Trust, Relationships, and Project Outcomes: The Impact of Trust on the Success of Construction Projects

By Richard T. Herko and Taline Hanna*

This article provides a rare look into the relationships between school-construction project owners, school district superintendents, and contractors. The authors surveyed these parties to new construction projects using English's (2006) framework. Our analysis provides a unique look at both sides of the construction project process and is based on years of negotiations. Operationalizing these constructs advances our understanding of how trust impacts these projects.

Keywords: Trust, Social Exchange Theory, Project Management

JEL Classification: L33, L74, M54

I. Introduction

Decision makers often initially have a clear idea about whether their firm should internalize a process or look to the market to provide the good or service. This clarity results from management researchers examining the make-or-buy decision starting as early as 1776 with Adam Smith until Oliver Williamson clarified the idea in 1975. An understanding of internal resources and capabilities available, the frequency of the process, and the search costs (both time and money) all lead to a lengthy discussion of contracting as the firm attempts to balance direct control with cost. Owners and managers can follow this clear guidance to determine the best course of action for their organizations.

Once the decision is made to externalize, however, the literature becomes a bit murkier. Williamson (1975) is silent on issues of trust and contract enforcement, yet trust is essential to optimize results for the creation of value networks. Given that managers and lawyers demonstrate a bounded rationality, contracts will be incomplete (March and Simon, 1958). All executives, including the CEO/Project owners under consideration in this study, demonstrate a bounded form of rationality and therefore cannot anticipate or monitor all aspects of a contract (Williamson, 1975).

When contracts are incomplete and both parties are expected to operate with their own self-interest at the fore, some authors have suggested that trust is a necessary component of complex projects (Axelrod, 1984; Putnam, 2000; Kramer and Tyler, 1996). Others disagree and argue that successful completion does not require trust (Korczynski, 1996).

This paper offers a number of contributions to the literature. Despite a diverse body of literature on social exchange theory, this study aims to better understand several interrelated aspects of trust and their impacts on working relationships in a rare project management context.

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Further, the study examines the relationships with project outcomes. This paper provides a rare empirical test of the theory by exploring these relationships through a unique study.

II. Literature Review

Social exchange theory handles trust in this way. Pesamaa and Hair (2007) cite Blau and Zaheer in asserting that trust is just one aspect of an individual's or firm's "long-term orientation" ("LTO"). These social arrangements then become much more than just a single transaction and can involve the forming of friendships and relationships beyond simple working interactions. In these types of arrangements, the individual or firm will be much less likely to consider taking advantage of their partner and this will probably have less to do with some of the individual factors, which build a trusting relationship.

In other words, there are probably some embedded characteristics in these types of relationships that confound many of these studies. Relationships of any length involve varying degrees of loyalty and commitment. Almost all involve some sort of trust, but parsing out where the trust relationship resides is difficult.

This concept of uncertainty runs throughout the literature on trust. Agents, in the classical theory, are self-serving and therefore will look for opportunities to shirk. They could potentially look to execute the contract in ways which were not originally conceived. However, more recent theories, e.g. Piercy and Lane (2007), recognize that all parties to the transaction will operate with a form of "enlightened self-interest" which allows parties to recognize social consequences. Parties will still act in a self-interested manner, often with guile. Monitoring is expensive and can have negative effects that serve to worsen performance to a level lower than what could have otherwise been expected (Husted and Folger, 2004). This other key concept of vulnerability also permeates the literature on trust.

The relationship of trust and control grows from the need to resolve uncertainty in relationships and to shore up vulnerabilities. Quite simply, there are limits to what can be contracted. Often the cost of contracting itself can be a barrier to contracting as when the over-formalization of a process actually slows the pace of the work to be completed. This takes the form of mutual experience and the interplay of nuances "signaled and received in a sensitive way" (Williamson, 1979). Given that contracting is an exercise in allocating risk and that a cost must be paid for assuming that risk, trust can be viewed not only as a lubricant to reduce friction, but may also reduce the overall cost of construction (Zaghloul and Hartman, 2003).

As Gulati and Nickerson summarize in their 2008 article, "trust may substitute for formal governance if the cooperative behavior trust generates offers a less costly and more effective safeguard than complex contracts or vertical integration" (Bradach and Eccles, 1989; Dyer, 1997; Lincoln and Gerlach, 2004; Nooteboom et al., 1997; Zaheer and Venkatraman, 1995). Likewise, Gulati (1995) argues "trust can substitute for hierarchical contracts in many exchanges and serves as an alternative control mechanism."

Trust is clearly differentiated from contracting, but in defining trust it is important to understand that it is also different from confidence. Whereas both have a basis in past behavior, for expectations about present conduct, trust goes farther in considering future behaviors and as Das and Teng (1998) point out, trust also "refers to expectations about possible motives."

Robbins and Judge (2007) offer the following definition of trust: "A positive expectation that another will not – through words, actions or decisions – act opportunistically.” This matches closely Das and Teng's (1998) definition: "The degree to which the trustor holds a positive attitude
toward the trustee's goodwill and reliability in a risky exchange situation.” Harvey MacKay, a best-selling author, captures the spirit of exposure to risk through a transactional relationship this way: “When a person with money meets a person with experience, the person with experience ends up with the money and the person with money ends up with the experience” (Mackay, 2013).

Das and Teng (1998) do point out benefits of trust that echo Zaghloul and Hartman (2003): lowering transaction costs, inducing desirable behavior, reducing the scope and extent of contracts, and dispute resolution. They also point out some of the costs of trust, chiefly risk. In extending trust, the actor or firm creates a vulnerability; if the person in whom they place that trust violates it, there is the risk of loss. Such trusting relationships also limit freedom of action for the parties. It is these constraints that cause such relationships, if they become long-standing, to be almost social contracts.

Language barriers and the distances of geography and background between parties often prevent the trust from developing. This failure can damage working relationships and lead to sub-optimal project outcomes (Pinto et al., 2009).

Trust has two important components to consider here. First, it is an interpersonal mechanism. “A firm does not trust, people trust” (Rodriguez et al., 2007). Even when trust is based upon the reliability of expectations that one firm places in the actions of another, those expectations are made by individuals. The other aspect is its future focus. This future orientation is based on a delicate interweaving of past encounters, connections, inferences, facts, and hunches. It governs present and future conduct.

**Figure 1: The Model for Trust, Working Relationships, and Project Outcomes**

Zaghloul and Hartman (2003), among others, divide the mechanism by which people trust into three component parts. *Integrity-Based Trust* is based on the perceived honesty of the individual. *Competence-Based Trust* is based on the perceived skill set (technical knowledge, interpersonal knowledge, and the perception as to whether the counterparties can accomplish what they say they will) of the individual. *Gut-Level Trust* is based on the perceptions towards individuals as to whether they inspire “gut-level” feelings of trust. These aspects of trust, whether positive or negative, define the relationships between parties. Figure 1 presents a graphic representation of the process, and the following two hypotheses are based on the process.
**H1a:** For contractors, high levels of competence-based, integrity-based, and gut-level-based trust lead to better working relationships.

**H1b:** For owners, high levels of competence-based, integrity-based, and gut-level-based trust lead to better working relationships.

“According to a substantial literature in economics and sociology, trust lowers transaction costs in all kinds of exchange relationships in which a risk of opportunism is present.” (Bradach and Eccles, 1989; Nootebloom, 1997; Nootebloom et al., 1997; Gulati and Nickerson, 2008)

Difficult working relationships in any business-to-business setting devolve into ponderous legal exercises as both sides pore through the contract ensuring they do the minimum required and are not “taken advantage of” in the relationship. These conditions slow down work, lead to sub-optimal working conditions, and impair communication. In contrast, if working relationships improve and trust is formed, the result can be a more positive outcome over time. In fact, Ingram and Lifschitz (2006) found that relationships between long serving purchasing managers and buying agents were stronger due to the trust that built up through repeated contacts. “Trust is linked to the predictability of a partner firm’s behavior toward a potentially vulnerable focal firm. If the partner firm fulfills positive expectations, the focal firm develops greater confidence in the partnership, and this confidence, in turn, mitigates future concerns about opportunism.” (Gulati and Nickerson, 2008).

The projects under review in this study were all at least three million dollars (US) building projects and had generally high but varying degrees of complexity. The contractors here were workers with highly transferable skill sets. With different boundary conditions it would be possible to get a different result, but given these, we would expect the following.

Public school projects can be several months to as long as six years in duration. Some reconstruction contracts even turn into “perpetual” ones as it often takes fifteen years to cycle through renovation projects at a school district’s buildings, just in time for the next round of renovations. As such it is very much in the best interest of the contractors to establish relationships with the “owners,” who are district superintendents.

Likewise, benefits will accrue to superintendents who have developed a trusting relationship with good contractors. Larger school districts have larger buildings with higher prestige and higher salaries. Superintendents who have demonstrated an ability to get projects shepherded through the process “on time and on budget” have an advantage in seeking jobs when even moderately-sized districts can be expected to invest $60-$100 million (US) in school construction bonds every thirty years.

Gulati and Nickerson (2008) observe a number of easily noticed benefits to parties that develop mutual trust:

1) There are lower expected maladaptive and haggling costs because exchange partners are more likely to avoid disputes or resolve them quickly;

2) The scope of adjustments exchange partners are willing to embed in a contract or leave out of it may expand;

3) There is a less formal governance mode.
Given that the parties to the contract would be expected to be rational actors with awareness of the ability to “win” not just from a single contract but from multiple contracts, the following hypothesis is derived.

**H2a:** For contractors, better working relationships lead to better project outcomes.

**H2b:** For owners, better working relationships lead to better project outcomes.

### III. Methodology

The original survey on which this study is based surveyed chief executive officers. The decision to treat the district superintendents as CEOs has its basis in the discussion from the Pennsylvania Department of Education in more than 7,500 links to the PA Department of Education website. Given that contractors were the other party in the survey, it is equally important that they held the view of the superintendent as CEO. Teaching.com and the more than 10 million links to “school superintendent as CEO” at Bing.com are evidence of the common acceptance in the educational community.

The original study (English, 2006) had several potential limitations which were identified by the authors as it relates to the theories offered by Zaghloul and Hartman (2003). For example, the integration of intuitive, or “gut feeling,” trust is tested here as well as an attempt to link the owners and contractors based on specific projects. Thus the owners were surveyed and asked to identify a specific project and a specific contractor as a basis for their discussion. The contractor was then contacted and surveyed on these same points.

In addition to eliminating two questions that tested as having low reliability in the initial survey and allowing open-ended responses for the role, the survey was also reformatted to contain no indication of the sponsoring party, although it was accompanied by a cover letter.

The authors contacted district superintendents at random from a list of superintendents who had attended a Western Pennsylvanian Superintendents’ Forum (to which every western Pennsylvania superintendent had been invited). The document contained contact information for each person, although two were incorrect.

The collection of the information from the individuals took several rounds of requests, with only one response to the initial request. A second email attempt with an attachment of the surveys elicited several more responses, with the final surveys being collected in a series of phone interviews. Each of the phone interviews was conducted by the authors and each question was read without comment. The authors provided no clarifications when the respondent was unclear of the intent of the question. Three of the superintendents chose to discontinue participation during the survey. One trusted survey had to be discarded when it was determined the “contractor” was actually a district employee (clerk of the works).

After four rounds of requests and cajoling, eleven respondents out of 50 potential respondents were tabulated. What was difficult to determine is how many superintendents should have been excluded as they did not have recent building projects, an issue that will be revisited in the discussion section. Using Dillman’s (2000) recommendations and varying the methods of contact did yield a 22% response rate. We followed four of the five recommended techniques for ensuring high return rates, eschewing only the inclusion of a small financial reward. In addition, the study period has been a time of transition, and many of those approached have subsequently
retired, suggesting they had little motivation for gaining any better understanding of the complex processes under study here.

Each superintendent designated a primary contact person at the contractor, and an identical survey was then mailed to the person from the construction management or engineering firm. Unfortunately, the hope of creating a dyad between two people was only achieved in two cases. In the other cases, the survey returned by the contractor either named a primary contact other than the superintendent or failed to name a primary contact. As a result, that line of research was dropped from this study.

It should be noted that the use of survey research has come under fire. Golder (2000) points out that “it [survey research] can produce biased information when past events are recalled.” Third party independent source materials can be used to detect and thwart biased historical recollections. In general, designed experiments are better than observational insights. Experiments provide better control over the amount and the quality of the data; however, in this case, it would not be possible to develop an experiment that would simulate the contact between superintendents and construction executives.

Factor analysis was used to determine what constructs would be used in the final model. Based on eigenvalues, a three-factor model was chosen with individual items loading on factors used as variables above. After the factor loads were calculated, a matrix determined the relevant score for each construct.

The variables of interest in this study were derived from Pinto et al. (2009). “Success” indicates the project was completed within the guidelines of the budget, timeline, and technical aspects of the project. “Relationships” measure the emotional investment in the on-going interactions between the parties. “Integrity” considers whether the rated individuals will keep their word. “Competence” considers whether the rated individuals could complete envisioned projects given their track record and performance. “Gut-level” considers the rated person’s ability to complete envisioned projects based solely on inter-party interactions.

IV. Results

After considering the descriptive statistics and correlations for the superintendents and contractors separately, a series of regressions was run to determine the level of support for the hypothesis. In addition, a regression was run to check for multicollinearity. As none of the variance inflation factors was above 1.00, multicollinearity was judged not be an issue.

Table 1: Descriptive Statistics Among Constructs for Contractors, n=11

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Dev</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Success</td>
<td>6.318</td>
<td>0.529</td>
<td>5.73</td>
<td>7.00</td>
</tr>
<tr>
<td>2 Relationships</td>
<td>5.778</td>
<td>0.502</td>
<td>5.17</td>
<td>6.33</td>
</tr>
<tr>
<td>3 Integrity</td>
<td>5.429</td>
<td>0.900</td>
<td>4.21</td>
<td>6.50</td>
</tr>
<tr>
<td>4 Competence</td>
<td>5.550</td>
<td>0.818</td>
<td>4.50</td>
<td>6.50</td>
</tr>
<tr>
<td>5 Gut-Level</td>
<td>4.833</td>
<td>0.683</td>
<td>4.00</td>
<td>5.75</td>
</tr>
</tbody>
</table>
The contractors were very positive in their interpretation of success as seen by the narrow range of responses centered slightly above 6.3 (Table 1). This is by far the highest response amongst the key variables and, when taken in concert with the lower score for whether a relationship had been formed, may be suggestive of a contractor’s view of the project as a “one-shot-deal,” leading to transactional behavior. This could be due either to the infrequency of construction projects or the turnover amongst superintendents. Superintendents were viewed to have a high degree of integrity and competence, although competence slightly out-performed integrity and was more uniform. Gut-level or initial impressions were not as strong.

Table 2: Correlation Matrix Among Constructs for Contractors

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Success</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Relationships</td>
<td>-0.103</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Integrity</td>
<td>0.500</td>
<td>0.763</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Competence</td>
<td>0.094</td>
<td>0.752</td>
<td>0.885</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>5 Gut-level</td>
<td>-0.327</td>
<td>0.429</td>
<td>-0.397</td>
<td>-0.281</td>
<td>1.000</td>
</tr>
</tbody>
</table>

A greater indication of transactional behavior can be found in the negative correlation between success and relationships. Integrity and competence were highly correlated and both were highly correlated with having a good relationship. Gut-level or initial impressions were only positively correlated to relationships.

Table 3: Regression Results for Hypothesis 1a

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>1.430</td>
<td>0.686</td>
</tr>
<tr>
<td>Integrity</td>
<td>0.387</td>
<td>0.589</td>
</tr>
<tr>
<td>Competence</td>
<td>0.111</td>
<td>0.871</td>
</tr>
<tr>
<td>Gut-level</td>
<td>0.351</td>
<td>0.514</td>
</tr>
</tbody>
</table>

R² = 0.796 Adjusted R² = 0.185
95% Confidence Interval = 1.07531 ≤ β ≤ 1.78469

Table 4: Regression Results for Hypothesis 2a

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>6.944</td>
<td>0.084</td>
</tr>
<tr>
<td>Relationships</td>
<td>-0.108</td>
<td>0.847</td>
</tr>
</tbody>
</table>

R² = 0.011 Adjusted R² = -0.237
95% Confidence Interval = 6.58032 ≤ β ≤ 7.29968

Table 3 shows the strong connection between trust and relationships, while Table 4 shows that for the contractors, the relationship and project success are not connected.
Table 5: Descriptive Statistics Among Constructs for Superintendents, n = 11

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Dev</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Success</td>
<td>5.675</td>
<td>1.238</td>
<td>3.45</td>
<td>6.82</td>
</tr>
<tr>
<td>2 Relationships</td>
<td>4.875</td>
<td>1.889</td>
<td>1.50</td>
<td>7.00</td>
</tr>
<tr>
<td>3 Integrity</td>
<td>4.946</td>
<td>1.241</td>
<td>3.29</td>
<td>6.57</td>
</tr>
<tr>
<td>4 Competence</td>
<td>4.750</td>
<td>1.837</td>
<td>1.00</td>
<td>6.75</td>
</tr>
<tr>
<td>5 Gut-level</td>
<td>5.031</td>
<td>0.761</td>
<td>4.00</td>
<td>6.50</td>
</tr>
</tbody>
</table>

The superintendents’ views of the contractors were more muted with the exception of gut-level trust. The superintendents had a slightly higher impression of the contractor’s abilities than the other way around, and some contractors generated a very high level of gut-level trust. The much higher standard deviations relative to those of the contractors suggest much less uniformity amongst opinions. Indeed, the range of competence spanned nearly the entire scale.

Table 6: Correlation Matrix Among Constructs for Superintendents

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Success</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Relationships</td>
<td>0.949</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Integrity</td>
<td>0.866</td>
<td>0.907</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Competence</td>
<td>0.838</td>
<td>0.934</td>
<td>0.916</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>5 Gut-level</td>
<td>0.701</td>
<td>0.605</td>
<td>0.377</td>
<td>0.364</td>
<td>1.00</td>
</tr>
</tbody>
</table>

For the superintendents, there is a very high correlation between the variables of interest, with the exception of those involving gut-level trust, which were not highly correlated with either integrity or competence. It is suggestive that contractors were not able to maintain their initial impressions as the project continued.

Table 7: Regression Results for 1b

Hypothesis 1b: For owners, high levels of competence-based, integrity-based, and gut-level-based trust lead to better working relationships

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-3.572</td>
<td>0.060</td>
</tr>
<tr>
<td>Integrity</td>
<td>0.368</td>
<td>0.380</td>
</tr>
<tr>
<td>Competence</td>
<td>0.622</td>
<td>0.068</td>
</tr>
<tr>
<td>Gut-level</td>
<td>0.729</td>
<td>0.050*</td>
</tr>
</tbody>
</table>

R^2 = 0.962 Adjusted R^2 = 0.933
95% Confidence Interval = -4.86547 ≤ β ≤ -2.17453
Hypothesis 2b: For owners, better working relationships lead to better project outcomes

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>1.217</td>
<td>0.133</td>
</tr>
<tr>
<td>Relationships</td>
<td>.832</td>
<td>0.001*</td>
</tr>
</tbody>
</table>

$R^2 = 0.901$ Adjusted $R^2 = 0.882$

95% Confidence Interval $= 0.37322 \leq \beta \leq 2.06078$

The results from these two tables confirm that gut-level trust in particular leads to better working relationships (Table 7), and those better working relationships lead to better outcomes (Table 8).

V. Discussion

With such small sample sizes and some missing information, it is difficult to gain great insights from this data. The contractors’ sample was just too small and ended up coming from only four firms. The evaluations were very high for all but one of the districts, as would be expected if the contractors were relying on the districts for a continued flow of resources.

It was encouraging that, even for contractors, the correlation between the aspects of trust and relationships were so strong, although a bit weaker for gut-level.

The sample size is problematic in a number of ways. The small sample size provided a result with low power to answer this question. Studies which have low power, like this one, make it harder to detect small effects. Thus, the non-significant findings may be a direct result of the small sample size and leave the questions posed unanswered. A larger sample would have allowed for more reliability in this data. Although there are some significant findings, the "n" was so small it is difficult to infer much. Likewise, a larger sample would increase the ability to bring in more advanced statistical tools. Given the small sample size, the SPSS software was easily able to handle the computations.

What was encouraging was that for the superintendents, the hypotheses were directionally correct with significant findings for gut-level trust on relationships and relationships on success. This finding was made despite gut-level trust’s lower correlation with the other forms of trust, which were again both very strongly correlated with relationships.

Three of the superintendents chose to discontinue participation during the survey. One of the superintendents was explicit about her reason for dropping out of the study – she related that projects too often end in legal disputes at some point and she did not want to complicate future litigation through potentially misconstrued positive comments. Two of the superintendents who chose not to participate did engage in lengthy and enlightening discussions as to why they could not be included.
VI. Future Research

As discussed, this paper was developed with only a small sample of school districts. The next logical step would be to obtain the necessary approvals to conduct a study of a larger sample of western Pennsylvania schools. Through this study, we could truly validate the work done by the Pinto et al. (2009) study and expand the understanding of the instinct-based trust construct.

Any study of this nature would be tied closely to the work in the field of project management. Cooke-Davies et al. (2007) have introduced the complexity theory to that field, and we believe that it bears consideration for trust as well. How do radical unpredictability, nonlinearity, and self-organization each moderate the traditional contractual relationship?

Another potential moderator that could be more clearly uncovered by a more thorough companion study here among school districts is its sensitivity to the environment. The original AMEC study (English, 2006) was conducted amongst individuals living in temporary quarters and on temporary assignments. Many of the contractors and the even the firms themselves were in an exploratory mode. They were developing relationships while testing the workflows, keeping those that worked, jettisoning the ones that proved faulty, and building the infrastructure for completing projects while they built the projects themselves. The superintendents, administrators, and architects of western Pennsylvania work in nowhere near as dynamic an environment. They may have a new Board of Education to contend with every four years or face negative publicity about taxes and school costs, but largely theirs is a smooth process.

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