An Action Research Approach to Implementation of Alternative Project Delivery Methods within Architectural, Engineering, and Construction Owner Organizations: Overcoming Resistance through Education

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ABSTRACT

Increasingly competitive business environments and restrictive financial conditions have lead owner organizations in the architecture, engineering, and construction industry to implement alternative project delivery methods. While the goal of alternative project delivery methods (APDMs) is to increase project delivery performance, the organizational challenges that are encountered during the implementation and adaptation of these tools are often overlooked, particularly in reference to employee resistance to change. This research utilizes an action research approach to gather empirical data on the behavioral elements of resistance to change within large public and private architecture, engineering, and construction (AEC) owners across North America. Observational data was collected for levels of change readiness and types of resistive behavior exhibited by key employees at multiple phases of the project delivery life-cycle. Key findings included a statistically significant, directly proportional relationship between employee training levels and their readiness for change. Additional findings identified the most commonly encountered type of resistance to be employee tendencies to revert back to traditional project delivery practices during implementation of new APDMs. Base upon these findings, the authors conclude that AEC owners should emphasize formal, change-related training programs when implementing new project delivery processes within their organizations. Future research is recommended to investigate the effect of other organizational characteristics and change-implementation strategies on employee resistance to change.

INTRODUCTION

In recent years, the architecture, engineering, and construction (AEC) industry has seen consistent growth in the implementation of alternative project delivery methods (APDMs) (ACEC 2008). Learning and implementing new project delivery systems requires concerted organizational change (OC) efforts by companies within the AEC industry, yet successfully accomplishing organizational change can be extremely difficult. Studies have shown that the majority of organizational change efforts fail to reach their originally intended purpose (Balogun and Hope Haley 2003, Ahn et al. 2004). Oftentimes, the primary reason for failure of planned change efforts is resistance from organizational members (Foote 2001), where resistance to change is generally defined as a form of dissent or a force that slows, opposed, or stops an OC movement (Giannreeco and Peccei 2005, Armenakis and Harris 2009).
Despite the emphasis placed on resistance to change, studies over the past twenty years have been more divergent than convergent, such that there is no widely accepted definition of resistance to change or its relationship to critical aspects of OC implementation strategies (Erwin and Garman 2010). Methodologies for resistance research over this time period have primarily been based on self-report survey questionnaires and subsequent quantitative analysis, leading Erwin and Garman to recommend that further research follow more “practice-based methods” including case studies and action research (2010).

This paper is an initial step in pursuing that recommendation, wherein the authors employed an action research methodology to observe employee resistance to change at multiple owner organizations. Each of these organizations implemented a new alternative project delivery method (APDM) on their AEC projects. Change readiness and displayed resistive behaviors were recorded for key project-level employees on each project implementation. Results were analyzed in accordance to the amount of formal change-related training provided to employees on each project in an effort to better understand the relationship between employee training and resistance to change. Contributions of this study include practice-based methods to collect empirical data on OC phenomena from a multi-actor perspective.

LITERATURE

Resistance research is rooted in Lewin’s unfreezing, moving, and freezing model of organizational change, which stated that there are driving forces that seek to either bring about or resist change (1947). In the 1990’s, research focused on individual reactions to change in reference to various aspects of the OC effort, including the information provided to employees, how the information was assembled and distributed, and how employees perceived the OC effort’s impacts (Isabella 1990). Other research centered on the change content (what the change was), context (environmental considerations), and process (how the change was executed) (Armenakis and Bedeian 1999). More recent research has divided individual resistance to change into three specific dimensions: cognitive, affective, and behavioral (Erwin & Garman 2010). The cognitive dimension refers to how employees think about the change, including their perceived capability to be effective in new work roles (Giangreeco and Peccei 2005). The affective dimension is defined as the emotional and psychological reactions employees experience in how they feel about the change (Denhardt 2009). These two dimensions are often accepted as the sources or reasons behind resistance, whereas the behavioral dimension separately examines the forms of resistance exhibited by employees (Fiedler 2010). The focus of this study was the behavioral dimension of resistance to change due to researcher’s ability to directly observe behavioral phenomena in a practice-based setting.

Behavioral Dimension of Resistance

Resistance to OC is frequently viewed as a behavioral phenomenon manifested by employees in opposition to change agent efforts (Smollan 2011). Many researchers divide behavioral resistance into categories based upon the displayed behavior of employees, oftentimes including various forms of active and passive resistance as well as other obstructive actions (Hultman 2006). Recent research notes
that behavioral responses are influenced by process factors such as the communication of the change, employee level of understanding of the change, management actions when implementing the change, and employee participation in planning and implementing the change (Erwin and Garwin 2010).

Continuums of Behavioral Resistance & Readiness

The behavioral dimension of resistance is commonly described in the literature in terms of employee behavior that is either positive or negative toward the change (Lines 2004, Mumby 2005). Researchers have described resistance as a “form of dissent” (Giangreeco and Piccei 2005) and others have likened resistive behaviors to a scale where positive and negative behaviors can be “strong or weak” (Lines 2005). Herscovitch and Meyers (2002) proposed a continuum of behaviors ranging through active resistance, passive resistance, compliance, cooperation, and championing. Another five-point continuum of resistance was defined by Coetsee (1999) as ranging from aggressive resistance, active resistance, passive resistance, apathy/indifference, and enthusiastic support.

Readiness for Change

Behavior that is supportive of change, whether in the form of cooperation, enthusiasm, and championing, is oftentimes an indicator of an employee’s readiness for change. Change readiness is defined as the extent to which employees hold positive views about the need for OC and their beliefs that the OC will have positive impacts on the organization and their individual work roles (Jones et al. 2005). Other researchers have linked readiness for change to organizational members’ “change commitment and self efficacy to commit the change” (Weiner 2009) as well as their willingness to engage in opportunities to participate in the change process (Cunningham et al. 2002). Proposed methods for creating change readiness include education and communication of the change message, employee participation and involvement, facilitation and support, and even coercion (Kotter and Schlesinger 1979).

RESEARCH OBJECTIVE

The research objective was to collect and analyze empirical evidence of resistive behavior within AEC owner organizations. An action research approach was utilized to measure change readiness levels as well as the type and frequency of displayed resistance behaviors across all phases of the project delivery life-cycle.

METHODOLOGY

Quantitative and qualitative descriptive research was used to describe the relationship between training and employee resistance to change, based upon direct observation of APDM implementation within AEC owner organizations. The studied organizations all underwent implementation of the same alternative project delivery method. The ADPM that was implemented in each of the participating owner organizations was a known as value-based project delivery.

The value-based project delivery method implemented in this study consisted of a best value procurement strategy that considered both price and performance
criteria in the procurement and selection of AEC firms. It also included a unique pre-
contract planning period between the project teams from the owner organization and
selected AEC firm, which occurred in parallel to traditional contract finalization
steps. This planning period focused on potential risks to project execution and
coordinated the resources and interactions between the owner and selected AEC
firm’s project teams. The final aspect of the value-based project delivery method was
a systematic project management process for tracking risk and performance for the
contract lifespan. This project management process occurred weekly for the project’s
duration to track all impacts to project cost, schedule, quality, and owner satisfaction.
In this manner, the value-based project delivery method served as an APDM that
impacted the entire project delivery life-cycle.

Participants

Participating organizations included eight large public and private entities
across North America. The identities of these organizations have been kept
confidential at the participants’ request. Each applied the new APDM internally on at
least one project and as many as eleven projects. Data collection was primarily based
on two key project team members, including procurement officers and project
managers, for each project within the data sample. The authors participated directly in
the implementation efforts as change agents to provide training and hands-on
implementation support to each organization. Data was collected via an action
research methodology similar to that employed by Armenakis and Harris (2009) and
Jorgensen et al. (2003), which follow the cyclic processes of planning, acting,
evaluating, and re-planning. Action research is defined as a systematic process of
ongoing data collection founded upon actual organizational conditions, collaboration
between researchers and affected members of the organizations, and iterative analysis
of multi-level variables (Powell Jr. 2002).

The key project team members within the owner organizations received
varying levels of training prior to beginning each project implementation, defined
below:

1 – No Training prior to Implementation
2 – Limited Project-Specific Training
3 – Extensive Training (Project- & Program-Specific)
4 – Direct Previous Implementation Experience

Employees in Level 1 were not provided with formal training prior to implementation
and instead relied solely on real-time interaction with change agents throughout the
project delivery process. Level 2 consisted of limited project-specific training,
typically in the form of a one- or two-hour lecture-style presentation about the
process steps within the APDM being implemented. Level 3 involved more extensive
training sessions, including one or more lecture-style presentations that not only
covered project-specific process steps, but also spent considerable time focusing on
how individual project implementations of the APDM would fit into larger, program-
level change efforts and contribute to the organization’s strategic goals. The highest
level of training, Level 4, was reserved for those employees who had already
implemented the APDM on a project within their organization (note that some organizations had multiple projects, meaning that key project team members could become involved with multiple APDM projects).

**Data Collection**

Data collection occurred at four key milestones along the project delivery life-cycle for each of the thirty one projects observed at the participating owner organizations. The project delivery life-cycle was divided into four key phases: RFP Development, Evaluation and Selection, Contract Negotiation and Planning, and Project Management. Data was collected by researchers acting as change agents who provided direct training to the owner organizations’ project teams. The lead change agent that was responsible for delivering training to each project team was asked to record the level of training they provided as well as the level and type of resistive behavior they observed from the project team. This data was collected via a questionnaire upon the completion of each of the 31 projects.

Two key metrics were tracked: change readiness levels and frequency of resistive behaviors that were displayed. Observations were made for both key individuals – the owner procurement officer and project manager – at each project phase. Results were then totaled for each individual to enable project-by-project analysis. Change readiness levels were tracked on a five-point scale based upon the continuums noted in the literature (Coetsee 1999, Herscovitch & Meyers 2002):

1. High Resistance: intentionally subverting or blocking the OC.
2. Medium Resistance: recommending against, low cooperation, or trying to alter the OC (begrudging)
3. Compliance: general cooperation, some doubt expressed.
5. High Readiness: championing the OC within the organization.

Nine types of displayed resistive behavior were tracked at each of the four project phases for both key individuals (on a per-project basis). Displayed behavioral frequency was coded in a “yes or no” fashion to gauge whether a specific type of resistive behavior was displayed within each phase. The nine categories are shown in Table 3 (ranked according to observed frequency) and were tabulated based upon timing within the project delivery life-cycle and the employees’ role within the organization. The nine types of resistive behavior used in this study were based on a compilation of specific resistance types identified in the literature (Bovey and Hede 2001, Fiedler 2010, Hultman 2006, Prasad and Prasad 2000).

**RESULTS AND DATA ANALYSIS**

In order to evaluate the relationship between employee training and change readiness, participating employees were grouped according to the level of training they received prior to implementation of the APDM on their projects. The average observed change readiness level for each employee group was then calculated. Employees who did not receive formal training prior to implementation (Training Level 1) were observed to exhibit the lowest level of change readiness (2.32), which
corresponded with medium resistance to the change, such as begrudgingly cooperating or even recommending against the change. Employees who had limited project-specific training had an average readiness level of 2.93 whereas employees who had extensive project- and program-specific training were observed to have an average readiness level of 3.25. The final group of employees all had direct previous experience with implementing the APDM, and was observed to have the highest change readiness (3.87). Results are summarized in Table 1 and were found to be statistically significant via ANOVA with a p-value of 0.0041.

**Table 1. Employee Training vs. Resistance Levels**

<table>
<thead>
<tr>
<th>Employee Training Levels</th>
<th>Number of Key Project Individuals</th>
<th>Average Change Readiness Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – No training prior to Implementation</td>
<td>5</td>
<td>2.32</td>
</tr>
<tr>
<td>2 – Limited Project-Specific Training</td>
<td>21</td>
<td>2.93</td>
</tr>
<tr>
<td>3 – Extensive Training (Project- &amp; Program-Specific)</td>
<td>18</td>
<td>3.25</td>
</tr>
<tr>
<td>4 – Direct Previous Implementation Experience</td>
<td>16</td>
<td>3.87</td>
</tr>
</tbody>
</table>

The frequency with which employees exhibited resistive behavior on their projects was also observed. As shown in Table 2, the frequency of resistive behaviors was found to be similar based upon organizational role. Procurement officers were responsible for 46 percent of all displayed resistance behaviors while project managers accounted for the remaining 54 percent. The frequency of displayed resistive behaviors was also found to be remarkably consistent across the separate phases of the project delivery life-cycle, nearly identical for each the RFP Development, Evaluation and Selection, and Project Management phases. The Contract Negotiations and Planning Phase (which consisted of the pre-contract planning process), however, was found to have almost twice the frequency of resistance behaviors, accounting for 39 percent of all resistance behaviors compared with the roughly 20 percent for each of the other three phases.

**Table 2. Displayed Resistance Behaviors by Project Delivery Phase and Organizational Role**

<table>
<thead>
<tr>
<th>Organizational Role</th>
<th>Frequency of Displayed Behaviors (Per Project Delivery Phase)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement Officer</td>
<td>24</td>
</tr>
<tr>
<td>Project Manager</td>
<td>24</td>
</tr>
<tr>
<td>Total Frequency</td>
<td>48</td>
</tr>
<tr>
<td>Percentage</td>
<td>21%</td>
</tr>
</tbody>
</table>
Further analysis was conducted to understand the type of resistance behaviors exhibited by employees on their project-level implementation of the APDM. Each of the nine resistance behavior categories are tabulated in Table 3 according to their observed frequency of occurrence across the project delivery life-cycle. The most frequently observed behavior (25.8 percent of the total) was employees actively making changes to the APDM during implementation to revert back towards their traditional project delivery techniques. The next most frequent behaviors were employees finding fault with how implementation was being conducted, passive resistance, and active resistance, respectively. The least commonly encountered form of resistance was negative external feedback from outside sources such as contractor, architecture, and engineering groups.

Table 3. Frequency of Displayed Resistive Behaviors Organized by Category

<table>
<thead>
<tr>
<th>Code</th>
<th>Displayed Resistance Behavior</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Changing the process by reverting to traditional practices</td>
<td>60</td>
<td>25.8</td>
</tr>
<tr>
<td>B</td>
<td>Finding fault with how the implementation was conducted</td>
<td>38</td>
<td>16.3</td>
</tr>
<tr>
<td>C</td>
<td>Passive Resistance</td>
<td>28</td>
<td>12.0</td>
</tr>
<tr>
<td>D</td>
<td>Active Resistance</td>
<td>25</td>
<td>10.7</td>
</tr>
<tr>
<td>E</td>
<td>Hiding information / Lack of transparency</td>
<td>23</td>
<td>9.9</td>
</tr>
<tr>
<td>F</td>
<td>Finding fault in the specific change being implemented</td>
<td>19</td>
<td>8.2</td>
</tr>
<tr>
<td>G</td>
<td>Changing traditional processes beyond the specific change</td>
<td>15</td>
<td>6.4</td>
</tr>
<tr>
<td>H</td>
<td>Striving for perfection at expense of implementation effort</td>
<td>14</td>
<td>6.0</td>
</tr>
<tr>
<td>I</td>
<td>Negative feedback from external sources</td>
<td>11</td>
<td>4.7</td>
</tr>
</tbody>
</table>

The final level of analysis aimed to understand the relationship between employee training level and the type and frequency of displayed resistance behaviors. Results are shown in Table 4, which shows the number of times a resistance behavior was displayed (organized by the nine behavior categories) for each of the four employee training levels. The results were normalized to account for the varying number of employees that were in each training level group. For example, the 21 employees in Training Level 2 (limited project-specific training) where observed to display resistance behavior category 2 (reverting back to traditional project delivery processes) a total of 24 times. Normalizing these 24 occurrences on a per-employee basis resulted in a value of 1.1 times that this behavior category was observed on any given project implementation. The “Total” column is simply the sum of resistance behaviors displayed on a per employee basis for each APDM project implementation. Results indicate that an average of 7.8 resistance behaviors were displayed per employee when employees were not provided with up front training, whereas only 1 resistance behavior was displayed for employees who had firsthand previous experience implementing the APDM on a previous project.
Table 4. Displayed Resistive Behaviors vs. Training Levels

<table>
<thead>
<tr>
<th>Employee Training Level</th>
<th>Displayed Resistive Behaviors (Categorized Per Key Project Individual)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>1</td>
<td>1.4</td>
<td>1.2</td>
</tr>
<tr>
<td>2</td>
<td>1.1</td>
<td>0.6</td>
</tr>
<tr>
<td>3</td>
<td>1.2</td>
<td>0.8</td>
</tr>
<tr>
<td>4</td>
<td>0.4</td>
<td>0.3</td>
</tr>
</tbody>
</table>

DISCUSSION

Results appear to indicate that training levels have a statistically significant impact on employee readiness levels when implementing new APDMs. Employees that do not receive change-specific training were found to exhibit resistance on the level of recommending against the change or, at best, begrudgingly cooperating with the OC effort. When some limited, change-specific training was provided to employees, they still reacted with more resistance than readiness, but were mostly compliant with the change effort (with some begrudging response). Only once employees received more extensive training regarding both project-specific aspects of implementation as well as the strategic objectives and intent of the overall change program were levels of change readiness reached. More extensively trained employees were found to be generally cooperative in performing their job functions within the new roles and responsibilities of the APDM, with some employees even reacting enthusiastically. An interesting point to note is that both these groups were observed to display resistive behavior at similar rates (4.4 and 4.7 times per project), yet measurements of their change readiness demonstrated a difference in the level of resistance exhibited (generally compliant with some begrudging behavior vs. cooperative with some willingness and enthusiasm). This is important to note the difference between change readiness (the level of resistance observed) and the frequency of resistive behavior (how often resistive behavior types were encountered).

Employees that had gained direct prior experience in implementing the APDM had high change readiness, with a majority of employees championing the change. These results seem to indicate that change efforts that do not incorporate training may be doomed to high levels of resistance, whereas project- and program-specific training may enable overall levels of cooperation. The fact that employees who have gained direct experience tend to become enthusiastic supporters and champions of the change may provide change agents with an attractive opportunity to pair these employees on project teams that have not yet gained experience.

In analyzing the frequency of displayed resistive behaviors, the most unexpected finding was that new contract negotiation and planning activities experienced nearly double the amount of displayed resistive behaviors as any other phase of the project delivery life-cycle. This is interesting because this is typically the project phase with the shortest duration in the AEC industry, and typically less than a one month time period. Conversely, the RFP development and Evaluation phases may
take multiple months and the Project Management phase may last from several months to years, depending on project size and complexity.

The high rate of resistive behaviors displayed in the Contract Negotiation and Planning phase may be a result of the fact that this phase represents the greatest departure from traditional project delivery practices compared to the other phases of the value-based project delivery method. In the value-based project delivery method, the pre-contract planning process that occurs during Contract Negotiation and Planning engages the owner and AEC firm’s project teams to participate in a risk-focused planning process prior to signing the contract, which is not typically done in traditional processes; therefore, this phase may be the largest change that the owner organization’s project teams encounter within the value-based project delivery method. The other phases of the project delivery life-cycle also represent a change, but perhaps to a lesser (or less radical) degree. For example, the RFP Development process is largely the same as traditional methods, but the value-based project delivery method incorporates different RFP language to account for a procurement strategy that is based on both price and performance criteria. The Evaluation and Selection process is also similar to traditional processes in that AEC firm proposals within the value-based project delivery method are evaluated by the owner’s evaluation committee, yet the proposals include different elements that must be evaluated in a slightly different manner. Further, most traditional Project Management approaches include some type of weekly project meeting, but in the value-based project delivery method the weekly risk reporting system formalized this within a performance measurement system. For these reasons, the employees may view Contract Negotiation and Planning as the most foreign phase within the value-based project delivery method. On top of this, it may also be true that the project teams are under larger financial and organizational pressure to rush through this stage and “just get the contract signed,” which may also be a contributing factor to the higher frequency of resistive behavior.

This conclusion may be further supported by the fact that of all the resistive behaviors that were displayed, by far the most common category was employees reverting back to their traditional project delivery practices. When resistive behavior frequency was grouped according to employee training level (Table 4), employees with no, little, or extensive formal training (training levels 1, 2 and 3) were observed to revert back to traditional practices at a rate three times higher than those employees who had previous implementation experience. This result may indicate that the first time employees implement a new APDM, reversion to traditional practices is to be expected regardless of their training level. Change agents are therefore advised to consider this aspect when new employees participate in an expanding OC effort.

CONCLUSION

Objectives of this research were to present empirical data showing the relationship between employee training, readiness for change, and displayed resistive behaviors. An action research methodology was utilized to study numerous project-level implementations of a new APDM within multiple AEC owner organizations. Observational data was collected to define levels of employee change readiness and document the type and frequency of resistive behaviors encountered at multiple
phases of the project delivery life-cycle. Key findings included a statistically significant, directly proportional relationship between employee training level and readiness for change. Additional findings included the observation that the most commonly encountered type of resistance is an employee tendency to revert back to traditional project delivery practices during implementation of new APDMs.

These findings contribute to the body of knowledge by providing empirical evidence (based on direct organizational change implementations within the AEC industry) to establish the relationship between employee training and change readiness. Second, these findings support the notion that owner organizations who are implementing new APDMs should seek additional training and develop formal avenues for delivering that training to employees.

Several limitations of this study deserve reference and inform future research directions. One limiting element within the data sample was the small number of available projects from private organizations (only 3 of the 31 projects), which did not support the ability to conduct a robust analysis of differences between public and private organizations.

**Recommendations for Future Research**

Future research is recommended to expand the population as well as investigate other characteristics that may be related to employee change readiness levels within the AEC industry, such as employee capability, buy in, and career stage. Considering owner organization characteristics (size, bureaucracy levels) and project-specific parameters (type, size, scope, duration, complexity, political profile) may also be of interest. Based on this research, the authors also observed employee resistance is a separate behavioral issue from actual adaptation rates regarding adherence to the change effort, and this relationship should also be explored.

Future research is also recommended to examine the possible antecedents and intervening variables that may influence resistive behaviors. Investigation of existing factors within both the owner organization (i.e. culture, change outlook, bureaucracy levels, etc.) and project level personnel (career stage, experience levels, etc.) may shed light on critical antecedent variables. Other intervening variables beyond education and training levels, such as project size and complexity or level of buy in from various employee roles may also provide insight into why resistive behaviors arise.

**REFERENCES**


