

Overview: ROI Measurement Approaches

Control and Experimental Groups
for ROI Measurement.

The Incentive Research Foundation

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The Challenge: Proving ROI

Most incentive program practitioners believe sales incentives are useful; however, providing definitive proof that quantifies their value in generating additional sales remains a challenge. Given ever increasing cost cutting in today's business environment, bottom line measurements of the effectiveness of sales incentive programs is a necessity. Firms strive for competitive advantage by treating the expenditure of a sales incentive program as an investment (Almquist and Wyner 2001).

What Does "ROI" Really Mean?

The term "ROI" (Return on Investment) means different things to different people. Those in the financial arena view ROI as a precise measure of the financial outcomes (returns) arising from investments in projects and initiatives that involve capital expenditures. Business managers think of ROI a little differently – in a more general sense and from a broader perspective. For them, the investment and outcome/results have more to do with "overall impact," rather than an exact measurement of the financial return.

Factors Affecting ROI

Several factors create these different perspectives. These include the following:

- The ability to separate and measure the multiple variables that drive outcomes
- The cost in terms of time and resources to conduct the analysis
- The business need (or lack thereof) for precise measurement

No matter how one defines ROI, the central premise to measuring it is the concept of *causality*. Causality has to do with demonstrating the return on investment (ROI) of a sales incentive program in such a way as to prove that it had a direct positive impact on the desired outcomes – and that other factors were not responsible. Causality thus links the program as the *primary cause*.

Why Determining Causality Is Difficult

Price cuts, increased advertising, improved market conditions, and other factors may have had a role in a sales increase. Thus, one cannot definitively say that the sales increase was due to a Salesperson's efforts alone -- there may have been extenuating circumstances.

For these reasons, measuring ROI must take into account how other activities or conditions may have influenced results. The thrust of the measurement process is to isolate the impact of sales incentives so that one can say sales increases were due directly to the incentive program.

Field Experimentation

The best approach to isolating causality is through field experimentation – a process that involves designing market parameters between two nearly identical groups. Whether one is measuring a program's impact on customers, dealers, or Salespeople, the field experimentation process applies a scientific method to measure success.

Experimental and Control Groups

Field experimentations normally employ two groups. In the simplest sense, by measuring the different outcomes of the two groups, causality can be isolated.

The Experimental Group. One of the groups is exposed to the 'treatment' (for example: incentive plan participation). This is the experimental group (also known as the treatment group).

The Control Group. The other group that does not receive the 'treatment' becomes the benchmark for comparison. This is referred to as the control group.

Matching of Relevant Attributes

It is not as simple as just setting up some groups though. The creation of a satisfactory experimental and control group requires careful matching on a number of relevant attributes. The closer that the groups are matched, the better.

For example, if two nearly identical groups are established, attributing incremental sales observed in the experimental condition (over the control condition) to the incentive program will be more valid. This is because all other conditions are held “nearly the same.” The essence of the scientific method applied to ROI measurement is thus causality. Causality is assessed through appropriate control and experimental group set up.

Pitfalls To Field Experimentation

Field experiments can provide extremely valuable insights into the relationships between marketing variables. In practice, however, conducting experiments in the field can be very expensive, time consuming, arduous ... and often politically charged. To the point, some firms fear potential negative reactions from dealers, or do not want their competitors to capture knowledge about the marketplace at the firm’s expense.

Two Alternative Approaches

Because of such pitfalls, the decision to conduct a natural field experiment involves trade-offs. Two alternative approaches for measuring ROI are covered in the following report. An overview of each approach follows.

1. Post-Hoc ROI Measurement

A less expensive (and less politically charged) approach is to create a “post-hoc” experiment by examining historical data. Post-hoc measurement requires control and treatment groups as in the field experimentation approach. As in any scientific study, the nature, scope and quality of the data that are available (or can be accessed) will determine the quality of the output. The same holds true for incentive program measurement. Therefore, central to effective post-hoc measurement is data integrity:

- Data on appropriate variables must be available
- Control and treatment group sample sizes must be reasonable

2. Outcome Based Measures

A second approach involves a pro-active effort to develop meaningful “outcome based” measures before the incentive program is implemented. In this way, the measures are tracked before, during, and after the program. These measures may include marketing outcomes (such as sales, market share etc.) as well as non-sales outcomes (such as accounts receivable, inventory turnover etc.).

The general approach is to identify other functions within the corporation (such as finance, advertising, manufacturing, human resources, etc.) that may be impacted by any sales increases resulting from the incentive program. For an outcome based approach, the process includes (but is not limited to) such activities as the following:

- Interviews with managers of all associated areas
- Collection of data from the affected areas to establish baselines
- Implementation of additional data collection steps in order to continue data capture
- Measurement of performance against baselines within all associated areas

Post-Hoc ROI Measurement

Post--hoc measurement involves “re-creating” a field experiment and forming control and experimental groups in order to isolate causality. This approach depends on the nature of available data and the degree to which distinct sub-segments can be created and matched on relevant dimensions. The following explores post-hoc measurement cases from two companies.

Overview Of Case Study 1: Office Equipment/Office Products Company

The first case is an office equipment/office products company that offered two different incentive programs to its distribution channel members. Case Study 1 therefore consists of two post-hoc measurement studies, namely:

- Incentive Program A directed towards the Salespeople (employed by the dealers) to motivate product sales
- Incentive Program B directed at Dealer Principals to motivate product purchases.

Research Objectives For Programs A And B

The research objectives for this first post-hoc measurement study were to:

- Determine the ROI for both programs A and B
- Determine perspectives from Salespeople and Dealer Principals regarding both programs

Study Design

A web-based survey was conducted among dealer sales personnel and Dealer Principals within company's dealership sales channel. This survey included qualitative questions about the incentive program, and asked about sales levels achieved as well as demographic information. To maximize response, ten \$50 gift certificates were offered in a random drawing. The survey was a useful tool in that it provided qualitative information about the program in general, as well as quantitative data concerning sales performance, etc. A total of 238 Salespeople responded, while 49 Dealer Principals responded.

Classifications Of Sub-Groups

Sales performance data acquired from the survey was correlated with demographic information, size of the dealership, and type of dealership. Further, dealers were classified into sub-groups based on two dimensions: size and type of dealership. These dimensions thus represented four variables that were applied to Program A (Salespeople study) and Program B (Dealer Principal study). For example ...

Size of Dealership (Variables: Large <-> Small) -- Purchases of the company's product in the year before the incentive program being evaluated. More than \$300,000 vs. less than \$300,000 in purchases determined if the dealer was classified as large vs. small.

Type of Dealership (Variables: Multiline <-> Exclusive) -- Dealerships were classified according to whether they carried other manufacturer's products, or carried the host company's products exclusively.

***Control And Experimental
(Treatment) Groups***

The survey identified Salespeople (for Program A Measurements) and Dealer Principals (for Program B Measurements) who participated in the sales incentive programs. Those who did not participate had “No Claim” to participating in the program and were thus considered the control group. Those who did participate had a “Claim” and were considered as the experimental (treatment) group. This was applied to both Program A (Salespeople) and Program B (Dealer Principals).

***Program A –
Salesperson Study***

Salespeople were assigned to the appropriate subgroup. As stated, each salesperson’s claim status was known based upon their survey responses. In this way, experimental and control groups were established with “Claim” versus “No Claim” as the key variable of interest. The two groups (experimental and control) were matched by dealership size and type.

Table 1 shows the number of Salespeople by sub-category among the large and small dealerships, along with average 2002 sales, incremental sales, and total incremental sales.

Table 1 – Program A Findings

Program A Findings

Category	Participation	Number of Salespeople	Average 2002 Sales	Incremental Sales	Total Incremental Sales
Large Multi-Line	Claim	116	\$ 356,297	\$ 248,644	\$ 28,842,704
	No Claim	18	\$ 107,663		
Large Exclusive	Claim	27	\$ 702,836	\$ 508,461	\$ 13,728,447
	No Claim	4	\$ 194,375		
Category	Participation	Number of Salespeople	Average 2002 Sales	Incremental Sales	Total Incremental Sales
Small Multi-Line	Claim	8	\$ 224,631	\$ 153,031	\$ 1,224,248
	No Claim	4	\$ 71,500		
Small Exclusive	Claim	28	\$ 209,360	\$ 174,860	\$ 4,896,800
	No Claim	5	\$ 34,500		
Total estimated incremental sales					\$48,691,199

As shown in the first line of Table 1 ...

- 116 Salespeople worked for large, multi-line dealerships who made an incentive claim.
- The average sale per Salesperson in 2002 for this subgroup was \$356,297.

As shown in line two ...

- \$107,653 was the average sale per Salesperson for the similarly matched sub-group of 18 Salespeople (also working for large, multi-line dealerships) that did not make a claim.

Thus, in column 5 ...

- The incremental sales per Salesperson were \$248,644, and the total incremental sales for the 116 Salespeople were \$29 million.

A similar analysis for the small dealers shows total incremental sales attributed to the incentive program were \$48 million.

Qualitative Results

Assuming a gross margin of 10% on retail sales and using the incentive program cost estimates provided by the company, Program A appears to be delivering a strong impact at the level of the dealer Salespeople.

Program B – Dealer Principal Study

Program B for this same manufacturer was directed at Dealer Principals. The analysis for this program is similar to the one described for Salespeople, with some caveats that follow.

Control and Experimental Group Set Up

The control group for the Dealer Principals had to be developed differently, because all dealers were making purchases from the company and thus could be considered as “participants.” This would mean that control and experimental groups could not be formed. As it turned out, some dealers had sales representatives that did not make any claims. For that reason, this group of dealers, although “participating” in Program B, really had no linkage to Program A, and could therefore be considered a “pseudo” control group

Program B Analysis and Results

Shown in Table 2 is an analysis of Program B – Dealer Principals.

Category	Participation	# of Dealers	Average 2002 Purchases	Incremental Purchases	Total Incremental Purchases
Large Multi-Line	Claim	76	\$ 462,213	\$ 311,724	\$ 23,691,024
	No Claim	5	\$ 150,489		
Large Exclusive	Claim	27	\$ 347,616	\$ 268,820	\$ 7,204,140
	No Claim	3	\$ 80,796		
Category	Participation	# of Dealers	Average 2002 Purchases	Incremental Purchases	Total Incremental Purchases
Small Multi-Line	Claim	33	\$ 115,137	\$ 50,492	\$ 1,666,236
	No Claim	49	\$ 64,645		
Small Exclusive	Claim	63	\$ 112,896	\$ 74,490	\$ 4,692,870
	No Claim	103	\$ 38,406		
Total estimated incremental purchases					\$37,254,270

Table 2 – Program B Findings

Table 2 shows ...

- The total incremental purchases attributable to incentive Program B were \$37.2 million.
- Assuming a gross margin of 20% on dealer purchases (and using the incentive program cost estimates provided by the company) Program B also appears to have a strong impact at the dealership level.

Note that the results are driven by the extent to which the matching process was feasible given the available data. Clearly, other variables that affect sales must be included to refine the analysis further. This represents an important direction for future research.

ROI Calculations For Programs A and B

Incentive programs A and B were viewed separately; however, because the sales data for the two programs constitutes one data set, the incremental sales for the two programs cannot be added together. An alternative way to look at how to calculate combined ROI is as follows.

The purpose of Program A was to determine differences between the sales of participants and non-participants – not to specifically establish an ROI for the program initiative. However, the costs of this program were added to the cost of Program B to determine the joint return from program investment for both programs. Since the manufacturer pays for both programs but receives revenue only from product purchases by the dealer, the ROI (impact) from the

manufacturer's perspective is:

$$\frac{\text{Profit From Incremental Sales To Dealers}}{\text{Cost of Program A + Cost of Program B}}$$

If the two incentive programs are considered together, the ROI can be calculated based on the sponsoring company's incremental profits on sales to the dealerships. In this example, the ROI is calculated as follows.

$$\begin{aligned} &\text{Incremental profit from product sales to dealers: } \$7.44\text{M} \\ &\text{Program investments:} \\ &\text{Program A + Program B} = \$3.5\text{M} \\ &\text{ROI:} \\ &(\$7.44\text{M} - \$3.5\text{M})/\$3.5\text{M} = 112.5\% \end{aligned}$$

Additional Value to the Sponsoring Company

Before this study, there were many unanswered questions about the ROI of both programs. Program A and Program B results were reviewed with the sponsoring company, which acknowledged them as informative and significant. The company also gained additional insights and a better understanding of how to improve incentive program impact.

Overview of Case Study 2: Paint Company

Another example case for which a post-hoc measurement process was performed is a paint company. The paint company offered an incentive program to painting contractors between July 1, 1998 and January 31, 1999 with the goal of motivating them to carry and promote the company's brand.

Control and Treatment Groups

Contractors had the choice of enrolling in the incentive program -- thus a "ready made" control group became those contractors who did not participate (No Claim). The treatment (experimental) group consisted of contractors who participated (Claim).

Categories of Sub-Groups

As in Case Study 1, the size of the contractor's business (based upon purchase volumes) and whether or not the contractor carried the paint company's products exclusively or carried other painting company products further defined the sub-groups. Four categories of contractors, based on 1997 gallons purchased (Purchase Volume) were formed as shown in the following table:

Category	Purchase Volume (1997)	# of Contractors
Large	Greater than 100 gallons	347
Medium	25 to 100 gallons	600
Small	Less than 25 gallons	664
Prospect	No purchases	459

Data Compilation

Purchase volumes for the participating and non-participating contractors were compiled for the program period. In addition, for each category, purchase volume for the same period during the previous year (i.e., July 1, 1997 to January 1, 1998) was retrieved from the database as well.

Case 2 Analysis and Results

The analysis by subcategories and the purchase data are shown in Table 3.

Table 3 – Case Study 2 Findings

Category	Participation	# of Contractors	1997 purchases (gallons)	1998 purchases (gallons)	Factor	Incremental purchases (gallons)
Large	Participant	157	246.31	323.54	1.31	22,566
	Non-participant	190	214.18	156.44	0.73	
Medium	Participant	143	58.26	155.31	2.66	14,211
	Non-participant	457	52.89	51.06	0.96	
Small	Participant	74	11.16	173.5	15.54	10,460
	Non-participant	590	9.04	26.11	2.88	
Prospect	Participant	74	0	151.98	-	8,857
	Non-participant	385	0	32.29	-	

Total Incremental Purchases – 56,094 gallons

Table 3 shows...

- Average purchases were higher for participating contractors (those who had claims) versus contractors who did not have claims. This result is true for large and small multi-line as well as large and small exclusive dealers.

- Medium-sized contractors (rows 3 and 4) non-participating (No Claim) contractors slightly decreased their purchases from 1997 to 1998 (by a factor of 0.96).
- Participating contractors (Claim) increased their purchases in 1998 over their own 1997 volume by a factor of 2.66.
- Incremental purchases for the participating contractors were $155.31 - (58.26 * 0.96) = 99.4$ gallons per participant.
- Multiplying the incremental purchases above by 143 participants in the Medium category reveals total incremental purchases for the Medium category at 14,211 gallons.
- Following the same analysis procedure, the total incremental purchases from all four categories are estimated at 56,094 gallons.
- These incremental purchases yield an incremental margin of \$361,806 based on the average margin (43%) and the average price per gallon (\$15).
- The estimated program expenses were \$324,414.

ROI Calculations For Case 2

Based upon the preceding data, the incentive program generated an ROI of approximately 11.6%. These calculations are shown below:

Total incremental purchases = 56,094 gallons Approximate price per gallon = \$15 Average margin = 43% Estimated total incremental margin = $56,094 \times 15 \times 0.43 = \$361,806$ Estimated program costs = \$324,214 Estimated ROI $(\$361,806 - \$324,214) / \$324,214 = 11.6\%$

In Conclusion ...

The two cases just explored demonstrate the post-hoc measurement approach. Common to each of the cases were:

- Control and experimental group determinations – participating vs. non-participating populations were categorized
- Data was available to derive volume (results) measurements for both groups

Because the two groups had similar situations (same time, same market environment, same dealers in some instances, etc.,) the effects of other extenuating circumstances on sales success were not factors – because all of the groups would be influenced by such factors to the same extent.

Causality and the elimination of doubt through the data analysis applied to the different groupings were central to these ROI measurements.

Outcome Based Measures of ROI

The ideal ROI measurement approach is field experimentation. Difficulties in implementation, due to expense, political ramifications, etc., create obstacles and the need for alternative measurement approaches. A post-hoc approach represents a valid alternative. Coupled with post-hoc measures – or as a separate process -- meaningful outcome based measures before the incentive program is implemented can be developed for ROI measurement as well.

What Are Outcome Based Measures?

With this method, measures are tracked before, during and after the program. These measures may include marketing outcomes (such as sales, market share etc.) as well as non-sales outcomes (such as accounts receivable, inventory turnover etc.). Outcome based measures take a broader view of the business operation. For example, sales increases resulting from a sales incentive program may be accompanied by increases in accounts receivable and inventory levels, which drain cash flow. Therefore, these effects must be explicitly taken into account in measuring the true impact of a sales incentive program.

In short, outcome based measures differ from post-hoc measures in terms of the extent of other areas that are influenced by the sales incentive program, as the following case will demonstrate.

Overview of Case Study 3: Hand Tool Manufacturer

This situation involves a more comprehensive look at assessing the impact of a sales incentive program. In addition to considering sales outcomes, this case allowed examination of other outcomes such as accounts receivable and inventory levels.

Approach. With an outcome-based approach, other functions affected by a sales incentive program are identified. In this case study, accounts receivable and inventory turnover were examined. Following discussions with managers in these functional areas, baselines were developed.

Study Design. Since the company had never implemented a sales incentive program before, the goal was to establish a benchmark based upon past years' sales. With that information, projections could be generated, taking into account factors such as the economy and industry and customer trends.

Incentive Program Objectives. The company offered incentives for its 126 distributors, with distributors earning points for performance in four key areas during the program period (January – September 2003). The points shown apply on a per distributor basis and are maximums possible.

- 600 points if minimum sales goals were met
- 300 points if all invoices were paid within 45 days of invoice date
- 100 points for offering flexibility in shipping dates for the manufacturer
- 100 points if the distributor's sales employees enrolled in a product/sales training program sponsored by the firm

Case 3 Analysis and Results

The program results are outlined in Table 4, which follows.

Table 4 – Case Study 3 Findings

Item	Jan-Sept 2002 (Actual)	Jan-Sept 2003 (Projected)	Jan-Sept 2003 (Actual)
Net Sales	18.661	19.221	20.661
Cost of Goods Sold	12.969	13.262	13.223
Gross Margin	5.691	5.843	7.438
SG&A Expenses	5.411	5.381	5.371
Net Income	0.279	0.461	2.066

All figures are in \$ millions

Projected sales figures in column 3 (January-September 2003) were based on extending the firm's historical sales trends after taking into account various economic, industry and customer factors. Before 2003, the firm had never implemented a sales incentive plan. Thus, the projected figures for January-September 2003 serve as the benchmark, because these numbers represent the anticipated results without the incentive program. The incentive program resulted in a net sales gain of roughly 7.5%.

Additional Outcomes

Costs incurred to achieve the sales numbers were held in check. The cost of goods sold (which includes the cost of carrying inventory) and the SG&A expenses (which includes the cost of unpaid invoices) remained at or near the previous levels. This resulted in a significant increase in the net income derived from the sales. In addition ...

- The level of accounts receivable was reduced from an average of 59 days to 32 days (among distributors participating in the program)
- Inventory turnover was reduced from 89 days to 70 days. This resulted in an estimated increase in cash flow of \$328,000 per month or \$2.95 million for the 9-month program duration.

These points are significant, because these resources would otherwise not have been available to the firm for use elsewhere. Thus, the sales incentive program had a positive affect on other outcomes for the company.

Qualitative Results

Along with the outcomes just mentioned, qualitative information was captured as well. Distributors were surveyed in March and July 2003 to obtain their views on various aspects of the program and to track their progress. The survey provided qualitative insights and showed that positive impressions about the program increased as the program progressed. Table 5 summarizes the survey findings.

Table 5 – Case Study 3 Survey Results

Distributor Survey Questions	March 2003 (n=110)	July 2003 (n=102)
Your business can benefit from this incentive program	3.48	4.36
The qualification process is easy to understand	4.22	4.50
This incentive program will help you motivate your sales team	3.44	3.84
This incentive program is equal to or better than those of others that you have participated in	4.12	4.52
The Regional Sales Manager is committed to supporting your sales efforts	3.72	4.24

The ratings were provided on a 5-point rating scale:

1: Disagree 2: Somewhat Agree 3: Mostly Agree 4: Agree 5: Totally Agree

Based on the previous, participants believed the program was valuable; further, positive impressions increased over time. Thus, the program appears to have had a positive effect.

In Conclusion ...

This case suggests that sales incentive programs can have far-reaching effects on the business as a whole. While it may be convenient to focus on immediate sales gains, the focus on marketing activities alone can prove to be shortsighted. Increases in sales are often accompanied by increases in inventory levels and the volume of unpaid invoices. If ignored, these can lead to a serious drain on cash flow. Thus, a more comprehensive view of the impact of sales incentive programs is important.

Implications For Practitioners

Post-hoc and outcome based measurement approaches can be implemented without undue strain on an organization in terms of political climate, expense, etc. Managers of sales incentive programs might consider these alternative approaches based on their desired level of comprehensiveness in assessing the impact of their program. In this section, we provide a synopsis of key considerations for incentive program designers and practitioners.

Key Considerations

The cases presented here offered three illustrations that describe alternative approaches for assessing impact. However, although it may be tempting to generalize the results obtained here to other situations involving sales incentive programs, doing so would not be appropriate.

For incentive program designers and practitioners, attention to data collection, level of analysis, group/subgroup set up, etc., is necessary.

Factor 1: Data Collection Process. Careful attention to data collection on an ongoing basis is the foremost requirement:

- Quality of the data affects the reliability of the ROI estimates;
- Identifying important, relevant variables for their product market is critical;
- Systematic collection of the necessary data on those variables and conducting rigorous and meaningful analysis must occur.

Factor 2: Study Design & Evaluation. Designing the measurement approach involves pre-work such as:

- Level of analysis – is the incentive program targeted to the dealers or to the Salespeople?
- Does the program cover one product, an entire product line or multiple product lines?
- Are there outcome variable(s) or other factors that may have an impact on that outcome that can be measured at the appropriate level?
- Carefully evaluate the comparison benchmark i.e., how is the control group going to be established? This involves taking a close look at the nature of the incentive program.

Factor 3: Groups and Sub-Groups. To ensure that you are addressing causality in a controlled way ...

- Ensure that the experimental and control groups are reasonably matched (i.e., similar in a number of respects). No two groups can be perfectly identical – the idea is to make them as similar as possible
- If the program runs throughout the year, look for a group of subjects that do not participate in the program.
- Determine the reasons for non-participation.
- Consider important dimensions on which the participating and non-participating groups may be similar or different.
- Make sure that measurements on these dimensions are being captured by the data system.
- For group assignments, consider additional variables for matching such as dealer size, dealer type, Salesperson experience, similarity of customers in the marketplace, etc.

Factor 4: Timing. Time is an important variable. Therefore ...

- If the program is of short duration (weeks or months), look for data availability before or after the program duration.
- This period will be the control group because the outcome(s) in these periods would serve as a benchmark for comparison.

Factor 5: Program Costs. Make sure that program cost and margin information are available. These numbers will be needed to compute ROI.

How You Can Use This Study

ROI measurement requires scientific thought. The principles provided here as they relate to post-hoc and outcome based measurement essentially amount to setting up control and experimental (treatment) groups as closely as possible, and measuring and comparing success. With similar groups being measured, the extenuating circumstances that may have been influencing them become “non factors” because the circumstances have an affect on both groups. By matching (as closely as possible) the groups as discussed here, you the incentive program practitioner will have a more valid measure of your sales incentive program’s ROI.

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