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Realisation of diffuse benefits using a relative return on investment paradigm

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This paper explores a number of ways used to quantify the realisation of systemic and diffuse benefits in public and private settings, including return on investment (ROI), social return on investment (SROI), relative return on investment (RROI), and cost benefit analyses (CBA). The paper explores the relative advantages and disadvantages of each approach, discusses a number of modelling approaches, and looks at factors to weight when determining the most appropriate technique to use.

Keywords: benefits realisation; impact demonstration; initiative assessment; justification; Monte Carlo; quantification; uncertainty

Introduction

The struggle to demonstrate impact is a perennial problem for most knowledge management (KM) initiatives, such as the concept of a "learning organization". KM initiative owners may find themselves asked to develop return on investment (ROI) calculations, which are then used as justification for continuing or ceasing the funding allocated for their project. The concept of ROI is well understood in economic and management theory as a way to prove that an investment of time, money and other resources is worth making. Expressed mathematically, the basic philosophy that you should only do something if you get back more than you put in seems obviously true. Why spend a dollar to get back 50 cents?

The reality turns out to be more complicated. Development organisations, which are generally positioned with a mandate to make change happen outside of their own organisational boundaries, struggle to use traditional ROI models. This article will examine commonly used benefit assessment methods and propose the use of a relative return on investment (RROI) as a novel assessment tool to justify investment in initiatives that yield long-term improvements in organisational effectiveness.

Calculating diffuse benefits

ROI methods rely upon knowing tangible costs and benefits, related to a specific initiative with known outcome timeframes and boundaries. However, ROI breaks down where

systems-level benefits exist that are not captured through purely internal calculations of organisational efficiency.

For example, an ROI calculation can be applied to the choice to replace an old truck with a new, more fuel-efficient vehicle. A simple cost-saving formula can be derived based on historical averages of travel distances and estimated reduction in breakdown rates. These savings can then be compared to the acquisition cost over a known period, typically three years. However, the more fuel-efficient car may also reduce pollution. This is unlikely to be directly considered by the individual since the effect of their personal choice is tiny, but the effect of many separate personal choices can add up and have a significant impact on a community or society. These systemic benefits, which are often too small to justify independent adoption, are known as diffuse benefits and are a common trigger for government regulation (Shapiro, 2004).

The technique of Cost Benefit Analysis (CBA), often favoured by economists, attempts to undertake holistic consideration of both tangible and diffuse benefits in a public policy environment. Governments typically create guidelines to ensure that costs and benefits across the whole community are considered and incorporated into overall value (e.g. Australian Government, 2016). Much like ROI measures, CBAs produce a numerical ratio of costs to benefits. Quantification of non-monetary benefits is normally achieved through monetary proxies or estimation techniques, such as the revealed preference method (RPM) and the contingent valuation method (CVM) (see box). Acting upon the sober, long-term evaluation of diffuse benefits by a CBA relies upon implementation by an effective authority. Even here, if personal costs are experienced, the risks of political pushback and regulatory evasion are far more significant (Rabushka, 1988).

Quantification of non-monetary benefits

A revealed preference method (RPM) observes consumer/client behaviours in real-world settings. There are several commonly used methods including:

- demand curve estimates – looking at behaviour based upon available budget of consumers
- market analogy method – an indirect approach that substitutes the cost of private goods for public services
- hedonic method – inferring price by comparing characteristics of options, eg cost of a new book versus a used book when borrowing books from a library (Kim, 2011)

By comparison, a contingent valuation method (CVM) method approaches people directly and asks them to express either:

- their willingness to pay (WTP) a price for a public good
- their willingness to accept (WTA) compensation for not being able to consume this good (Stejskal and Hájek, 2015)

Where it is impractical or impolitic to assign a financial value to an outcome, it may be more appropriate to use cost-effectiveness analysis (CEA), which calculates a ratio of costs against a quantified measure without assigning a financial value, such as lives saved (Boardman et al, 2010).

CBA methods are of limited utility in organisations for two reasons. Firstly, the conditions to impose effective authority rarely exist in organisations. Overt use of top-down power from managers "allows little participation of members of the organization and disregards learning possibilities", with research showing that an "autocratic style of management will result in clandestine practices and rejection of the objectives of change" (Boonstra and Bennebroek Gravenhorst, 1998).

Even purportedly customer-focused management approaches such as total quality management (TQM) and more recently, Six Sigma and Lean impose a certain decision-making culture that implies top-down diktat, "[overlaying] structures of management control with a system designed to capture the normative, as well as the technical content of human endeavour" (Knights and McCabe, 1999). Despite this, as Knights and McCabe point out "power and identity relations mean that at all times there are opportunities for resistance [in] organizational life".

Thus, taking advantage of diffuse benefits in an organizational context requires balancing of political support with the theoretical best course of action. Diffuse benefits manifest primarily in two ways. Firstly, there are operational diffuse benefits that improve the internal efficiency or effectiveness of routine activities through global changes to organizational processes or capabilities. An example might be the provision of an online room booking service for meetings. Operational diffuse benefits tend to be the proverbial 'low hanging fruit'. While there may be insufficient motivation for individual teams to prioritise their implementation, once identified by management they are comparatively easy to justify. Conventional ROI calculations mostly work in these scenarios since they provide reliable organisational benefits from a calculable improvement in productivity. On the other hand, systemic diffuse benefits are achieved through improved client1 knowledge, relationships, trust, and alignment to mutually desired outcomes that are beneficial to the organisation. Examples might include:

- fewer complaints generated
- fewer products returned
- fewer support requests
- fewer disputes and lawsuits
- faster client service
- scaling back of marketing and sales
- achieving desired behavioural change with less effort

Direct ROI benefits calculations fail when attempting to calculate diffuse benefits, which result from systems interventions creating positive feedback loops. These positive changes in behaviour are often indirect, delayed, and may be amplified or dampened through other

[1] The meaning of "client" is determined by the systems context. A team serving other parts of an organisation is handling clients, just as the whole organisation handles clients in the form of customers and stakeholders.

network interactions. The indirect nature of the diffuse benefits sought can lead to unconvincing internal metrics of success such as "two minutes saved per information search". Nearly all common KM techniques (such as after action reviews), world cafés and knowledge network analysis) and tools (such as knowledge bases, SharePoint, and wikis) suffer from this problem.

A study by Goh (2012) found "no clear consensus in the literature on an appropriate or consistent measure of organizational performance or effectiveness" and that "[f]inancial measures of performance … tended to be perceptual". Of 33 studies, just three used objective accounting financial information such as ROI, return on assets (ROA), sales or income growth. Put another way: lacking a means to tie performance to a tangible outcome, people seeking to realise diffuse benefits often fall back on self-assessments of success. This is a significant weakness when trying to convince anyone who is not already inclined to believe the inherent value of what is proposed. The key problem comes from only targeting proximate goals that have no intrinsic organisational value, instead of identifying ultimate goals, which do.

Social return on investment

One attempt to quantify ultimate goal value can be found in the charitable and social enterprise sector, where social return on investment (SROI) is a popular method for demonstrating value. SROI divides benefits into three categories: economic, socio-economic and social. Social benefits are defined as purely qualitative, while socio-economic benefits are indirect benefits arising from either costs avoided (e.g. lower unemployment, lower incarceration), or revenue gained (e.g. productive citizen generating taxes).

Arvidson *et al*. (2010) argue that SROI is functionally very similar to CBA. The main difference is that SROI originates from within an organisation, where "the choice of indicators [of value] is underpinned by a theory of change that holds assumptions and preferences for how impact, or change, can be achieved". A higher SROI does not indicate increased efficiency of the examined organisation, but rather a claim of increased external impact. Indeed, SROI is primarily intended as an explicit justification for an organisation's dependency on the continued supply of outside funds for its existence. SROI calculations attempt to demonstrate that an organisation acts as a "force multiplier", where internal efficiency is less important than the impact of its outcomes. However, the use of predefined proxy dollar values for SROI benefits (as distinct from an empirical analysis) means that the top-line figure of social value realised per dollar invested should be considered as more of a sales pitch, rather than a robust measure of actual systems outcomes.

Worked RROI example

This example demonstrates how to use the relative return on investment (RROI) methodology to model potential deployment of a knowledge base to improve service desk outcomes for an organisation. Rather than a full Monte Carlo simulation, it approximates a power law distribution.

1. **Identify ultimate goals and create a method for valuing goal outcomes.**
   Example: The ultimate goal is a reduction in client complaints. Each complaint costs a certain amount to resolve depending on its complexity and seriousness. Complaints are classed as Category A (80% of complaints), B (15%), or C (5%), and cost $20, $100, and $500 to resolve respectively.
2. **Identify proximate goals and options to target them.**
   Example: The proximate goal is to enable service desk staff to correctly answer questions asked by clients at first point of contact. This could be addressed through increased training, or implementation of a web-based knowledgebase system.
3. **Model impact of options on proximate goals.**
   Example: Under current arrangements, 70% of calls are resolved at first point of contact. Review of past interactions indicates that training in the top 20 scenarios (cost $120,000) would lift this rate to 90%, and a knowledgebase (cost $40,000) would lift the rate to 80%.
4. **Model change in ultimate goals based on change in proximate goals.**
   Example: Of the 250 000 clients handled per year, 1% complain when their questions are answered at first point of contact. 5% of clients complain when their first point of contact did not lead to a resolution. Additionally, the rate of Category C complaints doubles for clients who did not have resolution at first point of contact.
5. **Compare benefits to costs to find the RROI of each initiative.**
   Example: Based on the developed model, both initiatives have a positive relative return on investment, with a 1.39:1 RROI for training versus a 2.08:1 RROI for the knowledgebase. Therefore, the knowledgebase would be the preferred investment.

Much like a standard cost-benefit analysis, an evaluation of the limitations and externalities of any RROI model is intrinsic to its use. In this example, does training impact on staff retention? Is the cost of maintenance of the knowledgebase incorporated? Without a critical assessment of the validity of any model, there is a risk of simply achieving "garbage in, garbage out".

Proximate goals	**Untreated**	**Training**	**Knowledgebase**
First contact answered %	70%	90%	80%
First contact unanswered #	75000	25000	50000
Ultimate goals			
Category A complaints	4306	2768	3537
Category B complaints	731	493	612
Category C complaints	462	237	350
Benefits			
Category A savings	$0	30760	15380
Category B savings	$0	23800	11900
Category C savings	$0	112500	56000
Gross savings		**167060**	**83280**
Cost		**120000**	**40000**
Net savings		**47060**	**43280**
RROI		**1.39:1**	**2.08:1**

Relative return on investment

An alternative approach originates from the marketing sector, known as Relative Return on Investment (RROI). Segar (2010) explains that RROI "sidesteps the problem of assigning a monetary value [for proximate goals by] providing **a practical comparison between desirable and measurable [outcomes]** … and the investments allocated …" *(emphasis added)*. Like SROI, RROI is dependent on a systems theory of change. First, the organisation must agree that achieving the nominated ultimate goals has real value. Second, linking of proximate goals to ultimate goals is undertaken to build a model of expected systems outcomes. With these steps completed, organisations have a way to determine the nominal value of achieving proximate goals and in turn, the projected benefit of proposed initiatives. Just as with the more traditional cost-benefit analysis, assessment is baselined against a "do nothing" scenario to allow comparison of relative costs and benefits. Since proximate goals have an indirect, deferred, or uncertain impact on achievement of ultimate goals, assessment of impact is normally done through propensity modelling. Propensity modelling looks at the changed likelihood of occurrence of events based on simulation of discrete events or transactions. Monte Carlo simulations are a widely accepted way to "studying problems that are otherwise intractable … [to] explore complex systems, examine quantities that are hidden in experiments, and easily repeat or modify experiments" (Harrison, 2010).

This is particularly important when examining natural phenomena that follow a power law distribution rather than a normal distribution (Figure 1). Power law distributions, especially in environments with low transaction volumes, can lead to highly variable outcomes. For example, if you have 200 transactions a year, and only one in 1000 leads to catastrophic failure, there is a strong temptation to act as if the possibility for catastrophic failure does not exist at all. A simple calculation of the mean of past data will lead to highly misleading results if any given year has a significantly higher or lower incidence of extreme outcomes.

In short, for lower volume situations, conducting a simulation over a longer period will provide more robust analysis and predictions of uncertainty than using historical data. On the other hand for higher volume situations, predicted performance will adhere more closely to the norm.

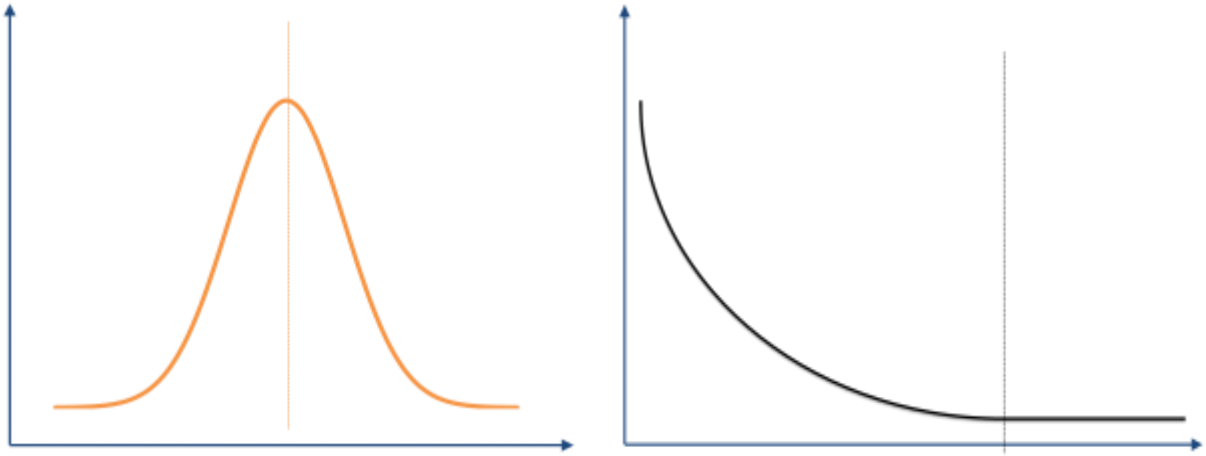

Figure 1. Normal distribution versus power law distribution of outcomes.

This completed RROI model then becomes both a communications tool and an evaluation model, by:

- representing an organisation's working theory for how and why it does what it does, and
- allowing a quantifiable valuation of costs versus benefits to be completed for any proposed initiative to change the status quo

Over time, as with Ssozi and Amlani (2015), enough data can be collected to show how well predicted systems behaviour matches the real world. The data provides the basis for ongoing modification and enhancement of the model going forward, but it should never entirely replace the model for the reasons outlined above.

In summary, the chief benefit of the RROI model is that it can justify initiatives through a repeatable, objective process that ties organisationally valuable (ultimate) outcomes to targetable (proximate) goals. Champions for any initiative can be identified by looking at the relative level of benefit to be realised by any sub-group of the organisation, and seeking their support or leadership for the initiative. In these circumstances, RROI methodology can provide additional political leverage strengthening otherwise marginal business cases when considering change in insolation.

Selecting the correct benefit measure

None of this seeks to invalidate the applicability of other benefit measures discussed here. Each benefit method can be the most appropriate choice, depending on the reason for its use. Figure 2 contextualises the usefulness of benefit measures by whether a narrow organisational benefit is sought versus a broad social benefit; and by whether the origin of the benefits being evaluated lie within or outside the organisation initiating the proposed change.

The overarching purpose of organisations will largely determine the correct benefit measure to use, although as with all of life these are guidelines rather than absolutes.

	Narrow benefit	Broad benefit
Internal focus	**ROI** Return on investment	**SROI** Social return on investment
External focus	**RROI** Relative return on investment	**CBA** Cost-benefit analysis

Figure 2. Comparative evaluation role for each benefit assessment measure.

Product-focused companies will most often use ROI measures, since their focus is on delivering defined products and services with clear scope and a known market value. These can be one-off projects or an ongoing manufacturing effort. Either the vendor or the buyer can carry out ROI calculations in order to determine whether a transaction should go ahead.

Community enterprises and service enterprises are driven more by RROI measures, since their success is defined by the systems that they can create or tap into for their benefit. This can be anything from ongoing attendance at a conference or seminar through the consultant ecosystem supporting a software platform. The multipolar systems mean that RROI are calculations that are unique to every party, since each will receive a different quantum of benefit.

Not-for-profit organisations that rely on philanthropic funding will spend more of their time creating SROI measures. More than any other benefit measure listed here, the primary value of SROI is as a marketing tool – but this is not meant in a pejorative way. Being able to articulate social impact in a quantifiable way helps people feel good about their choices both before and after investing.

Lastly, **policy makers, regulators and NGOs** will continue to use CBA measures to drive long-term decision making. The goal is to seek the broadest possible benefit according to their stated remit. Unlike the other types of organisation listed above that must justify their ongoing existence, it is presumed that these organisations will largely retain stable funding as long as they behave competently.

The alignment of organisations to these approaches is by no means absolute. All organisations can usefully apply all kinds of benefit measures where the situation is appropriate, for example:

- **ROI** can be used by a government regulator for the purpose of optimising like-for-like process efficiency (i.e. performance improvements that can be made without compromising the quality of their work).
- **SROI** measures may be adopted by a service enterprise to demonstrate the theory of change (TOC) underpinning its corporate social responsibility (CSR) activities, increasing the benefits accruing to the company brand.
- **RROI** measures can be used by a public company CEO to justify their strategic choices to a board, for a marketing division to justify their spending mix – or indeed, for a KM manager to sell their program to their boss. It is worth noting that RROI is also increasingly relevant for the purposes of valuing impact on the creation or curation of external communities.
- **CBA** assessments may be undertaken by not-for-profits to make a case for the release of funds by government or philanthropic services for the use of the non-profit.

The key is to be aware of the purpose of your benefit measure so you can pick the type that best fits your organisation's needs. Finally, it is worth remembering that all benefit realisation approaches involve prediction of the future in an uncertain world. When done well, benefit methodologies can vitally support better decision-making. However whenever used, we would all do well to be both cognisant of their limitations, and humble in their application.

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