

# Adopting Tools from Cost and Management Accounting to Improve the Manner in Which Costs in Social Programs are Analyzed and Evaluated

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**Background:** Managing programs in an environment where financial resources are limited, budget cuts are a reality, and external funding is now fiercely competitive, necessitate that both program administrators and program evaluators have a better understanding of program costs, so that financial resources can be optimized for societal good. This requires serious analysis of cost behavior and a proper understanding of the relationship between a program's variable costs and fixed costs since these costs have implications for clients fees and the number of clients that can be served. These types of analyses are quite routine in the profitability sector, but are considerably underutilized in other sectors.

**Purpose:** This paper will explain how several common strategic management tools from cost and management accounting can be used to present more meaningful and useful cost information, so that social program decision-making and cost-inclusive evaluations can be enhanced.

**Setting:** N/A.

**Keywords:** *break-even analysis; cost-behavior; cost structure; cost-volume-profit analysis; fixed costs; relevant costs; variable costs.*

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**Intervention:** N/A.

**Research Design:** A desk review was utilized for the discussion of the cost and management accounting concepts and tools outlined in this paper. The paper illustrates how the toolkit of economic evaluation tools can be enhanced by adding tools from cost and management accounting to enhance strategic decision-making.

**Findings:** This paper concludes by noting that program sustainability must be the new name of the game. This necessitates that program administrators and program evaluators start to analyze and evaluate program costs differently. Much work is needed to move towards a different philosophy of thinking with regards to program costs. Program administrators and program evaluators must therefore rise to the challenge and embrace cost analytical methodologies from other disciplines since the use of such methodologies can be beneficial to all concerned.

## Introduction

Economic appraisal methods such as cost-benefit analysis, net present value, and cost-effectiveness analysis, among others, offer much and are frequently used by profitability companies. These companies also utilize a number of cost and management accounting methodologies to aid decision-making such as break-even analysis, cost-volume-profit [CPV] analysis, and relevant cost analysis. Fundamental to these cost and management accounting methodologies is a proper understanding of variable costs and fixed costs, cost drivers, cost behavior, and cost structure since these issues are all central to the optimization of profits. In contrast to profitability companies, economic appraisal methodologies are considerably underutilized in social program analyses and program evaluations because of a number of practical problems which will be highlighted in the literature review. Additionally, methodologies from cost and management accounting are also greatly underutilized in social program analyses and evaluations because of their association with profitability.

Unlike profitability companies, where profit is the name of the game, social program administrators view social programs as fulfilling a different mission. Social programs provide a societal good. As a result, any reference to profitability and its origins is usually considered as quite distasteful to many persons. Consequently, many beneficial cost and management accounting methodologies which can greatly illuminate social program decision-making are generally ignored because of their link to *profitability*. While program administrators and program evaluators may not wish to think in terms of profitability, the reality is, that financial resources are limited and those tasked with decision-making have to at least ensure that they spend what they have in a way that maximizes societal good. They also need to consider program sustainability. To better comprehend program costs, several business tools from cost and management accounting can be adopted and utilized.

This paper contributes to the evaluation literature by discussing how methods from cost and management accounting can be used

to strengthen the manner in which cost information is analyzed to make social program decision-making more meaningful and useful. It posits that although social programs are not in business for profitability, these programs still need to at least break-even to be sustainable. Thus, a proper understanding of program costs is essential. The paper is arranged as follows: Section 1 provides a brief literature review on the importance of data in decision-making, challenges with economic cost appraisal methods, and an overview of important concepts in cost and management accounting. Section 2 discusses how several cost and management accounting methodologies can be used to enhance decision-making and program evaluations in social programs. The final section provides some suggestions on future directions for analyzing program costs to make more informed, meaningful, and useful program decisions.

## ***Data: The Lifeblood of Decision-Making***

Regardless to the type of organization (public or private, profit or non-for-profit, large or small), cost data can considerably aid decision-making in a number of different ways (Lepādatu, 2012). Whether cost data are being analyzed as a strategy to maximize profits, or to better understand your program's cost drivers so that you deliver your program services in a more efficient way, costs should be of critical concern to all decision-makers. As the world works towards advancing the United Nations 2030 sustainable development Agenda which was adopted in 2015 by 193 countries (United Nations, 2019), there is an urgent call for a data revolution globally to aid decision-making, permit better monitoring and evaluation, facilitate accountability, and advance sustainable development (United Nations, 2018). While the United Nations Agenda is targetted at the global and national levels, sustainable development cannot become a reality without a partnership with all people on the planet. Thus, it is incumbent that those responsible for social programs utilize data constructively to optimize the value that their programs can serve in society since many social programs serve a

fundamental societal good that directly contributes to the United Nations 2030 Agenda. Twenty-first century program administrators and evaluators therefore need to adopt a new motto, namely,

Data are the lifeblood of decision-making and the raw material for accountability. Without high-quality data providing the right information on the right things at the right time; designing, monitoring and evaluating effective policies becomes almost impossible (Independent Expert Advisory Group, 2014, p. 2).

### Challenges with Traditional Cost Analytical Methodologies

Traditional economic cost analytical methodologies include several distinct but related tools that can be used to appraise an evaluand (e.g., cost-benefit analysis, net present value, cost-effectiveness analysis, internal rate of return, cost-utility analysis). Many of these methodologies require that both costs and benefits be expressed in monetary units, something that is not always possible and/or practical (Persaud, 2018). According to the evaluation literature, although economic cost analytical methodologies are used by some program administrators and program evaluators, there is still very limited use of these methodologies overall (Christie & Fleischer, 2010). Moreover, when economic cost analytical studies are performed, they are often of poor quality (Madsen, Eddleston, Hansen, & Konradsen, 2017). This is due to several problems including persons not having the requisite skills to perform cost analysis (Herman, Avery, Schemp, & Walsh, 2009; Linfield & Posavac, 2019; Persaud, in press), controversies with certain types of monetary valuations such as lives saved (Linfield & Posavac, 2019; World Bank, 1996), issues with subjective weighing (Kee, 2004), incomplete and/or missing records, choice of an appropriate discount rate, problems with duplication and/or double counting, figuring out which costs and benefits should be measured, measurement of intangibles (Persaud, 2007a, 2007b, 2009a), among other issues. Due to the limited use and challenges with economic cost appraisal methods,

program administrators and program evaluators might find it useful to utilize some simpler cost analytical methodologies to aid decision-making, namely, methodologies from cost and management accounting.

### Overview of Important Concepts in Cost and Management Accounting

As previously mentioned, companies engaged in the numbers game of profitability utilize a wide array of cost and management accounting methodologies that enable them to figure out how to optimize profit. These methodologies accumulate, measure, analyze, and interpret cost data for both internal and external decision-making (Persaud, 2009b) and include methodologies such as break-even analysis, CVP analysis, and relevant cost analysis. The fundamental logic underpinning these methodologies hinges on an understanding of cost or activity drivers, cost behavior, and cost structure (Garrison, Noreen, & Brewer, 2016). These concepts, along with some specific cost and management methodologies are now briefly discussed.

**Cost or Activity Drivers:** The literature provides many different definitions for cost drivers. In this paper, a cost driver is defined as a factor that triggers cost (Sheng, 2009), or causes the activity's overall cost to change (Estermann & Claeys-Kulik, 2013). It should be noted that it actually quite common for a particular activity to have more than one cost driver (Garrison et al., 2016).

**Cost Behavior:** Refers to the sensitivity of *variable costs* and *fixed costs* in relation to changes in some activity level (traditionally production volume or sales volume). *Variable costs* (e.g., direct materials, direct labor) are costs that are incurred only when the activity is taking place. Thus, these costs are directly tied to cost drivers and vary in direct proportion to activity levels (Needles, Powers, & Crosson, 2011; Persaud, 2009c). For example, the number of latex gloves that are used in a clinic will vary according to the number of clients served. When considered on a per unit basis, variable costs are constant;

however, when considered in total, variable costs vary inversely with activity becoming larger with greater activity (Datar & Rajan, 2018). In contrast, *fixed costs* (e.g., capital expenditure such as furniture/equipment/machinery, utilities, rent, insurance) are costs that will be incurred as long as the entity remains in operation. These costs are incurred whether activity takes place or not. Fixed costs are assumed to have no impact on decisions in the short-term since the organization is assumed to be operating within the relevant range. The relevant range is the range of normal activity, that is, the boundaries within which an organization can operate without incurring additional fixed costs in the short-term (Datar & Rajan, 2018; Needles, Powers, & Crosson, 2011; Weygandt, Kimmel, & Kieso, 2010). On a total basis, fixed costs are constant within the relevant range; however, when considered on a per unit basis, fixed costs vary with activity or volume becoming smaller with greater activity or volume (Garrison et al., 2016).

**Cost Structure:** Cost structure is concerned with the relative proportion of fixed costs and variable costs in an organization (Garrison et al., 2016; Persaud, 2009c). For example, if an organization has \$1,000,000 in fixed costs and \$200,000 in variable costs, the cost structure of this organization will be 83%:17%. Firms with higher operating leverage (i.e., a higher proportion of fixed costs) will receive considerably more profit when sales are high in comparison to a similar organization with low operating leverage, but will be considerably more vulnerable compared to the low leverage operating organization during periods of downturn (Garrison et al., 2016). An entity's cost structure thus has implications for its performance (Ranjani, 2015). Specifically, firms with a larger proportion of committed fixed costs (i.e., costs which cannot be significantly reduced in the short-term such as rent, depreciation, salaries), are less likely to break-even (Horngren, Datar, & Rajan, 2012).

**The Contribution Income Statement Approach:** The contribution income statement approach is geared at facilitating more informed planning, control, and decision-making. This

approach emphasizes cost behavior by clearly distinguishing between an entity's variable costs and fixed costs (Needles, Powers, & Crosson, 2011). Essentially, the contribution margin is computed by subtracting variable costs from revenue. Fixed costs are then subtracted from the contribution margin to arrive at profit (i.e., net income). The contribution income statement approach provides the basic foundation for analyses such as break-even analysis and CVP analysis (Garrison et al., 2016).

**Break-Even Analysis:** Is a common business tool which is often used during the planning and implementation phases to measure the crisis point of an entity (Alnasser, Shaban, & Al-Zubi, 2014). It tells decision-makers how much sales must be undertaken before a profit is realized, or in the case of a service organization, how much revenue must be earned before a profit is made (Kinney, Prather-Kinsey, & Raiborn, 2006). At the break-even point, sales/revenue equates to the organization's variable and fixed costs (i.e., its total costs) and the organization earns neither a profit nor a loss. A sales volume below the break-even point will produce an operating loss, while a sales volume above the break-even point will generate a profit (Garrison et al., 2016). In performing break-even analysis, assumptions pertaining to revenue and expenses can be changed to fully understand the financial success that can be generated from an existing or new program (Patton, 1999).

**CVP Analysis:** This methodology analyses the relationship between revenue and expenses in the short-term (Abdullahi, Sulaimon, Mukhtar, & Musa, 2017; Bragg, 2019). It essentially examines how changes in variable costs and/or fixed costs, selling price, and sales volume affect profitability (Abdullahi, 2015; Albrecgt, Stice, Stice, & Swain, 2011; Horngren, Datar, George, Rajan, & Ittner, 2008). CVP analysis is intricately related to break-even analysis and also uses a number of assumptions.

**Relevant Cost Analysis:** Is a managerial accounting concept that focuses on identifying business costs which are avoidable. The

premise underlying this type of analysis is that any costs and/or benefits which will be incurred regardless of the decision should be ignored. Hence, only relevant costs and benefits are analyzed in formulating a decision, thus eliminating unnecessary data from the analysis (Albrecht, Stice, Stice, & Swain, 2011; Garrison et al., 2016).

## Using Tools From Cost And Management Accounting to Enhance Strategic Decision-Making in Social Programs and Produce More Meaningful Cost-Inclusive Evaluations

Program administrators and program evaluators need to make intelligent and informed decisions that are data-driven. In social programs, these decision focus on three questions: (1) Which services should the program offer and/or sell? (2) Who should the program be serving? (3) How should the program services be executed? These questions can best be answered by using one or more cost and management accounting tools. Such tools are widely utilized in manufacturing firms to facilitate decision-making (Mahal & Hossain, 2015; Ranjani, 2015). However, because these tools were designed with a focus on profitability, they are not widely used by social program administrations or program evaluators. This section argues that these methodologies can

enhance social program decision-making and program evaluation.

### Break-Even Analysis

Regardless to whether your program is offering services for a minimal fee sufficient only to recover costs (i.e., to break-even), or whether your program services are being priced to make a certain amount of revenue, knowing your break-even point in both dollars and units can provide really insightful and useful information for both internal decision-making and program evaluation. Consider the following scenario. A program has fixed costs of \$2,000, variable costs of \$150 per unit, and earns revenue of \$200 per client. As shown in Figure 1, if the program serves 100 clients, it contributes \$5,000 (100 clients X \$50) to cover fixed expenses. When fixed expenses are deducted, the program will earn \$3,000 in net income. As noted in the literature review, the Contribution Margin Income Statement provides the data needed for calculating the break-even point. Thus, Figure 1 further shows that the break-even point is 40 clients. At this number of clients, the program will neither make a profit nor a loss since its total costs [i.e., Fixed Costs \$2,000 + Variable Costs \$150 X 40 clients] is exactly equal to the revenue earned [i.e., \$200 X 40 clients]. If the program serves less than 40 clients, it will make a loss. If the program serves more than 40 clients, the program will receive \$50 in profit (i.e., the contribution margin per unit) for each additional client served.

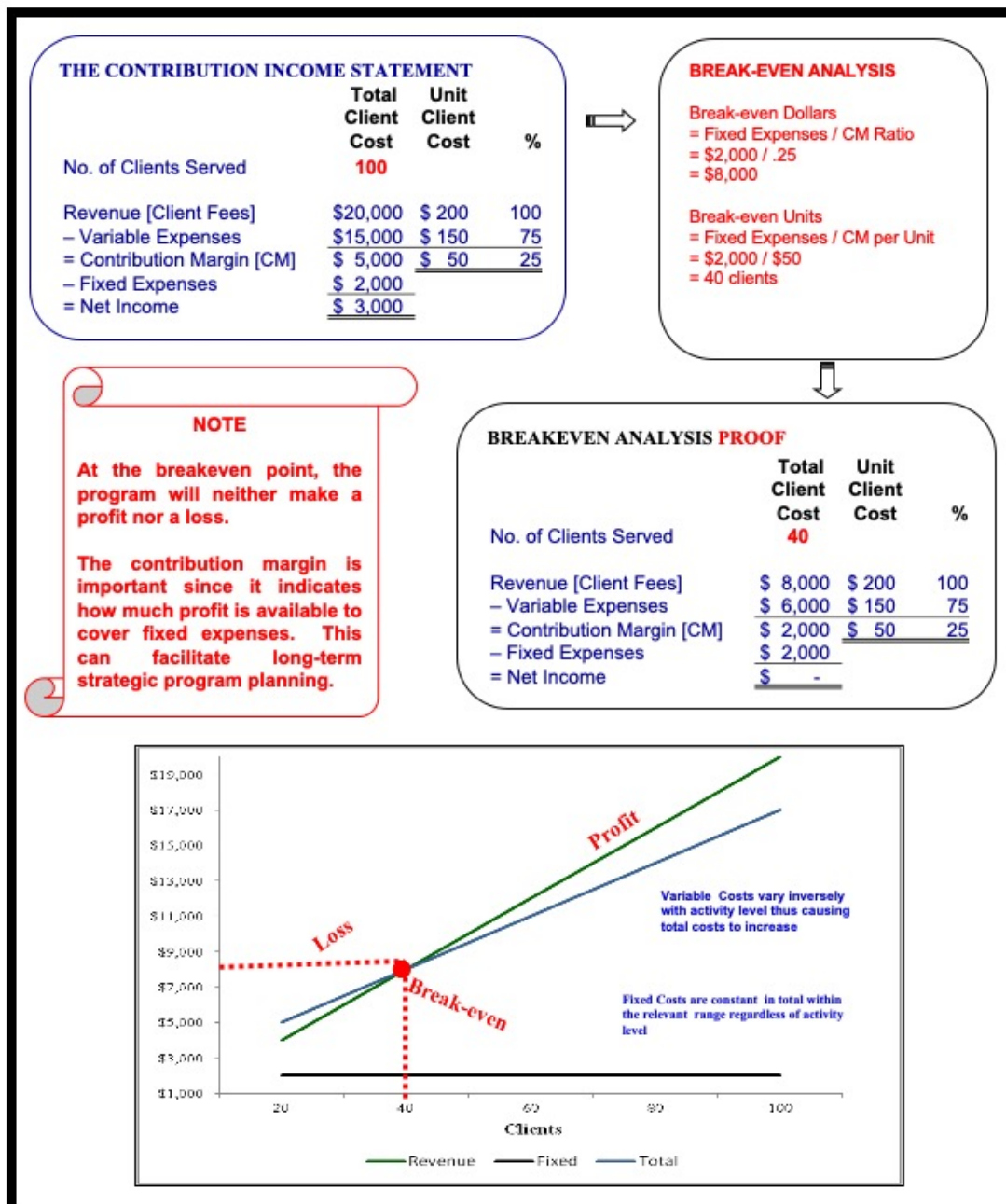


Figure 1. Break-even analysis.

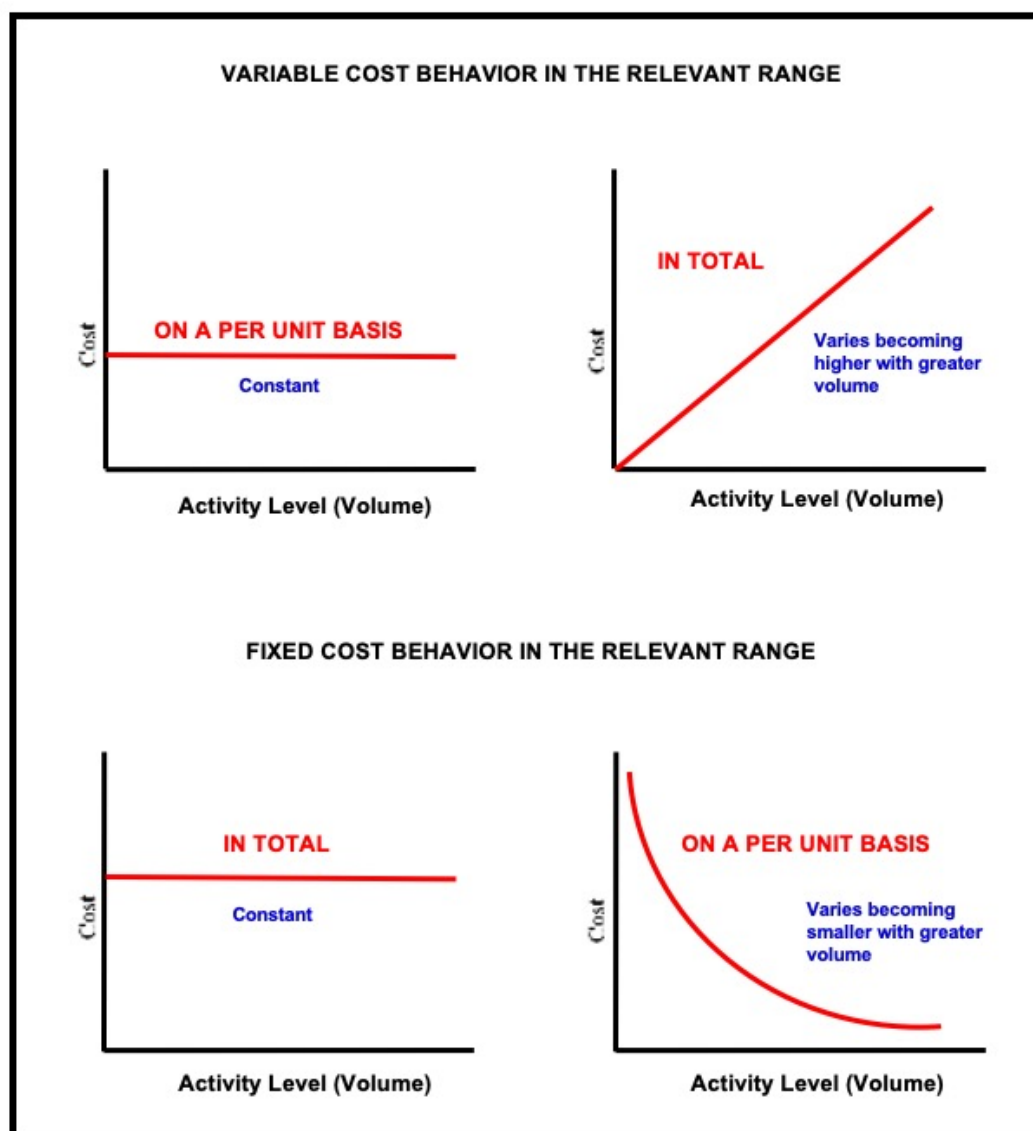


Figure 2. Cost behavior.

So how exactly can break-even analysis help with social program decision-making and social program evaluation? Knowing the point at which the program will break-even is very important because this will considerably decrease the risk of program failure. Today, most (if not all) social programs need to at least break-even to remain in operation. Thus, if a program is not at least recovering its costs, it may need to be discontinued. However, program administrators will generally not want their programs to be terminated. They therefore need to figure out an optimal configuration between costs (fixed and

variable), volume (number of clients served), and revenue (client fees) that will allow the program to at least break-even. This requires a good understanding of cost behavior (see Figure 2), as well as CVP analysis which is discussed shortly. Break-even analysis can also be used to ascertain what the break-even point will be if a targeted level of profit is desired. Finally, it can also aid decision-makers to strategically plan for program continuation, exportation, and/or expansion.

## CVP Analysis

As previously mentioned, CVP analysis is an important cost and management accounting tool that can be adopted for social program analyses and program evaluations. This tool is generally used in conjunction with break-even analysis and uses sensitivity analyses to test various assumptions to observe how net income would be affected in the Contribution Format Income Statement. Specifically, CVP analyses are helpful when program decision-makers or program evaluators wish to understand how changes in either client fees and/or changes in fixed costs and/or variable costs will affect the program's bottom line (i.e., net income earned). For example, if client fees increase from \$200 to \$210 but fixed and variable costs remain the same, the program's break-even point will decrease from 40 clients to approximately 34 clients [i.e.,  $\$2,000/\$60 = 33.33$ ]. The program will now need to serve only 84 clients instead of 100 clients to earn the original profit of \$3,000 shown in Figure 1.

If instead fixed costs increased from \$2,000 to \$3,000, with no increases in either client fees or variables expenses, the break-even point will move to 60 clients [i.e.,  $\$3,000/\$50$ ]. Finally, if client fees increased to \$210, variable expenses increased by \$15 per client, and fixed costs increased by \$500, the new break-even point for the program will be approximately 56 clients [i.e.,  $\$2,500/\$45 = 55.56$ ].

CVP analysis is also useful for analyzing how increases or decreases in client fees will affect activity levels. Thus, in the latter scenario, if the number of clients served declined from the original 100 to 90 when client fees were increased to \$210, program administrators would have an opportunity to revisit this decision and see if it would make more sense to leave client fees at the original amount of \$200 and instead try to serve more clients to offset the increases in fixed and variable costs. For instance, if the existing

program facilities were only being utilized at 50% capacity (current clients served = 100), a strategy to utilize the facilities fully (i.e., serve 200 clients instead) would actually be advantageous since the program's net income would actually increase from \$3,000 to \$4,500 which is a 50% increase in net income. Keeping client fees at \$200 in the face of rising fixed and variable costs would therefore be quite advantageous if the program's facilities could be fully optimized (see Figure 3). In this scenario, the program's break-even point will be approximately 72 clients. Alternatively, if the program administrators were satisfied with just maintaining the original net income of \$3,000 (see Figure 1), the program would need to serve approximately 158 clients, instead of 100 clients.

Undertaking CPV analysis is therefore very useful since it can provide data to facilitate different types of decisions including the following:- (1) It allows sensitivity analyses to be performed to examine which combination of costs, volume, and prices charged would make the best sense for current program operations. (2) It helps to determine if fixed costs are too excessive so that strategies can be implemented to reduce and control these costs since lower fixed costs will enable the program to have a lower break-even. This means that the program would start to earn net income sooner. Alternatively, increasing the program's fixed costs could also be advantageous since this may facilitate service to a greater volume of clients which would offset the increase in fixed costs. (3) It is useful for determining which program services to emphasize (i.e., what is the best program services mix). (4) It can assist with competitive leverage when funding is being sought since projections can be done to show how the funding will be utilized and maximized for societal good. (5) It is a powerful decision-making tool that can be used for strategic planning, as well as for forecasting for future program operations.



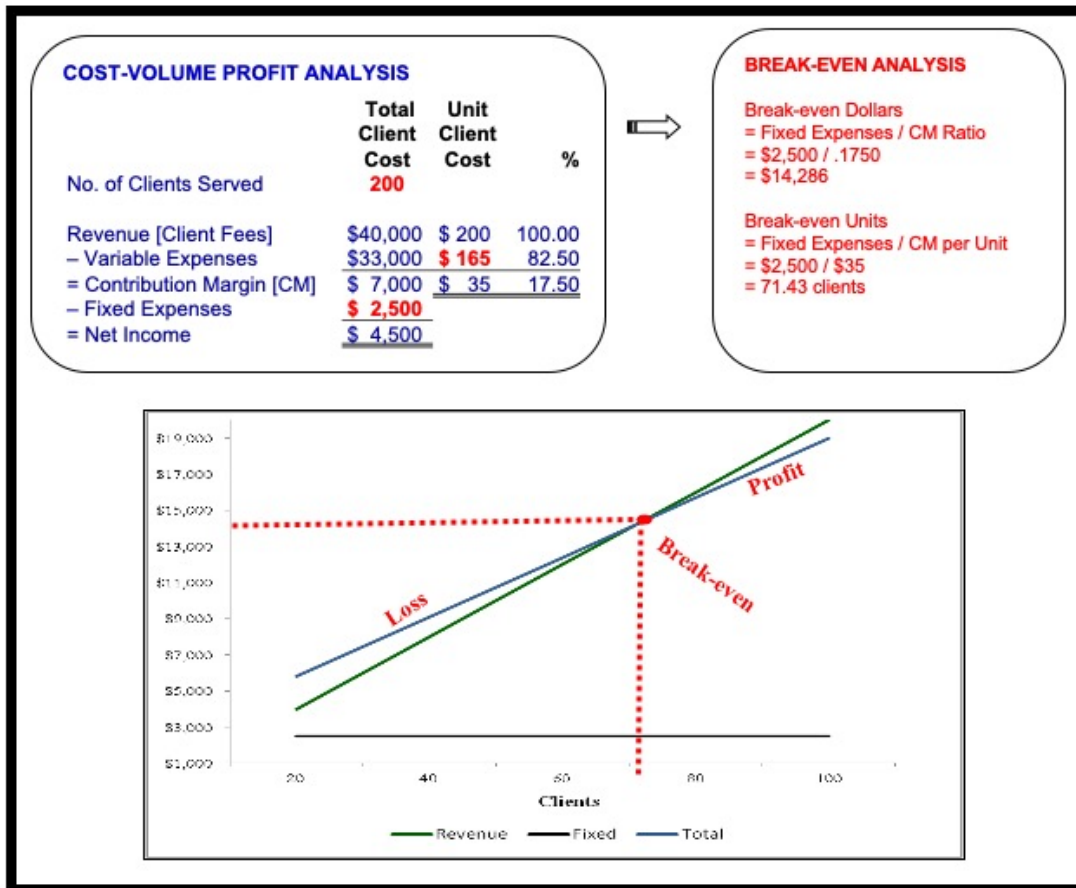


Figure 3. Cost-volume profit analysis.

### Relevant Cost Analysis

Relevant cost analysis is the final cost and management accounting tool that will be discussed in this paper. This type of analysis is also suited for use in social program analysis and program evaluation and is particularly helpful for the following types of decisions: (1) Determining whether a particular service or procedure should be added or dropped. (2) Determining if a particular service or procedure should be done internally or outsourced. (3) Determining if it would make sense to offer a one-off special service if fixed costs are underutilized. (4) Determining how to best optimize the use of a constrained resource (i.e., a resource with limited capacity). (5) Determining if a particular service should be sold as is or processed further.

Relevant cost analysis focuses only on the relevant costs and benefits of a future decision, that is, the costs that will be incurred specifically because of the decision and/or the costs that could be avoided because of the decision (e.g., if a service is dropped or outsourced), versus the benefits that would be gained from the particular decision. All other costs and benefits are ignored since they are irrelevant to the decision. Of specific interest in this type of analysis is allocated fixed costs. These are common fixed costs which are allocated to different services using some form of apportionment. As a result of this apportionment, a particular service may then appear as if it is losing money, when in fact it is not. Relevant costs analysis is thus very important since it can help decision-makers with strategic planning and program evaluators with determining the merit/worth of a particular program service.

## Future Directions for Analyzing Program Costs to Make More Meaningful and Informed Program Decisions

The future for analyzing and evaluating costs in social programs must be one that merges wisdom from prior experiences with vision from exploring new approaches, methods, and ways of doing such analyses (Yates & Persaud, 2019). This is particularly important since funding is becoming much more competitive, and also in view of the fact that all program administrators should now be contemplating program sustainability since we must join forces to achieve the United Nations 2030 Agenda. The traditional heavy focus by both program administrators and program evaluators on outcomes alone is no longer sufficient. Funders are demanding very detailed cost information on the costs involved with program operations, as well as the outcomes that will be derived from the financial resources obtained. Adopting and/or adapting tools from other disciplines such as cost and management accounting can be extremely useful and valuable for analyzing and evaluating social programs. Such methods can assist with preparing stronger program proposals to justify funding, and can tremendously help decision-makers to understand their program costs so that financial resources can be fully optimized for societal good. The use of cost and management accounting tools can also assist with strategic planning for program expansion and program sustainability.

Having a good understanding of your program's fixed and variable costs, how these costs behave, and your program's cost behavior provides powerful information for strategic decision-making when different approaches to program delivery are being considered. Knowing your program's fixed and variable costs also permits quick forecasting when different program activity levels are being contemplated. For example, when fixed costs and variable costs are combined into the simple algebraic formula shown in Figure 4, this formula can be used to determine the total costs for any projected program activity level.

Understanding your program's cost structure is also important. Program administrators of short-term programs need not worry about their program's cost structure. However, program administrators in charge of programs that are long-term in nature need to fully understand the relationship between fixed and variable costs. General fixed costs in most social programs will include cost categories such as rent, insurance, capital expenditures (e.g., equipment, machinery), utilities (e.g., electricity, telephone), and salaried labor. Common variable costs include all expense categories that vary directly in proportion to the volume of clients served. For example, typical variable costs in health care would include client care supplies such as gloves and medication. Since the cost structure of many social programs is heavily weighted towards a higher proportion of fixed costs, it is important that these costs be fully optimized, since this can greatly reduce the cost of client fees, or in the case where services are provided free of charge, make program operations more efficient.

The common CVP analysis concept that is so fundamental to the business discipline, along with the concept of break-even analysis, can also be usefully utilized for social program analysis. While program administrators and program evaluators would generally not want to think of social programs in a profit driven sense, the reality is that programs now need to show that they can at least be run without making a loss. Computing the break-even point may therefore actually be good strategy since it will indicate the number of clients that can be served with the money available. Program evaluators are tasked with assessing the worth of a program and with providing an evaluation report that can help program administrators to learn and improve. Understanding fundamental concepts from cost and management accounting and how they can be adopted and adapted for social program analysis, can tremendously help evaluators to prepare evaluation reports that are more meaningful for learning.

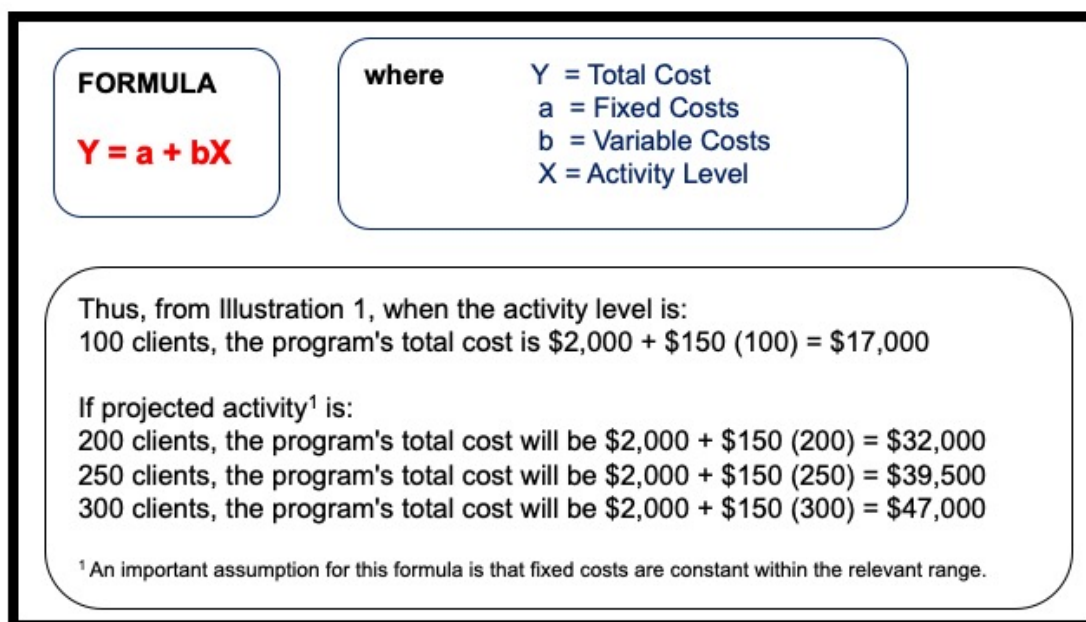


Figure 4. Algebraic formula for determining total program costs.

Helping program administrators to understand the cost drivers for their programs, and the concept of relevant costing are also important to enhance decision-making in service programs. While these methods are quite routine in business decision-making, and may appear quite foreign and perhaps even be perceived as complicated by many evaluators, in reality, they are actually quite simple and can provide invaluable information on program costs.

This paper has highlighted that several tools from cost and management accounting can be adopted and used to enhance decision-making in social programs. These tools are intricately linked to profitability which may be a term that is distasteful to many social program administrators. It may therefore be useful to tweak these methodologies so that the word profitability is not used. For instance, the word *profit* in the contribution format income statement can be replaced with *revenue earned* which may be considerably more palatable to social program administrators. Likewise, the word *profit* can be completely omitted from CVP analysis and this type of analysis can simply be referred to as cost volume analysis.

In conclusion, program sustainability must be the new name of the game. This

necessitates that program administrators and program evaluators start to analyze and evaluate program costs differently. Much work is needed to move towards a different philosophy of thinking with regards to program costs. As Franklin, Lomas, Walker, and Young (2019) point out a “one size fits all” (p. 631) approach cannot be used to analyze and/or evaluate program costs. Professional judgment is needed to determine which cost analytical methodology would provide the most useful information for decision-making in individual programs. Program administrators and program evaluators must therefore rise to the challenge and embrace cost analytical methodologies from other disciplines since the use of such methodologies can be beneficial to all concerned.

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