An evaluation of transit procurement training

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ARTICLE INFO

ABSTRACT

We evaluated a training course called "Orientation to Transit Procurement", designed and conducted by the National Transit Institute. This course is designed to provide Federal Transit Administration (FTA) grantees an overview of regulations and best practices related to the procurement process. Our objective in conducting the evaluation was to understand how transit agency staff made changes in procurement practices in response to the course training. The evaluation was mixed mode: an Internet survey followed by in-depth interviews with a small group of respondents. Survey respondents were also provided with an open-ended question providing us with additional context for our evaluation. Results show that the training is substantially successful at meeting the goal of improving procurement practices at transit agencies; indeed, most respondents report making changes at their agencies as the proximate result of the training. This was at odds with our exploration of knowledge of procurement topics, as most respondents gave inaccurate answers on multiple-choice "knowledge questions". This may have been due to question structure or, more likely, the nature of online surveys. Suitable training on the procurement of information technology was also a main concern. The lack of training in this area is indicative of the broader challenge facing public transit agencies in how to incorporate new forms of technology into their existing practices and bureaucratic structures.

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1. Introduction

The National Transit Institute (NTI) was established at Rutgers, The State University of New Jersey, in 1991 and has been delivering workforce-training courses to the transit industry for over 20 years. At the end of each course, NTI conducts evaluations using an in-class paper survey; this measures the immediate reaction of participants in the course and is essentially a measure of 'customer satisfaction' (Kirkpatrick, 1998). However, these course-contemporaneous surveys cannot measure longer-term changes and outcomes that arise as a result of the participants taking a course. To that end, the approach presented here delves deeper to program-evaluate actual changes to practices that are made

subsequent to course participation, and, in so doing, adds to the broader transit-training and program evaluation literature.

Procurement procedures required by the Federal Transit Administration (FTA) are one of the critical elements of federal oversight of the many transit agencies throughout the country. The aim of these regulations is to maintain adequate competition among bidders and to provide a framework for the best selection of goods and services acquired by transit agencies. FTA performs triennial reviews of each transit agency's performance, which includes an analysis of procurement procedures and compliance with regulatory requirements (US Department of Transportation (USDOT), 2014). These reviews frequently find that some transit agencies have difficulties complying with procurement rules; the procurement course offered by NTI, then, is seen as vital to the mission of FTA to improve regulatory compliance.

Our evaluation largely follows the framework outlined by Kirkpatrick (1998), who specified four levels of training: reaction,

learning, behavior, and results.[1] The first step, reaction, measures customer satisfaction with the training; to capture this initial component, we included questions in our survey aimed at assessing satisfaction with the course and the instructors. Learning involves the ability of course participants to improve their knowledge, change attitudes, and increase their skill set. These are seen as precursors to the third step, behavior, which assesses whether the training course led to actual changes in work practices. A successful outcome of this sequence is partly contingent on a supportive work environment that allows changes to occur (Holton, Chen, & Naquin, 2003). The final step encompasses results; for a transit agency this would be improved or continuing compliance with FTA regulations. This fourth step was not directly assessed in our evaluation.

Alliger and Janak (1989) critiqued some of the assumptions of Kirkpatrick's framework by asking, in particular, whether the four "steps" (or "levels" as they prefer) are causally linked, i.e., does a "good reaction" necessarily imply learning? Is learning necessary for behavior change? And are results always dependent on behavior change? While Alliger and Janak (1989) do not propose an alternative model, their caution is warranted and well-taken. For example, it is well known that "satisfied" students, by which we mean those giving good reactions, often learn the least (Rodin & Rodin, 1972); in contrast, Kirkpatrick (2006) notes that good reactions (i.e., satisfied customers) are required for organizations to continue to engage in training. We discuss some of the disparity between results on our knowledge-based questions and actual behavioral change. Another criticism is that research designs are often not complete (Aguinis & Kraiger, 2009); one argument is that control samples are needed. In program evaluation practice, however, this is often not feasible and was not in our case. Rather, we used a mixed mode research design, complementing the quantitative survey with qualitative in-depth interviews to add context and sufficient detail to better understand the benefits course participants gained from their training.

Holton et al. (2003) have examined factors associated with what he defines as "transfer"; i.e., how training knowledge is transferred into practice within organizations. They conclude that each organization is unique and it is probably not possible to make generalizations based on common organizational attributes. Other work suggests that support from supervisors and a good work environment are key conditions that make transfer possible and lead to successful training (Aguinis & Kraiger, 2009). Our evaluation includes questions that probe the ability to apply skills learned in the training course.

Our evaluation of the procurement course focused on how transit agency staff achieve change at their agencies. While most transit agencies comply with procurement regulations they need to make sure new staff are properly trained and that existing staff are retrained as regulations change. With that in mind, and following Kirkpatrick (1998), our evaluation focused on four elements:

- overall satisfaction with the course (reaction);
- course knowledge retention (learning);
- changes in agency practices as a result of the course (behavior); and
- participant suggestions for improving the course including identification of any deficiencies.

We did not evaluate long-term results, largely due to time constraints; Kirkpatrick (2006) makes the point that longitudinal evaluation requires frequent follow up and monitoring and, as such, is generally resource-intensive. Moreover, as noted above, FTA monitors agencies via their triennial review of performance.[2]

2. Methodology

An online survey and follow-up interviews with participants in the NTI "Orientation to Transit Procurement" course were administered to transit agency employees who took the course between December 2011 and June 2014; NTI provided contact details for all participants during this time period which covered 25 offerings of the course. In consultation with NTI staff a questionnaire was developed and implemented as an on-line survey instrument. Some questions were included from another survey developed for procurement training, although not specific to transit (Canada School of Public Service, 2010).

Our survey focused on the following topics: respondent's current and past employment experience in the transit industry; satisfaction with the course and instructors; changes made at their agency as a result of the course; and knowledge retention and basic background information about the respondents. Several survey questions were open-ended, including a final question at the end of the instrument, which provided an opportunity for "any other comments".[3]

Nearly 50 percent of those who attended the NTI procurement course in the past five years responded to the survey, and of those, nearly 90 percent completed the survey. Out of the original list of 627 participants, 230 completed the survey, 38 provided partial responses and 23 were determined ineligible due either to their failure to follow through on their registration and attend the course, or to the fact that they are no longer employed by a transit agency. The response rate was higher among participants who took the course more recently (i.e., over 50 percent among those who took the course in 2013 or 2014 compared with only 33 percent for those who took the course in 2011 or 2012). This higher response rate for more recent attendees is likely the product of two practical factors: more accurate contact information, and a nearer-in-time cognitive association with the course experience.

Just over half, 56 percent, of respondents were female. The median age for respondents was 46 years old, although there was a large variation (22 to 78 years old). Some 72 percent of the respondents identified as Non-Hispanic white, 18 percent as Non-Hispanic black, 10 percent as Non-Hispanic Asian and 9 percent Hispanic, and most respondents report having a college or graduate degree (74 percent).

Respondents had a wide range of experience working in the transit industry and, more particularly, in procurement at the time of the survey. The median years working in transit, and in procurement was, for both, six years. Of course, some participants were very new to the industry, and for them the course provides an introduction; others, however, have many years of experience working in transit and procurement; for them, the course served to update their frame of reference for procurement best practices. At the extreme, one participant reported having 37 years of experience working in the transit industry while another had 34 years of experience working in procurement.

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[1] The research underlying the concepts in Kirkpatrick's 1998 book are Kirkpatrick (1959a, 1959b, 1960a, 1960b). As noted in a review article by Aguinis and Kraiger (2009), Kirkpatrick's method, even 50 years later, remains the most widely used in practice.

[2] As part of our evaluation we obtained a list of "problem" agencies from the FTA. However, these agencies did not necessarily match the course participants who responded to our evaluation survey.

[3] The wording of that final question was: "Please provide any additional comments you would like about the "Orientation to Transit Procurement" course you took in (month/year)."

Following the survey, a series of 10 in-depth telephone interviews were conducted to gather thicker detailed information from survey respondents about the course, with a qualitative focus on changes they made at their agency as a result of the course. These were conducted in September and October of 2014, and lasted between 15 and 45 min each. We used a standard qualitative structured in-depth interview approach in order to obtain contextual information from selected respondents (Roller & Lavrakas, 2015). This included an interview script from which the interviewer could, as appropriate, extend and explore additional information provided by the interviewee. We found that after 10 interviews, we were not learning any new information, a circumstance known in the qualitative research literature as saturation; this is the point at which only minimal, if any, benefit would derive from further interviews.

3. Findings

3.1. Satisfaction with the course

Overall, survey respondents were very satisfied, found the course very useful, and provided universal praise for NTI and the instructors. Respondents indicated their satisfaction in both their responses to multiple-choice and open-ended questions about their course experience in general, as well as with the instructors, in particular.

While 86 percent of respondents reported "strong agreement" or "agreement" with the statement "I learned a great deal in the course," only 5 of the 257 respondents "disagreed" or "strongly disagreed" that they learned a great deal in the course (Table 1).

Similarly, when asked how they would rate the overall quality of the course, 94 percent of respondents to the survey reported "very good" or "good." As shown in Table 2, only 6 percent (15 respondents) felt that the quality of the course was "fair" or "poor."

The in-depth interviews provided a basis on which to contextualize these findings; from the interviews, we learned that the course components participants found most satisfying were practice-based discussions, i.e., informal talks with other student-practitioners about common issues, as well as engaging in more formal "in-class" dialogue on the in-the-field experiences of the instructors. One participant noted that the particular benefit of the course is that it is specific to transit, while other procurement trainings were considered too broad and apply only to "public purchasing." The NTI procurement course, however, is specifically designed to FTA requirements. Others praised the classroom dynamic and discussions where one could hear from other participants and instructors about their experiences doing "real world" procurement (Table 2).

An overwhelming majority, over nine out of ten survey respondents, also "agreed" or "strongly agreed" that the "course materials are useful." In addition, 88 percent, rated the "teaching effectiveness of the instructor" as "very good" or "good." Only 6 of 256 responding to that question—less than 2 percent—gave negative feedback about the instructors.

Table 2
"How would you rate the overall quality of the 'Orientation to Transit Procurement' course?"

	Freq.	Percent
Very Good	126	49.0
Good	116	45.1
Fair	14	5.5
Poor	1	0.4

Overall, interviewees reported that the instructors were very knowledgeable and helpful; in particular, participants appreciated their ability to relate their real life experiences to procurement processes. While respondents praised the course instructors, they also offered several suggestions for improving course instruction, and, given the focus on training improvement, therein lies the true value of the program evaluation.

One criticism of the instruction was that the instructors seemed to focus more on larger agency experiences; this is likely because the instructors had worked for larger agencies. Consequently, the experiences of smaller agencies received less attention than those participants would have liked. As one of the commenters put it, "since both instructors were from very large [transit] properties they were not able to relate to some of the issues that small urban transits must deal with." To this point, an interviewee suggested that NTI might want to consider including instructors from smaller agencies, in addition to those from larger agencies. While there may be practical as well as cost-benefit considerations with this suggestion, it is an issue to be considered at the program-production policy-making level.

3.2. Retention of course material

An important element of evaluating any training program is to assess learning effectiveness through content retention. To this end, four multiple-choice questions focused on specific topics covered during the course were aimed at measuring knowledge retention. It was expected that those working in this area should not have difficulty answering these questions. It was also anticipated that they would have resources at hand, such as the course manual, and would simply look up answers to questions with which they had difficulty.

Not surprisingly, it seems that since they were not cautioned that the questionnaire is not a test, respondents had significant difficultly correctly answering the knowledge questions. Curiously, it appears that they self-constrained to "testing" dynamics: In other words, they seemed to think the survey was a "closed-book" exam. As a result, only 6 (2.5 percent) out of 236 respondents answered all four questions correctly. And only 14 percent (33 respondents) answered three of the questions correctly (Table 3).

The actual questions asked are shown in Table 4, along with the percent selecting each answer value, with the correct answer in bold. The majority answered questions 2 and 3 correctly, but the

Table 1
"I learned a great deal in the course."

	Freq.	Percent
Strongly Agree	98	38.1
Agree	123	47.9
Neither Agree nor Disagree	31	12.1
Disagree	4	1.6
Strongly Disagree	1	0.4

Table 3
Percent of knowledge questions answered correctly.

	Freq.	Percent
0%	45	19.1
25%	79	33.5
50%	73	30.9
75%	33	14.
100%	6	2.5

Table 4
Knowledge questions.

Correct answer is in bold, percent selecting each is in parentheses

1. Consider a procurement action involving federal funds. When would a cost analysis not be required in connection with the action?

A. When the procurement method being used is an invitation for bids rather than a request for proposals and there is adequate competition. (20.4%)

B. When the procurement action is sole source (5.1%)

C. When the purchase is a micro purchase and you have multiple sources. (30.6%)

D. The procurement action merely modifies a preexisting contract (3.2%)

E. A cost analysis must be included in connection with each of the above actions. (40.7%)

2. Suppose you are conducting procurement for new equipment using federal funds. When would cost not generally be a determining factor in your decision making?

A. When the dollar amount of a purchase is below both state and federal thresholds for micropurchases (22.7%)

B. When the procurement method is an invitation for bids (6.5%)

C. When the procurement method is a request for proposals (55.6%)

D. When a price analysis is conducted rather than a cost analysis (13.9%)

E. Cost is not a determining factor for any procurement action (1.4%)

3. Transit agencies that purchase equipment and services using grants from the Federal Transit Administration must operate in accordance with certain rules. Which of the below is one such rule?

A. Personnel performing procurement for equipment or services must not be involved in the requisition process (4.2%)

B. An independent cost estimate is required in connection with every procurement (62.2%)

C. Every procurement action, regardless of dollar amounts involved, must have a system for project management oversight (10.3%)

D. A price analysis is required in connection with every procurement (17.8%)

E. All procurements must use sealed competitive bids to ensure fairness (5.6%)

4. Imagine that you are using FTA funds to procure several new buses. Which of the below clauses would FTA require you to include in your proposal document and contract?

A. Laborer and mechanics must receive prevailing wages, in accordance with the Davis-Bacon Act (6.4%)

B. Any materials transported by ocean-going vessels must be shipped aboard a U.S.-based carrier (23.3%)

C. The proposer must submit a DBE goal to you for your approval (5.9%)

D. Both (B) and (C), above (29.5%)

E. All of the above (37.9%)

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expectation was that a far larger percentage would correctly answer all the questions. We examined whether procurement experience or those taking the course more recently answered the questions correctly, but found no statistically significant differences. It is possible that these questions may have been too challenging for respondents to answer when they did not expect them; moreover, the wording of the questionnaire did not suggest that they consult their resources when answering and they may have felt that to do so was in some way "cheating." To address this inclination, directions strongly encouraging respondents to consult their course materials will be included in future course evaluations in such a way as to more authentically replicate the work experience.

The knowledge questions were particularly challenging for respondents. The first, most likely, explanation is the sheer complexity of procurement regulations, exacerbated by the respondent's reluctance to check reference materials. Another possible explanation is the difficulty of looking up specific answers since the reference materials are not indexed. As noted above, future program evaluation surveys will contain directions to "authorize" respondents to look up the answers in the course materials, and emphasize that the questionnaire is not a surreptitious "closed-book exam." But, an actionable insight supported by our interviews with select respondents, as noted in the next section, is that an index would be helpful.

3.3. Applicability of course skills and knowledge

Two of the objectives of this evaluation were to determine (1) if and how transit professionals are able to use the skills learned in the course, and (2) whether, following the course, they made any needed changes in their own agency's procurement procedures.

Respondents overwhelmingly reported that when they returned to their agency they used the skills and knowledge they learned in the course. Ninety percent of respondents (n = 210) indicated affirmatively while only 10 percent (24 respondents) said that on return to their agency after the course, they did not use those skills and knowledge. Further, 76 percent of participants

have been "very" or "somewhat" frequently able to apply the knowledge and or skills they learned in the course to their work. Among those who do not use their skills, the primary reported reasons were that they changed position, or felt the knowledge did not apply to their job. Only a non-zero but trivial count of respondents (3) reported not learning new skills or knowledge.

Those who did apply their new knowledge on the job provided us with insightful detail into the nature of those improvements. For example, one respondent reported they gained a "better understanding of the 'Buy America' process . . . [by applying] the principle to a potential document production purchase." Another provided a more detailed example:

> "I served on the committee that reviewed and recommended a firm to provide bus service for a 3–5 year service contract. At the first meeting, the RFP [request for proposals] had already been released. I asked if an independent cost analysis had been performed and it had not. The RFP was cancelled and reissued after an ICE [independent cost estimate] was performed. Additionally, much of the information was related to best practices and federal standards and requirements. I have been able to draw on this knowledge for non-FTA services we procure."

Respondents described how the course helped to improve their supervision of staff: several developed or amended their agency policies and procedures, while others improved their understanding of rules and regulations. One respondent's report moves directly from the learned realization that her agency had been using an incorrect process to how she returned to her agency "armed with knowledge" to "fix it":

> "First, I learned what we have been doing WRONG, then went back to work and attempted to fix it. Created a few forms for users to utilize in our procurement process, gained some valuable connections to other procurement folks in other agencies and a basic knowledge of the whole process. I now know enough to speak and explain how the process works to other employees in my agency that don't understand it, AND don't understand why THEY need to write a good scope, and

WHY the process takes as long as it does. I went back to work armed with knowledge!" [Capitalization as in original].

Respondents also reported that the course materials are useful, and that most refer to those materials on a regular basis. One interviewee described using the course materials on a daily basis, keeping them on his shelf at arm's length. Another said that she "refers back to the binder (course material) all the time." Interviewees described the materials as a great resource and noted that the multiple examples at the end of each section are particularly helpful.

However, interviewees also reported some frustration from the absence of an index to the course materials, as well as a lack of a "search content" mechanism, which made it difficult to locate specific topics. One described the course material as having "great potential," but was exasperated by the fact that she could not easily find what she needed in the books. That interviewee noted "I know it is in there but I don't know where to find it." These interviewees suggested that NTI add a detailed index and provide a digital version of the course materials so they could easily search for desired content.

As noted previously, respondents did not perform well on the knowledge retentions questions. One of the improvements in the program evaluation is to advise the questionnaire respondents that, particularly, the knowledge question are not "gotcha" probes, but rather should be treated as if they arose in the *in-vivo* execution of their job responsibilities, where they would consult those materials.

3.4. Changes in procurement procedures

Respondents were also asked whether, subsequent to taking the NTI course, any changes to procurement procedures and practices had been made at their agency or firm. Just about half of the respondents, 110 out of 229, who responded to this question, indicated that they made at least some changes. Among those who made changes, the four most common alterations were to procurement procedures (80 respondents), use of standardized forms (76 respondents), modifications to existing procurement manuals (58 respondents) and development of procedures to determine the proper contract type (44 respondents). These are summarized in Table 5.

The primary reason reported for not making any changes was, quite plainly, that none were needed (see Table 6). Most who selected "Other" also indicated that they did not need to make changes since existing practices were already in place and adequate. It is likely that respondents may have reported that changes were not needed because other procurement officers at their agency had previously taken the NTI course.

Table 6
"Why were no changes implemented at your agency or firm?"

	Freq.	Percent
No changes needed	60	53.6
It wasn't practical	3	2.7
Actively discouraged	2	1.8
Time constraints	6	5.4
Tried to implement	5	4.5
Other	36	32.1

Interviewees described a wide variety of changes they made to their agencies' procurement processes following the course. While those changes were largely idiosyncratic to the needs and practices at each agency, almost all the interviewees outlined multiple changes. Examples of respondent-reported post-course procurement process changes include:

- updating their protest procedures to ensure that they are up to date, clear and that they are included in their bid documents;
- changing how their agency obtains independent cost estimates;
- modifying the language of "evaluating options at the time of a contract award"; and,
- adding a section about options to the cost evaluation portion of their memo on the topic.

Finally, one interviewee created a library of resource materials based on materials she already gathered and materials from the class (e.g. sample requests for proposals). Another interviewee described how she incorporated aspects of the course into an annual internal procurement training program she runs at her agency. She described incorporating the "common pitfalls" described in the class.

Not all the interviewees made changes. One interviewee made very few changes after the course because, as noted above, the interviewee's supervisor had previously taken the course and already implemented many course-driven changes. As a result, many of the standard practices had already been put in place and few changes to the procurement processes were necessary following the interviewees' return to work. Only two respondents were actively discouraged from making changes; while we have no detailed information on this, the fact that less than 2% of our sample reported being discouraged from making changes, suggests that a substantial proportion of agencies have a supportive work environment that encourages the application of training knowledge (Holton et al., 2003). Of those that did not make changes, 32% marked "other". Substantive responses to this open-ended question indicated that changes actually had been made at their

Table 5
"As a result of the procurement course did you make any of the following changes at your transit agency?"

Change made to procurement processes	Percent
Changed procurement procedures	80
Standardized procurement forms to be used on future procurements	76
Modified an existing procurement manual	58
Developed procedures to determine proper contract types	44
Modified written procedures for selection of vendors	39
Modified written procedures to protest the selection of a vendor	22
Implemented an annual planning review of procurement practices	20
Increased procurement resources (e.g. increased staff or office equipment)	18
Reorganized structure of procurement teams	17
Produced a procurement manual	15
Produced written procedures for selection of vendors	14
Produced written procedures to protest the selection of a vendor	11
Other (please specify)	9

agency (or were in the process of being made), or that the person answering the survey did not have the authority to make changes. This suggests future surveys should perhaps rephrase this question to query whether the agency, not the person, is making the changes.

Overall, a strong majority of those taking the course implemented changes at their agencies, which suggests the training is having the desired positive effect. The changes either brought the agency into better (or full) compliance with FTA regulations or improved the efficiency of their procurement process. Moreover, this success is multiplied by the fact that other employees who received training may have already put necessary changes into place.

3.5. Suggested course improvements

Interviewees suggested several topics which could be included in future courses. Most notably, participants virtually all agreed that the current NTI course provided insufficient training for information technology (IT) procurement issues. Interviewees reported that IT procurement issues are particularly vexing and so more instructional content on this topic would be helpful. One interviewee reported that software licensing is the number one issue she faces and yet both the FTA and the course instructors came up short in addressing issues that procurement officers face when dealing with software vendors. Another commented that IT procurement issues are particularly important because of the high costs of contracts and the challenge of negotiating with software vendors, who have far greater knowledge about their services and products than many procurement officers. In the absence of training, interviewees described how they have had to "learn as we go along." This concern is underscored by one participant that reported, "If you do not deal with it every day, IT issues are difficult."

3.6. Enabling professional networks

Almost all of the in-depth interviewees reported that as a result of taking the course they developed an informal professional network of transit procurement professionals. Interviewees used the contact information provided by NTI for the course attendees to ask their peers about how they dealt with new or challenging issues. Typically, interviewees described this informal networking as occurring every month or so, in that someone from the course will correspond about specific procurement issues they are facing.

One interviewee described how, following the course, she emailed with other students to swap some materials and checklists based on what others were doing. This networking aspect was something that she found particularly helpful when dealing with new issues in her work to see how others, similarly situated, are dealing with the same issues or concerns. In one example, she described an "in-house checklist of their files" so that when reviewers come they can look at their files "in order of how we have it, by the tabs." The interviewee passed that around to others in the course. While these networks have developed spontaneously, NTI may want to provide resources to help support and sustain these positive, helpful networks.

4. Conclusions

Our evaluation sought to examine four key aspects of NTI's "Orientation to Transit Procurement" course. These were overall satisfaction with the course, knowledge retention, changes in agency practices, and participant suggestions for improvements.

Transit professionals who take the course overwhelmingly report satisfaction with the course and with the instructors. The

course provides a useful introduction to the work they do and they use the skills they learned when they return to their offices.

Knowledge retention (or learning) results were, on the face of it, disappointing. However, we are confident this finding is an artifact of the program evaluation methodology; perhaps our choices of questions were too difficult to answer in a survey context, or respondents treated the questionnaire, as suggested above, as a "closed-book exam". Despite this, respondents seemed familiar with the basic concepts of the course as they were making necessary changes at their agencies. We recommend that when conducting a program evaluation of a training course, evaluators include instructions for any knowledge questions authorizing, if not encouraging, respondents to treat the questions as if they were arising in a real-world circumstance, and encourage the respondent to take the time to consult with the training materials or other sources.

To some extent, these results support Alliger and Janak's (1989) contention that Kirkpatrick's levels are not causal. While we did find high customer satisfaction, this did not necessarily translate to evidence of learning. However, the behavioral changes we found seem to directly contradict the assertion of no causal link between course satisfaction and course-earned value. In other words, while our knowledge questions suggested ineffective learning, almost half of the survey respondents reported that they made changes to their agency's procurement processes after attending the course.

Indeed, we found ample detail of these changes. Some interviewees stated that they corrected processes that were in violation of FTA guidelines, while others streamlined their processes to improve efficiency. When no post-course changes were made it seems most likely that was because the agency already had sufficient and compliant processes in place. FTA seeks to improve compliance with their regulations, and the procurement training clearly contributes to this goal. Moreover, we found marginal-to-no evidence that unsupportive work environments hinder implementation of the knowledge brought back to the agencies at which our respondents worked.

Through this evaluation, several areas were identified where improvements could be made. First, the lack of instruction on issues of IT procurement was a noticeable omission. This is an issue that interviewees said they face frequently and yet these issues are not addressed in the course. FTA regulations do not appear to be easily adaptable to the specifics of IT procurement and this may be an issue that FTA needs to study and clarify. Of course, transit agency procurement staff are not alone in their struggle to incorporate new technologies into practice. Transit agencies, and other large public agencies, all struggle to adapt to the changing landscape of mobile devices and ever increasing Internet connections.

Second, course materials need to be easier to use as these serve as reference materials. Survey respondents and in-depth interviewees expressed frustration with the course materials. While they kept this material at their desk, they struggled to find what they were looking for because the materials lack an index and, most vitally, are not digitally searchable. Developing an extensive index or enabling electronic access would be desirable. These changes would also apply more broadly to any procurement materials not just those associated with the training. While it is NTI policy not to distribute materials electronically, as then many agencies may opt not to send staff to courses, there are ways to constrain electronic access to legitimate subscribers.

Third, NTI should work to make sure that the course is effective for both small and large transit agencies. Respondents to the survey and interviews suggested that the instructors' experience working for large transit agencies made it difficult for them to understand the challenges that smaller agencies face.

Finally, the processes and methods developed for this evaluation were largely successful and can be easily replicated for the

evaluation of other, particularly transit-focused, courses. We largely followed the recommendations of Kirkpatrick (1998) in designing the evaluation. In most cases, evaluations are focused on the instruction and communication of information. However, it is most useful to determine if the training actually changed behavior and lead to improvements in agency practices, here in the form of improvements designed to better comply with FTA procurement regulations. Future evaluations might benefit from exploring how, and what the role of the course participant is, in bringing about changes at the agency. While there is benefit to doing evaluations shortly after course completion, changes to agency practice may require that evaluations occur after changes can be made. This may be anywhere from three to six months after course completion; however, noting that our response rate was lower when the respondent had taken the course more than 18 months previously, our results suggest that program evaluation of transit-training courses should be conducted within that time frame.

Acknowledgement

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