. Trust may be the largest barrier to acceptance of lean and formal education is needed for Lean IPD.	Had a smaller version of IPD, all participants were present in a room to discuss the constructability of the project, but only for 3 days. All the consultants, designers, and subs were present and gave inputs to the architect during the 3 day period.	3 years
2	Have experienced it in the real estate sector and it happens a lot.	Feel more collaboration will help in reducing unethical behavior.	Aware of it but have not experienced it.	2.5 years
3	Gerrymandering to gain LEED points. And it does exist.	Yes, positive. Time lost in communication can be used for value adding activities.	Aware of it but have not experienced it.	4 years
4	It does exist and is a result of excessive capitalism where greed has overtaken good practices. Since construction involves a lot of skilled/unskilled laborers and unionization exists, coordination can be hard. As a result, exploitation is rampant in the industry, especially at the labor level. Irregular work times leads to a feeling of more entitlement in terms of compensation, which may be a reason. Automation may solve this issue.	Yes, it would. The fear of retribution or losing name will stop a person from indulging in malpractice. Over a period, people will learn to work well with each other and would take construction to the next level. For example, buying expensive tools and sharing the expenses. It will help the efficiency and speed up the processes.	Have not experienced it, but have read about it and had thoughtful discussions regarding it in our office.	3.5 years

**Table 2. Continued**

1. What is your opinion or perception of the existence of unethical behavior in the Respondent construction industry?	2. Do you think a change in environment by means of more collaboration between participants would help improve the issue of unethical behavior? Yes/No/Maybe. Why or why not? Can you please give some	3. What is your awareness or experience regarding the existence of Lean-IPD?	Years of construction industry experience
<p>Unethical behavior does exist, wasting client money due to internal politics, ultimately becoming inefficient and results in substandard quality. Unless one is constantly being supervised, unethical behavior happens in every realm of construction.</p>	<p>Yes, to a certain extent. You feel more responsible since there is a common target. But not entirely fool proof, if needed, one can still engage in unethical behavior to maximize profit for the entire group. How about newcomers? Will they be given an opportunity? Does the system have provisions for integrating new players in the industry?</p>	<p>Aware of it but have not experienced it. In India, there is an area which has jeweler stores, after they close shop in the evening, the area is occupied by street food stalls. They provide security to the jewelry store. The food stalls are open till late night after which they clean the area for the street vendors selling vegetables who occupy the area till around 9 in the morning, till the jeweler's open shop. This ensures there is security all the time in the area and this practice has been going on for many years. This kind of circular economy, I feel lean IPD has the same intentions of trust, flow, and security. I feel lean IPD can help with the issue of unethical behavior in the industry.</p>	<p>6 years</p>
<p>Not so much, since there is a lot of litigation involved in construction, I do not believe it exists to on a large scale.</p>	<p>Yes, definitely. We do have delivery methods which are similar to IPD and we incorporate lean principles such as TVD and EVD. We may not call it a full-fledged IPD, but it does reduce RFIs for example, and it has a positive effect on the team morale.</p>	<p>We had a project which was IPD like, but we could not enforce it entirely because one subcontractor claimed he did not have to participate in the IPD because he belonged to a union and it was not binding with him to participate in the IPD process. It did slightly affect the team morale of other participants, but it was a great effort nonetheless.</p>	<p>12 years</p>
<p>I do believe it exists, but it is because the profit percentage of construction projects is really low, around 5%. The company cannot run on this amount of profit, and hence, people look for loopholes to make money. For example, to maximize the costs till the allowable budget even though it can be done at a lower cost so that the company gets a higher cut at the end of the project.</p>	<p>Yes, I do, I explore alternative delivery methods. We sit with the owner and explain to them that we will save them money, and deliver exceptional quality. But, we also negotiate and include a clause that from the amount saved, part of it, maybe around 25% comes back to us. This makes the contract a bit relational, and the owner ends up being our long term customer. What we do may not be entirely a lean project delivery, but we do follow clauses which are similar to it. We focus on relationships which help in collaboration.</p>	<p>Yes, I am aware of it. We have had some projects, most recently a hospital where we implemented a lean IPD. It was a great success, we had doctors giving design inputs and we built specialty wings with the minimum requirements. Because the medical field constantly evolves, so does the machines. And by incorporating minimum design requirements, the equipment can be easily changed over time. But for this, we have to have an extremely progressive client.</p>	<p>22 years</p>

**Table 2. Continued**

Respondent	1. What is your opinion or perception of the existence of unethical behavior in the construction industry?	2. Do you think a change in environment by means of more collaboration between participants would help improve the issue of unethical behavior? Yes/No/Maybe. Why or why not? Can you please give some	3. What is your awareness or experience regarding the existence of Lean-IPD?	Years of construction industry experience
8	In my opinion, most of the unethical behavior happens in smaller firms as they try to maximize their profits, specifically subcontractors.	I think maybe, not completely, but to a very large extent. To my knowledge, unethical behavior occurs because of unlicensed labor. In a project, all materials have to be approved which is hard to cut down on that but it is easy to cut down on labor. In cases of artificial change orders, it is a form of unethical behavior. If collaboration is from the very beginning of the project, then a lean IPD will have great benefit to reduce unethical behavior. In the case of conflicts, since the entire team is involved, there is already a majority to an outcome which reduces the time	I am aware of it but have never participated. Favoritism happens when there is no collaboration, but in a collaborative team effort, the contract would be awarded on merit base. Feel Lean-IPD will definitely reduce unethical behavior.	4.5 years
9	It does exist, and it is not an issue as long as it affects someone negatively.	People will look forward to removing waste actively when they know that it will go to a common profit pool.	So far worked with K12 schools, and due to public procurement policy, DBB is the format followed.	2 years
10	Unethical behavior exists and will exist, but it depends more on the individual than the ethics of the company.	Maybe, leaning toward yes. Can help improve the scenario but the individual behavior is still in question. Because in IPD everyone responsible is introduced to the information at the same time. It can minimize the risk. Because for a firm it is more important to be ethical than unethical because relationships can take you further than making money. Theoretically, Lean IPD should help, but also depends on the stature of the project, maybe the stakeholders have an interaction in another project which may affect performance on the Lean-IPD project.	I am aware of the concept but have a doubts regarding its implications.	4 years

## CHAPTER VI

### DISCUSSION

From the conversations with the interviewees, the following were the takeaways;

1. Gerrymandering<sup>2</sup> for the purposes of showing the development of an area, improvements in sustainability or infrastructure, is another form of unethical behavior in the industry; and this is perpetuated by government officials.
2. Two respondents had discussed the issue of unionization. This was a surprising finding identified as a deterrent to collaborative behavior.
3. Respondents who frequently interacted/worked with field personnel had indicated a strong presence of unethical behavior; whereas respondents who did not interact/work with field personnel felt unethical behavior is not a substantial issue.
4. More experienced respondents were receptive to a collaborative environment, this is consistent with the findings of Kent et al. (2010).
5. Further, experienced personnel considered behavior in a group and the interaction in a group a significant contributor to unethical conduct. This is consistent with the findings of social network analysis of unethical behavior.
6. From the interviews, it appears that IPD like methods were implemented mostly in healthcare and commercial. Public industries such as water works and heavy civil were fixated on traditional delivery methods.

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<sup>2</sup> To manipulate the boundaries of a constituency to gain advantages.

7. Respondent number 5 expressed concern about the behavior of participants who had business ties outside the IPD environment and its impact on collaboration.
8. Only one respondent stated that low-profit margins due to competition were a reason for the unethical behavior.



## CHAPTER VII

### CONCLUSIONS

From the interviews with 10 respondents, it appears the structure of delivery methods may align with the structure of relationships defined by the social network analysis perspective diagrammed in figure 3. The construction industry traditionally focuses on transactions and contracts; such forms of contracting support clean deliverables, but they are relatively ineffective in attempts define collaborative behavior. Laws which are applied to the purchase of goods tend to govern the rules applied to construction. Due to this traditional delivery methods focus on the contract, even though projects fail due to behavioral issues such as poor teamwork. Traditional delivery methods assume that the foreman lacks the intelligence to manipulate the cost/schedule according to his needs, it appears that current management practices may engender dishonesty. This also confirms the opinions of the respondents who worked with site personnel. Unless there is an integrated approach for delivering projects, there may be unethical conduct because dishonesty and uncertainty appear to be built into traditional delivery methods. The argument that lowest bidder provides protection from corruption and delivers the product at the lowest possible cost appears to be deeply rooted in the construction industry. Alternatives such as negotiated contracting sometimes occur in the private sector, but public procurement still often follows the low bid system. Despite modifications such as adding prequalifications to the statutes governing public projects, the low bid system persists today. Price alone may no longer be a critical factor for project success. Other factors such as quality, safety and time are equally important. The low bid method may

even negatively impact these factors. This view was shared by respondent 7 who specialized in alternative delivery methods in public sector projects and who described himself as successful. Most of respondent 7's clients were repeat customers. Legal regulations are necessary for any industry, but human integration and collaborative efforts between parties can potentially offer a more effective form of checks and balances. Focusing on building relationships may help the construction industry to overcome the issue of unethical behavior, even in societies that do not address corruption through enforcement of laws. As construction directly reflects the economic development of a country, more acceptance of Lean-IPD in construction may be an effective grass roots weapon for combatting corruption.

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