



Common (Mis)understandings of Marketing ROI

One of the most important tracking mechanisms for marketers relates to returns generated from investments. Tracking of sales and investment spending are (or should be) standard. Tracking of softer metrics often provides additional insights, and is generally straightforward but itself requires investment into primary research to estimate awareness, consideration, purchase intent, and other attributes. Early warning indicators are of growing importance to marketing, such as web chatter and consumer-initiated topics of interest. However, the fundamental concept of return on investment (ROI) is often considerably misunderstood. On the surface people may view ROI as simply a slow moving measure and argue the multitude of forces that can have an impact. Some might even argue that businesses are incentivized against sales, margins, and other clean objectives and tangible measures, and not towards the less tangible estimations of marketing ROI. Further ROI of marketing activities (ROMI) is quite undefined to be measured against the strict objectives measuring business health, and thus ROI and ROMI may impact critical decision making to smaller degrees than hard and more concrete measures.

Part of the problem behind marketing ROI is associated with the black box used to calculate it. Host of techniques that estimate ROI, and the key word here is estimate, require artistic application of statistical techniques than commonly accepted financial principles. One can compare the balance sheets of two different companies because of the reliance on commonly accepted reporting principles, yet one cannot compare the marketing ROI of different companies because of a lack of such common standards. Further, the mechanisms to calculate the ROI require creative statistics, such as marketing mix models, which is a class of regression techniques that attempt to determine the contribution of each marketing driver on sales. The result of this regression is combined with spending on marketing to arrive at the ROMI. However the ROMI (or ROI) calculated at the end of the process is heavily reliant on the quality of the statistical model created to measure the impact of marketing on sales. On the surface, this approach is logical, and one in which Genpact invests heavily to ensure the mathematics underlying the models is as accurate as possible. It is in this step (the modeling) however where hosts of issues arise that can impact the ROI, and thus fuel its misunderstanding and misuse.

The quality of the modeling should be one of the most critical aspects of ROI estimations, and in the coming months will be the topic of many white papers. However, how the ROI is calculated despite the models has a subtlety that is the cause of so many problems in being able to rely on ROI to make the most impactful improvements to marketing plans. So with this introduction, one must ask how ROI and ROMI are used in decision making.

Decision Making

Presumably the mantra “if it ain’t broke, don’t fix it” enters the business and marketing world. However just because a process or a campaign is not broken does not mean it cannot be improved upon. At one end of the spectrum, a campaign that is unsuccessful is often met with hosts of measures pointing to the same conclusion. Triangulating several such measures is generally more than enough information for decision makers to rethink the value of a poor marketing campaign. Yet campaigns that work well can often be tweaked for further improvement yet require careful articulation of its strengths and opportunities to realize the gain. It is in tweaking of campaigns where the subtleties of marketing ROI can have its greatest impact.

For example, if the ROI of a marketing lever is very high, the initial response is to potentially increase investment. However without a greater understanding behind the ROI, this logical recommendation may potentially prove unwise. For instance, perhaps this marketing lever is at the point of diminishing returns whereby any additional investment would yield a considerably lower return, potentially decreasing profitability. Conversely, if the ROI of another marketing lever is very low, many would recommend decreasing investment. However the omitted insight behind the ROI might be that the current investment level is below the minimum threshold spending level and only by increasing spending above some minimum would drive significant sales volume, ROI, and profitability. In these two situations, one might increase the investment behind a high ROI marketing effort and decrease the investment on a low ROI marketing investment, whereas the reverse would be the better recommendation given the greater insights about the ROI measures. In this case, information on diminishing returns and related measures provides the content of the ROI. However this context alone is insufficient.

Many tools in the market, both syndicated and custom created, that help marketers plan marketing budgets tout marketing simulations of all sorts. The underlying engines of these tools are reliant upon marketing mix equations that relate sales to investment of each marketing investment. When these tools run scenarios, such as forecast sales as a function of alternate possible budgets, they apply the historical relationships to the different budgets to arrive at the corresponding forecasts. Budget simulators are common place, but equally as common is a bold assumption, that too often renders the outcomes far from optimal.

The tools themselves base the forecasts on the budget plan without regard to how the investment will be flighted. For example, if one plans to spend \$12,000,000 in a fiscal year on a marketing lever, it could be spent as \$1,000,000 per month or \$6,000,000 in January and \$6,000,000 in December. Such vastly different spending scenarios impact the lagged impact on the consumer, deal with diminishing returns quite differently, and may other realities. The engines behind the simulators however often assume equal spending throughout the time period, or make the assumption the budget will be flighted identically to prior years. Here too this could be faulty since an increase in budget may not be spread proportionally throughout the year but instead be focused on a particular time period or geography. Likewise a decrease in spending may not come from all time periods but instead be quite localized. These tools use ROI calculations to aid decision makers in understanding the ROI at alternate levels of investment but introduce powerful and problematic assumptions that too often render the ROI information considerably less useful. These budget scenario tools make bold assumptions about the role of time in their ROI estimations.

Since one of the purposes of marketing ROI information is to fuel budgeting decisions, which in turn fuel hosts of tactical decisions. Another purpose of ROI information is to tweak the effectiveness of specific marketing channels. Hence the ROI measures are intended to suggest if the marketing is working, and as a broad stroke the ROI measures do indeed do that. But most marketing efforts require tweaking, not just occasional overhauls, and the tweaking capability provided by ROI estimates are too often overshadowed by their underlying assumptions, which all too often are vast.

ROI of the ROI

When companies invest in marketing ROI analytics, models, and dashboards they do so with the understanding that it will provide competitive advantage. Hence the ROI of undertaking an analysis of the ROI is to improve the marketing. At Genpact we have decomposed the purpose of the ROI information in order to appropriately align the underlying mathematics with the marketers’ goals to maximize the competitive advantage. The purposes of the ROI can be categorized into one of three differently actionable buckets: Forward, Backward, and Average. These three categories have a number of similarities yet fuel completely different parts of the marketing evaluation and decision making process.

In general, the marketing ROI is calculated by dividing the attributable volume to marketing by investment of marketing. The definition of ROI may seem clear and unambiguous, yet the nuance of the forward in time view, the backward in time view, and average time view alter the actionable to business recommendations.

The numerator (sales, profit, inquiries, households, clicks, etc) are due to the marketing

The denominator (marketing investment) is marketing that generated the numerator.

$$\text{Marketing ROI} = \frac{\text{Incremental sales volume/consumer response}}{\text{Spending/weight/delivery of marketing}}$$

The incremental sales due to marketing is reported from a marketing mix analysis. (For more information on how to conduct such an analysis or to arrange for a Specialist to produce an analysis of your brand, market or category, please contact Genpact and/or the author of this paper). When incremental sales are divided by the investment to achieve that incremental lift, we have a common form of the marketing ROI.

Even with alternative definitions of ROI, the numerator and denominator as presented here are direct components of these other calculation. The ROI is a function of sales generated due to an investment. The missing component of this definition however is the time element.

Since ROI metrics are applied to and derived from time series data, the ROI of a particular investment should be measured across time since marketing drives sales across time. The way that time is synchronized to the metric determines these three perspectives

- Forward ROI, which is based on the numerator, looks into the future
- Backward ROI, which is based on the denominator, looks into the past
- Average ROI, which is based on both, looks at all time

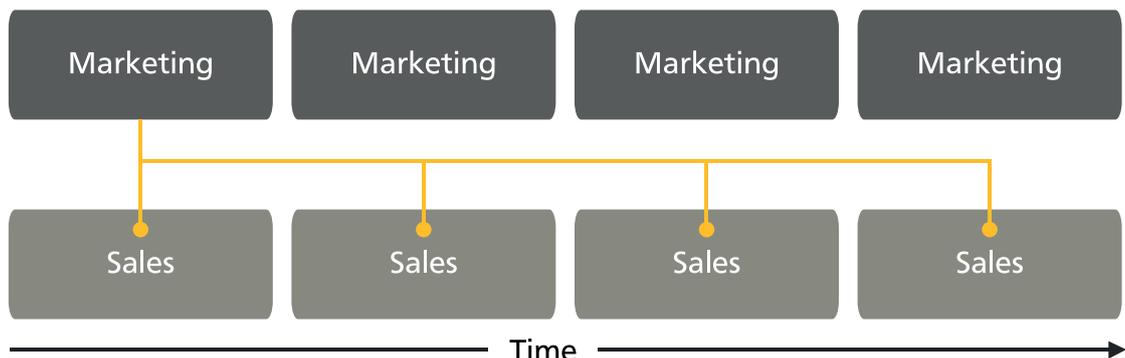
These time perspectives are important because there are many circumstances where these are conflicting even though at other times they may be consistent. If not matched correctly, these can lead to the development of faulty marketing recommendations. An ROI analysis considers impact over the ensuing days, weeks, and months following execution, especially for daily or weekly time series. Given the delayed effect of some marketing efforts like media, time spans are usually incorporated into the ROI estimates. Knowing which of the three perspectives is most appropriate for the situation at hand is vital for optimal understanding of the insights from ROI metrics.

Forward ROI

When executing marketing activities such as media, with the expectation to generate favorable consumer behavior, it is reasonable to assume that the incremental sales are to be generated during periods thereafter. In terms of ROI calculations, this concept is based on fixing the denominator (i.e. the marketing spend) in time and accumulating the numerator (the sales) forward in time. Any investment is thus expected to generate returns over the course of the following periods. This is a forward-looking ROI, which is not fully defined unless the impact for all relevant future periods is included.

This can present a number of problems. If there are several periods of actual measured data following the marketing, calculating the forward ROI is trivial. However, the closer to the end of the reporting time period the fewer periods after the marketing are available to calculate the forward ROI. For example, if we invest in January 2011 and our data ends in December 2011, we have plenty of observations with which to report the impact January marketing has on ensuing sales throughout the year. Yet marketing invested in December 2011 is expected to drive volume in December and in the months beyond the reported time period, hence the delayed impact will be excluded from the ROI calculation. Therefore, forward ROI calculations rely more on forecasts beyond historical data which in turn means forward ROI are more accurate for older time periods and less accurate for more contemporary time periods.

The arrows represent the forward ROI, where a specific execution of marketing lead to sales in future periods



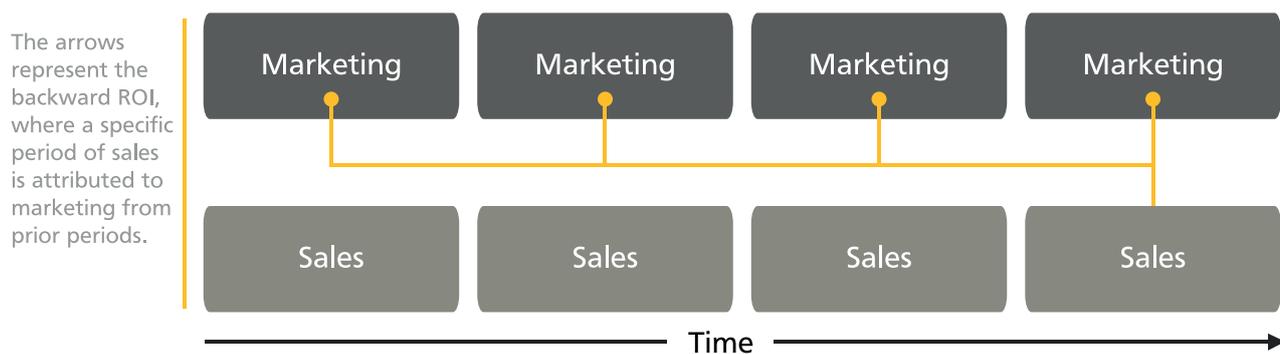
Many of the well-known forecasting issues will impact the ROI at this point. The analysis will end up forecasting all independent variables and baseline effects, which can potentially distort marketing effectiveness from previous time periods. In addition, any forecasting errors in independent data will directly impact the sales forecasts from specific marketing channels, especially in interaction-oriented models (i.e. multiplicative log-log models) and any synergy and halo calculations.

Forward looking ROI analyses have several benefits. They clearly show which marketing channels are expected to provide the best future returns, since budget planning is based upon expected future responses following marketing execution. They also enable the decision maker to distinguish between short-term and long-term effects, exposing marketing half-life issues. Improving forward looking ROI metrics and forward looking sales opportunities generally are the decision maker's primary objectives when developing recommendations, since they are designed to improve sales following marketing execution. Hence the forward ROI is the metric of choice when trying to understand precisely what one can expect in the future for a given investment in a specific period of time.

In all, forward ROI is designed to quantify what can be expected from the future from a current investment, and what the sales were due to any given historical investment. The forward ROI should thus be in the tool belt of the marketing budget planner and marketing forecaster.

Backward ROI

If the decision maker wants to understand drivers of the market place during a specific span of time, the answer is a retrospective or backward analysis. For instance during historically expected good months for a brand, decision makers may want to understand why such months were so strong; likewise poor months may prompt queries into why they were so weak. In both cases sales during a specific period of time are partially due to activities from that period and from those in prior periods. The backward-looking ROI analysis is based on fixing the numerator in time and reverse engineering the denominator. For this analysis, sales generated in a specific period of time are influenced by investments from a number of prior periods, and the ROI is not fully defined unless the entire impact from all relevant prior periods is included.



As with a forward looking ROI, this presents a number of problems. In this case, the further the dataset travels forward in time, the more historical data is available for analysis, and the calculation of later ROI values is straightforward. However, since the dates towards the beginning of the dataset (i.e. the older data) lack the data quantifying earlier periods of marketing, the backward ROI for initial periods cannot be accurately determined. For instance, if our data begins in January 2011, we cannot report the impact of 2010 marketing on January 2011 sales, since the backward looking view of the data is unavailable for a January 2011 start. A view of June 2011 can only consider the impact of marketing between January and June of 2011, and thus any longer term impact from 2010 is also excluded from the June 2011 backward ROI analysis. Hence the backward ROI analysis is most accurate for the most contemporary of data and least accurate for older data.

Backward ROI analyses, however, can clearly determine which time periods provided the greatest impact on the sales. Further, backward ROI clearly shows what has driven historical sales, without requiring the assumptions for forward ROI analysis, such as the forecasting component required for the forward-ROI analysis. Backward ROI analyses allow one to determine the percentage of sales at any point in time due to media. Analysts can leverage this type of analysis when decomposing sales effects, since they are ultimately designed to attribute sales at each moment in time to all its sources.

In all, backward ROI is designed to quantify which historical activities drove sales for a specified period of time. The backward ROI should thus be in the tool belt of the brand and category analyst and those who manage insights.

Average ROI

Most common approaches to ROI or ROMI estimation use neither forward nor backward ROI concepts whatsoever, including the engines of most marketing budget scenario planning tools. They instead consider an average ROI, which is not the average of the forward and backward ROI. It is instead based more upon modeling techniques and assumptions than on the manner in which marketing generates sales.

A number of common modeling approaches report parameters that do not vary with time. These constant parameters describe the average relationship marketing has with sales over the modeled span of the data. The total lift in sales over time is the numerator of the ROI and the total spend in marketing is the denominator. This form is the average case scenario over the modeled period, and as such, does not consider which period of marketing effects has been effected by which marketing efforts and periods.

$$\left(\frac{\text{Total Attributed Sales}}{\text{Total Marketing Investment}} \right) = \text{Average ROI}$$

Average ROI is time-independent. The total attributable sales and marketing are based on the entire span of the modeled period.

While an average ROI analysis describes an estimate of the overall ROI, there are a number of limits. Since this average case computation is based on the entire span of the modeled data, all uses of this information should be restricted to insights and recommendations applicable to the entire modeled data span and not to any subset of time. This computation is not ideal for any specific date range within the span, as the model may not be an accurate representation for any smaller date range within the span. For example, if a selected data range contains a number of unique marketing, competitive, or economic events that are not present for all other periods in the modeled date range, the average case will not necessarily accurately describe the marketing sensitivity during this specific sub-span. Date specific ROI based on the average case approach requires having time-specific coefficients. In such situations, it is advised for one at least to build time-varying parameter based models. Regardless, caution is strongly advised when making granular decisions from analytics based on average scenarios, including decision making based on the common average ROI

However there are other issues with the average case approach that relate to the endpoints of the time span of data. Marketing executed towards the end of the modeled date range would have yet to generate the bulk of its impact because of the lag effect into the future. Periods following the end date are expected to benefit due to the marketing from the last observed few periods. Therefore, the numerator is actually missing attributable sales from the next few periods after the modeled span ends.

By the same logic, it is also the case that some sales from the start of the modeled period are affected by marketing from periods before the model start date. Without a clear sense of the magnitude of the marketing before the start date, or the magnitude of the attributable sales after the end date, this average case ROI can be considered as not the ROI due to the marketing specifically, but a typical ROI that has been achieved during the date range. It is a biased estimate excluding future sales that marketing is expected to generate (and thus is under-reported), yet include some sales at the start of the data that is due solely to marketing from even earlier periods (and thus is over-reported). Assuming the bias is symmetrical, the average ROI should be close to accurate. However if there is reason to believe that any activity prior to the modeled period or following the modeled period is not similar to activities within the modeled period, then the average case approach to ROI estimation should be avoided.

In all, average ROI is designed to quantify the general activities in relation to the general sales across a range of time, and is best suited for brands and categories that are reasonably stable with few shifts in marketing or swings in the marketplace. The average ROI relies on hosts of assumptions both before and after the date range reported, and rely on regularity and predictability of the market. When these assumptions fail, the reliability and usefulness of the average ROI is greatly diminished, even though this form of ROI and ROMI is the most common form of marketing ROI.

While from a mathematical standpoint the average ROI is not incorrect, the average ROI is best limited to describing the returns over the course of the entire period for stable brands and markets. To increase its accuracy, longer modeled periods are recommended so end-date bias and start-date bias is reduced. Thus two critical pieces of information marketers should seek from their analytical partners is which form of ROI they are using, and which form should be used given their purposes of the information.

Caution for CPG and Pharmaceutical Mix Modelers

Tremendous caution is advised here. Common in consumer package goods modeling and pharmaceutical marketing response modeling is a series of reports called "due to's". This popular report conveys the change in sales due to marketing across two consecutive time periods as compared to the change in marketing investment across the same time periods. As innocuous as this may appear, this implies that the sales climb (or drop) from one period to the next is due to the change in investment from the period over period. However, in the second period of investment, many of the attributable sales it is expected to generate would actually be delivered in the periods following the "due-to" reported dates. Likewise, many of the sales reported in the first period of this "due-to" report may actually have been generated from media invested in periods before this first period.

For instance, sales due to TV may have climbed by 10 units from last month to this month, and the spending on TV may have increased by 5 units from last month to this month. People often draw the conclusion that the increase by increase in TV investment of 5 may have driven the incremental 10 units of sales due to TV. However given the lags, the additional 5 units of TV may actually drive sales in the months ahead and may not have been fully realized to date. Likewise, the incremental 10 sales due to TV may have been due to changes in TV prior to these two months.

In these cases, rather than report the average ROI and use metrics of this nature, the "due to" reports would be more correctly insightful if produced as a comparison of the forward ROI of each period's marketing (indicating which period's marketing has better future sales generating power) and a comparison of the backward ROI of each period (indicating which period was the greater beneficiary from historical marketing).

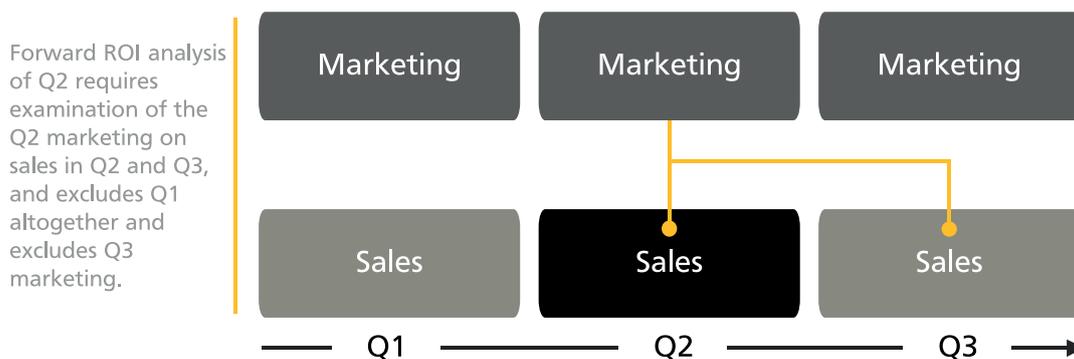
Another serious concern of "due to" reports is if the reports themselves were created from average based analytics, such as average ROI. The average ROI is built off a model that generates an average coefficient for each marketing lever over the modeled span of time. For instance, when modeling sales over two years, one might find the elasticity of price of the effectiveness of TV. Yet these two observations are themselves strictly the average elasticity and effectiveness over the two years and not the specific elasticity and effectiveness for either of the two years individually. Hence the due to change year over year of the sales due to price and due to TV are reported from the average elasticity and effectiveness which is not necessarily indicative of either year specifically. Therefore even though the "due to" reports are supposed to reflect changes from one time period to the next, the underlying statistics are not ground in them, and therefore the ROI measures estimated are misleading. To get a true measure of the future impact of one time period requires a forward ROI calculation of each time period, rather than an average ROI of any particular time period.

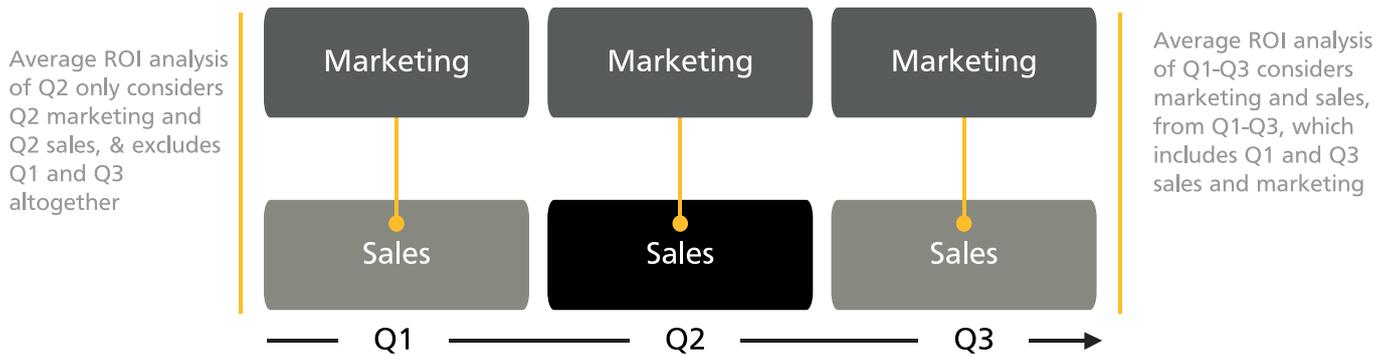
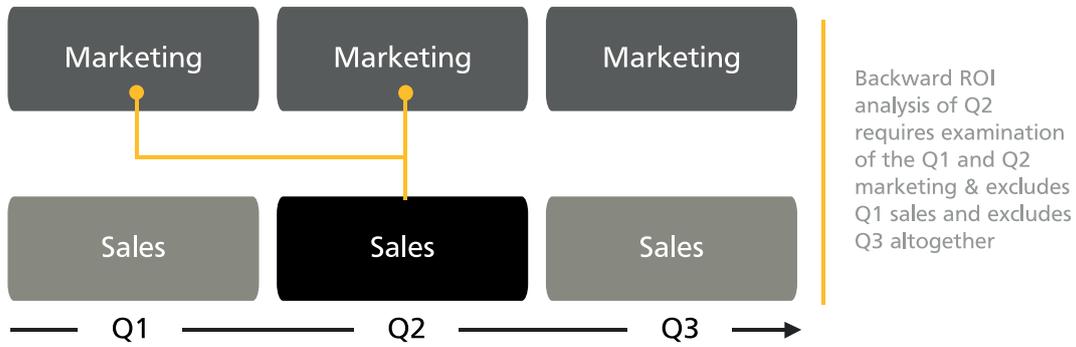
Practical Differences and Applications

In practice, these different ROI metrics tend to report similar results over large spans of time, as variability tends to reduce due to averaging and since many brands and categories and their respective marketing activities are considerably stable. For stable brands and markets it is somewhat common for future periods of activity to not differ so drastically from past ones. Changes are expected over time in general and markets evolve, yet in the course of adopting change it is common for companies to keep some activities relatively consistent while undergoing change in other areas of business. As a result, the forward, backward, and average ROI do not always differ drastically across long time horizons. However for any specific period of time, these can indeed differ, and often do so considerably.

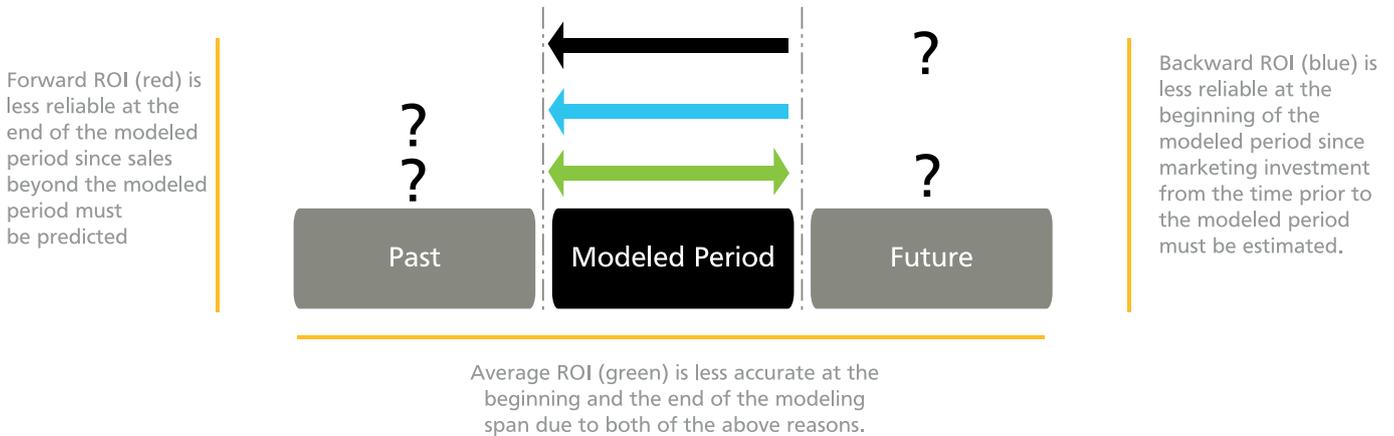
Suppose for a specific product it is known that media positively impacts sales up to three months later. A forward ROI analysis of media spending in Q2 will show incremental sales in Q2 and Q3 (i.e. spring and summer). However, a backward ROI analysis of Q2 would consider marketing from Q1 and Q2 (i.e. winter and spring).

In this case, the Q2 forward ROI analysis would consider sales in the warm months and the Q2 backward ROI analysis would consider consumer receptivity of marketing in the cold months. If the product is seasonal in nature, then it is likely the sales responsiveness and receptivity of media in warm months would be different than in cold months.





By the same token, the average ROI approach focused on Q1 through Q3 does not more fully capture the ROI. Instead this also suffers from the Q3 media spend generating sales in Q3 and Q4, and the Q1 sales having been affected by Q1 and the prior Q4 media.



Averaged across an entire year these differences can become reduced and all analyses and insights can become similar in certain regularly occurring conditions. In terms of long-term metrics and brand valuation, the forward, backward, and average ROI analyses become even closer over multi-year spans if such regularity of the market is observed, with differences only exaggerated when planning short-term marketing, such as media flights.

Recommendation When to Use

In practice, each ROI form is an important function that when correctly used provides a great deal of effectiveness insight. Forward ROIs indicate what to expect from an investment, backward ROIs show which dates contributed a specific success, and average ROIs show the general ebbs and flows of marketing successes. Therefore when planning a future flight, one should focus attention on the forward ROI information. When trying to understand the success of past sales periods, one should focus attention on the backward ROI. When one is trying to determine the optimal investment mix across a multi time period horizon, one should focus attention on the average ROI.

Strategy versus Tactics

Generally speaking, strategy and tactics are related yet different classes of issues come into play. Strategic issues are higher level ones focused on budgets, missions, goals, and messaging intent. Tactical issues tend to be focused on execution issues such as flights, property purchase, mixes, and other more granular details. Since tactics may change based on specific localized information whereas strategies may be more stable and change on considerably less frequent basis, the role of forward, backward, and average ROI on developing strategies versus tactics may also differ.

When using ROI metrics for strategy development and planning, the planner and decision maker tends to focus on future results. The forward ROI analysis relates well when planning strategies to fuel growth. Ultimately the strategy is designed to take the investment in a specific period and generate needed response in the future, and thus the appropriate focus on the forward ROI. When developing specific tactics, such as when to advertise, what media mix to use, which marketing channels to support, what products if any to re-launch, and trying to understand the historical successes of specific campaigns to help determine how best to execute a given strategy, the focus turns to studying the past, and thus one should utilize the backward ROI perspective. The concept is to learn how specific executions worked and to gauge the magnitude of the successes for specific periods of historical sales, and thus the appropriate focus on the backward ROI.

It is important to note that tactical applications (i.e. from backward ROI metrics) are not devised in isolation of strategic plans (i.e. from forward ROI metrics), since the purpose of tactical applications are to execute specific strategies. Therefore, the planner and decision maker should use forward ROI analyses to create strategies, and backward ROI analyses to develop the tactics for executing the strategies.

The average case ROI analysis is suited to explain the historical retrospective health of marketing during a longer period such as an entire reported period. If devising multi-year marketing plans, which is uncommon, review of the average case ROI may be helpful. Note however that multi-year marketing planning is not the same as devising future year planning one or two years in advance. Nevertheless, the best use of the average ROI information is benchmarking against backward ROI or forward ROI, since the plans to be executed should ultimately yield forward ROIs that exceed the average ROIs and backward ROIs, and based on similarities to mixes and campaigns that historically generated backward ROIs that also exceeded the average ROIs.

Recommended ROIs to Report to Management

Comparable to the users of strategic information and tactical information, executives are more likely to make decisions from forward ROI metrics alone, since their responsibilities are more focused on driving future impact. Those reporting to the executive, such as the heads of marketing and media, are more likely tactic and detail-oriented and would thus rely on backward ROI metrics.

Extrapolating and generalizing from this, the higher one goes up the organizational hierarchy, the more insights from forward ROIs will often be studied. Conversely, the lower one goes in the organizational hierarchy, the more insights from backward ROIs will be studied.

About Genpact

Genpact Limited (NYSE:G), a global leader in business process management and technology services, leverages the power of smarter processes, smarter analytics and smarter technology to help its clients drive intelligence across the enterprise. Genpact's Smart Enterprise Processes (SEPSM) framework, its unique science of process combined with deep domain expertise in multiple industry verticals, leads to superior business outcomes. Genpact's Smart Decision Services deliver valuable business insights to its clients through targeted analytics, reengineering expertise, and advanced risk management. Making technology more intelligent by embedding it with process and data insights, Genpact also offers a wide variety of technology solutions for better business outcomes.

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