

Identifying Resistance to Change in Owner Organizations: *An Action Research Approach*

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Abstract

Owner organizations within the architecture, engineering, and construction (AEC) industry are presented with a wide variety of potential process-related improvements aimed at increasing project efficiency and performance. Implementation of process improvements can prove to be extremely difficult; previous research cautions that perhaps more than half of all planned organizational change initiatives fail to accomplish their intended objectives, oftentimes due to resistance exhibited by the organization's own personnel. This study utilizes an action research approach to document and catalogue employee resistance across multiple owner organizations that were engaged in the implementation of new process improvements within their project delivery practices. An analysis of variance with Tukey post hoc testing was performed to identify a prioritized ranking of the most frequently encountered resistive behavior types within owner project teams. This study contributes empirical documentation of change resistance along with actionable recommendations to address various forms of project team resistance.

Research Details

INTRODUCTION

In recent years, the architecture, engineering, and construction (AEC) industry has seen consistent growth in the implementation of project delivery process improvements (PDPI) (Barrett and Sexton 2006). AEC organizations are increasingly seeking to adopt improvements such as building information modeling technology (Won et al. 2013; Sackey et al. 2015), project management software systems and web-based technologies (Arnold and Javernick-Will 2013; Doloi 2014), and lean production approaches (Castillo et al. 2015), to name just a few.

In the context of this study, PDPI are defined as any set of approaches, tools, or processes that are new to the owner organization and are intended to improve some deliverable within the AEC project delivery lifecycle. In the context of this study, it is important to recognize that PDPI do not refer to holistic project delivery systems such as design-build, construction manager at risk, or integrated project delivery; rather, PDPI refer to more discrete changes within an organization's management processes at the project level. Such processes may be confined to individual phases within the holistic project delivery lifecycle, such as the procurement, contracting, or project management phases. For instance, the owner organizations participating within this study implemented PDPI that specifically consisted of alternative procurement systems that incorporated entirely new evaluation criteria, unconventional contracting methods that were structured to formalize risk transference within the owner–vendor relationship, and the introduction of new project management tools intended to assist owner project managers in monitoring and controlling project performance.

A key stakeholder in AEC projects is the project owner (Ankrah et al. 2008), who generally determines the delivery method, procurement method, contracting approach, risk management technique, and project reporting process by which the project will operate. However, successful implementation of a planned change in PDPI can be extremely difficult for an organization to accomplish due to the extent of modifications that must be made to the organization's traditional work processes, organizational structures, and personnel roles and responsibilities (Migliaccio et al. 2008; Xia and Chan 2012).

When owner organizations proceed with the implementation of new PDPI, they are in fact engaging in a planned organizational change effort, which is a challenging, complex, and dynamic process that typically unfolds over a longitudinal timeline and requires allocation of organizational resources (Burnes 2009; Gray et al. 2012; Lee et al. 2014). Previous studies have shown that the majority of organizational change efforts fail to reach their originally intended purpose (Ahn et al. 2004; Balogun 2005; Beer and Nohria 2000). In a recent study, Rahman (2014) noted that many barriers hinder the adoption of modern methods of construction. A primary cause of organizational change failure is commonly cited to be resistance of organizational members (Foote 2001; Piderit 2000); for example, Ozorhon et al. (2014) identified resistance from contractor personnel as a leading barrier to the adoption of lean construction methods. The contribution of this paper is to investigate the various forms by which personnel resistance is manifested in the AEC industry and identify effective change management approaches that correspond to the most frequent types of resistance.

LITERATURE REVIEW

Resistance to change at the individual level has often been organized into cognitive, affective, and behavioral dimensions (Erwin and Garman 2010). The cognitive dimension refers to how employees think about change, including their perceived capability remain effective within new work roles (Chreim 2006, Giangreeco and Peccei 2005), their opinion of how their individual self-interest is being impacted (Armenakis et al. 1993), and whether certain individuals may inherently possess a low tolerance for change (Kotter and Schlesinger 1979). The affective dimension is defined as the emotional and psychological reactions of how employees feel about the change (Denhardt and Denhardt 1999), where positive and negative personal feelings may be simultaneously invoked (Tichy and Ulrich 1984). These two dimensions are often described as being the sources or causes behind resistance. The behavioral dimension, conversely, examines the displayed forms of resistance exhibited by employees as an outcome of the cognitive and affective processes (Bovey and Hede 2001a, b; Fiedler 2010).

The behavioral dimension was selected for this study due to the fact that behavioral phenomena are directly observable in a practice-based research setting, whereas the thoughts and emotions behind resistive behaviors are not as easily detected (Mumby 2005). Empirical documentation of behavioral resistance provides significant insight into personnel reactions during their participation in organizational change initiatives (Kinicki and Kreitner 2006).

Behavioral Dimension of Resistance to Change

Behavioral resistance is commonly viewed as an observable manifestation of employee opposition to change efforts (Smollan 2011). Many researchers have divided behavioral resistance into categories based upon the explicit forms of behavior displayed, with separate classifications utilized depending upon whether a displayed behavior takes on an active, passive, or more-neutral form (Bolognese 2002; Bovey and Hede 2001b; Fiedler 2010; Hultman 2006; Mishra and Spreitzer 1998). These separate forms are most commonly considered to be mutually exclusive in the sense that the individual behaviors within each classification represent a distinct resistive action; however, multiple resistive behaviors may occur at different times throughout the change-implementation phase. Based upon a

thorough review of the previous literature, this study has adopted the active, passive, and inadvertent classifications as described next.

Active Forms of Resistance

Active resistance is generally defined by behaviors that are open, overt, and directly challenge the change effort (Bolognese 2002; Bovey and Hede 2001a, b). Many examples of active resistance are illustrated within the literature. Fiedler (2010) identified active resistance behaviors to include instances of employees openly finding fault with the organizational change, ridiculing the change, appealing to fear, resigning and leaving the company, and taking manipulative actions to hinder the change. Other active resistance behaviors, such as badmouthing and taking retaliatory actions against the change, were described by Mishra and Spreitzer (1998). Hultman (2006) divided passive and active resistance into 20 forms of so-called displayed behaviors, which included active resistance forms of being openly critical, undermining, or starting rumors about the change effort.

Passive Forms of Resistance

Passive resistance may still be overt (openly expressive and therefore directly observable) but typically occurs as more submissive, docile, or tractable forms of dissent (Bolognese 2002; Bovey and Hede 2001a, b). Fiedler (2010) defined passive resistance behaviors as instances where employees may verbally agree to participate but then do not follow through with actions to implement the change. Also included were instances of employees feigning ignorance of necessary change-related action steps, or withholding information pertinent to the change initiative. Additional forms of passive resistance include reluctant compliance (Bacharach et al. 1996), employee withdrawal and procrastination (Mishra and Spreitzer 1998), and conscious actions to avoid participation (Hultman 2006).

Inadvertent Forms of Resistance

Other studies have noted ambiguous or involuntary behaviors that may negatively impact change efforts despite not being clear whether resistance was the employee's explicit intent. For example, Prasad and Prasad (2000) described ambiguous accommodations to authority as sometimes having a trickle-down effect to hinder change. Emiliani and Stec (2004) described instances of employees reverting away from the change and upholding traditional organizational practices, yet noted that these behaviors may be blamed on a lack of employee understanding of the change rather than intentionally active or passive resistance against the change. Other studies have found inadvertent resistance to be a particularly vexing challenge in the AEC industry; for example, Molenaar and Gransberg (2001) found that when owner organizations first implemented new project delivery systems (such as design-build), their project-level employees were often "constrained" by traditional methods and habits they had become accustomed to within the lowest-bid approaches historically used within their organizations. Finally, Van de Ven and Poole (1995) described organizational change implementation as often resulting in unintended outcomes, including misguided applications of the change initiative.

Toward Practice-Based Research of Resistance to Change Phenomena

Little current research defines the individual types and frequency of resistance to change encountered within the AEC industry. Erwin and Garman's (2010) review of more than a decade of organizational change studies concluded that the majority of resistance to change research has been based upon theoretical models or self-report survey questionnaires. Their recommendation was for researchers to consider empirical approaches, specifically in the form of practice-based research methods such as case studies and action research. Fiedler (2010) also noted that practice-based action research is an effective method to collect "actual resistive behaviors" through direct researcher collaboration with the organization that was performing the change program. This study contributes a

practice-based approach to investigate the various types and frequencies of resistance that AEC owner organizations encounter when implementing a planned change in project delivery processes. An action research methodology was utilized to collect data from AEC projects across multiple owner organizations. Contributions of this study include identification of the most common types of resistance as well as discussion of corresponding change management strategies. This study therefore addresses an identified need within the literature and contributes actionable recommendations that may be useful for practitioners across the AEC industry.

METHODOLOGY

Research Context

The organizational change studied in this paper consisted of the implementation of a set of three project delivery process improvements within a multiorganization sample of AEC owners. The three PDPI consisted of the implementation of new procurement, contracting, and project-management processes. The new procurement process was a value-based procurement method that implemented entirely modified request for proposal (RFP) documentation along with new evaluation criteria and source selection procedures. This represented a change in how the owner's procurement personnel prepared RFP documents as well as how the owner's evaluation committee (typically consisting of project management and operations personnel) reviewed and scored project proposals.

Second, the new contracting process was a precontract planning process that occurred between the owner's project team and the selected AEC firm. The selected AEC firm refers to the single bidder who received the highest evaluation score from the owner's procurement process and was thus invited to enter contract negotiations with the owner organization. The new precontract planning process took place in parallel with traditional contract negotiation and legal award activities, yet marked a change in process for all AEC owner organizations due to the timing of personnel involvement. Additionally, the new process augmented risk-transference within the contracting process by inserting new planning deliverables prior to contract award, including a vendor-created risk management plan, an owner and AEC firm coordination plan, and an agreed-to owner action item list for responsibilities within the project's duration.

Lastly, the new project management process deployed a risk management tool that restructured the project team's communication around risk identification, response, and impact assessment. A unique aspect of this study was that all owner organizations within the data sample implemented the same PDPI, enabling the research team to analyze multiple organizations and project teams that were attempting to accomplish roughly equivalent organizational change processes.

Data Sample

The data sample consisted of 16 AEC owner organizations across the United States and Canada, 14 from the public sector (state government agencies, county and city governments, universities, or school districts) and 2 from the private sector (defense contractor and private education). The identities of these organizations will remain anonymous at their request. In all, a total of 52 project-level change implementations were observed across the 16 owners. The project types varied in the following ways: 21 were construction projects (new, renovation, roofing, and tenant improvement) ranging from \$125,000 to \$34 million, 7 were design and engineering projects (greenfield and repurposing, renovation) ranging from \$250,000 to \$4 million, and 20 were business services (custodial services, cleaning product supplies, moving services, equipment management, furniture supplies, dining services, material recovery, and vehicle services) ranging from \$50,000 to several hundred million dollars. Each organization's

leadership recognized the implementation of the PDPI as a concerted organizational change effort which required training and support for their project-level.

Direct researcher participation on the contract administration portion of change implementation was achieved via direct collaboration with each organization's procurement, purchasing, or contract-management department. Within the operations and project management functions of the organizations, direct participation from each owner's capital projects or facilities management group was engaged. In each of the 52 project-level applications of the PDPI, the change-related actions of two lead project personnel were documented: the owner's contracting officer (who was responsible for all procurement and contract management aspects of the change on a project level), and the owner's project manager (responsible to oversee the management, delivery, and closeout of the change from an operations standpoint). By observing two lead project personnel in each of the 52 projects, the unit of analysis for the research sample was measured at the individual-level and consisted of a total dataset of $N = 104$.

Data Collection

Data collection followed an action research methodology, defined as a method of systematically collecting research data about an ongoing organizational process relative to a goal, objective, or need of the organization (French and Bell 1990). The action research method is often characterized as a cyclical approach of planning, acting, observing, and reflecting upon the results before the implementation of further enhanced planning (Altrichter et al. 2002). Many contemporary researchers have advocated for the action research approach when investigating organizational change dynamics (Armenakis and Harris 2009; Bommer et al. 2005; Coghlan and Brannick 2002). Powell Jr. (2002) specifically recommended action research due to its foundation on three main concepts: (1) the research is based on actual conditions rather than being limited to theoretical models; (2) the research is founded upon collaboration between the researchers and the affected members of the group of organization; and (3) the cyclical approach enables flexibility in reevaluation that is necessary to adequately analyze organizational challenges, which often act as moving targets.

The decision to apply an action research methodology in this exploratory study was based on several key elements. Foremost, a high degree of researcher participation was deemed necessary to fulfill the research objective of implementing change on the project-level within AEC owner organizations (Jorgensen et al. 2003). Second, the open collaboration between researchers and practitioners opened a rich source of data collection (Cowan- Sahadeth 2010). Lastly, direct researcher participation enabled the research team to observe and document change implementation as it occurred in real time (Coughlan and Coghlan 2002). Based upon this approach, the research team participated directly within each of the 52 project-level change implementations in collaboration with the owner's project personnel to offer change-related support to the project teams. Such support included hands-on assistance with application of new documentation and templates, process training (alongside internal change agents within the owner organizations), visibility to answer questions about the change, and feedback regarding outcomes of the change process at various stages of implementation. This high degree of collaboration gave the research team access to direct lines of observation, which provided a more holistic perspective of how the change occurred within the project-level context of the application (Gummesson 2000).

Over the duration of this study, multiple data collection sources were utilized, including on-site meetings, discussion forums, and workshops related to the project-level application of the change initiative within each organization. As a standard aspect of the action research process, each research team member kept a research journal of their observations, thoughts, and impressions related to all project interactions (Cowan-Sahadeth 2010). Additionally, content analysis of project documentation was conducted with particular emphasis on correct usage of new RFP language, evaluation score sheets, contract documentation, risk management plans, project schedules, action items, change orders, and owner satisfaction surveys.

Measurement of Resistance to Change

Individual instances of resistive behavior were documented for each implementation of PDPI within the owner organizations and coded into three categories: passive, active, and inadvertent behaviors. Each of these categories was subdivided into four individual types of resistance based on the literature. During data collection, each individual resistance type was organized via an alphabetical coding system (from A to L) as shown in Table 1 below.

Table 1. Definition of Resistive Behavior Types

Type Code	Label for the Resistive Behavior	Definition of the Resistive Behavior
A	Reluctant Compliance	Doing the minimum required, lack of enthusiasm, guarded and doubtful
B	Delaying	Agreeing verbally but not following through, stalling, procrastinating
C	Lack of Transparency	Hiding or withholding useful information during implementation
D	Restricting Education	Avoiding or restricting the spread of the change message
E	Arguing & Open Criticism	Verbally opposing and/or finding fault with the change implementation
F	Obstructing & Subverting	Openly sabotaging, blocking, undermining the change implementation
G	Spreading the Negative Word	Spreading negative opinions and rumors, appealing to fear in resistance
H	Termination	Voluntary or involuntary removal from the project or organization
I	Reversion	Changing back to traditional practices during the implementation
J	Misguided Application	Changing the implementation beyond the stated process, goals, methods
K	Forcing the Change	Striving for perfection at expense of implementation effort
L	External Influence	Behavior in response to negative feedback from external sources

Passive resistance was defined as conscious behaviors that were openly observable, yet the responsible individual did not directly confront or challenge the change; rather, the behaviors aligned with more submissive and compliant actions. Four types of passive resistance behaviors were documented (coded as A, B, C, and D). First, Reluctant Compliance (A) was defined as instances where the owner's project personnel (either the lead contracting officer or lead project manager) were observed to minimally participate in change-related activities. In these cases, employees displayed a lack of enthusiasm and were not supportive of the change; rather, they exhibited guarded and doubtful tendencies with required tasks (Bacharach et al. 1996; Giangreco and Peccei 2005). The second resistive behavior type, Delaying Participation (B), was observed when employees agreed verbally with a change-related task but ultimately did not follow through. This included actions to stall participation in the change, such as procrastination, avoidance, or delayed action (Bovey and Hede 2001a, b; Hultman 2006; Mishra and Spreitzer 1998). The third resistive behavior type was Hiding Information (C), which referred to instances where employees hid or withheld information that was valuable to the project-level change effort (Hultman 2006). The fourth type of passive resistance was Restricting Education (D), which consisted of employees who avoided change-related training or did not make an effort to ensure other project stakeholders had access to training resources (Giangreco and Peccei 2005).

Four resistive behavior types (E, F, G, and H) were included within the active category. First, Open Criticism (E) was defined as instances where employees voiced verbal opposition to the change effort to change leaders, typically based upon disagreement with the content of the change or the implementation approach (Bovey and Hede 2001a,

b; Fielder 2010; Hultman 2006). Second, Subversion (F) included employee actions to sabotage, obstruct, or undermine the change initiative (Bovey and Hede 2001a, b; Hultman 2006). Third, employees were found to Spread Negative Rumors (G) when they actively initiated negative, critical, and fearmongering rumors about the change (in some instances, employees spread manipulative or false information regarding the change process with the effect of intimidating others within the organization from participating) (Fielder 2010; Hultman 2006). The final active behavior type, Termination (H), involved an employee's voluntary (resignation) or involuntary (removal) departure from either the project-level change or the organization as a whole (Fielder 2010).

The next four resistive behavior types (I, J, K, and L) fell under the inadvertent resistance category, which included employee actions that were ambiguous as to whether employees were consciously resisting the change or unintentionally hindering implementation. Inadvertent resistance behaviors therefore may be deliberate (reflective of an employee's resistive intent) or unintentional (innocent of resistive intent). For example, instances of Reversion to the Status Quo (I) were documented when an employee deviated from the intended change during the implementation phase and returned to the organization's original practices (Emiliani and Stec 2004). Next, Misguided Application (J) also involved employee deviation from the change during implementation, yet rather than reverting back to traditional processes, in this case, the employee inappropriately altered the change in a new and unintended manner often leading to unexpected consequences (Van de Ven and Poole 1995). Employees that were observed to be Forcing Implementation (K) of the change upon openly unwilling participants and stakeholders. Lastly, Influence of External Criticism (L) was defined as instances where the lead project personnel's actions deviated from the planned change activities primarily based upon negative feedback from sources outside the owner's project team. These outside sources were most commonly identified as the AEC industry firms who were proposing on the owners' projects, perhaps due to their discomfort with engaging new, owner-driven project processes.

Based upon the above measurements of resistance to change, two main hypotheses were investigated:

- **Hypothesis 1 (H1):**
Frequency of passive, active, and inadvertent categories of resistance: Resistive behavior categories (passive, active, inadvertent) do not all have the same mean frequency, such that the mean frequency of at least one resistive behavior category is statistically different from the others; and
- **Hypothesis 2 (H2):**
Frequency of individual resistive behavior types: At least one of the 12 identified resistive behavior types has a statistically different mean frequency, indicating that different types of resistive behavior are encountered more frequently than others during a change implementation stage.

RESULTS

Passive, Active, and Inadvertent Resistance

An analysis of variance (ANOVA) was conducted to determine whether the mean frequency of observed resistive behaviors varied for each of the three resistance categories (passive, active, and inadvertent). Frequency statistic results are presented in Table 2. Analysis found a homogeneity of variances, as assessed by Levene's test ($p < 0.01$). A significant effect of the behavioral resistance category was observed on the total frequency of resistive behaviors, $F(2,309) = 4.950$, $p < 0.01$, leading to the acceptance of H1. The data within this study are presented as the mean \pm standard deviation. The passive resistance category had the highest frequency per project (1.94 ± 0.321), inadvertent resistance was second highest (1.68 ± 0.201), and active resistance was the lowest (0.91 ± 0.174). Tukey

post hoc analysis revealed that the difference between passive and active resistance was statistically significant ($p < 0.01$). No other group differences were statistically significant, although active and inadvertent resistance were significant at the 90% confidence interval ($p = 0.063$).

Table 2. Frequency of Resistive Behavior Categories

Category	Types (Code)	Description	Per Project Frequency	Total Frequency	Total Percentage
Passive	A-D	Reluctant, Delay, Hide Info., Avoid Edu.	1.94	202	43%
Active	E-H	Argue, Subvert, Rumors, Termination	0.91	95	20%
Inadvertent	I-L	Revert, Misguided Appl., Force, External	1.68	175	37%

Individual Resistance Types

Further investigation of the 12 individual resistive behavior types was also performed. ANOVA revealed a homogeneity of variances as assessed by Levene's test ($p < 0.01$). The frequency of occurrence resulted in a statistically significant difference between resistive behavior types, $F(111,236) = 13.335$, $p < 0.01$, leading to the acceptance of H2. The Tukey post hoc analysis of the 12 resistive behaviors is summarized in Fig. 1 to identify statistically significant differences between bivariate relationships.

Fig.1. Statistically Significant Differences in Resistive Behavior Frequencies

Type (Code)	Description	A	B	C	D	E	F	G	H	I	J	K
A	Reluctant Compliance											
B	Delaying		x									
C	Lack of Transparency	x		x								
D	Restricting Education	✓	x		x							
E	Arguing & Open Criticism	x	x	x		*						
F	Obstructing / Subverting	✓	x	x	x	*						
G	Spreading the Negative Word	✓	✓	✓	x	✓		x				
H	Termination (Volun. or Invol.)	✓	✓	✓	x	✓	x	x				
I	Reversion	*	✓	✓	✓	✓	✓	✓	✓	✓		
J	Misguided Application	✓	x	x	x	*	x	x	x	✓		
K	Forcing the Change	✓	*	✓	x	✓	x	x	x	✓	x	
L	Influenced by External	✓	x	x	x	x	x	x	x	✓	x	x

x = not significant at the 90% confidence level

* = significant at the 90% confidence level

✓ = significant at the 95% confidence level

DISCUSSION

Passive, Active, and Inadvertent Resistance

This study identified that passive resistance types accounted for 43% of the total observed resistance behaviors, far exceeding either of the remaining categories. This finding is useful to practitioners who are tasked with implementing change within an AEC owner organization. Practitioners should be conscious of the fact that

resistance factors may be difficult to identify, and only a minority of resistance is expected to be actively confrontational.

Recommended Change Management Strategies for Common Types of Resistance

The quantification of individual resistive behavior types presents further implications for practitioners, as it is vital that practitioners are equipped with solution strategies to overcome different forms of resistance. As indicated in Table 3, the top five most frequently encountered resistive behavior types identified in this study were reversion (22%), reluctant compliance (15%), arguing or open criticism (13%), hiding information (12%), and delaying or stalling the change (11%). Implications of these five most frequently encountered resistance types are discussed next, along with recommended solution strategies identified in the literature.

Table 3. Frequency of Resistive Behavior Types

Type (Code)	Description	Per Project Frequency	Total Frequency	Total Percentage
I	Reversion	1.02	106	22%
A	Reluctant Compliance	0.67	70	15%
E	Arguing & Open Criticism	0.58	60	13%
C	Lack of Transparency	0.54	56	12%
B	Delaying	0.52	54	11%
L	Influenced by External Resistance	0.29	30	6%
F	Obstructing / Subverting	0.22	23	5%
D	Restricting Education	0.21	22	5%
J	Misguided Application	0.21	22	5%
K	Forcing the Change	0.16	17	4%
G	Spreading the Negative Word	0.10	10	2%
H	Termination (Voluntary or Involuntary)	0.02	2	0%

Reversion

Reversion was encountered when project personnel abandoned the new project delivery strategies and instead implemented their organization's traditional practices. This type of resistance may be either inadvertent (where personnel simply lack sufficient training and therefore revert back to their traditional job functions) or purposeful (when employees are still committed to old behaviors and may not be convinced of new practices). This form of resistive behavior is rooted in Lewin's (1947) concept of unfreezing the organization's current "way of doing things," which notes the difficulty in asking employees to let go of previous habits in order to enable the transition to new methods.

The literature recommends approaches to increase employee readiness for change, which is defined as the extent to which employees possess positive views about the change (Jones et al. 2005). Beer and Eistenstat (1996) noted that the role of senior management is to clarify that the proposed change is both necessary and appropriate to achieve the organization's goals. Cameron and Quinn (1999) further supported this notion by recommending that senior management must demonstrate both the advantages of the change and the disadvantages of not changing (e.g., remaining with the status quo). Providing this information within the change message is important to create the readiness such that personnel are more likely to support the change effort (Armenakis et al. 1999). Practitioners must also consider their individual organization's history with previous change efforts. If the organization has a history of frequent change attempts that have resulted in abandoned efforts, the current change initiative may be perceived as another flavor-of-the-month and be taken less seriously (Emiliani and Stec 2004). Overcoming this

perception is best accomplished by building credibility through visible and public support of both formal and informal leaders within the organization (Armenakis et al. 1999).

Reluctant Compliance

The second most frequently encountered resistive behavior was reluctant compliance. In this case, employees did not support the proposed change with enthusiasm, but rather acted in a guarded, doubtful, and minimally participative manner towards the required activities during change implementation. A potential cause of this behavior is due to the uncertainty with the new processes and general fear of the unknown (Bourne et al. 2002). Additionally, personnel may worry that they (or the overall organization) are not capable of making the necessary changes in their daily job-function in order to implement the change successfully (Judson 1991). To reduce personnel uncertainty levels, organizations must provide the appropriate level of training to ensure employees are confident in their ability to adapt to the change (Galpin 1996). Beyond providing the necessary training, organizational leaders should also be readily available to answer change-related questions both before and during implementation (Covin and Kilmann 1990). Leaders must be willing to roll up their sleeves and become directly involved in the change implementation, which should include visible participation within change-related training sessions, listening to employee feedback, and exhibiting a willingness to take proactive steps to address employee concerns (Self and Schraeder 2009).

Open Criticism

Verbal defiance, disagreement, and arguing against the change was the third most frequent resistive behavior encountered. Previous literature notes that antichange arguments commonly stem from employee disagreement with the proposed change initiative's appropriateness (Walker et al. 2007) or their disagreement regarding need for the change (Armenakis et al. 1993). Change practitioners are recommended to address these concerns by publicly showcasing successes that are achieved during change implementation. Cameron and Quinn (1999) proposed that public documentation of successful results is an effective method to build employee confidence that the change is both necessary and appropriate to achieve improved performance. Kotter (1995) went so far as to recommend that change practitioners should plan for (and then celebrate) short-term wins. Regular, two-way communication specific to the change initiative and employee's concerns may also lower resistance by increasing understanding and engagement (Whelan-Berry and Somerville 2010).

Hiding Information

The fourth most frequently encountered resistive behavior type took the form of employees who hid or withheld useful information during change implementation. Potential causes of this behavior include employees having low personal valence such that they feel threatened by the change and do not understand "what's in it for me?" Self and Schraeder (2009) stated that valence issues typically arise from an employee's perception of negative change outcomes, which may stem from an employee's fear of losing authority, status, rewards, autonomy, control, and relationships, or simply their general perception that the change will leave them worse off within their job function. Change practitioners must be conscious to effectively communicate how each employee will benefit from the change within their respective job function (Self and Schrader 2009). Schweiger and DeNisi (1991) specifically recommended face-to-face interaction between change leaders and organizational members in order to illustrate facilitate a two-way exchange of information regarding benefits and issues related to the change effort.

Delaying

Employees were observed to delay the completion of change-related tasks even after agreeing verbally to participate in implementation activities. Ultimately, these employees were observed to be dragging their feet and not following through with the change implementation procedures. This type of avoidant behavior is indicative of a lack of enthusiasm from employees who are dodging active participation. Diagnosing the source of this resistive response type is difficult, and previous research has been devoted towards examining individual attributes and personal disposition of change participants. For example, Nikolaou et al. (2007) considered certain individuals to have high openness, which would result in being more open-minded and willing to attempt new things. Kotter and Schlesinger (1979) similarly proposed that some individuals may simply possess a low tolerance for change. Practitioners are recommended to be mindful of which personnel are selected to participate early during the change process in order to build a coalition of supporters for the change (Cameron and Quinn 1999). One widely recognized strategy used to overcome resistance is allowing individuals to participate directly in the processes of both planning and implementing the change (Holt et al. 2003). Identification of enthusiastic volunteers is recommended early in the process, and subsequent leadership encouragement of volunteers makes it easier to recruit additional supporters over time (Cameron and Quinn 1999).

CONCLUSIONS

The objective of this study was to measure the frequency and types of behavioral resistance to change within AEC owner organizations. Data collection followed an action research methodology to identify the frequency of occurrence of 12 types of resistance during the implementation of PDPI within multiple owner organizations. Passive forms of resistance were most frequently encountered (43%), followed by inadvertent (37%), and active (20%) resistance. The finding that resistance most frequently occurs in passive forms has important implications for practitioners, especially as passive resistance factors may be more difficult to identify and address.

Contributions of this Research

This study addresses a gap in the prior literature by providing empirical evidence of the resistive behaviors encountered within AEC owner organizations during the implementation of process changes within their projects. The results provide valuable insight to change practitioners and organizational leaders by providing knowledge of the types of resistance most frequently encountered during change implementation along with recommended solution strategies.

Limitations and Recommendations for Future Research

The structure of the research design, which emphasized directly observable resistance phenomena, limited this study to the behavioral dimension of resistance to change.

Future research is recommended to consider the cognitive and affective viewpoints of AEC project personnel throughout the change implementation process.

Further analysis is recommended to account for the decision factors which first motivate owner organizations to implement project delivery process improvements. The participating owner organizations within this study freely chose to implement PDPI; in fact, their decision was not expressly driven by mandated change initiatives from legislation, sunset provisions, or temporary leadership teams (e.g., politically appointed). Presumably, their decision to implement change was driven by the internal or external needs of their organizations, yet this study did not

account for the process by which each individual organization made their decision to move forward the change initiative.

The nature of certain resistive behavior categories was a possible limitation under the action research methodology employed for this data collection. For instance, passive resistive behaviors are generally more difficult to identify and observe than active or inadvertent forms. Since the study was limited to observable behaviors, it is possible that the frequency of passive resistance could even be somewhat understated within this study.

Finally, this study did not account for the boundary conditions of each participating organization's environmental context. In terms of research design, the objective of the present study was to quantify the frequency with which various resistive behaviors were encountered within an organization's project-level applications; therefore, broader organizational boundary characteristics were beyond the scope of the study. Future research is recommended to specifically investigate environmental context factors such as organizational culture, learning capacity, change readiness, and the organization's historic record of adaptability.

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