TRAINING AND DEVELOPMENT RESEARCH CENTER

PROJECT NUMBER SIX

VALIDATION OF THE TRAINING BENEFIT FORECASTING METHOD: RECREATIONAL VEHICLE SERVICE TRAINING

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Project Number Six
Validation of the Training Benefit Forecasting Method:
Recreational Vehicle Service Training

The following is a summary of the cost-benefit issues associated with the Onan Service School change from an Onan field-based Recreational Vehicle (RV) Generator Set training program, to a customer delivered self-instructional training program.

The boundaries of the analysis were established as follows:

1. **Trainee Population**
   For analysis purpose, the population receiving training was determined to be 300.
   
   A. This was established using the number of U-haul dealer units that were interested in this training program as a start-up requirement for a new RV maintenance dimension of their organization. The assumption is that a minimum of one individual from each U-haul dealer unit would receive the training.

2. **Field-Based Training Time and Trainee Complement**
   This was established at the service school's planned training program length of 12 hours. The number of trainees per session was set at 16.

3. **Costs**
   Onan costs associated with the customer delivered field-based training were determined by an audit of the operating accounts and personnel work effort schedules of the service school.

4. **Forecasts**
   The forecast activities related to the cost-benefit issues associated with field-based and customer delivered training were carried out by TDRC personnel prior to and independent of any knowledge of actual outcomes of the audits and follow-up analysis.

Data and Analysis of Actual Costs and Outlays

**Onan Field-Based Training**

1. Number of training sessions required to train 300 trainees
   
   **Calculation:** \( \frac{\text{Total # of trainees}}{\text{# trainees per session}} = \frac{300}{16} = 18.75 \) rounded up to 19

2. Number of total training hours required to train 300 trainees
   
   **Calculation:** \( \text{[# sessions]} \times \text{[# hours per session]} = 19 \times 12 = 228 \) hours

3. Cost for preparation and on-site delivery of 19 sessions (228 hours of training)
   
   **Calculation:** \( \text{[# sessions]} \times \text{[cost per session (see Attachment 1)]} = 19 \times \$2,499 = \$47,481 \)
Customer Delivered Training

1. Number of training sessions required to train 300 trainees

   Calculation: \[\text{[Total # of trainees]} \times 1^* = 300 \times 1 = 300\]

   *The number of books (5) interacted with in any combination of time increments, but the completion of all 5 texts is considered the completion of 1 session.

2. Number of training hours required to train 300 trainees

   Calculation: \[\text{[# sessions]} \times \text{[# hours per session*]} = 300 \times 3.75 = 1,125 \text{ hours}\]

   *Service calculated that it would take an average trainee 3.75 hours to complete the 5 book series.

3. Cost of development and delivery of 300 sessions (1,125 hours of training)

   Calculation: This is calculated as a one-time cost (see Attachment 1). With the exception of occasional low-cost revisions, all delivery costs are covered with a "cost coverage fee."

   Attachment 1 calculations = $17, 160

Cost-Benefit Analysis Rationale

The performance goal for the service school is to produce trained (knowledge-based) RV Gen Set mechanics regardless of the method.

Furthermore, the objective was to entertain options that reduce the cost of training the same numbers of recreation vehicle generator set mechanics.

The cost-benefit rationale in this study can be summarized as maintaining the customer's performance value and reducing Onan costs.

1. Net Performance Value = a - b = 0

   where a = b (# trained mechanics by Option B)
   b = a (# trained mechanics by Option A)

2. In that neither option yields direct performance value to Onan and the projected customer performance value is constant, the option with the lower costs yield the greatest benefit to Onan.

<table>
<thead>
<tr>
<th>Actual Cost-Benefit Analysis</th>
<th>Onan Field-Based (Option A)</th>
<th>Customer Delivered (Option B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Performance Value</td>
<td>a - b = 0</td>
<td>a - b = 0</td>
</tr>
<tr>
<td>Cost</td>
<td>- $47,481</td>
<td>- $17,160</td>
</tr>
<tr>
<td>Benefit</td>
<td>($47,481)</td>
<td>($17,160)</td>
</tr>
</tbody>
</table>
Summary of the Forecast Data

The following data represents the forecast effort of an individual who was unfamiliar with any of the particulars of actual costs and activities associated with the training projects.

Performance Value

No value was submitted as the goals of the training efforts remained identical.

Option A

Costs of 1.5 day field-base training

<table>
<thead>
<tr>
<th>Elements considered</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructor salary (incl. fringe)</td>
<td>$220 per trip @ $110 per day</td>
</tr>
<tr>
<td>Travel expenses</td>
<td>$700 per trip</td>
</tr>
<tr>
<td>Per diem</td>
<td>$250 @ $125 per day</td>
</tr>
<tr>
<td>Administrative support costs (incl. fringe)</td>
<td>$188 per trip @ 16 hrs. x $11.75/hr.</td>
</tr>
<tr>
<td>On-site support costs</td>
<td>$350 per day</td>
</tr>
<tr>
<td>Material transportation costs</td>
<td>$300 per trip</td>
</tr>
<tr>
<td>Materials and consumables</td>
<td>$100 per trip</td>
</tr>
</tbody>
</table>

Average cost per trainee:

\[
\frac{16 \text{ per trip} \times \$2,108 = \$33,728}{16} = \frac{\$131.75 x 300 = \$39,525}{300}
\]

ESTIMATED TOTAL COST FOR 300 TRAINEES:

$131.75 x 300 = $39,525

Option B

Cost of Customer Delivered Training (total of 5 books)

<table>
<thead>
<tr>
<th>Elements considered</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development:</td>
<td></td>
</tr>
<tr>
<td>5 pkgs @ 35 pgs. each (average) = 210 pgs.</td>
<td></td>
</tr>
<tr>
<td>210 pgs. @ 4 hours each</td>
<td>$11,550</td>
</tr>
<tr>
<td>840 hours = 105 days @ $110 per day</td>
<td></td>
</tr>
<tr>
<td>Delivery:</td>
<td></td>
</tr>
<tr>
<td>Reproduction:</td>
<td></td>
</tr>
<tr>
<td>$1 per book @ 5 books = $5 per pkg.</td>
<td></td>
</tr>
<tr>
<td>Mail:</td>
<td></td>
</tr>
<tr>
<td>$.50 per book @ 5 books = $2.50 per pkg.</td>
<td></td>
</tr>
<tr>
<td>Total of 300 pkgs @ $7.50 per pkg.</td>
<td>$2,250.00</td>
</tr>
<tr>
<td>Administrative Support Costs:</td>
<td></td>
</tr>
<tr>
<td>Estimated 1 hour for each 25 pkgs. = 12 hrs. cost @ $11.75 per hr. (including fringe)</td>
<td>$1,211.75</td>
</tr>
</tbody>
</table>

ESTIMATED TOTAL COST FOR 300 TRAINEES

$15,011.75
Summary: Cost-Benefit Forecasts

<table>
<thead>
<tr>
<th></th>
<th>Onan Field-Based (Option A)</th>
<th>Customer Delivered (Option B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Performance Value</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Costs</td>
<td>$39,525</td>
<td>$15,011*</td>
</tr>
<tr>
<td>Benefits</td>
<td>$39,525</td>
<td>$15,011*</td>
</tr>
</tbody>
</table>

*Option B costs less for the same outcome. Therefore, the forecast is that at an estimated cost of $15,011, Option B is the most cost-beneficial method.

Conclusions

The significance of this investigation is that while the net performance value desired by a training effort was zero (no change in quantity or quality), the TBFM was able to forecast and compare the costs. Benefits of training options were viewed in terms of zero (0) being the most cost beneficial.

Utilizing the guidelines set down for forecasting costs (in this case it was the only variable as net performance value did not change), it was possible to accurately forecast the ultimate cost-benefit. Furthermore, differences in performance values (rather than net performance values) for each option provide a way of more accurately interpreting this low-cost means of benefit analysis.

Summary Comparison of Actual vs. Forecasted Financial Data

<table>
<thead>
<tr>
<th></th>
<th>Option A Actual</th>
<th>Option A Forecast</th>
<th>Option B Actual</th>
<th>Option B Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Performance Value</td>
<td>0</td>
<td>N/A</td>
<td>0</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>$47,481</td>
<td>$39,525</td>
<td>$17,160</td>
<td>$15,011</td>
</tr>
<tr>
<td>- Costs</td>
<td>$47,481</td>
<td>$39,525</td>
<td>$17,160</td>
<td>$15,011</td>
</tr>
<tr>
<td>Benefits</td>
<td>$47,481</td>
<td>$39,525</td>
<td>$17,160</td>
<td>$15,011</td>
</tr>
</tbody>
</table>
APPENDIX A

THE RELATIONSHIP BETWEEN COSTS AND HOURS OF TRAINING
IN FIELD BASED AND STAND ALONE R.V. SERVICE TRAINING

80 Hours = 6.5 Training Sessions
6.5 Sessions x 16 Trainees = 104 trainees

TOTAL COST F.B. $47,481
TOTAL COST S.A. $17,160
Cost Difference $30,321
(300 trainees)

$47,481**
$17,160*

$17,160*

20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400

228 hours = 19 sessions/300 trainees

HOURS OF TRAINING TIME

Field Base
----------------- Stand Alone

*Cost to deliver Stand-Alone Training to 300 people
**Cost to deliver Field-Based Training to 300 people
## APPENDIX B

Cost of RV Field School (actually 1 1/2 days)

Estimate number of students - 16

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation for Instructor - 6 hrs @ $44 =</td>
<td>264.00</td>
</tr>
<tr>
<td>(This field school is an extension of a factory school which has development work already completed)</td>
<td></td>
</tr>
<tr>
<td>2 Days Travel (salary) 16 hrs @ $44</td>
<td>704.00</td>
</tr>
<tr>
<td>No public relations</td>
<td>0</td>
</tr>
<tr>
<td>Telephone estimate</td>
<td>30.00</td>
</tr>
<tr>
<td>Postage - no charge to dept. (corporate expense)</td>
<td>0</td>
</tr>
<tr>
<td>Printing &quot; &quot; &quot; &quot; &quot; &quot;</td>
<td>0</td>
</tr>
<tr>
<td>No air freight unless we are late getting materials out</td>
<td>0</td>
</tr>
<tr>
<td>Meals</td>
<td>0</td>
</tr>
<tr>
<td>Facility Distributor Expenses</td>
<td>0</td>
</tr>
<tr>
<td>Equipment</td>
<td>0</td>
</tr>
<tr>
<td>Transportation &amp; Lodging estimate (4 days @ 280)</td>
<td>1,120.00</td>
</tr>
<tr>
<td>Materials (see materials list) 18.83 x 16</td>
<td>381.28</td>
</tr>
<tr>
<td></td>
<td>2,499.28</td>
</tr>
</tbody>
</table>

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Present RV Stand Alone Package - Contains 5 books

To Write - 60 hrs per book (5 books) x $44.00/hr = Development Cost 13,200.00

4 hrs each book to proofread & read by others 4 x $44 x 5 = 880.00

Ongoing Revisions - 10 hrs per pkg per year 10 x $44 440.00
    (add per year)

Artwork - 4 hrs each unit x $44.00 880.00

Slide Package & Script (1 package - 40 hrs @ $44.00 1,760.00

17,160.00

We sell package for $5.00 ($1.00 per book)
APPENDIX C

ORDER FOR PRINTED MATERIAL

RECREATIONAL VEHICLE TRAINING

PLEASE HAVE MATERIAL AT THE SERVICE SCHOOL BY _____________. THANK YOU!

GENERAL: Will require ( ) sets of the following materials - gathered and stapled together in sets of one each and in the following order:

BULLETINS: A-866 Spec. Sheet (Aux.)
AB-128 Nominal Ampere Ratings
F-471 Bulletin "Onan Microfiche Program"
F-508 RV "Elite Fleet" Brochure
F-514 Solid State

ALSO ( ) EACH:
1.00900-99 Technical Bulletin P-00P
2.07900-0186 Wiring Diagram Manual for Mobile Applications
4.00900-0337 RV Service Manual
1.09013-0006 Onan Load Test Panel
2.07932-0402 RV - Service Training Manual
2.07900-0019 Tool Catalog
2.07932-404 Generator Training Manual
1.09900-0329 Microfiche Training Guide
1.09932-1000 Onan Safety Handbook
1.00F-528 Quick Reference Service Card

Kathy Hokanson MN30-2030
3/22/84
RWAT
THE RELATIONSHIP BETWEEN COSTS AND HOURS OF TRAINING
IN FIELD BASED AND STAND ALONE R.V. SERVICE TRAINING

CUMULATIVE COST

$47,481**

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6.5 Sessions x 16 Trainees = 104 trainees

TOTAL COST F.B. $47,481
TOTAL COST S.A. $17,160
Cost Difference $30,321
(300 trainees)

$17,160*

Field Based

Break-Even Point

Stand-Alone

228 hours = 19 sessions/300 trainees

HOURS OF TRAINING TIME

Field Base

Stand Alone

*Cost to deliver Stand-Alone Training to 300 people
**Cost to deliver Field-Based Training to 300 people
APPENDIX A

THE RELATIONSHIP BETWEEN COSTS AND HOURS OF TRAINING
IN FIELD BASED AND STAND ALONE R.V. SERVICE TRAINING

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TOTAL COST S.A. $17,160
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$47,481**

$17,160*

28 Hours = 19 sessions/300 trainees

20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400

CUMULATIVE COST

Field-Based

Stand-Alone

Break-Even Point

HOURS OF TRAINING TIME

Field Base

Stand Alone

*Cost to deliver Stand-Alone Training to 300 people

**Cost to deliver Field-Based Training to 300 people