Construction Industry Institute®

Support for the Implementation Champion: The Experience Reference Index

Research Summary 246-1b

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Prepared by
Construction Industry Institute
Implementation Strategy Committee

Research Summary 246-1b
March 2013

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The University of Texas at Austin

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Printed in the United States of America.

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Executive Summary

The requirements for successful implementation of CII practices change as an organization's implementation experience increases. Although the fundamentals of implementation remain constant over time, the specific concerns of an organization will change according to the scope of its implementation efforts and depending on its experience at implementing new practices. This research addresses the question, "How do implementation requirements differ based on experience and the characteristics of the organization?" This research examined the role of an organization's experience with CII practices as an indicator of how its implementation efforts need to change over time. This study is a continuation of the effort of CII Research Team (RT) 246 to develop an implementation methodology.

Using survey data it collected, the research team developed the Experience Reference Index (ERI) to provide a detailed extension of the CII Implementation Planning Model. The ERI recognizes that an organization's implementation concerns will change over time. Specifically, it addresses five key elements affecting implementation success. Each of these key elements has different focal points, depending on the level of experience and the geographic deployment of the organization. Implementers should use the ERI to supplement the development of their implementation plans. Using it will ensure that the appropriate focal points are addressed, depending on the organization's level of implementation experience.

The results of the background survey suggest that differences in implementation concerns change as organizations become more engaged in the implementation of CII practices. Such changes in perspective and findings include the following:

- Experienced implementers reported placing a greater emphasis on obtaining communications assistance to convey the implementation message to their respective organizations.

- Experienced implementers understood the value of the link between the Implementation Champion (IC) and the network of experts in the organization.
- Experienced implementers considered the geographic deployment of an organization to be a primary indicator of which focal points an organization should consider.
- Minimal differences existed between contractors and owners among the population surveyed, in terms of their experience-based needs and their perspectives on the primary factors for implementation success.

1

Introduction

To continue the ISC mission of supporting CII member organizations and their Implementation Champions (ICs) during the implementation process, the institute sponsored a study to determine how organizations with different levels of CII experience require different kinds of support. The goal was to develop the Experience Reference Index (ERI), a tool with two main uses: 1) it can help organizations determine which focal points they should emphasize during different phases of their CII experience, and 2) it can help new ICs determine the appropriate types of implementation resources for their organizations. (See Chapter 5 for a detailed discussion of the ERI.) The benefits of this research to CII member organizations are as follows:

- Recognize and communicate the different requirements for implementation as the levels of experience change over time.
- Provide guidance for the selection of ICs with the preferred attributes for particular levels of experience.
- Understand the specific changes that should be made in recommended implementation scope for implementation plans, depending on the level of experience.

The ERI is intended to serve as a support element during the initial phase of the implementation planning effort. The ERI is a guidance tool, designed to reflect the impact of experience on the implementation process. The tool is divided into a matrix with four levels of experience across the top. These levels reflect the organization's familiarity with the implementation process. The vertical dimension comprises index elements that reflect the specific areas affected by the levels of experience, e.g., IC characteristics and resource requirements. Finally, the index specifics are the individual focal points within the matrix that require attention as the level of experience increases over time. Together, these components create the ERI matrix, a tool that helps organizations find the best approach to implementation, regardless of experience.

The current study stands as a complement to CII Implementation Resource (IR) 246-2, *Implementation Steps to Success*, as well as to CII Research Summary (RS) 246-1a, *The Role of Executive Support in Implementation Champion Success*. The original IR 246-2 document provided the general blueprint for implementation success. This blueprint was augmented by RS 246-1a, which addressed the critical question of how appropriate support for the IC during the implementation process directly affects the probability of success of the implementation effort. However, each of these documents addressed implementation as a general process. Subsequent discussions with CII members indicated that organizations at different stages of experience implementing CII research findings require different levels of support and focus during their implementation efforts.

This research summary provides the background, the methodology, and the data underlying the ERI, and discusses the findings in terms of the overall implementation process.

2

Literature Review

The current study builds upon several areas of previous study in the management domain. Of particular relevance is the work in change management. In this regard, the study builds upon the insights of several lines of inquiry to develop the experience-based approach presented in the ERI. The need to enhance an organization's productivity and effectiveness in response to changing environments is a recurring theme in business literature in particular, and in all areas of production in general. As outlined by Collins (2001), the greatest threat to an organization's achievement of greatness is its contentment with being very good at what it does. In the context of new practices, this phenomenon transfers to the greatest threat being an organization's contentment with established practices that have achieved acceptable and above-average results. The prospect of moving from a position of being successful in a specific area or context to one of potentially excelling beyond the competition can be daunting to many organizations. Specifically, the cost-benefit analysis for introducing the disruption into existing processes can be inconclusive, given the unknowns involved in the process. This uncertainty goes against the risk perspective of the capital facility industry in general and leads directly to the desire to proceed with established practices.

The evidence for this reluctance to introduce new practices is well documented in the literature. In general, the literature focuses on the topic of change management. Although change management and new practice implementation have a close relationship, the two topics should not be considered interchangeable. Specifically, the relationship between change management and new practice implementation can be viewed as causal. Initially, an organization encounters a trigger to examine its practices for improvement opportunities. This trigger can be competition, economics, new business opportunities, customer demand, or an internal gap analysis. In each case, this trigger generates an opportunity for improvement through new or improved practices.

Once the opportunity is identified and an implementation path is laid out, the implementation process will result in the need for change. In this manner, the implementation of new or improved practices is the driver for change management. More importantly, implementation of a practice gives a specific context for change management to occur. It also establishes a need for a specific plan to be introduced. This new plan should both manage change and lead to the successful implementation of the new practice.

Given this relationship between new practice implementation and change management, foundational work in the area of change management can be considered as background for the current research. Arguably, the research in this area that had the greatest impact was that of Kotter (1995). Kotter studied organizations to determine why change efforts were unsuccessful and why change efforts encountered barriers that appeared insurmountable. The conclusions of this investigation were that change management and leadership are intertwined, and that successful change management efforts are directly dependent on the capabilities of the person leading the change. Kotter's ideas are reflected in the ERI Index Elements.

A second research effort that is essential to the implementation process was performed by Suchman (1987). In this work, Suchman studied the variance between change plans and actual implementation efforts. The main finding was that change management plans must be used as a guide rather than as a blueprint, and deviations should be expected and actively managed rather than seen as failures. This finding emphasized that both internal and external forces will act upon a change process and, more likely than not, these forces will result in changes occurring throughout the process. These changes should be expected and accommodated rather than viewed as indications of a failure of the plan. This result complements the findings of Mosier et al. (2000), who found that risk is an integral part of change, and the ability to accept that risk will be directly related to the organization's ability to succeed in the overall process.

A third thread in the change management literature that is relevant to the implementation of new processes is the focus on the fact that change affects multiple areas within an organization, and that these effects in turn require a group of individuals to be responsible for the process, rather than a single individual (Yarberry 2005). This recognition will have two beneficial consequences: 1) it should prompt the group of individuals to meet on a regular basis to discuss the change process and any deviations from the original plan that may be necessary; and 2) it should prompt the change management group to anticipate potential barriers that can be recognized early in the process (Rowden 2001).

Finally, change management and new practice implementation owe a significant debt to the work of Peter Senge and the development of a systems approach to organizational change (Senge 1990). Specifically, Senge introduced the concept that a shared vision was critical to the effective communication of the reasons for undertaking organizational transformation. In this shared vision, the organization must understand the imperative need for change, as well as the consequences of not incorporating change into the system. Because the organization is a dynamic system that is in a constant state of environmental response, the introduction of change is not only beneficial, but it is critical to successfully surviving environmental turbulence.

3

Methodology

The methodology adopted for the current study was a survey approach, which was augmented by group interviews conducted at multiple CII events. For the quantitative element of the study, the research team used a Web-based survey to obtain responses from existing ICs and Board of Advisor (BOA) representatives of CII member organizations. Each IC and BOA representative was sent an invitation to participate in the study. The result of the invitations to the ICs was a 42 percent response rate, with 49 responses out of 118 invitations. The response rate of the BOA representatives was 40 percent, with 47 responses out of 118 invitations. (See Table 1.) Out these 96 survey recipients, 26 were both the IC and the BOA representative for their respective organizations. Thus, the study collected surveys from 70 individuals. These survey responses represented 37 owners and 33 contractors, which together made up 59 percent of the CII membership as it stood at the time of the survey. The respondents in both the BOA and IC populations were drawn from both experienced or novice organizations, thus providing the range in perspectives required for the study. The novice ICs and BOA members who were in either the "New to Process" or the "First Implementation" categories were combined into one group. They are referred to as "New Implementers" in the following sections. Similarly, experienced IC and BOA respondents who were rated as being in the "Good Understanding" and "Formalized Processes" categories were combined into another group. They are labeled "Experienced Implementers."

A limitation of the results presented here is that the survey results are from a convenience sample, since the responses were not intended to be random. Instead, they represent the member community based on the convenience of the available population. This factor, combined with the limited overall population prevents the study from establishing a broad statistical result that is applicable across all groups. However, the results are reflective of CII members at the time the study was completed.

Table 1. Overall characteristics of the survey samples

Attribute	BOA Respondents	IC Respondents	Respondents in Both BOA and IC Roles
Total Respondents	21	23	26
Member Type	Owner: 10 Contractor: 11	Owner: 13 Contractor: 10	Owner: 14 Contractor: 12
Experience Level with CII Implementation	New to Process: 2 First Implementation: 5 Good Understanding: 13 Formalized Processes: 1	New to Process: 9 First Implementation: 4 Good Understanding: 7 Formalized Processes: 3	New to Process: 8 First Implementation: 0 Good Understanding: 13 Formalized Processes: 5

The results of the survey were grouped together to develop answers to the key study questions. The focus of the questions and the summary answers are as follows:

- Which personality traits and skill sets should the IC possess? (See page 19 for details.)
  - an understanding of the practice
  - established networks in the organization
  - personal link to projects are the key characteristics of a successful IC

- Which minimal resources should he or she control? (See page 20 for details.)
  - The implementation planning process and communication resources were considered to be the key elements, according to the Experienced Implementers.

- Which title should the IC hold? Which minimal organizational tenure is optimal? (See page 19 for details.)
  - The position in the organization and length of employment are considerations, but were not reported as being as important as the organizational network in place.

- Should the organization have multiple ICs, a single IC, or no specific IC? What is the consequence of each path?
  - The respondents viewed the IC as being important as a leader. However, they thought that the number of ICs needed is dependent on the number of projects, with the key element being personal links to projects.

- How should the IC communicate about implementation practices and CII activities, within the organization? (See page 21 for details.)
  - Communication remains an area of concern for the respondents and was found to be the weak link in current implementation efforts in RS 246-1a.
  - Organizations need to move away from emphasis on individual communication to a broader enterprise outlook.

- How should Return-on-Investment (ROI) be addressed for a new implementation? (See page 24 for details.)
  - With 87 percent of the respondents indicating that an anticipated ROI is not required for starting an implementation, this issue should not become a barrier to implementation.

The following sections provide answers to these questions in the context of the ERI, based on the data collected from the survey study.

4

Data Analysis

The data obtained from the surveys provide a CII-based perspective on implementation. The following sections present a detailed look at these data in each of the focus areas. Table 2 summarizes the key findings from the surveys.

Table 2. Summary of Data Responses

Area of Focus	Top Response	Second Response
Current Focus of Implementation Efforts	PDRI, FEP, Alignment	Safety
IC Characteristics – Responses by the Experienced Implementers	Understanding of Proposed Practice	Established Organizational Network
IC Resources Required – Responses by the Experienced Implementers	Implementation Planning Process Control	Personnel
Communication Methods Used to Highlight Implementation Efforts	E-mail Distributions	Group/Staff Meetings
Primary Barriers to Implementation Success	Time Allocation	Available Personnel

The data indicate that the current emphasis on implementation within CII is on front end planning, with a secondary focus on safety. The respondents indicated that to successfully implement practices in these areas and others, an IC must have a strong understanding of the practice and an established organizational network. In their view, the IC also needs to have control over the implementation planning process and the personnel required to implement the new practice. However, they also believe that barriers to successful implementation occur because of the lack of time and personnel necessary to complete it. To overcome these potential barriers, the organizations studied utilize e-mail and staff meetings as a communications approach.

The following sections provide a detailed discussion of each of the implementation elements addressed in the ERI survey. For each question, the survey data are presented together with an analysis of how the data affect successful practice implementation.

Focus of Implementation

The survey first focused on which practices CII member organizations have emphasized for implementation. The responses were limited to organizations that have undertaken implementation efforts. As illustrated in Table 3, the dominant emphasis is currently on front end planning. This topic had double the responses as safety, which was the second-place response from both BOA members and ICs. In each sample, several respondents indicated a wide range of current processes that are incorporated into the organization. (See Appendix A for a complete presentation of responses.)

Table 3. Top areas of implementation in organizations that have undertaken implementation efforts

Focus of Implementation	BOA Respondents	IC Respondents	Respondents in Both BOA and IC Roles
PDRI	7	2	9
Other Front End Planning Resources	5	1	5
Safety	7	6	1
Constructability	4	2	3
Change Management	2	0	3
Many CII Resources	3	4	2

When asked which (or whether) new processes are currently being implemented, a few said "yes," but most respondents indicated that they are continuing with existing efforts. This includes reviewing and/or updating these efforts. The reason for this is unclear. It may be economic conditions, reluctance to move into new areas, or a lack of interest in additional ideas.

Finally, this first section explored the question of whether organizations attempted multiple implementation efforts concurrently. This question asked whether specific barriers might emerge for organizations that are undertaking more ambitious implementation efforts. In response to this query, nine BOA members and 12 ICs indicated that they had attempted multiple implementations. These respondents were either in the Good Understanding or Formalized categories. (See Table 1 above.) This response suggests that a strong familiarity with practices is preferable for undertaking multiple implementations.

Experience Level Perspectives

Given the respondents' overall implementation emphases, the survey turned to the central question of the study, "How do perspectives and needs change as implementers become more experienced at implementing CII practices?" In the following sections, the data from the same questions are presented from both the New Implementer perspective and the Experienced Implementer perspective. The purpose of this separation is to provide the reader with a summary understanding of how experience may or may not change the needs of the organization in terms of implementation. The users were categorized according to the number of implementations that they had undertaken. As discussed in Chapter 3, implementers who had never undertaken an implementation effort or were in their first implementation were considered to be New Implementers. Respondents from organizations with experience from multiple implementations were considered to be Experienced Implementers.

The New Implementer Perspective

The challenge for any new implementer is to achieve success in implementation in a timely manner, while trying to understand an effective approach to implementation. This process requires four central elements: 1) an IC, 2) appropriate resources, 3) an effective approach to communications, and 4) an understanding of the barriers that may be encountered during the implementation process.

Implementation Champion Characteristics

The focus on the IC emphasized two components: 1) the characteristics that were required for a successful IC; and 2) the resources that an IC should control to successfully undertake an implementation effort. The first of the survey questions addressing the characteristics of an IC was asked of the BOA members to get a management perspective. Figure 1 illustrates the responses from the New Implementers among the BOA respondents. Each was asked to name four characteristics. The numbers in the figure indicate the percentage of times the characteristic was mentioned by the respondents The graph illustrates that the New Implementers favor the IC having an understanding of the practice, familiarity with CII, and personal links to projects. In contrast, length of employment, control of monetary resources, and control of personnel resources were not considered essential elements for an IC among these inexperienced implementers.

The underlying suggestion of these data is that an understanding of the practice, combined with established networks within the organization and a personal link to projects, are the key characteristics of a successful IC for initial implementation efforts. In summary, the responses suggest that it is the ability to connect to projects and understand the practice that will enable initial implementation success.

Implementation Resources

Complementing the first query on IC attributes, the second question focused on which resources an IC should control to be successful in his or her implementation initiatives. To obtain an implementation perspective on this issue, the study posed this question to the New Implementers among the ICs.

As illustrated in Figure 2, the ICs that were new to the role emphasized the need to control the planning process by a two-to-one margin over all other possible responses. The remaining responses were all approximately even in importance. However, these responses indicate that it is the need to control the implementation planning process that is the central concern for the new ICs surveyed.

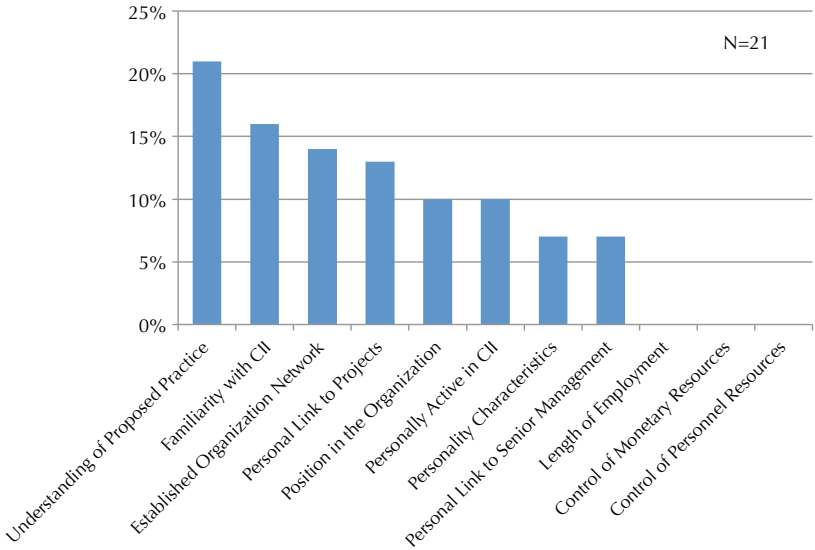

Figure 1. IC characteristics from the New BOA Implementer perspective

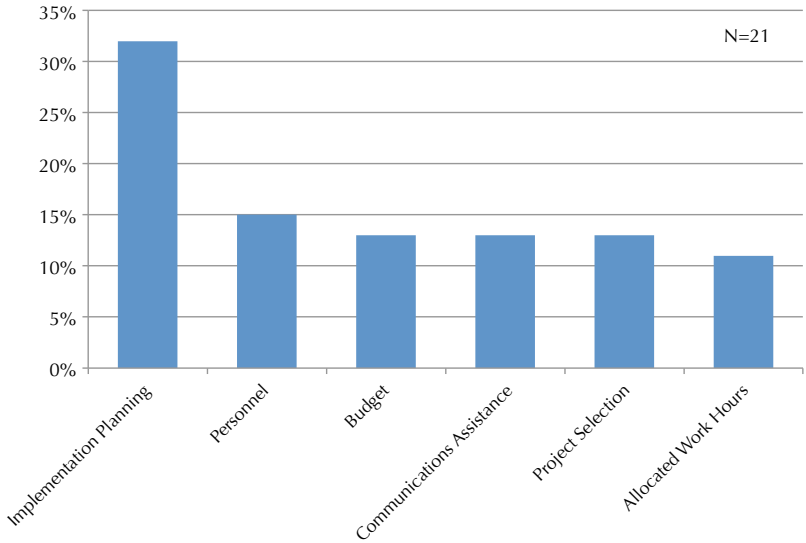

Figure 2. Resources required for an IC from the New IC Implementer perspective

Communications

The survey's third focus was on the broad area of communications. The BOA respondents were most concerned with the types of communication mechanisms that are being used to communicate about the organization's activities with CII. Figure 3 shows that the New Implementers among the BOA respondents are trying a variety of communication mechanisms to do this. However, the responses indicated the primary use of e-mail distributions and staff meetings to convey current CII activities. Company intranets, publications such as newsletters, and informal conversations were the next three most popular responses. Other mechanisms were recorded, such as CII Communities of Practice and participation in CII research, but these were significantly less common than the use of meetings or individual communications.

The summary take-away from these data is that communication remains an issue of concern for the organizations participating in the survey, since it is the weak link in current implementation efforts. (See RS 246-1a, *The Role of Executive Support in Implementation Champion Success*, for details on the significance of communication to implementation.) These results suggest that organizations that are just beginning to undertake implementation efforts should move away from an individual communication emphasis to a broader enterprise approach.

Implementation Barriers

The study's final focus of interest for the New Implementers was an inquiry into the perceived barriers to implementation from the IC perspective. This constituted a return to a question from the first IC study undertaken by RT 246. However, in this case, the approach was altered so that the respondents were asked to rank the barriers. In this way, the current study was able to examine relative responses. The result is illustrated in Figure 4. As indicated, the New Implementers among the ICs rated time and personnel as the primary barriers, followed by "Not Invented Here" syndrome, familiarity with CII, and management support. Budget ranked next to the bottom in what may be a counter-intuitive result, since, often, a lack of monetary resources often seems to be mentioned in conversation as a primary barrier.

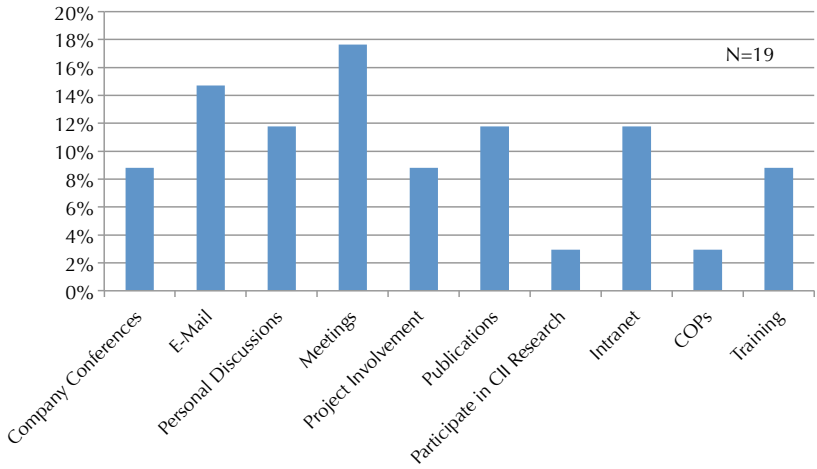

Figure 3. Corporate communication approaches for CII implementation efforts as indicated by the New BOA Implementers

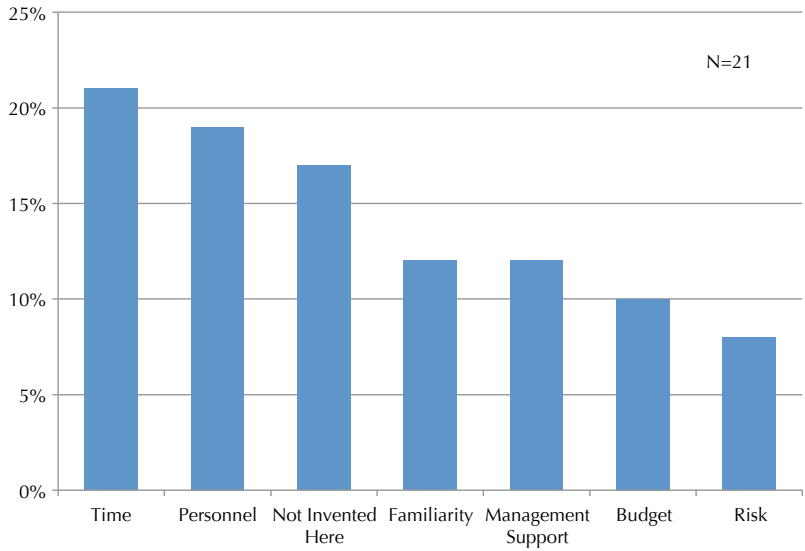

Figure 4. Barriers to implementation as indicated by the New IC Implementers

The Experienced Implementer Perspective

The challenge for the Experienced Implementers is to expand upon initial implementation successes and move from them being isolated successes to being part of a standardized organization-wide approach. As with the New Implementers, this also requires four central elements: 1) an IC, 2) appropriate resources, 3) an effective approach to communication, and 4) an understanding of the barriers that may be encountered during the implementation process. However, the perspective changes in these elements as the organization turns its attention to broader implementation concerns. The following sections compare the concerns of the New Implementers to those of the Experienced Implementers.

Implementation Champion Characteristics

Once again, the first question addressed the characteristics of an IC, and was asked of the BOA members to get a management perspective. Figure 5 compares the responses to this question from the Experienced BOA Implementers (represented by blue bars) with the previously shown responses from the New BOA Implementers. (See Figure 1.) In this figure, the ranked order of the characteristics is the same as in Figure 1, but the different values reflect the divergent perspectives of the Experienced Implementers. In contrast to the New Implementers, the Experienced Implementers placed a greater emphasis on "Personality Characteristics" and "Links to Senior Managers." The "Understanding of the Proposed Practice" characteristic remained a top characteristic for both groups.

In summary, the results suggest that the Experienced Implementers view a greater breadth of attributes as desirable, but, like the New Implementers, they consider having an understanding of the proposed practice to be the key attribute to focus on for ICs.

Implementation Resources

Figure 6 compares the differences of perspective between the New and Experienced IC Implementers with respect to implementation resources. Whereas the new ICs emphasized the need to control the planning process, the experienced ICs recognized the importance of

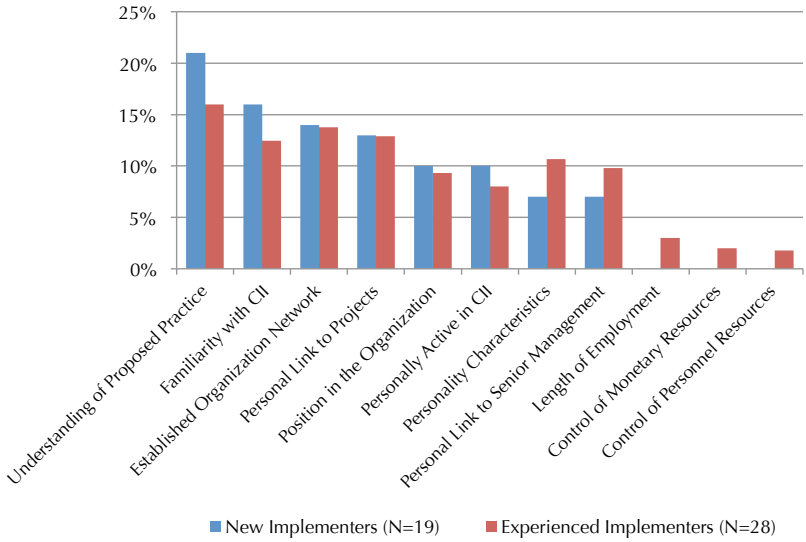

Figure 5. Comparison of New and Experienced BOA Implementers' perspectives on IC characteristics

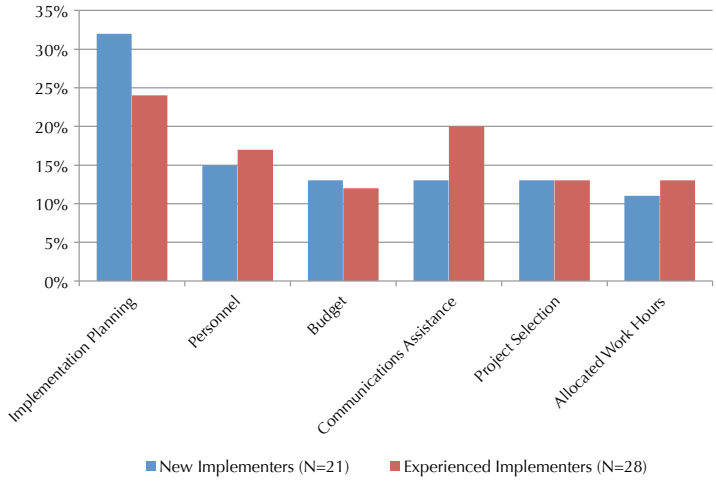

Figure 6. Comparison of New and Experienced IC Implementers' perspectives on resources required by an IC

communications, project selection, and work hours as resources that are as important as those involved in the overall planning process. This is a significant difference in perspective and one that is addressed in the ERI.

Communications

The third focus of the survey was again the broad area of communications. For the BOA respondents, the question focused on what types of communication mechanisms were being used to communicate the organization's activities with CII. As illustrated in Figure 7, the Experienced Implementers among the BOA respondents indicated that they are trying a variety of mechanisms. However, as with the New BOA Implementers, the primary responses continue to focus on the use of e-mail distributions and staff meetings to convey current CII activities. As did the New Implementers, the Experienced Implementers indicated that company intranets, publications such as newsletters, and informal conversations continue to be popular modes of communication. (See Figure 3.)

And, again, as with the New BOA Implementers, the Experienced BOA Implementers suggested that communication continues to be a potential source of concern for organizations. This was because these respondents were also aware that individual and impersonal communication methods still dominate the approaches used to convey information about implementation efforts.

Implementation Barriers

The study's final comparison was between the New and Experienced ICs' respective perceptions of the barriers to implementation. Figure 8 shows no difference between the Experienced and New ICs in terms of perceived implementation barriers. Both groups placed the same barriers at the top and bottom of their lists.

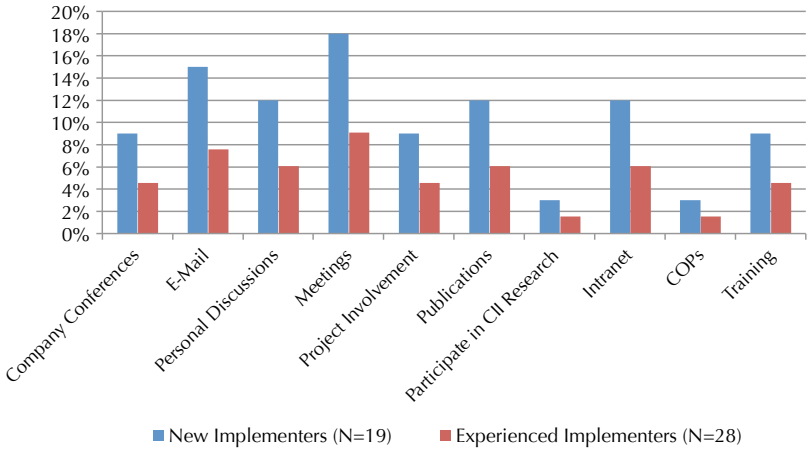

Figure 7. Comparison of New and Experienced BOA Implementers' perspectives on corporate communication approaches to CII implementation efforts

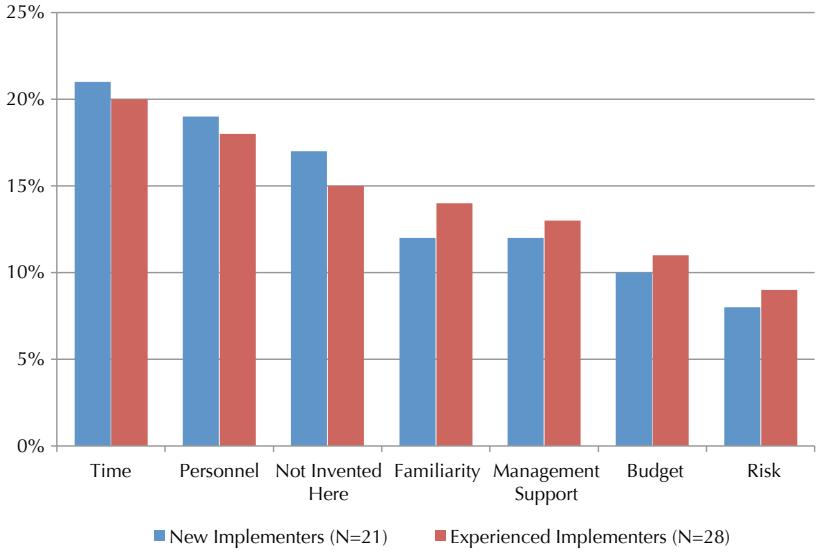

Figure 8. Comparison of Experienced and New IC Implementers' perceptions of barriers to implementation

Summary Comparison: New versus Experienced Implementers

In summary, the analysis of the data from the New and Experienced Implementers suggests that there are subtle differences that organizations should recognize during different phases of their implementation efforts. The differences were apparent in the study's four specific areas of interest:

- **IC Characteristics**
  - **New Implementers** – The New Implementers favored the understanding of the practice, familiarity with CII, and personal links to projects as the top characteristics of an IC.
  - **Experienced Implementers** – The Experienced Implementers placed a greater emphasis on personality characteristics and links to senior managers, while the understanding of the proposed practice remained the top priority for the New and Experienced Implementers alike.

- **Implementation Resources**
  - **New Implementers** – The New Implementers emphasized the need to control the planning process by a two-to-one margin over all other possible responses.
  - **Experienced Implementers** – The Experienced Implementers considered the importance of communications, project selection, and work hours to be resources that are as important as the overall planning process.

- **Communications**
  - **New Implementers** – The New Implementers reported using e-mail distributions and staff meetings to communicate about current CII-related activities.
  - **Experienced Implementers** – The Experienced Implementers also indicated that they use e-mail distributions and staff meetings to communicate about current CII activities.

- **Implementation Barriers**
  - **New Implementers** – The New IC Implementers ranked time and personnel as the primary barriers, followed by "Not Invented Here" syndrome, familiarity with CII, and management support as the next most significant barriers.
  - **Experienced Implementers** – There was no difference between the Experienced and New IC Implementers in terms of perceived implementation barriers.

Supplementary Information: Implementation Requirements

As a supplement to the survey questions discussed above, an additional question was asked of all respondents to determine which implementation requirements were in place in their respective organizations. For the BOA members, this focused on whether implementation objectives were required and/or ROI expectations had been established. In terms of the former, only 10 of the 47 respondents indicated that implementation objectives were required prior to the initiation of an implementation process. Similarly, only six of the respondents indicated that ROI numbers were required to undertake an implementation initiative. These responses are potentially very important to the ISC, since these are questions that are commonly asked during Product Implementation Workshops (PIWs) and are a primary focus of the PIW presentations.

The summary of this inquiry is that 87 percent of the 47 BOA respondents indicated that an anticipated minimal ROI is not required for initiating an implementation. Although not statistically significant, this finding suggests that this issue should not be viewed as a barrier to implementation.

On the IC side of the survey, this area of interest was first addressed in terms of whether an implementation plan is required for an implementation initiative. Twenty-eight of the 49 IC respondents indicated that a plan was required. The second question related to this concern was whether the IC knew about the CII Implementation

Planning Model and the web-based CII Implementation Assistant. In response, 37 of the ICs surveyed were aware of the CII Implementation Planning Model, and 38 were aware of the CII Implementation Assistant. Of the Experienced Implementers, these numbers were 23 and 21, respectively. This result raises the question of why the ICs are not leveraging the opportunity to get assistance in the plan development process when a plan is required and when they know about these CII planning tools. It also brings up the larger question of whether there is a difference between using CII tools for project management and using CII tools to develop implementation efforts within an organization.

Owner versus Contractor

A further analysis of the data was performed to determine any differences between the owner and contractor responses. The concern in this review was that any differences in the preferred characteristics of the IC, the perceived implementation barriers, or other issues reported by these two groups might be rooted in systemic differences between the two populations. However, after reviewing the above issues at the finer grain of owner versus contractor, only one area emerged as having any difference between the two groups: the characteristics of the IC.

In the analysis of the preferred characteristics for the IC, the data suggested that owner organizations prefer to have ICs that have a strong network link within the organization. This preference emerged from the owner organizations that are predominantly national or global and that have multiple divisions. These respondents indicated that, when they implement a new process, the individual leading the implementation effort requires a network that traverses many of their respective organizations' geographic and operational boundaries. In contrast, contractor organizations have no clear preference for the characteristics of the IC. The contractor respondents were divided in their preferences, and provided no clear indication of which characteristics should be emphasized.

5

The Experience Reference Index

The ultimate result of the RT 246 study on support for the IC was the development of the Experience Reference Index (ERI). The ERI reflects the survey findings described above, along with the findings from organized discussions, held at CII events, with participants of varying levels of experience. The totality of these inputs strongly suggested that an implementation framework reflecting implementation experience was required as part of CII's overall implementation assistance. The ERI is fully explained in IR 246-3, *Support for the Implementation Champion: The Experience Reference Index*. An overview of the ERI is provided here.

The ERI is intended to directly affect the manner in which an organization and its IC approach their implementation efforts. Specifically, the ERI provides guidance at the following levels:

- Organizations new to CII get guidance on how to prepare for the implementation process and how to select the individuals and projects that are appropriate for initial implementations.
- First implementers are encouraged to focus on early process elements that are key to any implementation effort; they are also encouraged to build the networks that are key to implementation success.
- The ERI encourages repeat implementers to emphasize the integration of the effort into existing project and organizational networks; they are also encouraged to understand the importance of communicating results.
- Finally, the ERI encourages organizations that are integrating new processes to embrace the elements needed to move new implementations from being individual successes to being standard operating procedures; these elements include instituting benchmarking programs and implementing communication networks.

From this perspective, the ERI should be used as a lens that ICs use to focus their respective organizations on the essential areas that lead to success, depending on level of experience.

The ERI comprises three structural elements that combine to form a matrix. (See Figure 9.) These three elements are as follows:

- **Levels of Experience** – Across the top, the matrix presents the levels of experience that an organization may have at implementing CII practices. There are four levels of experience: 1) New to CII, 2) First Implementation, 3) Repeat Implementation, and 4) Integrated Processes. These levels are then subdivided into Local/Regional and National/Global categories, which reflect unique concerns for these subdivisions at each level. **The implementation team's first step with the ERI is to determine the organization's level of experience.**
- **Index Elements** – Down the left-hand side, the matrix presents the index elements, which are the five areas of implementation focus that require a change in focus over time and as experience increases. These five elements are 1) IC Characteristics, 2) Resource Requirements, 3) Implementation Plan Focus, 4) Senior Leadership Requirements, and 5) Organizational Scope. **Once the appropriate level of expertise has been determined, the implementation team should focus on each of these five areas to determine the specific concerns for the implementation process.**
- **Index Specifics** – At the intersections of its horizontal and vertical dimensions, the matrix provides a field for each possible combination of the experience levels and index elements. Within these fields, the ERI offers index specifics. The index specifics are the individual concerns that must be addressed by the implementation team for each index element at the specified level of expertise. **The task of the implementation team is to understand and address each index specific during the development of any given implementation plan.**

Index Elements	Levels of Experience							
	New to CII		First Implementation		Repeat Implementation		Integrated Processes	
	Local/ Regional	National/ Global	Local/ Regional	National/ Global	Local/ Regional	National/ Global	Local/ Regional	National/ Global
Implementation Champion Characteristics	Project Link Organization Position Link to Senior Management	Project Link Organization Position Link to Senior Management Organizational Network	Project Link Organization Position Link to Senior Management Understanding of Practice	Project Link Understanding of Practice Organizational Network Link to Division or Regional Management	Project Link Personality Familiarity with CII Understanding of Practice	Project Link Active in CII Familiarity with CII Organizational Network	Project Link Personality Active in CII Organizational Network	Project Link Organization Position Active in CII Organizational Network
Resource Requests	Implementation Planning Personnel		Implementation Planning Personnel Project Access		Implementation Planning Personnel Budget Communications		Implementation Planning Budget Communications	
Implementation Plan Focus	N/A		Viability Timeframe Success Story	Viability Network Connection Success Story	Communications Future Integration Barriers	Communications Repeatability Support Network Connection	Communications Support Strategies	Communications Network Integration Strategies
Senior Leadership Requirements	Visible Support CII Engagement Allocate Hours		Resource Allocation Empowerment CII Engagement	Resource Allocation Communications Assistance Network Access	Resource Allocation Communications Assistance CII Engagement	Allocation of Hours Communications Assistance Visible Support	Communications Assistance Active in CII	Active in CII Allocation of Hours Visible Support
Organization Scope	Personnel Involvement Operational Objectives Needs Analysis		Single Group or Project Education Change Audit	Single Region Network Engagement Change Audit Benchmark Development	Limited Projects or Groups Visible Returns Community of Practice	Visible Returns Network Involvement Consideration of Complete Organization	Institutional Integration Measurable Benchmarks	Measurable Benchmarks Full Organization Awareness

Figure 9. The CII Experience Reference Index (ERI)

6

Conclusion

The BOA members and ICs surveyed in this research indicated that the implementation of new practices is dependent on a number of elements, ranging from the individual characteristics of the IC to the communication processes adopted by the organization undertaking the implementation. The survey addressed several issues, including the desired traits of an IC, the primary resources that the IC should control, the perceived barriers to implementation success, and the current primary focus of the respondents' implementation efforts.

The survey also examined several issues that are highly organization-specific, i.e., the number of ICs that an organization requires and the number of implementation efforts that it should undertake. It is essential for an organization to address these needs prior to undertaking a long-term implementation policy. Additionally, the responses suggested that communication is an area in which ICs require further assistance.

The survey data provided the basis for the development of the ERI, which is presented in detail in IR 246-3. This tool and the data it is based on together stand as a complement to IR 246-2, and should be used to refine any implementation effort that is being considered.

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Appendix A

Focus Point Definitions

Active in CII – Is the individual engaged on a CII research team or committee, or does he or she attend CII events regularly?

Allocate Hours – the ability to control time allocation for implementation personnel

Barriers – potential institutional barriers to implementation success

Benchmark Development – the development of metrics to determine implementation success

Budget – the monetary budget required for implementation

Change Audit – the process of undertaking an implementation change audit as defined in CII IR 246-2

CII Engagement – being involved with CII on research teams or committees to better understand the potential impact of practices

Communications – the communications process and elements required to publicize a practice within an organization

Communications Assistance – assistance by communications professionals in the organization to publicize implementation efforts

Community of Practice – a group of individuals with similar technical or managerial responsibilities

Consideration of Complete Organization – How will a practice be integrated into the larger organization?

Education – the education required by personnel affected by a new practice

Empowerment – having the authority to make changes required for implementation

Familiarity with CII – having knowledge of CII practices and a potential support network sufficient for answering questions from others in the organization regarding proposed practices

First Implementation – a CII member organization that is undertaking a first implementation effort

Formalized Processes – a CII member organization that has integrated practices into standard operating procedures

Full-organization Awareness – the communications required to make a practice visible across an organization

Future Integration – the ability of the new practice to be adopted by the organization; involves the consideration of existing practices and the similarities between the proposed practice and existing practices

Good Understanding – a CII member organization who has undertaken more than one implementation and understands the issues involved with implementation

Implementation Planning – the process required to integrate a new practice into an organization

Institutional Integration – How does a practice integrate into multiple divisions or operating regions?

Limited Projects or Groups – a limited scope of implementation focus, restricted to a single regional area or a small number of project teams

Link to Senior Management – a personal link, based on relationship with senior managers in charge of implementation; allows for accessibility to management and the ability to obtain support from management

Measurable Benchmarks – the metrics used to evaluate a new implementation

Needs Analysis – What are the needs of the organization in terms of a new practice?

Network Connection or Engagement – the opportunity to engage with individuals across the organization

New to Process – a CII member organization that has not as yet undertaken an implementation effort

Operational Objectives – the goals for the implementation effort

Organizational Network – the level of engagement with individuals across the organization

Organizational Position – the formal position of an individual within an organizational chart

Personality – the personality of the IC, specifically possessed of the ability to work with others to sell a proposed practice

Personnel – personnel required to generate an implementation plan

Personnel Involvement – getting the right personnel involved in the implementation process

Project Access – personal access to project personnel who are influential in implementing a practice

Project Link – a personal link to key personnel on a specific project

Repeatability – Can the current implementation effort be repeated by others at the same location or at other locations?

Resource Allocation – the ability to control general resources required for implementation

Single Group or Project – limiting the scope of implementation to a single group or project

Single Region – limiting the scope of implementation to a single region

Strategies – strategies that enhance implementation success

Success Story – a story that can be told of a successful implementation effort

Support – Does the implementation effort have tangible support by senior management?

Timeframe – the length of projected time for an implementation effort

Understanding of Practice – level of understanding of the proposed practice, including potential benefits, challenges to existing practices, and requirements for implementation

Viability – the likelihood that an implementation process will succeed

Visible Return – returns required to satisfy Return-on-Investment requirements

Visible Support – providing tangible support and authority to implement the change through corporate communication avenues

Appendix B

List of Implementation Focus Areas*

	BOA Response	IC Response	BOA/IC Responses
PDRI	7	2	9
Front End Planning	5	1	5
Safety	7	6	1
Constructability	4	2	3
Change Management	2	0	3
Many	3	4	2
Alignment	1	0	3
Lessons Learned	3	2	1
Planning for Start-up	2	0	1
Benchmarking	1	3	1
Materials Management	1	0	1
Modularization	2	0	0
Project Health Indicator	0	0	2
Risk Assessment	1	0	1
Lean Construction	1	3	0
Partnering	1	2	0
Productivity	1	0	0
Project Controls	1	0	0
Project Delivery	1	0	0
Team Building	1	3	0
Dispute Prevention	0	2	0
International Risk Assessment	0	2	0
FEED	0	1	0
Procurement	0	1	0
Organizational Work Structure	0	1	0

* These responses were from the BOA members and ICs from organizations experienced at implementation (i.e., having engaged in one or more implementation effort).

Appendix C

Study Data

IC Data

1. What level of CII member would you consider your organization to be in terms of implementation of CII research findings?

New to the Process	17 responses
First Implementations Started	3 responses
First Implementations Completed	1 response
Good Understanding of Implementation Process	20 responses
Implementation Process Formalized in Organization Process	8 responses

2. Has your organization undertaken any implementations of CII Practices?

Yes	32 responses
No	17 responses

3. If yes, which practices have you completed the implementation process for?

PDRI	11 responses
Front End Planning	6 responses
Safety	7 responses
Constructability	5 responses
Change Management	3 responses
Many	6 responses
Alignment	3 responses
Lessons Learned	3 responses
Planning for Start-up	1 response
Benchmarking	4 responses
Materials Management	1 response
Modularization	0 responses
Project Health Indicator	2 responses
Risk Assessment	1 response
Lean Construction	3 responses
Partnering	2 responses
Productivity	0 responses
Project Controls	0 responses
Project Delivery	0 responses
Team Building	3 responses
Dispute Prevention	2 responses
International Risk Assessment	2 responses
FEED	1 response
Procurement	1 response

4. If yes, are there practices that are still in the implementation phase?

   Varied responses to this question, but the essence is that a variety of practices are being explored by member organizations.

5. If yes, have you attempted to implement more than one new practice concurrently?

Yes	15 responses
No	6 responses

6. Given your organization's experience with implementation, what resources are important for an IC to control?

budget	18 responses
personnel	17 responses
implementation planning	25 responses
project selection	12 responses
communications assistance	15 responses
allocated IC work hours	9 responses

7. Do you currently distribute CII communications such as the newsletter to staff or management?

Yes	29 responses
No	20 responses

8. Do management and staff members working on implementation processes meet to align objectives for the implementation?

Yes	31 responses
No	18 responses

9. If yes, how frequently do the meetings occur?

monthly	12 responses
weekly	2 responses
bi-weekly	2 responses
semi-annually	2 responses
quarterly	4 responses
annually	1 response

10. If you have adopted CII practices, does your organization modify the CII practices to meet the needs of your organization?

Yes	41 responses
No	8 responses

11. Are you required to have an implementation plan before starting the implementation process?

Yes	28 responses
No	21 responses

12. Are you aware of *The Implementation Planning Model: Steps to Success*, IR 246-2 published by CII to guide successful implementation efforts?

Yes	37 responses
No	12 responses

13. Are you aware of the Implementation Planning Assistant available online through CII?

Yes	38 responses
No	11 responses

14. What have you found to be the primary barriers to successfully implementing a new practice in your organization? (Rank 1-7 with 1 being biggest barrier.) Total Points: 7 points for largest barrier, 1 point for smallest barrier

Budget availability	160 responses
Familiarity with potential practices	205 responses
Management support for new practices	164 responses
"Not Invented Here" perspective	190 responses
Personnel availability	258 responses
Risk concerns	114 responses
Time available to staff to pursue new practices	281 responses

Board of Advisors Data

1. What level of CII member would you consider your organization to be in terms of implementation of CII research findings?

New to the Process	10 responses
First Implementations Started	1 response
First Implementations Completed	8 responses
Good Understanding of Implementation Process	25 responses
Implementation Process Formalized in Organization Process	3 responses

2. Has your organization undertaken any implementations of CII Practices?

Yes	34 responses
No	13 responses

3. If yes, which practices have you completed the implementation process for?

PDRI	16 responses
Front End Planning	10 responses
Safety	8 responses
Constructability	7 responses
Change Management	5 responses
Many	5 responses
Alignment	4 responses
Lessons Learned	4 responses
Planning for Start-up	3 responses
Benchmarking	2 responses
Materials Management	2 responses
Modularization	2 responses
Project Health Indicator	2 responses
Risk Assessment	2 responses
Lean Construction	1 response
Partnering	1 response
Productivity	1 response
Project Controls	1 response
Project Delivery	1 response
Team Building	1 response
Dispute Prevention	0 responses
International Risk Assessment	0 responses
FEED	0 responses
Procurement	0 responses

4. If yes, are there practices that are still in the implementation phase?

   Varied responses to this question, but the essence is that a variety of practices are being explored by member organizations.

5. If yes, have you attempted to implement more than one new practice concurrently?

Yes	11 responses
No	8 responses

6. What do you think are the key characteristics of a successful IC? (Select 5) (Number of responses for each item is indicated.)

Understanding of Proposed Practice	36 responses
Familiarity with CII	28 responses
Established Organization Network	31 responses
Personal Link to Projects	29 responses
Position in the Organization	22 responses
Personally Active in CII	21 responses
Personality Characteristics	24 responses
Personal Link to Senior Management	21 responses
Length of Employment	9 responses
Control of Monetary Resources	4 responses

7. How are you currently communicating with professional staff regarding your organization's participation with CII? (Number of responses for each item is indicated.)

E-mail Distribution	21 responses
Group/Staff Meetings	16 responses
Company Intranet	11 responses
Informal Conversations	9 responses
Reports to Senior Management	8 responses
Company Annual/Quarterly Meeting	8 responses
Corporate Newsletters	5 responses
Training Sessions	5 responses
Procedure Redefinitions	5 responses
Internal Community of Practice	3 responses
Phone/Teleconference Conversations	3 responses
Circulation of CII Publications	3 responses

8. Do staff members other than the IC or Board of Advisors (BOA) representative or alternate have opportunities to attend CII events?

Yes	44 responses
No	2 responses

9. If yes, how are these individuals selected? (Open responses are listed here.)
   - Based on their ability and time to transfer the lessons to the rest of the organization
   - Interest, position
   - Used as a development opportunity for the individuals on an informal rotational basis.
   - By me (BOA member) depending on their level of interest and availability and potential to contribute and develop themselves
   - Members of study groups

- Typically, member of other committees or RTs.
- The Alternate Board member will attend and if committee or research teams meet we will have them attend.
- Member company has an internal CII network with representatives for several parts of the company
- Relevance to customers or practices
- Personal interest or involvement in CII practice implementation
- Individual business case
- Value they may get from either subject matter, or from the network experience
- By their involvement with project work.
- By management
- They are leaders in implementation best practices
- Position, applicability to role and responsibility
- Event type and role within CII
- Self-nomination, with approval by their local management and CII BOA member
- Based on role, business needs, personal growth opportunities and recognition
- Random selection
- There is no formal process – some managers recommend individuals attend, sometimes employees request to attend, other times BOA requests participants.
- By senior management
- Based on topics of CII Annual Conference or workshop
- Discussion with myself (BOA), our Managing Director, and select members of the SMT
- Committee or Community of Practice involvement
- Active on Research teams/attendance at Annual Conference
- Asking for volunteers, matching their skills and interests with the event.
- Invitation sent to all interested in CII. They must then get approval from their chain of command to attend.

- Demonstrated performance and potential
- Announcements of specific workshops or training events; BOA invitations to Annual Conference
- Interest, part of development plans
- Management discretion
- High performing and high potential individual – as reward or as development
- Discussions with BOA members and department heads
- Future leaders, positions of influence for implementation, development opportunity
- Support to CII initiative and Needs for BP
- By the Business Groups (and their leaders seeing value in it and willing to commit dollars)
- Interest level and role in the organization
- By panel of BOA member & BOA alternates
- Subject Matter Experts

10. Are specific implementation objectives documented for the IC or the implementation team to measure progress against?

Yes	10 responses
No	36 responses

11. Does your organization require a ROI case for a proposed new implementation?

Yes	6 responses
No	40 responses

12. If yes, what is the timeframe where an ROI must be demonstrated? (Open responses are listed here)
    - 5 years
    - It depends on size of change.
    - 12-18 months
    - Not defined.

13. If yes, is there a return ratio that is required before an OK is given to pursue the implementation? (Open responses are listed here.)
    - Yes
    - No
    - Need to meet hurdle rate—most exceed hurdle rate—we prioritize based on efficiency frontier
    - Not defined.

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