ima®

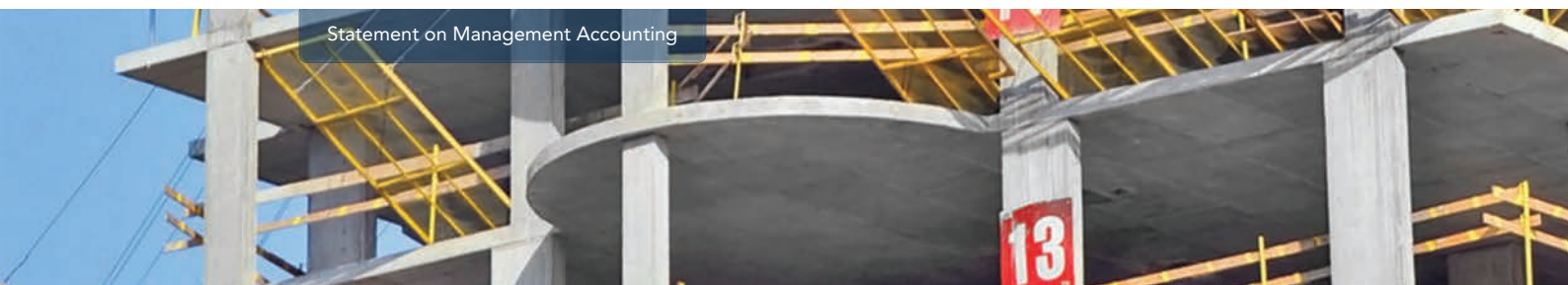
The Association of Accountants and Financial Professionals in Business

美国管理会计师协会

管理成本的概念框架

The Conceptual Framework for Managerial Costing

Statement on Management Accounting



关于 IMA®

IMA® 是全球最大且最受尊敬的协会之一，由工商界会计人员和财务专业人士组成，专注于推进管理会计职业。

在全球范围内，IMA 通过进行学术研究、开展注册管理会计师（CMA®）认证计划、实施继续教育、建立人脉网络以及倡导高标准商业道德行为来助推管理会计职业的发展。IMA 已经在全球 140 个国家成立了 300 个专家和学生分会，拥有 10 万多名会员。IMA 的总部位于美国新泽西州蒙特维尔市，它将全球分为四个区域——美洲、亚太地区、欧洲和中东及非洲地区并提供本地化服务。如想了解更多有关 IMA 的信息，请访问 www.imanet.org。

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IMA 研究

《管理会计公告》

《管理会计公告》（SMA）介绍了 IMA 对于管理会计领域最佳实践的立场和观点。这些权威专著覆盖了实践操作中所遇到的广泛问题。

转变财务职能

该研究领域侧重于研究组织如何让员工的行为与其战略目标保持一致，研究内容包括运营控制系统，其专注于那些能让一线员工实现流程持续改进的举措；此外还包括管理控制系统，旨在促进管理人员将自身行为与公司的总体战略目标契合起来。

目录

Table of Contents

引言

本文提供了一个管理成本框架，组织能够通过它明确哪些成本信息能为其内部决策提供最好的支持，同时确保自身的成本建模方法是合乎情理的。借助该框架，组织可以评估其成本核算方法，同时依据国际公认的成本核算原则确定哪些成本核算方法能够最好地满足自身的成本建模需要。该框架侧重于决策支持方面的成本建模，其目的是将管理成本置于一个由原则、概念和制约因素组成的、结构清晰的、经过充分推理的概念基础之上，为决策提供支持。“管理成本的概念框架”并不是一种特定的成本核算方法，相反，该框架为比较、挑选、实施或设计成本核算方法提供了有益的、全面的及合理的基准。

创建概念框架的需求来源于两个问题。首先，针对外部使用者的财务会计和报告受到准则、法规和规则的制约，而这些因素会影响到内部决策所使用的最佳成本信息的生成。其次，尽管成本信息对于外部和内部使用者而言可用于多种目的，但就组织内部而言，可为决策提供支持的最合适的成本建模方法尚未取得普遍的认同，或者建模方法的标准尚未得到明确的阐述。

“管理成本概念框架”所期望取得的成果是帮助组织设计和构建以原则为基础的成本模型，管理者可以成功地应用这些模型来改进运营状况并实现战略目标。

关键术语

管理会计是一个专业领域，它涉及到管理决策制定过程中的协作，计划和绩效管理系统的设计，提供财务报告和控制方面的专业知识以协助管理层制定和实施组织的战略。IMA，《管理会计的定义》，《管理会计公告》，2008。

成本会计对以外部财务报告或监管为目的的成本进行计量和报告，其必须遵循和遵守准则和原则，以符合法规、法律或其他既定准则和要求的规定。（国际会计师联合会（IFAC），《评估和改进组织的成本核算》，《国际良好实践指南》，2009 年 7 月。

管理成本纯粹是出于组织的内部使用需要而执行的成本核算，以确保用于决策的信息反映了组织资源和运营的特征。

框架的使用

管理成本的概念框架能满足实务界和学术界的多种需求：

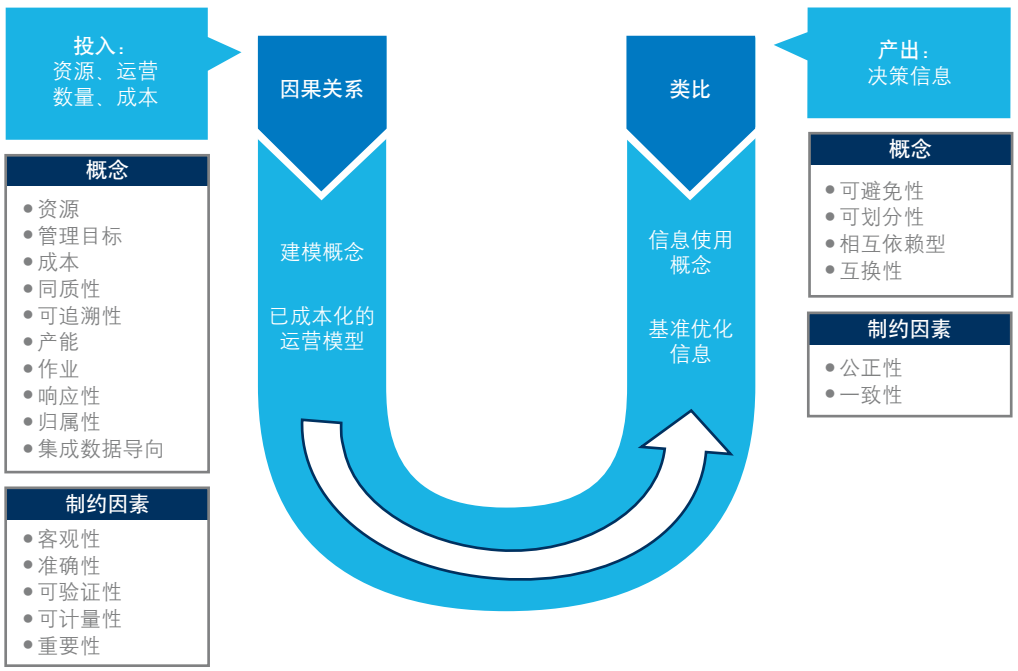
- 它为成本模型的设计提供了指导，这些成本模型能准确地反映组织中最为常见的决策工作的操作和过程；
- 它为生成内部管理所需的成本信息建立了可靠的参考，并阐明了这一成本信息与外部财务报告、税务报告和监管成本信息有所不同的原因所在；
- 在生成与决策相关的成本信息方面，它提供了详细的指导来比较现有方法和替代方法的优劣势。

框架概述

成本建模以货币形式来呈现组织的资源、流程、产品和服务。而管理成本的概念框架概述了建立有效的成本模型所必需的原则、概念和制约因素。

运营建模（以及成本建模）的指导原则具有因果性，即能够反映因果关系。具有实效的成本模型必须能够有效地指导管理者（1）从货币结果追溯运营原因，以及（2）就正在考虑的特定运营行动（或原因）可能产生的货币结果形成明确的见解。

图 1. 管理成本的概念框架



[1] 本文围绕管理成本的概念框架采用了更为实际的方法。如想了解更为详细的学术性讨论，请参阅完整文档：《管理成本的概念框架》。

通过应用因果关系原则及相关概念，我们可以创建一个反映组织运营的模型并阐释由此带来的财务结果。这项工作确立了一个基础，借此，管理者可以寻求以最优方式来实现战略。

决策制定的指导原则是类比——利用具有因果关系的见解来推断过去或未来的原因或结果。管理者通过应用类比原理来推断过去或未来的原因或结果，进而对成本信息加以利用。这样可以学习过去经验，面向未来制定计划，并为资源应用决策提供支持以实现战略目标。

管理成本的目标

管理成本的目标是：

1. 以货币形式来反映企业资源的利用情况；
2. 将因果效应的见解与企业过去、现在或未来的经济活动联系起来。

管理成本有助于管理人员开展分析并制定决策，并为优化企业战略目标的实现提供支持。

内部运营是管理成本的重点，而管理成本的主要用户是内部管理层。从本质上讲，管理成本阐述了组织资源、活动、产品以及服务之间的关联，以便最终以货币形式描述这些经济关系并形成理解。其结果就是管理成本模型。

关键术语

货币反映：管理成本必须为详细的经济决策提供支持，必须以货币形式准确地反映资源和流程的实际情况。

资源：为了实现战略目标，组织需要获取和部署人员、机器设备、建筑物和资本等资源。资源的获取和部署还包括组织所有成本的相关来源。

因果效应的见解：内部管理层在制定流程设计、提高运营效率和效果以及战略执行的相关决策时，需要针对资源应用进行合理推理。

企业经济活动：企业经济活动是指不仅限于生产或服务运营的运营活动，它包括用于实现战略目标的所有资源。

管理者：管理成本侧重于管理者和员工为制定组织内部决策所产生的需求。

分析和决策制定：分析侧重于推动学习和获取企业经济活动的相关知识，特别是资源和能力方面的知识，其目标是实现战略目标。

优化：内部管理层的任务是通过利用资源以最小成本实现收益的最大化，进而实现企业的战略目标。

企业的战略目标：目标可以是财务目标或非财务目标。

管理会计师的职能

管理会计师的职能之一就是提供信息，从而为寻求优化业务运营的管理者和员工提供决策支持。管理成本信息可用于外部用途，但需要根据相关的外部报告原则、准则和法律加以评估。以下八项原则涵盖了用于内部目的的管理成本的范围：

1. 为内部管理者和员工提供准确、客观的组织成本模型和反映组织资源使用情况的成本信息。
2. 以灵活的方式提供决策支持信息，以契合内部决策者所需见解的时间节点。
3. 围绕内部决策者正在考虑的替代方案，提供边际 / 增量方面的相关见解。
4. 提供产出与生产和交付这些产出所需投入之间的量化因果效应的模型。
5. 以货币形式准确地评估组织运营和支持流程所需的资源的供应和消耗情况。
6. 提供信息以辅助制定即时及前瞻性的内部决策，以实现优化、取得增长并实现企业战略目标。
7. 提供内部信息以评估绩效并通过结果进行学习。
8. 为探索性和预测性的管理活动提供基础和基准因素。

理解管理成本的概念框架

管理成本的原则

管理成本模型的设计、实施和应用必须遵循两个原则 ——因果效应和类比。因果效应涉及到获取和理解企业的量化因果关系。而类比是在行动优化过程中应用因果信息。

关键术语

因果效应：管理目标的量化产出与实现这一产出时所需消耗的投入量之间的关系。[2]

类比：利用具有因果关系的见解来推断过去或未来的原因或影响。

管理者追求资源的最优利用方式，为了提供支持，管理成本需要建立一个合理的模型，以量化方式来计量组织的所有资源、商品和服务。资源消耗量和相关产出量的量化信息所构建的基础可以帮助确定管理成本的货币化信息，并对有效地管理企业提供支持。模型越精准，假设越有效，它们所反映的情况就越接近于组织资源和流程的实际情况。

管理成本的核心是一个由产出量及所需投入量（资源）组成的运营模型。基于数量的因果效应成本模型的关注重点不是将总分类账的货币单位（例如美元、欧元）解析为财务指标，而是将资源、产品和服务直接联系起来，而管理者需要围绕这三者做出决策。货币作为一个通用要素，用以比较多样化的且通常无法加以比较的各个运营决策方案。

这种建模方法通过两种方式来满足管理者的信息需求：

1. 非货币形式，以量化方式来展示过程之中资源之间的相关因果关系；
2. 货币形式，围绕资源的数量关系提供财务评估。

从根本上而言，类比构成了所有管理决策和行动的基础。它所形成的机制可以帮助管理者获取宝贵的业务经验并加以应用。借助基于运营因果效应的成本模型所提供的信息，组织可以对类比加以应用。这种因果模型可为所有管理者提供组织运营关系及相关货币化结果的、清晰的、具有逻辑关系的深入观点，进而推动学习和决策制定。（请参阅附录，有关因果效应强度的讨论。）

[2] 改编自 Gordon Shillinglaw 的《外部报告的成本会计原则：概念框架》，向 William A. Paton 致敬，密歇根大学，密歇根州安娜堡市，1979 年，第 162 页。

管理成本的概念

管理成本的概念由两个基本的、相互关联的观点构成：

1. 衡量和获取组织的资源和成本信息（称为“建模”）；

2. 将这些信息用于制定决策。

“成本建模视图”的目标是提供计量和核算数据（包括费率）以反映在支持、管理以及产品或服务的生产过程中组织资源的消耗情况。高效的模型可以为各种各样的内部管理活动提供基准信息，如规划、改善运营以及绩效评估。**因果效应**是构建管理成本运营模型以及模型提供信息所应遵循的原则。

“信息使用视图”的目的是提供一个基础，让任一级别的决策者（包括经理、主管或员工）明白应如何应用成本模型的结果来获取见解和做出推断，进而制定决策并采取行动。决策者通过模型信息来获取见解，并应用见解来推断将现有资源用于新目的或将新的资源用于现有目的的情况（如采用**类比方式**）。在通过应用模型信息来选择最优决策方案并采取适应性和纠正性措施的过程中，类比是所应遵循的原则。

建模概念概述

这些概念可作为构造模块用以建立反映组织运营的因果效应模型：

1. 构成企业运营模型的**构造**模块（资源和管理目标）；

2. 这些构造模块的**特征**（成本、同质性、可追溯性、产能和作业）；

3. 模型之中构造模块之间的**相互关系**（响应性和归属性）；

4. 模型所需**数据**的性质（集成数据导向）。

在设计基于因果效应的模型以反映组织的运营情况时，首先要考虑的事项是：

- 我们想要完成什么？（**管理目标**）
- 为了实现这些目标，我们有什么可以利用？（**资源**）

资源：人员、机器设备、信息技术、原材料和物品 / 组织内部开发的知识产权（例如，医院内部开发的计费软件）。根据有意放宽的资源定义，资源可以是：

- 所有成本的来源。
- 具有生产能力的实体。
- 决策者必须加以调整或施加影响以实现变革的量化实体。
- 优化过程中的基本构造模块；它们决定了任何优化活动所来带来的增量收益的大小。

管理目标：是指应用或提供资源的具体成果或结果，管理层选择对其进行监控以推进一项或多项管理活动。管理目标的关键考虑因素包括：

1. 实现管理目标是利用资源获取产出的原因所在。
2. 制定和管理互不关联的管理目标对于企业实现其战略目标而言是必要的。
3. 管理目标要与管理者的责任、衡量需求、问责制以及最终的激励措施保持一致。

管理目标可以是组织的最终产出或任何中间产出。它们可在管理者认为合适的任何时间框架内满足任何的计量、分析或预测之需。管理目标的示例包括内部消耗的生产活动和支持活动、外部活动或合约服务、可销售的产品和服务、目标市场和细分市场、建设或获取资源和基础设施的项目。

管理目标消耗资源，且大部分管理目标有助于实现下游的管理目标或更高层次的管理目标。准确反映管理目标之间的消耗关系可确保在实现管理目标的过程中所消耗的所有资源都是可以识别和确认的。如此一来，模型可以累积所有目标的可归属成本——最接近于完全成本的成本，其依然遵循了因果效应原则。由此生成的信息可为分析和决策支持提供因果效应方面的见解，并作为基准用以确定决策的相关成本。

若想创建有效的因果模型，组织需要掌握模型所使用的构造模块的特征，其包括**成本**、**同质性**、**可追溯性**、**产能**和**作业**方面的特征。

成本：是通过货币化来计量（1）实现特定的管理目标所消耗资源或其产出，或（2）尚未使用资源，为了实现资源或其产出可用的消耗。确定资源使用和管理目标的成本是管理成本的目的所在。成本信息以货币形式来呈现资源的消耗，可对不同的替代方案进行比较。

成本定义强调，管理成本模型中的资金流动仅仅反映了商品和服务的基本运营消耗。资金是经济活动的元语言，而非活动本身。

与管理目标相关的成本源于其产出（生产人工工时、生产机器工时、产品数量等）与产生所需的投入（人员、设备、原材料、占地面积、公用设施等）之间的关系。因此，投入的相关成本被分配给管理目标，这是因为实现该目标需要一定数量的投入——资金反映了具有因果效应的资源消耗情况。这种观点认为，如果不存在量化的因果消耗关系，则不应对资金加以分配或分摊。

成本的定义包括被浪费资源或闲置资源的相关成本（例如，可用于实现管理目标的但未加以利用的资源）。从最优化的角度来看，过剩 / 闲置产能总会带来成本影响——至少是形成了机会成本。

同质性：一种或多种资源或类似技术或技能的投入所具备的一个特征，即它们的成本以相同的方式受到一组相同的决定因素的影响和控制。同质性在成本计量和建模中发挥着关键作用，它可以将具有类似能力和产能的资源分组并集中到一个单一的管理目标之中，以便以经济有效的方式进行管理、加以优化以及就这些资源的使用收取费用。组织通常需要对组织要素加以细分以实现资源的同质性分组。

可追溯性：作为投入单元的一个特征，它能够以可验证的交易记录为基础，根据某个特定管理目标，对投入单元加以整体识别。当存在因果效应时，资源的消耗必须与特定的管理目标关联起来。可追溯性与因果效应的量化特征保持一致（即一定水平的产出需要一定数量的资源投入）。可验证的交易记录能让组织跟踪资源的数量，例如物料清单、产品布线步骤、领料单、工时表、发票、软件应用程序中的交易执行记录以及机器设计规范和评级。

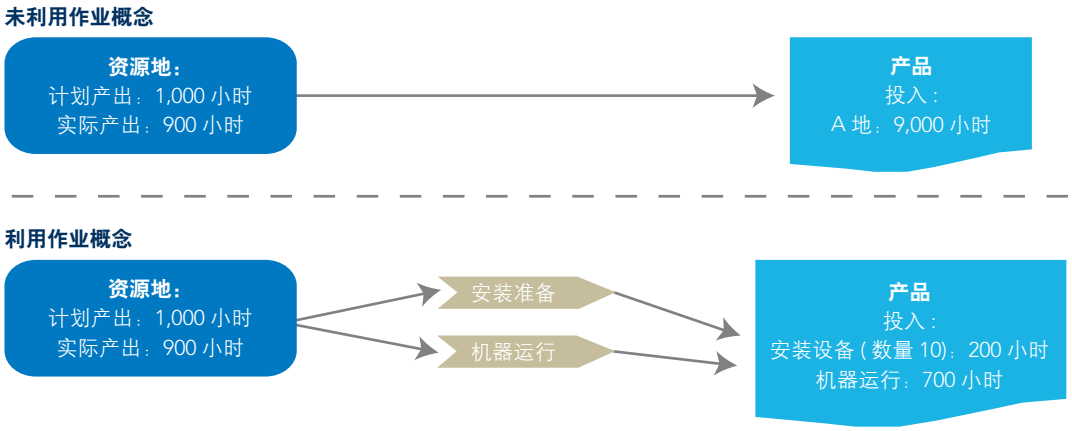
可追溯性的存在表明存在一种很明显的因果关系。而缺乏量化的消耗关系必须采用归属性来进行建模。

产能：是指某种资源所具备的工作潜能。产能描述了在实现管理目标的过程中，资源所能做出贡献的能力极限。有效地利用资源的产能来实现管理目标，这是优化工作的关键所在。对过剩或闲置的产能加以了解，这也代表了一个重要的优化机会。（有关产能建模的讨论，请参阅附录。）

作业：是资源产出单位具体性质的衡量指标。资源参与特定的作业活动或业务流程以实现管理目标。当深入审视作业的本质能给管理者的优化工作带来裨益时（例如流程改进），针对作业进行建模的能力也能为决策者提供额外层次的细节。

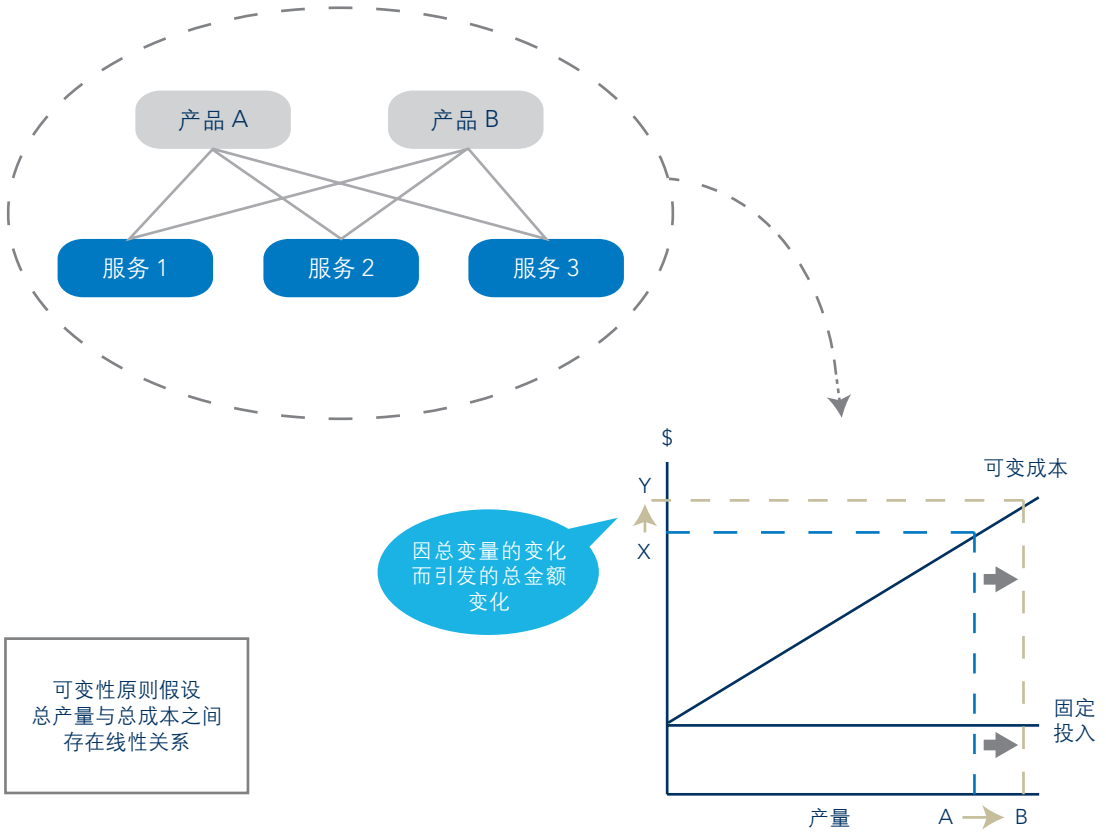
当用于建模时，作业有助于表述因果关系并提供重要的决策支持信息。作业活动本身不具备产能；它们只是消耗和传递产能。图 2 分别说明了具备和不具备作业概念的资源数量的消耗情况。针对作业进行有效的建模，这需要在整个企业模型中利用资源数量来保持资源产能的可追溯性。

图 2. 作业概念示图



响应性：特定管理目标的产出数量与该产出所需的投入数量之间的相关性。响应性取代了传统的可变性概念。如图 3 所示，可变性假设总产出从 A 点到 B 点的变化总是会导致总成本从 X 点到 Y 点的变化。

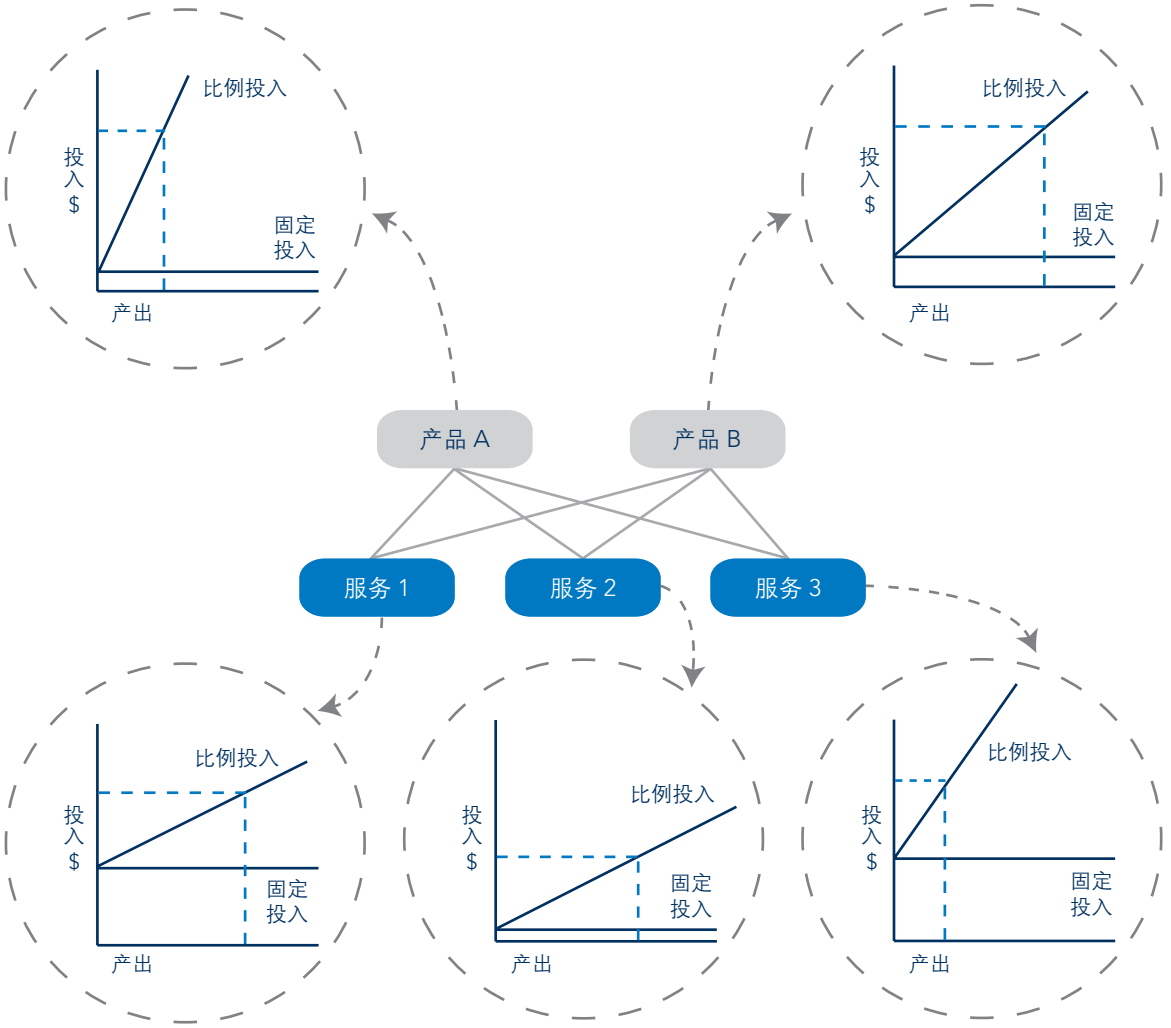
图 3. 可变性：总成本与总产量之间的关系



响应性可以更好地反映因果关系的性质，可以提供准确的边际成本信息。由于因果效应涉及产出及其所需投入之间的关系，因而在因果关系的表述中，因果效应需要更具体化，而这是可变性的总体假设所不能提供的。响应性反映了单个（中间和最终）管理目标层面的量化消耗的本质。

为了向管理者提供因果关系方面的见解并促进相关推断，响应性侧重于反映流程中某些节点上的因果关系的本质，而在这些节点上，管理者必须对行为和资源消耗施加影响，如图 4 所示。

图 4. 资源与产出之间的关系 — 响应性



因果关系可以是静态的、动态的，也可以是与产出相关的静态和动态的组合。这些特征的定义如下：

- **固定的响应关系**表示无论管理目标的产出水平如何变化，都将消耗的一定投入。
- **比例性的响应关系**表明，随着消耗目标的产出水平的变化，所需投入水平也将发生变化。

对资源数量的关注以及因果关系的性质，这些让响应性能够针对总产量与总成本之间的关系提供更细化的信息。响应性与因果关系的量化定义保持一致（即，资金仅仅承继了相关投入数量的行为特征）。

对于努力获取能够可靠反映运营因果关系的深入见解而言，响应性概念是至关重要的。响应性（以及它将因果关系与其特征适配起来的方式）为管理者提供了极好的运营基础，以便他们在类比或信息使用行为中（如分析、决策制定和规划）以此为基础进行推断。响应性是管理成本模型提供边际 / 增量信息的基石。

归属性：是指在改变资源供应和（或）消耗的前提下，投入对决策的响应程度。如果成本不能按照相对有效的因果关系方式与具体产出进行量化关联，那么，该类成本可按归属性概念进行管理。将这些成本任意分配给产出的常见做法或高度概括的驱动因素会导致组织许多层面的决策信息发生扭曲。

可归属成本的一个示例就是产品组的过剩 / 闲置产能成本。如果将这些成本分配给所生产的产品，那么，生产经理可以更有效地开展工作（以更少的资源完成相同的工作），但由于过剩 / 闲置成本的任意分配，这样做只能导致产品成本的扭曲。相反，过剩 / 闲置产能成本应该归属于特定机器所服务的产品组。如何对效率提高所带来的过剩 / 闲置产能加以利用，这应该是销售、营销或综合管理层的责任所在。

值得注意的是，管理成本框架中的量化因果关系与特定的产出相关，而按照归属性概念进行分配的成本通常是根据控制和责任因素分配给业务或组织层级的。

集成数据导向：关于组织的经济资源、事件及其相应货币价值的信息，并不受传统会计惯例的制约，可以针对任何目的对基本数据元素及其价值进行汇总。管理成本需要一组集成的运营和财务数据源，其按照一致的方式加以存储，整个组织都可以访问或检索这些数据源，而非仅限于财务数据使用者。集成数据导向的概念可以让管理成本不再依赖于总分类账，进而可以清晰地划分财务会计和管理成本。集成数据导向将总账视为财务会计和报告的评估层级。管理成本需要自己的评估层级，可以与资源和流程的非财务数据有更为紧密地关联。

企业资源计划（ERP）软件数据库系统非常适合在成本模型中实施集成数据概念。ERP 系统通过企业数据库提供数据集成，该数据库涵盖了企业的活动范围，克服了传统的信息技术孤岛。这可能包括调节和跟踪不同评估层级之间的差异。

信息使用概念

信息使用概念概述

成本模型生成资源消耗及其成本的相关信息；但是，决策者在使用信息时必须对适当概念有所了解。资源和管理目标在模型中具有高度的相互依赖性，无数的定性因素可能会给它们的成本带来变化并产生影响。管理信息使用概念可分为两组：

1. 主要与分析相关的（可避免性和可划分性）。
2. 主要与决策相关的（相互依赖性和互换性）。

可避免性：其特征之一是做出某项决策后投入（及其成本）可以取消。可避免成本是管理目标所引发的成本，如果不再需要这一目标，那么，从即刻起或在合理的时间段内，该成本将不再发生。

决策者需要评估资源消耗的变化是否可以形成避免受影响资源成本的能力。可避免性是分析工作中的关键概念，这是因为对于企业所面临的每个决策场景而言，理解可避免和不可避免成本是至关重要的。

可划分性：资源的特征之一，即可根据某项决策所带来的管理目标产出的变化，将某个资源的整体与产出变化完全关联起来。资源并非总具有灵活性。成本削减决策的成效取决于受这一决策影响的资源是否可以消除或出售（即如果资源是可划分的，则其成本可以避免）。相反，对于增加产能或产出的决定，资源的可划分性将决定所需的投资。

可划分性是资源的一个特征，它对决策而言至关重要，这是因为在确定成本是否可以避免的过程中，它是一项关键因素。

相互依赖性：管理目标之间的关系，之所以会产生这一关系是由于为了实现某项目标而制定的资源使用决策会影响到实现其他目标所需的资源数量或质量。相互依赖性概念强调了从整体角度出发了解组织定性维度的重要性。例如，开设一家新工厂（B 工厂）可能需要从现有工厂（A 工厂）抽调人才，以帮助 B 工厂培训新员工并更快地开展运营。这将给 A 工厂的生产力和成本带来直接的影响，这一点对于管理者而言是显而易见的，但却可能难以量化。

没有一个量化模型，无论是以成本为导向的还是纯运营性的，能够完全取代对组织职能的了解。如果不具备这种了解，那么组织就仍然面临一个巨大的风险，即高质量的数据和精心构建的信息也可能带来不太理想的决策。相互依赖性是一个定性的因果因素，它可能胜过量化的消耗关系并带来一个次优决策。

互换性：任何两个或多个资源或资源产出的属性，它们之间可以相互替代，而不会影响到可互换资源所涉及活动需要的其他资源的相关成本。为了及时实现管理目标，管理者需要考虑所有选择。某项资源如果能够用于多项生产流程，在建模过程中，它往往得不到全面的反映，但在许多决策场景中，它可能是一个可行的替代方案。为了实现管理目标，管理者需要考虑这些可替代资源能提供的所有选择。

互换性所带来的影响通常只能在因果见解所得出的事实被纳入成本模型之后才能显现。例如，两名工人从事相同类型的工作，但其中一名工作技能水平较低，需要更多的检查和返工。从表面上看，这些工人之间是可以互换的，但实际上，互换将改变资源池的成本结构。互换性的成本影响通常在历史分析中表现得很明显，但很难就此建模，这是因为组织通常不知道替代是否可行或可接受。

管理成本的制约因素

制约因素是指原则和概念发挥作用的区域边界，它们隐含地限定了建模和信息使用概念的应用。

与管理成本建模相关的概念受到五个因素的制约，分别是**客观性**、**准确性**、**可验证性**、**可计量性**和**重要性**。

客观性：成本模型的特征之一，它表明不存在任何偏见。只有当模型以无偏见的方式进行构建时，所生成的管理成本信息才算得上是客观的。

准确性：是指管理成本信息对组织欲建模的概念的反映程度。准确性是成本信息的特征之一，它反映了资源与管理目标之间的因果关系在成本模型中得到反映的真实程度。准确性取决于成本信息的使用环境。也就是说，在围绕生成成本信息的关系进行建模的过程中，与具有 80% 或 90% 利润率的公司相比，利润微薄的组织所要求的准确性要更高。

可验证性：信息建模的特征之一，能让独立评审者得出类似的结论。建模者的目标是创建一个模型，独立人员在对该模型进行审查之后，可以针对模型设计得出类似的结论。

可计量性：因果关系的特征之一，经过一定的合理努力，它能让因果关系得以量化。可计量性这一制约因素要求成本建模者通过一定的合理努力创建一个具备量化关系的模型。

重要性：成本建模的特征之一，在不影响管理者决策需要的情况下，它可以简化工作。重要性这一制约因素要求更好的见解所带来的增量收益必须超过提供这一新信息所增加的管理工作量。

信息使用的制约因素

信息使用概念受到两个因素的制约，分别是**公正性**和**一致性**。

公正性：对所有的资源应用替代方案加以公正的考虑。

公正性是任何优化活动的重要组成部分，因为它认识到管理者摒弃偏见的必要性以及针对资源应用应考虑所有的选择。

一致性：单个管理行为之间的相互依赖性，其试图以最佳方式实现个人和企业的目标。

一致性要求管理者认识到企业整体优化对于个别行为的依赖性。在其他条件相同的情况下，与现状相比，能带来最大整体增量收益的替代方案是最优解决方案（尽管对于局部而言可能是次优结果），它能满足一致性这一制约因素。

管理成本概念框架的应用

理解战略与战略执行之间的关联

管理成本为实现组织战略目标和优化运营提供了支持。管理成本的执行者必须评估、理解并将组织的战略和运营纳入有效管理成本模型的设计和实施之中，而后对得出的决策支持信息加以有效的应用。

从何着手

以当前的运营情况作为优化活动的基础。组织现有投资（已部署的资源）、价值链、产品 / 服务、细分市场和客户情况构成现状，管理者综合利用上述因素来实现战略目标。

无论何时考虑变化，在决策制定过程中，管理者都会将当前运营作为决策的基准。在评估决策方案时，管理者需要了解他们所试图影响和改进的转换流程的因果关系，它通常可以针对未来结果向管理者提供最佳指导。

企业优化工作：背景、目标和范围

管理成本模型的设计始于了解组织的战略管理目标。需要考虑与组织及其战略相关的背景、目标和范围，这一点非常重要。管理会计师需要根据框架概念和制约因素来做出适当的选择和权衡，以便找到适合于所在特定组织的恰当的平衡和关注点。

模型设计必须通过整合行业环境、竞争格局以及公司自身的现状和安排来获取优化决策。这些方面构成了公司优化**工作的背景**，决定了管理者将要做出的决策类型的性质和频率。

例如，同样是选择新的设施位置，对于一个公司而言具有战略意义（例如，丰田在美国德克萨斯州建立新的卡车工厂），而对于另一个公司而言则具有战术意义（例如，星巴克在距离现有街区不远的另一个街区的角落里开设一家门店）。与此相似，增加一个产出单位对于一家公司而言属于运营决策（例如，当地面包店额外制作一批面团），但是对于另一家公司而言则属于战略决策（例如，波音公司考虑是否制造一架 B737 飞机或是将资源转移到 B787 梦想飞机上，以便相对于空客公司等竞争对手，能够重新获得竞争势头。）

优化工作的背景为管理成本提供了参考框架，指导成本模型的设计和实施，为管理者提供有效的支持。例如，在分销业务中，运营方面的见解对于盈利能力最大化而言是至关重要的（例如接收、拣选、包装和运输，以及了解有利可图的最小订单规模是多少）。另一方面，在外包业务中，针对特定交易所打造并定价的产品组合（产品和服务的组合，例如应用托管、基础设施和业务流程）是至关重要的。

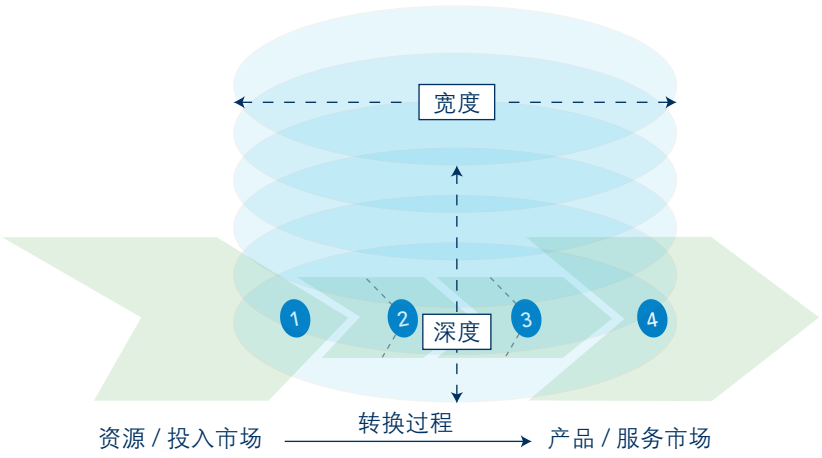
目标是指管理行动的战略意图，更具体地说，是指改变战略（适应性行动）或强化现有战略（纠正性行动）。优化决策的目标离不开管理成本，以便通过因果效应的见解来为规划、模拟、计量和分析提供支持。例如，成本核算模型将用于支持公司现有战略 / 计划的修改工作。这些适应性行动取决于信息，而这些信息有助于管理者就未来结果做出推断和预测。通过生成具有适当结构和细节的因果信息，模型能够为管理者提供最好的服务，推动他们开展前瞻性活动。

成本核算模型还将用于支持纠正性行动——为让组织重回正轨实现现有目标而采取的措施。通过深入了解实际结果与计划或目标的偏差，进而采取纠正性行动。最初的重点是了解实际结果及其原因和影响，以帮助管理者了解所发生的情况，进而给予指导并采取适当的纠正措施。

范围涉及模型所支持的决策的广度和深度（请参见图 5）。对于管理成本而言，优化决策的广度决定了要使用的管理目标的类型，并为模型计算数值。[3] 广度包括四个价值链优化领域：

1. 寻找资源 / 投入市场。此处的决策考虑了新技术、方法和人员设备资源，并努力通过资产置换、投资、采购和外包来最大限度地利用有限的资本资源。
2. 在转换中应用资源 / 投入。强调效率（以正确的方式做事），决策需涉及资源应用、利用、重新调整或重新部署、流程改进、消除浪费以及产能管理。
3. 形成产出。有效性是关注重点（做正确的事情，生产正确的产品）。这里需要做出的决策包括自制或购买产品、支持新产品的推出、流程改进、业务流程再造和消除浪费。
4. 通过企业产出实现收益。这涉及在产品 / 服务市场中创造所期望的结果。决策涵盖目标市场和细分市场、服务成本、产品 / 服务组合、产品停产、进入新市场、为现有市场打造新产品 / 服务以及市场挖掘。

图 5. 四个优化领域和优化范围



资料来源：Anton Van der Merwe，《管理会计哲学系列之三：填补护城河》，《成本管理》，2007 年 11 月至 12 月刊。

[3] 在管理成本中，管理目标的类型可包括与资源、作业活动、产品、服务项目，分销渠道以及客户相关的目标。

深度涉及信息需求，其针对的是优化决策所带来的变化幅度。透彻的决策需要就因果关系以及它们可能带来的影响形成更加深入的见解。为此，决策支持信息必须包含一系列成本构造模块，就优化影响的程度提供深入的见解。成本构造模块包括以下内容：

- 生产量成本（当决定在相关范围内额外生产一个单位时）。[4]
- 增量成本（决策的两个备选方案之间的总成本差异）。
- 短期比例成本（在考虑资源使用互斥情况下的机会成本时）。
- 可归属成本（用于撤资决策，如银行外包其信息技术职能）。
- 完全成本（用于战略决策，例如一家工具制造商通过在南美设厂进入该地区的市场）。[5]

设计和构建成本模型

成本建模需要六个步骤：

1. 确定组织保有并供其使用的资源（及其成本）。
2. 确定资源所支持的管理目标。
3. 了解管理目标之间的因果关系。
4. 设计一个能够获取管理目标及其因果关系的模型。
5. 提供模型的描述，包括模型的范围、预计用途、所需投入、产出以及基本假设和限制。
6. 应用并维护成本模型。

1. 确定组织保有并供其使用的资源（及其成本）。

需要了解每种类型的资源的固有特征，其中，首先需要了解管理者监管的物理实体以及他们决策所针对的对象。建模者特别需要了解每个资源的产出、可存储性和成本性态特征（即，成本变化是否与产出呈比例变化还是保持固定不变——响应性的概念）。

[4] 相关范围是一个经济术语，通常是指一个范围，其中需求水平的变化要求消耗材料发生比例性的变化，而不是人工或设备层次的比例变化。

[5] 通常被称为完全吸收成本或满负荷成本。

2. 确定资源所支持的管理目标。

成本模型反映了组织资源的实际情况、资源所涉及的作业和产出以及这些作业和产出在形成中间和最终产出的过程中是如何被消耗的。相关人员必须了解上述所有内容，以便确立具有代表性的管理目标，提供有用的因果关系见解以及相关的成本信息。

管理目标可分为三个层次：

- 第一层次针对的是资源及其产出，包括资源池和活动 / 流程。
- 第二层次针对的是产品和服务，包括生产订单、服务订单和项目。
- 第三层次针对的是结果部分，包括实体层级（例如工厂、业务部门或法人实体）、市场部分以及目标市场成本对象。在“以盈利为目的”的实体中，这些管理目标还包括实现盈利管理的收入。

建模者所采用的特定管理目标是管理者结合战略背景、目标和组织战略范围，根据自己的规划、分析、决策和优化需求所确定的。它们与各管理者的责任范围相对应。

3. 了解管理目标之间的因果关系。

资源（通过第一层次管理目标所获取的）用于提供产出，其代表了最终管理目标以及作为投入以实现中间管理目标。在管理成本中，组织必须了解这一投入、中间产出和最终产出系统并进行建模。该模型能获取组织的因果关系，而这种关系（反过来）又在整个模型中作为资源成本的分配基础。了解何处不存在因果关系并应用归属性概念，这一点也很重要。

4. 设计一个能够获取管理目标及其因果关系的模型。

通过了解组织及其目标、管理者的需求、资源及其所涉及的活动和产出，管理会计师能够着手设计工作，以充分展示资源与其消耗者之间的关系并用量化的投入—产出关系来加以表达。一旦建立了这种量化模型，资源成本就能够以适合于决策的货币形式来评估模型。

5. 提供模型的描述，包括模型的范围、预计用途、所需投入、产出以及基本假设和限制。

至关重要的一点是，成本信息的使用者不仅需要了解成本模型概念设计所内含的原则，还需要了解用于构建这一模型以及模型局限的基本假设。例如，如果使用了财务折旧，则应认识到该模型在提供产品生命周期盈利能力和产品 / 服务毛利率的相关见解方面所存在的局限，这是因为与资产的实际经济寿命相比，财务折旧按照规定所必须采用的资产寿命通常要短得多。也就是说，在资产折旧期间，产品 / 服务的成本会被高估；而在资产完全折旧之后，产品 / 服务的成本会被低估。

6. 应用并维护成本模型。

将资源成本和产出数量输入已建立的模型，组织就可以核算出各种具体管理目标的成本。而后，这些成本可用于监测活动和决策活动。不断更新模型以保持最新状态，包括根据管理者不断变化的类比需求进行调整，这一项工作非常关键，如此才能不断地为管理者提供相关信息。在模型概念设计中，框架中所存在的与建模（例如，可计量性和重要性）和管理者相关的制约因素以及类比需求在控制模型的规模和复杂性方面发挥了重要作用。许多管理成本计划都以失败告终，这是因为建模者并未认识到他们需要采取什么行动或措施才能保持概念设计工作不受局限。

运用成本模型

应用管理成本方法所需要的不仅仅是理解和应用此框架所阐述的原则、概念和制约因素。管理会计师需要领导跨职能团队或作为其中一员，以解决广泛的技术、管理和社会 / 文化问题，这些问题可能影响到组织使用管理成本来改善自身决策信息以及提高绩效的效果。成本信息是组织绩效信息的重要组成部分，通过得以改善的成本信息来制定决策，这将给组织的每个方面及每名员工带来影响。

管理成本模型及解决方案的概念设计

管理成本最终需要一个软件解决方案，但无论怎么强调都不为过的一点是，软件的选择并不是实施管理成本计划的启动步骤。第一步是了解所在组织的管理者为了优化其运营并实现组织的战略目标而需要做出哪些类型的决策。这需要深入了解所在组织的运营，并帮助管理人员和组织领导层将眼光放长放远，超越他们当前所使用的财务信息。为了提高绩效，组织需要哪些成本和运营信息？

对成本核算方法的引入加以管理

管理成本方法的应用非常复杂，广泛涉及组织的大多数组成部分。将项目管理技术应用于管理成本项目是非常重要的一点，它们有助于在成本、进度和绩效之间取得平衡。若非如此，项目就可能面临因需求不断增长、范围渐变或妨碍而陷入困境的风险。

与大多数运营良好的项目一样，管理成本计划应分解为较小的阶段性可交付成果，可由高管层定期进行评估和审批。这样操作能让项目人员以及组织的其他成员都专注于完成项目的各个部分。如果在早期阶段就能从更深入的管理成本中获取经改善的信息，那么，这将导向更复杂的问题，并需要开展更为深入的建模工作。项目团队和组织领导层需要为此做好准备，将关注重点放在确保项目在陷入任何领域的困顿之前，整个组织能够获得信息改善所带来的好处。

软件

再一次强调，管理成本项目的最初步骤不应该是软件的选择，也不应该是软件决定概念设计的能力，这一点非常重要。组织管理成本的概念设计必须始终先于软件备选方案的评估。即使组织已经实施了企业资源计划（ERP）套件，情况亦是如此。

许多管理成本项目都因过多关注软件而备受困扰。这妨碍了管理成本概念设计阶段的工作，因为已经形成了一种专注于软件实施的倾向，让组织的需求不得不去“契合”所选软件的能力。首先，评估此框架所概述的原则、概念和制约因素，并考虑它们可如何应用于所在组织的战略以及满足优化需求。打造概念设计，而后着手检查软件备选方案以支持概念设计，且不论组织已拥有软件抑或必须获取软件。

用于支持管理成本的软件主要有三种类型：

1. 企业资源计划（ERP）软件：具有集成模块的大型软件。对于管理成本而言，物流和财务领域所使用的 ERP 系统可以作为成本信息的有效基础。而仅用于财务会计和报告的 ERP 系统或许不能提供该框架下管理成本所不可或缺的资源和物流信息。制造企业解决方案等运营系统是必需的操作数据的丰富来源。
2. “单项优势”管理成本软件：针对特定的管理成本方法而形成的诸多专业化软件解决方案。大多数能与 ERP、财务、物流和运营系统进行集成。多年以来，许多大型 ERP 软件供应商已经收购了一个或多个此类解决方案提供商，此类软件也可以作为独立模块加以使用。
3. 商业智能软件：该软件专注于整合企业中的数据，通常需要创建计算引擎以支持管理成本。这类软件非常适用于只有简单需求的小规模组织或是那些具有独特需求以及解决方案开发专业知识的大型组织。

数据

框架非常重视运营数据—有关组织流程和资源的信息。基于框架实施管理成本方法，需要广泛熟悉运营和物流数据以及支持系统。其中一个好处就是，当运营和物流领域的员工得知您已经听取了他们的意见并了解了他们的工作环境和挑战时，他们会更容易加以接受。因组织的性质、规模和复杂程度不同，系统和数据的类型呈现出很大的差异。这意味着实施团队必须弄清楚整个组织的管理者在做出决策时使用了哪些运营和财务数据。

在管理成本的实施过程中，源数据质量通常是一个问题。真正的考验是模型通过提供信息来打造自身的可信度，而这些信息要能准确反映运营资源及其货币价值，能帮助整个组织更快、更准确地做出更有利可图的决策。

领导与变革管理

做出努力并取得成功的关键是认识到管理成本的实施工作并不是一个技术性的会计运用。这是一项改变整个组织决策支持和绩效信息的努力。通常，组织需要花费很大的努力来克服阻力，让员工能够面对不断变化的信息以及为生成信息而不断变化的实务操作，感到轻松自在并充满信心。

对影响阻力的三个因素之间的关系加以考虑，这是审视阻力的有效方法：

努力营造一种环境，其中
（D x V x F）> R.

在这一关系中：

- R 代表阻力
- D 代表对当前状况感到不满。除非人们感到不安，否则他们很少会对改变任何事务产生兴趣。人们倾向于维持现状。
- V 代表一种愿景，即什么看起来“更好”。当人们对自身所处环境的有了不同看法或看到一个可以改善状况的解决方案时，他们会考虑做出改变。
- F 代表第一个操作步骤，但它经常被忽略。有些人可能认为诸多不满（D）和一个坚定的愿景（V）足以克服巨大的阻力（R），但是，诸多的不满（D）和坚定的愿景（V）还远远不够。如果人们认为这个愿景过于理论化、复杂化、成本高昂或不切实际，那么，他们就不愿意做出改变以实现这一愿景。你需要借助 F 来落实愿景。

不要低估 R 的大小；即使它处于相对被动的地位，它也可能是巨大的。如果等式中的 D、V 或 F 任何一个为零或数值很小，则它们三者的乘积不会超过 R。您需要适当考虑所有三个因素。

如果人们对现状感到满意，他们就不太可能做出改变。可以适当引入不适吗？一种有效的方法可能是围绕质疑运用一种批判性的思维方法。例如，您可以向执行团队和同事提出以下问题：我们的成本核算方法是否会形成更为复杂的产品？其中的高度技术支持通过简单的产品（其使用相对较少的间接费用和分摊费用）而得到补贴？我们最大的客户是最赚钱的客户吗？是否有客户格外挑剔，需付出额外努力，进而侵蚀了我们的利润？但我们尚未衡量这些成本？我们如何获知这些内容？我们如何弄清哪类客户需要保留、不断扩大、发展成为新客户抑或重新赢回客户？如何通过交易、特价和促销活动来保留、发展、获取和赢回这些客户？在每类客户身上花费多少是最优的？如果在每类客户身上的实际开支超过或低于最优数额，这会不会损害股东财富？

在许多情况下，无法就上述问题做出很好的回答。如果回答说“我不知道”，那么后续的问题应该是“这是一件好事吗？在不知道这些答案的情况下，我们继续这样做出决定还要持续多长时间？”如果能以正确的方式提出这些发人深思和有意令人不安的问题，那么，组织就无需耗费太多的时间来推广愿景（V），许多项目拥护者通常更喜欢强调这一变量。将潜在问题转换为显而易见的问题并让高管和同事们有所了解，如此一来，变革需求将变得更为明显。

组织对管理成本的接受

利用该框架来打造一个精心设计的、反映因果关系的、准确的管理成本系统，让使用者获取信息，了解并信任成本系统所提供的信息。但请注意，组织必须对信息使用者加以培养和发展。管理成本项目的成功与否总是取决于组织如何响应并使用这些新的成本信息。

具备了高质量的管理成本之后，组织会有何不同？管理层会有何不同？在整个组织内，它会给运营和非财务人员带来什么不同？显然，如果能够获得高质量、可信任的成本信息，这将改变组织的沟通，特别是那些与经济决策相关的沟通。在整个组织中，拥有高度可用的成本信息并给分析、决策、沟通和管理协同带来影响，这是管理成本计划最终取得成功的重要影响因素。

实现了高效管理成本的组织能够更为迅速地关注业务问题，因为它们只需花费更少的时间来讨论管理成本实务、成本信息的质量以及支持系统的功效。此外，因为这些信息将得到广泛的理解和信任，在组织中将有更多的员工能够使用成本信息来做出决策。

若想达到这种状态，组织需要不断获取成本信息以及相关的运营和资源产能信息。这些信息必须持续得到应用、观察和评估。

可用的成本信息

通过有效应用因果关系原则及其支持概念，组织将提高其成本信息的可用性。可用成本信息所涉及的关键要素是信息的**透明度**、**防御性**和**及时性**。

透明度意味着使用者能够了解成本数据是如何计算得出的以及信息是否反映了运营中的因果关系。缺乏透明度将导致大多数管理人员尽其可能地忽视此类成本信息。成本核算系统所提供信息的相关性和可靠性必须是清晰的、可辨的。

管理者倾向于猜测不透明的成本信息，这会分散他们的精力，削弱他们对其他重要决策因素的批判性分析。关于成本核算系统的争论也影响到了组织为改善决策制定流程所做出的努力。透明的、具有因果关系的成本信息解决了管理人员在获取证据并快速提供准确的成本信息的过程中所面临的挑战。

防御性意味着财务和非财务人员可以利用成本信息来创建和评估业务案例、解释结果、支持和解释决策、推广理念。透明度将让成本信息具有防御性，能够应对准确性方面的挑战，而无论这种挑战是出于任何特定目的。但是，这种类型的防御通常是由财务部门承担的，因为财务部门是成本信息的创建者。当财务部门以外的管理人员和员工在调查运营问题或评估运营解决方案时，能够轻松应用成本信息，而不必担心财务部门会发现分析所使用的成本数据存在错误，此时，才真正谈得上实现了防御性。这时，管理成本成为一个赋能工具，可以帮助各类管理人员就自身所控制资源的部署问题以及改善组织绩效的投资事项，寻求做出更好的决策。在整个组织中，让成本核算信息具有防御性的关键是在设计流程和系统以生成信息的过程中应用因果关系原则及其支持概念。

及时性是指最新的、持续可用的成本信息。首先，成本信息必须是最新的。根据具体情况，可能需要几分钟、几小时或几天来反映当前以及正在开展的运营。在这一方面，实时概念应该是默认目标。

其次，成本信息必须保持持续可用状态。可用性要求组织建立有效的管理成本系统，以便生成信息并提供给管理人员和员工。一项成本研究，不论是以多么高效的方式开展，不论完成的速度有多快，也不论多好地获得了政策和程序的指导，其作用永远都不可能比得上获取信息并将其用于日复一日的计量和评估。只有通过持续观察和评估，成本信息才能得到一定程度的理解，让管理者能够确信模型反映了他们所管理资源、流程和运营活动的因果关系。

决策制定和管理协同

高度可用的成本信息所带来的最大好处是它让各级管理人员能与组织的优化目标保持一致。精心设计的管理成本系统能在资源层面将成本信息和运营按因果关系联系起来并与管理目标结合，从而消除了成本信息与运营之间的任何不匹配。这种清晰度让成本信息能够更有效、更广泛地用于规划、投资、风险管理、绩效评估、盈利能力分析以及需要边际 / 增量信息的其他管理决策。

评估成本核算方法

业界已经开发出了许多管理成本方法，其中包括传统的标准成本法、作业成本法、精益会计、产量会计、变动成本法、估时作业成本法、资源消耗会计等等。管理成本的概念框架提供了可用于以下目的的基本概念：（1）评估所在组织的管理成本需求；（2）明确具体方法的优缺点所在。通过审视下列问题并提出与所在组织相关的其他问题，考虑评估各个管理成本方法对您所在组织的适当性：

1. 为支持管理人员需要做出的一系列决策（从战略决策到战术决策），所在组织的管理成本需求是什么？
2. 根据各个建模概念对所在组织的重要程度来加以具体应用：
   - **资源。**您是否需要具体了解资源和资源组，抑或广泛的货币分组和列示是否足够充分？
   - **管理目标。**所在组织是否需要深入了解整个组织的管理人员所需实现的所有目标的相关成本？
   - **成本。**对于了解组织资源、产能以及实际产出之间的货币价值形式的关系，所在组织到底有多大的需求？
   - **响应性。**所在组织是否需要了解其流程各个层级的固定成本和比例成本，以便制定改善投资、特殊订单定价、制造或购买方面的边际决策以及其他决策？
   - **可追溯性。**找到所需数据的可验证交易记录，以便为管理人员提供所需的决策支持信息，这项工作的难易程度如何？
   - **产能。**了解产能限制何时会受到挑战以及解决这些问题的方案，这项工作对于所在组织而言到底有多重要？了解生产性、非生产性以及闲置 / 过剩资源的产能成本是否重要？
   - **作业。**所在组织是否需要具备能力以针对流程进行建模并将作业活动与开展作业所需的资源、作业所形成的中间和最终产品 / 服务直接联系起来？
   - **归属性。**如果没有明确的因果关系，成本分配将在多大程度上影响到决策？
   - **同质性。**所在组织是否拥有形成同一管理目标的资源，而这些资源在年限、技术、质量以及其他绩效方面有所不同？
   - **集成数据导向。**所在组织的财务和运营系统生成的财务和成本信息如何有效地反映资源、流程、产品 / 服务以及管理者和员工所制定的相关决策？
3. 考虑框架制约因素——客观性、准确性、可验证性、可计量性和重要性对所在组织的影响。在这些制约因素中，哪些最为重要？您如何有效地平衡它们以最大限度地降低每个制约因素的负面影响？
4. 管理成本方法如何有效地针对每个概念提供相关信息？一个关键的考虑问题是，是否可以从常规核算中获取重要信息并用于分析；或者是否需要更多的时间和研究，例如，因为方法固有的因果关系有限而需开展特别研究。
5. 管理成本方法如何有效地围绕最为重要的制约因素向所在组织提供信息？

结论

在因果关系和类比原则的指导下，管理成本审视业务资源的利用情况以及相关原因，并以货币形式反映组织的运营情况。有效的因果模型利用资源和运营方面的透彻理解，确定它们是如何为管理目标和组织战略的执行提供支持。一旦模型提供了运营性理解，基于因果关系原则的成本信息将以货币形式稳健地反映运营情况。运营性理解与相应的财务语言翻译结合起来，能为管理决策提供强有力的支持。

附录

因果关系的强度

管理成本中针对因果关系的正确建模需要区分该原则应用的强弱形式。

强式是指因果关系可以得到明确量化的情况。也就是说，在产出（例如 250 个模拟器小时）和投入（例如运行模拟器 250 小时所需的 50,000 千瓦时（kWh））之间存在必要的相互依赖关系。

弱式是指投入与产出之间的关系不能加以量化，然而二者之间有着清晰的关联。例如，一个机器专门用于制造产品 A 和产品 B（两个产品组成一个产品组）。机器的过剩 / 闲置产能成本与产品 A 和产品 B 之间的关系是什么？为了制造产品 A 和产品 B，机器必然会发生成本，但所生产的产品与机器的闲置时间之间的关系无法进行量化。**因果关系原则的适当处理—弱式还是强式—对企业优化工作和管理者而言都是非常重要的**。

建模能力

产能是所有资源的关键特征。组织需要识别两种类型的产能投入：

1. **产能供应**投入是实现产出承诺所必需的，即便最终没有形成产出。资源的产能供应成本是为实现其承诺产能所必须消耗的固定投入数量的成本。一旦承诺提供一定水平的产出，那么，相关的产能供应成本就无法避免，直到就这一产能做出淘汰决定并采取行动。
2. **产能使用**投入是指为了生产实际产出而发生的超过产能供应投入的额外投入。产能使用成本是在生产产出的过程中所消耗的比例投入的成本。

所有产能成本（从供应投入到使用投入）的分配是以数量为分母的函数，用于计算资源的产出成本率。消耗的实际产能使用投入将反映所形成的实际产出。产能供应投入（及其成本）的分配更具有挑战性，因为所涉及的因果关系通常不是那么明显。它们需要一个数量作为分母，以适当地反映因果关系的强弱形式

如果将计划产出作为分母用以确定费率，那么，所有的产能供应成本都将分配给消耗这一产出的产品。在这种情况下，将共有固定成本（是指与特定产出之间消耗关系非常薄弱或根本就不存在的成本，例如过剩 / 闲置产能）分配给产品的形式未与因果关系原则保持一致。这样做会造成一些产能供应成本的随意分配，会影响到管理者对因果关系的理解。

因此，用于分配产能供应成本的分母必须反映以下内容：

- 应用资源来生成产品或服务以及资源未得到应用的时间。
- 产能供应投入及其成本与已应用产能和未应用产能均相关。

已应用产能是指能够按照因果关系与特定产出建立消耗关系的生产性产能（生产产品所耗费的时间）和非生产性产能（安装准备工作、计划内和计划外的养护工作、返工等耗费的时间）。未应用产能包括与特定消耗目标之间不存在明显因果关系的所有闲置 / 过剩时间和非生产性产能。产能资源的成本借助因果关系为管理者的类比活动提供支持。显而易见的是，组织应该按照资源的整体可用时间段来分配产能供应成本。因此，不应该将闲置 / 过剩资源时间的产能供应成本分配给生产性产出，而应按照归属性的概念进行处理。出于优化目的，在将产能供应成本分配给产能消耗者时，理论产能用作分母是合适的。其他分母，包括实际产能、预算产能或正常产能，都可将一些未应用产能及其供应成本任意地分配给所形成的产出。

产能的定义

闲置 / 过剩产能：当前未计划加以利用的产能。闲置产能有三种存在形式：不可销售产能（市场并不存在或管理层做出战略决策以退出市场）、禁用产能（不可使用的产能）以及可销售产能（具有市场，但产能闲置）。

非生产性产能：产能未处于生产状态或者也不处于任何已经界定的闲置状态。非生产性产能包括安装准备、养护、待机、计划停机、计划外停机、返工和报废。组织应该尽量减少非生产性产能。

生产性产能：为客户提供价值的产能，这也是组织获取资源的原因所在。生产性产能用于改变产品或提供服务，形成并交付优质产品或服务，并用于流程或产品的开发。

理论产能：基于所有权或合同协议，资源保持可用的整个时间段。建筑物和设备通常保持一年 365 天，一天 24 小时的可用状态。人力资源通常按照每周约定的小时数保持可用状态。如果需要，加班可作为一种额外资源。

资料来源：Thomas Klammer，编辑，《产能的计量和改进：管理人员评估和优化产能生产率的指南》，1996 年。

The Conceptual Framework for Managerial Costing

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Introduction

This document presents a framework for managerial costing that enables organizations to determine what cost information best serves their internal decision support needs while having some assurance that their cost modeling approach is sound. The framework enables the evaluation of costing approaches and helps organizations determine which costing approaches will best match their cost modeling needs based on internationally accepted costing principles. The framework focuses on cost modeling for decision support. The intention is to place managerial costing on a clearly established and well-reasoned conceptual foundation of principles, concepts, and constraints to support decision making. The Conceptual Framework of Managerial Costing is not a specific costing approach. Rather, the framework provides a beneficial, comprehensive, and logical baseline for comparing, selecting, implementing, or designing costing approaches.

The need to create a conceptual framework results from two problems. First, financial accounting and reporting for external users is guided by standards, regulations, and rules that impair the creation of optimal cost information for internal decision use. Second, although cost information is useful for a variety of purposes for both external and internal users, the most appropriate cost modeling approach for decision support inside organizations has not been universally agreed upon or the criteria for a modeling approach has not been articulated clearly.

The desired outcome of the Managerial Costing Conceptual Framework is to help organizations design and build principles-based cost models that managers can successfully apply to improve their operations and achieve their strategic goals.

KEY TERMS

Managerial accounting is a profession that involves partnering in management decision making, devising planning and performance management systems, and providing expertise in financial reporting and control to assist management in the formulation and implementation of an organization's strategy. IMA, *Definition of Management Accounting*, Statement of Management Accounting, 2008.

Cost accounting is measuring and reporting costs intended for external financial reporting or regulatory purposes where guidelines and principles must be followed and complied with to meet regulatory, legal, or other defined standards and requirements. (IFAC (International Federation of Accountants), "Evaluating and Improving Costing in Organizations," *International Good Practice Guidance*, July 2009.)

Managerial costing is costing done purely for the organization to use internally to ensure that information for decisions reflects the characteristics of the organization's resources and operations.

Using the Framework

The Conceptual Framework for Managerial Costing serves multiple purposes for practitioners and academia:

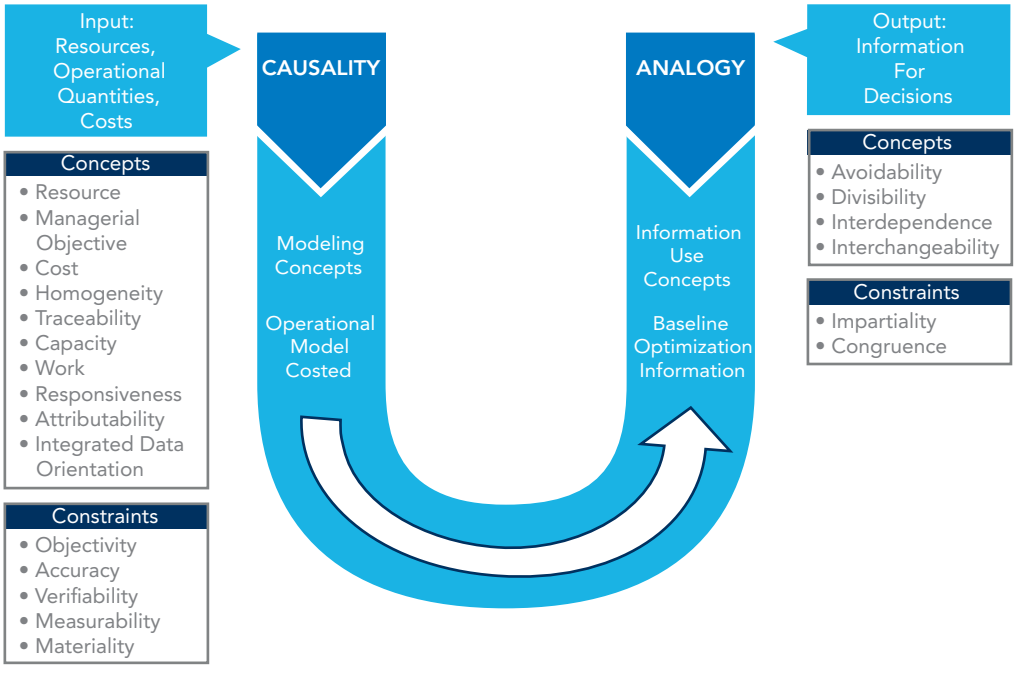
- It provides guidance for designing cost models that accurately reflect operations and processes for the decisions that organizations need to make most frequently;
- It establishes a reliable reference for generating cost information for internal management use that clarifies why this cost information is different from external financial reporting, tax, and regulatory cost information; and
- It details guidelines for comparing the strengths and weaknesses of existing and alternate approaches to generating decision-relevant cost information.

Overview of the Framework

Cost modeling provides a monetary representation of the organization's resources, processes, and products and services. And the Conceptual Framework for Managerial Costing outlines the principles, concepts, and constraints necessary for effective cost modeling.

The guiding principle for operations modeling (and, hence, cost modeling) is causality, the ability to reflect cause-and-effect relationships. A useful cost model must efficiently guide a manager (1) from a monetary effect to the operational cause and (2) to clear and direct insight into the probable monetary effect of a particular operational action (or cause) being considered.

Figure 1. The Conceptual Framework for Managerial Costing



[1] This document takes a more practical approach to the conceptual framework for managerial costing. For a more detailed and academic discussion, refer to the full document: Conceptual Framework for Managerial Costing.

By applying the principle of causality and its associated concepts, we can create a model that represents an organization's operations and explains the resulting financial results. This establishes the baseline from which managers will seek to achieve strategy in an optimal manner.

The guiding principle for decision making is analogy—the use of causal insights to infer past or future causes or effects. Managers use cost information by applying the principle of analogy to infer past or future causes or effects. This results in learning from the past, making plans for the future, and supporting resource application decisions to achieve strategic objectives.

The Objective of Managerial Costing

The objective of managerial costing is to:

1. Provide a monetary reflection of the utilization of business resources and
2. Relate cause-and-effect insights into past, present, or future enterprise economic activities.

Managerial costing aids managers in their analysis and decision making and supports optimizing the achievement of an enterprise's strategic objectives.

Internal operations are the focus of managerial costing, and managerial costing's primary customer is internal management. At its essence, managerial costing describes the links among an organization's resources, activities, products, and services to produce an understanding of economic relationships expressed, ultimately, in monetary terms. The result is a managerial costing model.

KEY TERMS

Monetary Reflection: Managerial costing must support detailed economic decision making and must accurately reflect the actual resources and processes in monetary terms.

Resources: To achieve strategic objectives, organizations acquire and deploy resources such as people, machinery, buildings, and capital. The acquisition and deployment of resources also comprises the source of all of an organization's costs.

Cause-and-Effect Insights: Internal management makes rational inferences about resource application when making decisions concerning process design, improving operational efficiency and effectiveness, and strategy execution.

Enterprise Economic Activity: Enterprise economic activity refers to operations beyond just production or service operations. It includes all the resources used to achieve strategic objectives.

Managers: Managerial costing focuses on the needs of managers and employees making decisions inside an organization.

Analysis and Decision Making: Analysis focuses on facilitating learning and gaining knowledge about the enterprise's economic activity, specifically its resources and their capabilities, with a view toward achieving strategic objectives.

Optimizing: Internal management is tasked with achieving enterprise strategic objectives by employing resources to realize maximum benefit at minimum cost.

Enterprise Strategic Objectives: Objectives can be financial or nonfinancial.

Role of the Management Accountant

One role of the management accountant is to provide information to support the decisions of managers and employees who seek to optimize business operations. Managerial costing information may be useful externally, but it needs to be evaluated against external reporting principles, standards, and laws that govern such uses. The following eight tenets capture the scope of managerial costing for internal use:

1. Provide internal managers and employees with an accurate, objective cost model of the organization and cost information that reflects the use of the organization's resources.
2. Present decision-support information in a flexible manner that caters to the timeline for insights needed by internal decision makers.
3. Provide internal decision makers with insight into the marginal/incremental aspects of the alternatives they are considering.
4. Model quantitative cause-and-effect linkages between outputs and the inputs required to produce and deliver those outputs.
5. Accurately value the supply and consumption of resources to the operations and support processes of an organization in monetary terms.
6. Provide information that aids in both immediate and forward-looking internal decision making for optimization, growth, and attainment of enterprise strategic objectives.
7. Provide internal information to evaluate performance and learn from results.
8. Provide the basis and baseline factors for exploratory and predictive managerial activities.

Understanding the Conceptual Framework for Managerial Costing

Principles for Managerial Costing

The design, implementation, and use of a managerial costing model must apply two principles—causality and analogy. Causality deals with capturing and understanding enterprise quantitative cause and effect relationships. Analogy is concerned with applying causal information in optimization actions.

KEY TERMS

Causality: The relation between a managerial objective's quantitative output and the input quantities consumed if the output is to be achieved.[2]

Analogy: The use of causal insights to infer past or future causes or effects.

To support managers' pursuit of optimal resource usage, managerial costing is concerned with modeling a sound quantitative representation of all of an organization's resources, goods, and services. Quantitative information about the consumption of resources and the outputs produced forms the basis for determining managerial costing monetary information and supports the ability to effectively manage an enterprise. The more accurate the models are and the more valid the assumptions, the closer they reflect the reality of the organization's resources and processes.

The backbone of managerial costing is an operational model composed of outputs and their required input (resource) quantities. Instead of a primary focus on parsing the general ledger's monetary units (e.g., dollars, euros) into financial metrics, a quantity-based causal cost model directly connects the resources, products, and services about which managers make decisions. Money serves as a common denominator to compare diverse and often incomparable operational decision alternatives.

This modeling approach supports managers' information needs in two ways:

1. Nonmonetarily, it presents a quantitative representation of relevant cause-and-effect relationships between resources in processes, and
2. Monetarily, it provides the financial valuation of the resource quantity relationships.

Analogy fundamentally underlies all managerial decisions and actions. It forms a mechanism upon which valuable business experience can be gained and applied. Analogy can be applied by using the information from a cost model built on operational cause-and-effect relationships. Such a causal model facilitates learning and decision making by providing for all managers clear, logical insights into the operational relationships and related monetary outcomes of an organization. (See the Appendix for a discussion on the Strength of Causality.)

[2] Adapted from Gordon Shillinglaw, "Cost Accounting Principles for External Reporting: A Conceptual Framework," Essays in Honor of William A. Paton, University of Michigan, Ann Arbor, Mich., 1979, p. 162.

Concepts for Managerial Costing

The concepts for managerial costing are framed by two fundamental and connected views:

1. The measurement and capture of an organization's resources and costs (referred to as "modeling") and
2. The use of that information for decision making.

The objective of the cost modeling view is to provide measurements and calculations (including rates) that reflect the consumption of the organization's resources in support, administrative, and product- or service-producing operations. A highly effective model provides the baseline information for a large variety of internal management activities, such as planning and improving operations as well as evaluating performance. **Causality** is the principle that governs constructing managerial costing's operational model and the information the model provides.

The intent of the information use view is to provide a basis for how decision makers at any level (including managers, supervisors, or employees) should apply the results of the cost model to gain insights and draw inferences to make decisions and take action. Decision makers apply insights gained from the model's information to infer the use of existing resources for new purposes or new resources for existing purposes (i.e., in an analogous manner). **Analogy** is the principle used in applying the model information to select an optimal decision alternative and take adaptive and corrective actions.

Overview of Modeling Concepts

These concepts serve as the building blocks for a reflective cause-and-effect-based model of an organization's operations:

1. The **constructs** that make up an enterprise's operational model (resources and managerial objectives);
2. **Characteristics** of those constructs (cost, homogeneity, traceability, capacity, and work);
3. The **relationships** between the constructs in the model (responsiveness and attributability); and
4. The nature of the **data** needed for the model (integrated data orientation).

Among the first things to consider when designing a cause-and-effect-based model to be reflective of an organization's operations are:

- What are we trying to accomplish? (**managerial objectives**)
- What do we have at our disposal to accomplish these objectives? (**resources**)

Resources: *The people, machines, information technology, raw materials, and items/intellectual property developed internally (e.g., a hospital's billing software developed in-house).* Based on an intentionally broad definition, resources can be:

- The source of all costs.
- The entities that have productive capacity.
- The quantitative entities that decision makers must adjust or influence to effect change.
- The basic building blocks in optimization; they determine the magnitude of incremental gain in any optimization activity.

Managerial objectives: *Specific results or outcomes of the application or provision of resources that management chooses to monitor for the purpose of enabling one or more managerial activities.* Key considerations of managerial objectives include:

1. Achieving managerial objectives is the reason for employing resources to produce output.
2. Establishing and managing discrete managerial objectives is necessary to achieve an enterprise's strategic objectives.
3. Managerial objectives align with managers' responsibilities, the need for measurement, accountability, and, ultimately, incentives.

Managerial objectives can be an organization's final outputs or any intermediate outputs. They can serve any measurement, analytical, or predictive purpose for whatever time frame managers deem appropriate. Examples of managerial objectives include production activities and support activities consumed internally, activities of external or contracted services, saleable products and services, target markets and market segments, and projects to build or acquire resources and infrastructure.

Managerial objectives consume resources, and most contribute to another downstream or higher-level managerial objective. An accurate reflection of consumption relationships between managerial objectives ensures all resources consumed in achieving a managerial objective can be identified. This allows the model to accumulate all of an objective's attributable costs—the closest one can get to full cost while remaining in compliance with the principle of causality. The resulting information provides cause-and-effect insights for analysis and decision support and serves as the baseline for determining relevant costs in decision making.

To create an effective cause-and-effect model requires capturing characteristics of the constructs used in the model. These include the characteristics of **cost, homogeneity**, **traceability**, **capacity**, and **work**.

Cost: *A monetary measure of (1) consuming a resource or its output to achieve a specific managerial objective, or (2) making a resource or its output available and not using it.* Determining the cost of resource use and managerial objectives is the purpose of managerial costing. Cost information presents resource consumption in monetary terms and allows for comparison between diverse alternatives.

The definition of cost emphasizes that the flow of money in a managerial costing model merely reflects the underlying operational consumption of goods and services. Money is the meta-language of economic activity and not the activity itself.

The cost associated with a managerial objective results from the relation between its output (production man hours, production machine hours, product quantities, etc.) and the inputs (labor, equipment, raw material, floor space, utilities, etc.) required to produce the output. Thus, the cost of an input is assigned to a managerial objective because that input quantity is required to achieve that objective—money reflects causal resource consumption. In this view, money is not allocated or assigned in the absence of a causal quantitative consumption relationship.

The definition of cost includes the costs of wasted or inactive resources (for example, a resource available for the achievement of managerial objectives but not used). From an optimization perspective, excess/idle capacity always has a cost impact—at the very least, an opportunity cost.

Homogeneity: *A characteristic of one or more resources or inputs of similar technology or skill that allow for their costs to be governed by the same set of determinants and in an identical manner.* Homogeneity plays a key role in cost measurement and modeling. It allows for the grouping of resources with similar capabilities and capacities into a single managerial objective in order to manage, optimize, and charge for the use of those resources in a cost-effective manner. Organizational elements often need to be subdivided to achieve homogeneous groupings of resources.

Traceability: *A characteristic of an input unit that permits it to be identified in its entirety with a specific managerial objective on the basis of verifiable transaction records.* Resource consumption must be connected with specific managerial objectives when a causal relationship exists. Traceability aligns with the quantitative nature of causality (i.e., a certain input quantity of resources is needed to produce a certain level of output). Examples of verifiable transaction records that allow for the tracing of resource quantities are bills of materials, product routing steps, material requisitions, time cards, invoices, transaction execution records in software applications, and machine design specifications and ratings.

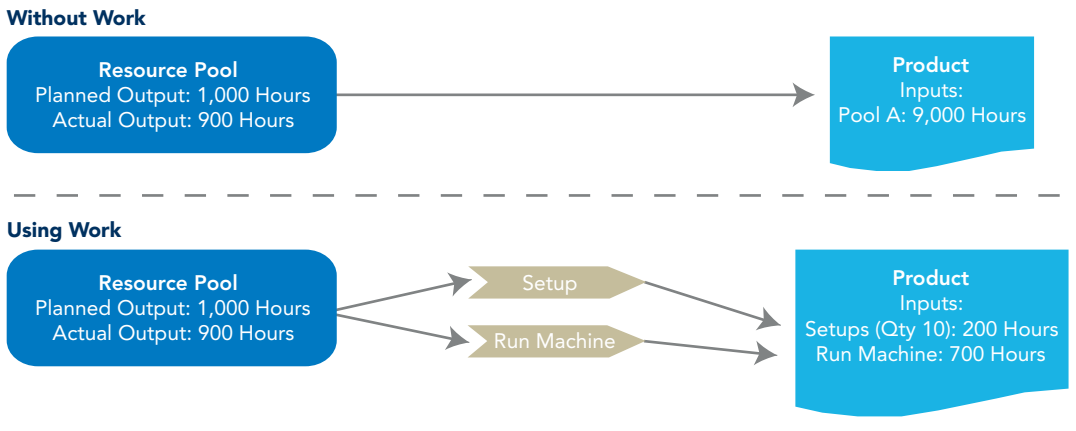
The existence of traceability indicates the presence of a strong causal relationship. The lack of a quantitative consumption relationship must be modeled using attributability.

Capacity: *The potential for a resource to do work.* Capacity describes the limits of a resource's capability to contribute to achieving managerial objectives. Effectively using resource capacity to achieve a managerial objective is the key to optimization. Knowledge of excess or idle capacity also represents a major optimization opportunity. (See Appendix for a discussion of Modeling Capacity.)

Work: *A measure of the specific nature of units of resource output.* Resources engage in specific work activities or business processes to accomplish managerial objectives. The ability to model work provides decision makers with an extra layer of detail when insight into the nature of work is beneficial to managers' optimization endeavors (e.g., for process improvement).

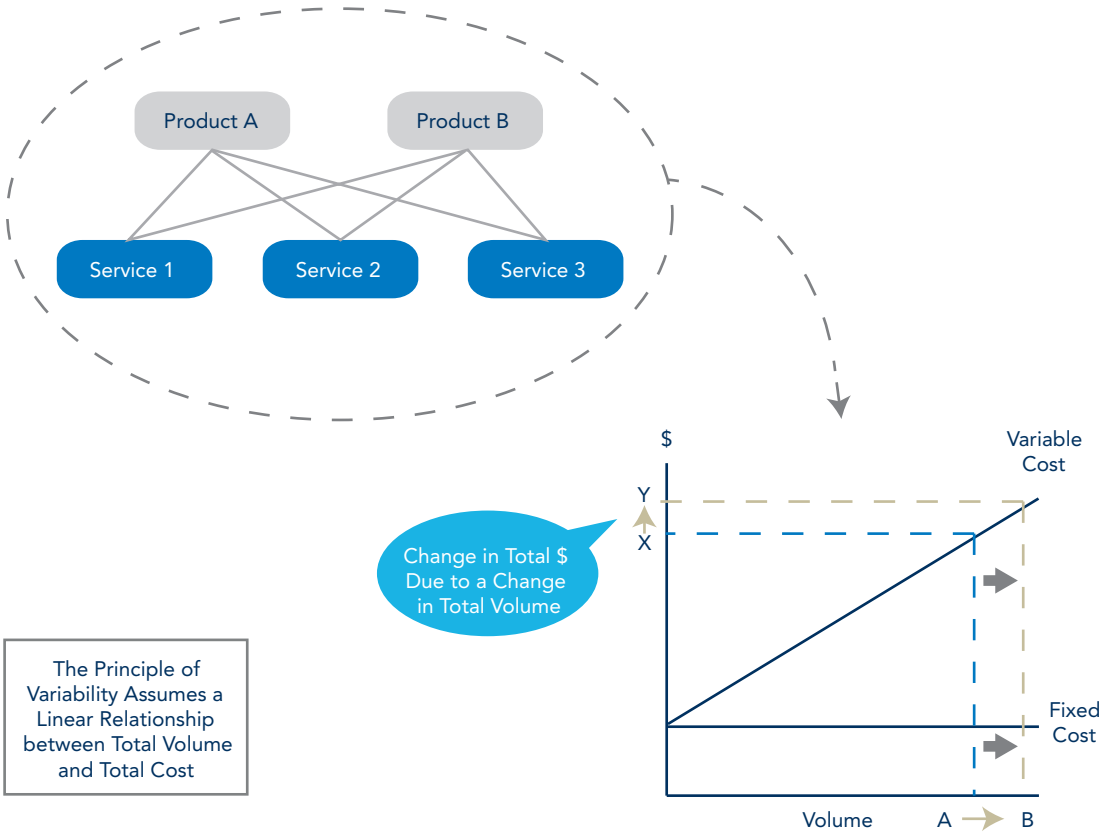
When used in modeling, work is beneficial in expressing a causal relationship and provides important decision-support information. Work activities do not have capacity themselves; they merely consume and transmit capacity use. An illustration of the consumption of resource quantities with and without the concept of work is provided in Figure 2. The effective modeling of work requires the use of resource quantities to maintain traceability of the resource capacities throughout an enterprise model.

Figure 2. Illustration of the Concept of Work



Responsiveness: *The correlation between a particular managerial objective's output quantity and the input quantities required to produce that output.* Responsiveness replaces the conventional concept of variability. As illustrated in Figure 3, variability assumes that a change in total output from point A to point B will always result in a change in total cost from point X to point Y.

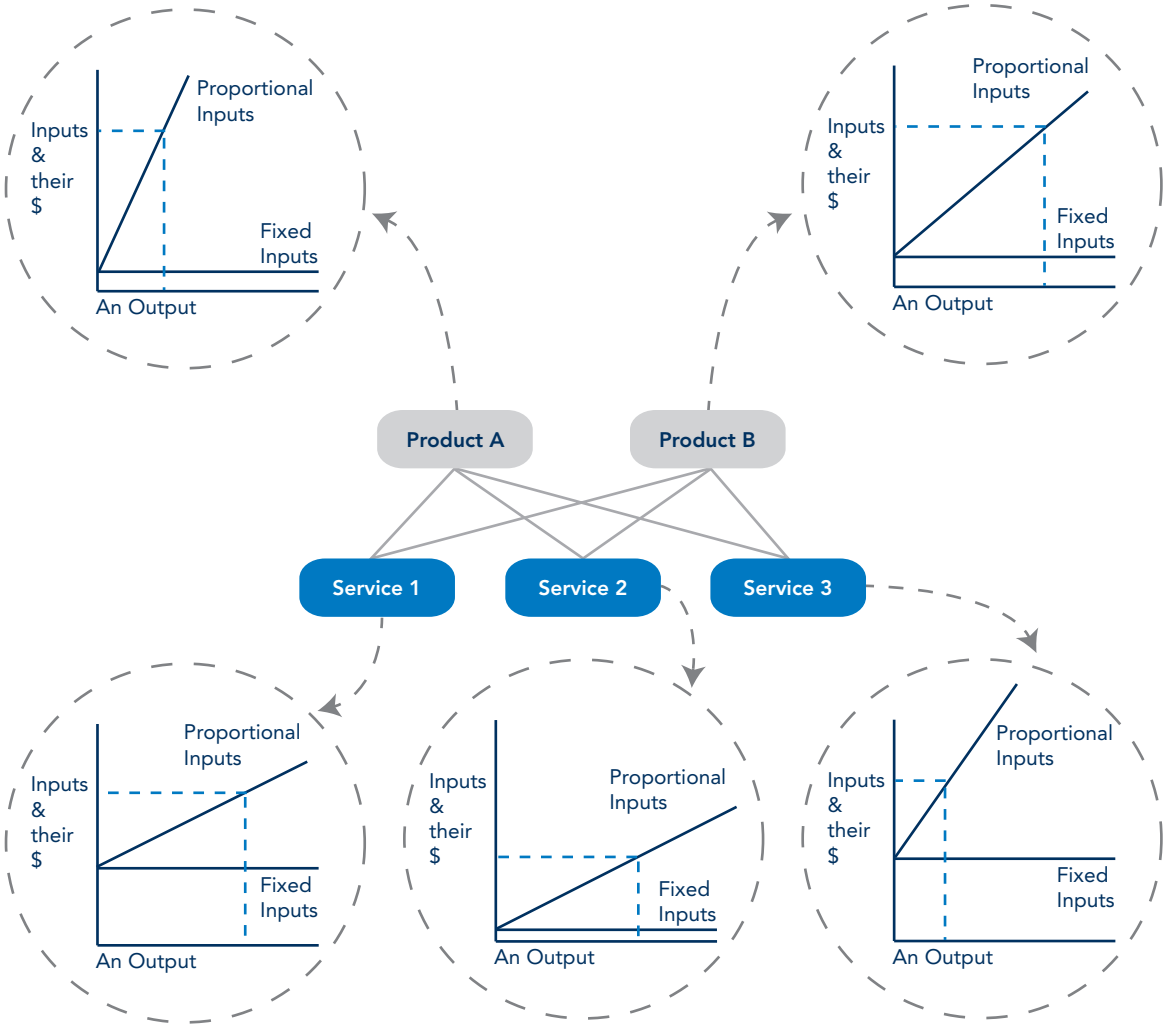
Figure 3. Variability: The Relationship between Total Cost and Total Volume



Responsiveness better captures the nature of cause-and-effect relationships. It enables the provision of accurate marginal cost information. Because causality is concerned with the relationship between an output and the inputs required to produce it, causality demands more specificity in cause-and-effect expressions than variability's aggregate-level assumption is able to provide. Responsiveness reflects the nature of quantitative consumption at individual (intermediate and final) managerial objective levels.

To provide managers with cause-and-effect insights and enable related inferences, responsiveness focuses on reflecting the nature of cause-and-effect relationships at the points within a process where managers must influence the behavior and consumption of resources, as shown in Figure 4.

Figure 4. The Relationship between Resources and Output—Responsiveness



Causal relationships can be static, dynamic, or a combination of both in relation to output. These characteristics are defined as follows:

- A **fixed responsiveness relationship** indicates that an input will be consumed regardless of changes in the level of output of the consuming managerial objective.
- A **proportional responsiveness relationship** indicates that demand for an input will change as the consuming objectives' output level changes.

The focus on resource quantities and the nature of causal relationships allows responsiveness to provide more nuanced information on relationships between total volume and total cost. Responsiveness is consistent with the quantitative definition of causality (i.e., money merely inherits the behavioral characteristic of its associated input quantity).

The concept of responsiveness is critical in striving for a reliable representation of operational cause-and-effect insights. Responsiveness—and the manner in which it accommodates causal relationships and their characteristics—provides managers with a superior operational foundation to base inferences in their analogous or information use activities such as analysis, decision making, and planning. Responsiveness is the cornerstone of the marginal/incremental information that a managerial costing model will provide.

Attributability: *The responsiveness of inputs to decisions that change the provision and/or consumption of resources.* Costs that can't be quantitatively associated with specific outputs in a relatively strong causal manner are governed by the concept of attributability. The common practice of allocating these costs to outputs arbitrarily or with a highly generalized driver distorts decision-making information at many levels of an organization.

Excess/idle capacity cost for a product group is an example of an attributable cost. If these costs are assigned to the products produced, production managers who become more efficient (doing the same amount of work with less resources) will only see distorted product costs arbitrarily inflated by allocation of the excess/idle costs. The excess/idle capacity costs instead should be attributed to the product group the particular machine is dedicated to. Utilizing excess/idle capacity achieved by efficiency improvements should be the responsibility of sales, marketing, or general management.

It is important to note that quantitative causal relationships in the managerial costing framework relate to specific outputs, while costs assigned based on the concept of attributability are generally assigned to business or organizational levels based on control and responsibility factors.

Integrated Data Orientation: *Information about an organization's economic resources, events, and their corresponding monetary values, free from traditional accounting conventions, which allows for the aggregation of elementary data elements and their values for any purpose.* Managerial costing requires a set of integrated operational and financial data sources that are consistently stored for access and retrieval throughout the organization rather than by financial users only. The concept of integrated data orientation moves managerial costing from being dependent on the general ledger, allowing a clean separation of financial accounting and managerial costing. Integrated data orientation views the general ledger as a valuation layer for financial accounting and reporting. Managerial costing requires its own valuation layer; one much more closely connected to nonfinancial data from resources and processes.

Enterprise resource planning (ERP) software data warehouse systems are well suited to implementing the integrative data concept within a cost model. ERP systems provide integration through the implementation of an enterprise database that spans the range of enterprise activities and overcomes traditional information technology silos. This may include reconciling and tracking differences between different valuation layers.

Concepts for Information Use

Overview of Information Use Concepts

The cost model generates information about the consumption of resources and their costs; however, decision makers must be knowledgeable about the appropriate concepts when using the information. Resources and managerial objectives are highly interdependent in a model, and countless qualitative factors can change and have an impact on their costs. The concepts governing information use fall into two groups:

1. Those primarily relevant to analysis (avoidability and divisibility).
2. Those primarily relevant to decision making (interdependence and interchangeability).

Avoidability: *A characteristic of an input that allows for the input (and hence its costs) to be eliminated as a result of a decision.* Avoidable cost is a cost incurred for a managerial objective that will—immediately or in a reasonable period of time—no longer be incurred if the need for that objective is eliminated.

Decision makers need to evaluate whether changes in resource consumption will result in the ability to avoid the costs of affected resources. Avoidability is a pivotal concept in analysis because for every decision scenario an enterprise faces, understanding the avoidable and unavoidable costs is crucial.

Divisibility: *A characteristic of a resource that allows it to be associated in its entirety with the change in a managerial objective's output resulting from a decision.* Resources are not always flexible. The magnitude of a cost-reduction decision depends on whether the resources affected by a decision can be eliminated or sold (i.e., if the resource is divisible, its cost can be avoided). Conversely, for a decision to increase capacity or output the resources' divisibility will determine the investment required.

Divisibility is a characteristic of resources that is critical to decision making since it is a key factor in determining whether costs are avoidable.

Interdependence: *A relation between managerial objectives that occurs because of a decision to use resources to achieve one objective that affects the amount or quality of resources required to achieve other objectives.* The concept of interdependence highlights the criticality of understanding the qualitative dimensions of an organization holistically. For example, opening a new plant, Plant B, may require the transfer of talented people from existing Plant A to help train the new workforce and establish operations quicker. This will have a direct impact on the productivity and costs of Plant A that will be apparent to managers but may be difficult to quantify.

No quantitative model, whether cost-oriented or purely operational, can fully substitute for a functional understanding of an organization. Without this understanding, there is still a great risk that even high-quality data and carefully constructed information will lead to less than optimal decisions. Interdependency is a qualitative causal factor that may outweigh quantitative consumption relationships and dictate a decision that may otherwise be considered suboptimal.

Interchangeability: *An attribute of any two or more resources or resource outputs that can be substituted for each other without affecting the costs of the other resources that are required to carry out the activities to which the interchangeable resources are devoted.* Managers need to consider all options for achieving managerial objectives in a timely manner. A resource with the capability to be used in several productive processes is often not modeled comprehensively, but it could be a viable alternative in many decision scenarios. Managers need to consider all options for such fungible resources for achieving managerial objectives.

The effects of interchangeability can often only be gleaned after the fact from the cause-and-effect insights incorporated in the cost model. For example, two workers do the same type of work, but one is less skilled and requires more inspection and rework. On the surface, these workers are interchangeable but, in reality, interchanging will change the cost structure of the resource pool. The cost impact of interchangeability is normally apparent in a historical analysis, but it is difficult to model since it is often unknown whether the substitution will be feasible or acceptable.

Constraints for Managerial Costing

Constraints are a boundary of the zone in which principles and concepts govern. They implicitly qualify the application of modeling and information use concepts.

Five constraints applied to the concepts associated with managerial cost modeling are **objectivity, accuracy, verifiability, measurability**, and **materiality**.

Objectivity: *A characteristic of a cost model that shows it to be free of any biases.* Managerial costing information can only be objective if the model that produces that information is constructed in an unbiased manner.

Accuracy: *The degree to which managerial costing information reflects the concepts you intended to model.* Accuracy is a characteristic of cost information and reflects the fidelity with which causal relationships between resources and managerial objectives are reflected in the cost model. Accuracy is conditional to the context for which cost information is to be used. That is, an organization with razor-thin margins requires more accuracy in modeling the relationships generating its cost information than a company with 80% or 90% margins.

Verifiability: *A characteristic of modeling information that leads independent reviewers to arrive at similar conclusions.* An objective of a modeler is to create a model that could be reviewed by an independent person who would arrive at similar conclusions about the model's design.

Measurability: *A characteristic of a causal relationship enabling it to be quantified with a reasonable amount of effort.* The measurability constraint requires a cost modeler to create a model with relationships that are quantifiable with a reasonable amount of effort.

Materiality: *A characteristic of cost modeling that would allow for simplification without compromising managers' decision-making needs.* The materiality constraint requires that the incremental benefits of greater insight must exceed the incremental administrative effort to provide the new information.

Constraints for Information Use

Two constraints applied to information use concepts are **impartiality** and **congruence**.

Impartiality: *The unbiased consideration of all resource application alternatives.*
Impartiality is an important component of any optimization activity in that it recognizes the need for a lack of prejudice on the part of managers and the consideration of all options for applying resources.

Congruence: *The interdependence of individual managerial actions to attempt to achieve both individual and enterprise objectives in an optimal manner.*
Congruence requires that managers recognize the dependence of overall enterprise optimization on their individual actions. All other things being equal, the alternative with the largest incremental overall gain over the status quo, despite potential localized suboptimal outcomes, is the optimal solution and the one that satisfies the congruence constraint.

Applying the Conceptual Framework for Managerial Costing

Understanding the Connection to Strategy and Strategy Execution

Managerial costing supports the achievement of an organization's strategic objectives and the optimization of its operations. The managerial costing practitioner must evaluate, understand, and incorporate the organization's strategy and operations into the design and implementation of an effective managerial cost model and then apply the resulting decision-support information effectively.

Where to Start

Current operations serve as the foundation for optimization activities. An organization's current investments (resources deployed), value chain, products/services, market segments, and customers equate to the status quo, and collectively they are what managers use to achieve strategic objectives.

Whenever change is considered, managers use current operations as the baseline in their decision making. In evaluating decision alternatives, managers' best guidance for future outcomes is often provided by understanding the cause-and-effect relationships in the conversion process they are attempting to influence and improve.

Enterprise Optimization: Context, Aim, And Scope

The design of a managerial cost model begins with understanding the organization's strategic managerial objectives. It's important to consider the context, aim, and scope associated with the organization and its strategy. Management accountants will need to make appropriate choices and trade-offs among the framework's concepts and constraints to find the correct balance and focus for their particular organization.

The model design must enable optimization decisions by incorporating the industry environment, competitive situation, and the company's own current conditions and disposition. These aspects comprise the company's optimization **context**, which determines the nature and frequency of the types of decisions its managers will make.

For example, selecting a new facility location could be strategic to one company (e.g., Toyota opening a new truck plant in Texas) and tactical to another (e.g., Starbucks opening a store on a corner one block away from another). Similarly, one more unit of output will be an operational decision for one company (e.g., an additional batch of dough for the local bakery) but a strategic decision to another (e.g., Boeing considering whether to make a B737 or divert the resources to B787 Dreamliner production to regain its competitive momentum against a competitor such as Airbus).

The optimization context provides managerial costing with a frame of reference and guides design and implementation of the cost model for effectively supporting managers. For example, in a distribution business, operational insights are critical to maximizing profitability (e.g., receiving, picking, packing, and shipping and understanding what a profitable minimum order size is). On the other hand, in an outsourcing business, the portfolio (the mix of products and services, e.g., application hosting, infrastructure, and business processes) structured and priced for a particular deal is critical.

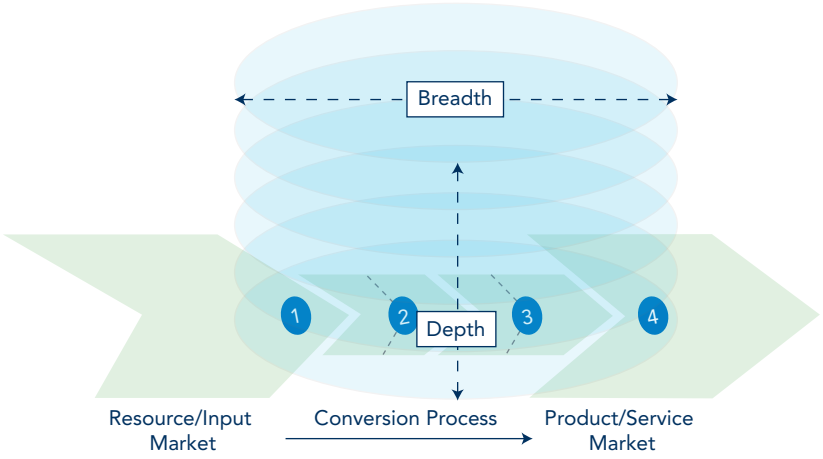
Aim refers to a managerial action's strategic intent—more specifically, to change strategy (an adaptive action) or to reinforce existing strategy (a corrective action). The aim of optimization decisions require managerial costing to support planning, simulation, measurement, and analysis through cause-and-effect insights. For example, the costing model will be used to support changes in the company's existing strategy/ plan. These adaptive actions depend on information that will assist managers in making extrapolations and projections as to future outcomes. Managers are best served by models that produce cause-and-effect information with appropriate structure and detail to facilitate their forward-looking activities.

The costing model will also be used to support corrective actions—steps taken to bring an organization back on track with its existing objectives. Corrective actions are triggered by insights into the deviation of actual results from the plan or target. The preliminary focus is on understanding actual results, and their causes and effects, to help managers understand what has transpired and to guide appropriate corrective actions.

Scope addresses the breadth and depth of decisions to be supported by the model (see Figure 5). For managerial costing, the breadth of optimization decisions dictates the types of managerial objectives to use and calculate values for in a model.[3] Breadth consists of the four value chain optimization areas:

1. Sourcing resource/input markets. Decisions here consider new technologies, methods, and worker equipment resources, and strive to maximize limited capital resources through asset replacement, investment, sourcing, and outsourcing.
2. Applying resource/inputs in conversion. Efficiency is emphasized—doing things right—and decisions address resource application, utilization, realignment or redeployment, process improvements, eliminating waste, and capacity management.
3. Producing outputs. Effectiveness is the focus (doing the right things, producing the right outputs). This may include decisions that deal with product make-or-buy, supporting new product introduction, process improvements, reengineering, and eliminating waste.
4. Realizing gain from enterprise outputs. This involves creating the desired outcomes in product/service markets. Decisions cover target markets and market segments, costs-to-serve these, product/service mix, product discontinuance, entering new markets, creating new products/services for existing markets, and market mining.

Figure 5. The Four Optimization Areas and Optimization Scope



Source: Anton Van der Merwe, "Management Accounting Philosophy Series 3: Filling Up the Moat," Cost Management, November-December 2007.

[3] In managerial costing, the types of managerial objectives can include those related to resources, work activities, products, service lines, distribution channels, and customers.

Depth is concerned with the information needs related to the magnitude of change that result from optimization decisions. Incisive decisions require deeper insight into causal relationships and the effects they are likely to have. To this end, decision-support information must comprise a range of cost constructs that provides insight into the level of optimization influence. The cost constructs include the following:

- Throughput costs (when deciding to produce one additional unit within the relevant range).[4]
- Incremental costs (the difference in total costs between two alternatives in a decision).
- Short-term proportional costs (when considering the opportunity cost of mutually exclusive uses of resources).
- Attributable costs (for divestment decisions such as a bank outsourcing its information technology function).
- Full costs (for strategic decisions, such as a tool manufacturer entering the South American market by establishing a plant in the region).[5]

Designing and Building Cost Models

Cost modeling entails six steps:

1. Identify the resources (and their costs) the organization retains for its use.
2. Identify the managerial objectives the resources support.
3. Develop an understanding of the cause-and-effect relationships between managerial objectives.
4. Design a model that captures the managerial objectives and their causal relationships.
5. Provide a description of the model to include its scope, intended uses, required inputs, outputs, and underlying assumptions and limitations.
6. Apply and maintain the cost model.

1. Identify the resources (and their costs) the organization retains for its use.

An understanding of each type of resource's inherent characteristics is needed, which starts with an understanding of the physical entities that managers oversee and about which they make decisions. Specifically, a modeler needs to understand each resource's output, storability, and cost behavior characteristics (i.e., whether the cost change is proportionate to output or remains fixed—the concept of responsiveness).

[4] The relevant range is an economic term typically meaning a range where changes in demand levels require proportional changes in consumed material but not in the worker or equipment level.

[5] Often referred to as fully absorbed or fully loaded costs.

2. Identify the managerial objectives the resources support.

A cost model reflects the reality of an organization's resources, the work and outputs of the resources, and how the work and output are consumed in producing intermediate and final outputs. One must understand all these to establish managerial objectives that are representative and will provide useful causal insights and related cost information.

Managerial objectives can be grouped into three tiers:

- Tier 1 is for resources and their outputs, which comprise resource pools and activities/processes.
- Tier 2 is for products and services, including production orders, service orders, and projects.
- Tier 3 is for result segments, including entity level (e.g., plant, business unit, or legal entity), market segment and target market cost objects. In "for profit" entities, these managerial objectives also include revenue to enable profitability management.

The particular managerial objectives a modeler employs are determined by managers' planning, analytical, decision-making, and optimization needs within strategic context, aim, and scope of the organization's strategy. They will correspond to individual managers' areas of responsibility.

3. Develop an understanding of the cause-and-effect relationships between managerial objectives.

Resources (captured in first-tier managerial objectives) are used to provide outputs that represent ultimate managerial objectives as well as outputs that become inputs used in achieving intermediate managerial objectives. In managerial costing, this system of inputs, intermediate outputs, and ultimate outputs must be understood and modeled. The model captures an organization's cause-and-effect relationships, which (in turn) serve as the basis for assigning resource costs through the model. It is also important to understand where causal relationships do not exist and apply the concept of attributability.

4. Design a model that captures the managerial objectives and their causal relationships.

Equipped with an understanding of the organization, its objectives, managers' needs, resources, their activities, and outputs, a management accountant can begin the tasks of designing an adequate representation of the relationships between resources and their consumers, expressed in quantitative input-output relationships. Once this quantitative model is established, resource costs serve to value the model in decision-appropriate monetary terms.

5. Provide a description of the model to include its scope, intended uses, required inputs, outputs, and underlying assumptions and limitations.

It is crucial that users of cost information understand not only the principles inherent in their cost model's conceptual design but also the underlying assumptions that were used in constructing the model and the model's limitations. For example, if financial depreciation is used, recognize the limitations of the model in providing insight into product life-cycle profitability and product/service gross margins due to the forced, and often much shorter, asset life used in financial depreciation compared to the actual economic life of the asset. That is, while the asset is being depreciated, products/services will be over-costed; once the asset is fully depreciated, products/services will be under-costed.

6. Apply and maintain the cost model.

By feeding resource costs and output quantities into a completed model, one can calculate costs for the various managerial objectives specified. These costs, then, are available for use in monitoring and decision-making activities. Keeping the model current, including adapting it to managers' changing analogous needs, is a vital part of consistently providing managers with relevant information. In model conceptual design, the constraints in the framework related to modeling (e.g., measurability and materiality) and to managers, analogous needs play an important role in curbing the size and complexity of the model. Many managerial costing initiatives have failed because modelers were unaware of what it would take to maintain their unrestrained conceptual design effort.

Implementing Cost Models

Implementing a managerial costing approach requires much more than understanding and applying the principles, concepts, and constraints articulated in this framework. The management accountant will need to lead or serve as part of a cross-functional team to address a wide variety of technical, managerial, and social/cultural issues that can impact an organization's effectiveness in using managerial costing to improve its information for decision making and its performance. Cost information is a critical component of an organization's performance information, and the decisions made with improved cost information will have an impact on everyone and every aspect of the organization.

Conceptual Design of the Managerial Costing Model and Solution

Managerial costing ultimately requires a software solution, but it can't be emphasized strongly enough that software selection is not the way to start implementing a managerial costing project. The first step is to understand the types of decisions the managers in your organization need to make in order to optimize their operations and achieve the organization's strategic objectives. This requires gaining a deep understanding of your organization's operations and helping managers and organizational leadership look beyond the financial information they currently use. What cost and operational information is needed to drive the organization's performance?

Managing the Introduction of a Costing Approach

Implementation of a managerial costing approach is complex and significantly touches most components of the organization. Applying project management techniques to a managerial costing project is critical. They help balance between cost, schedule, and performance. Without it, the project runs the risk of getting swamped by requirements growth, scope creep, or stonewalling.

Like most well-run projects, managerial costing initiatives should be segmented into smaller phased deliverables that can be assessed and approved by senior management on a regular basis. This keeps both the project staff and the rest of the organization focused on completing segments of the project. The early availability of improved information from more incisive managerial costing will lead to more sophisticated questions and demands for more in-depth modeling efforts. The project team and organizational leadership need to be prepared for this and focus on ensuring that the entire organization gets the benefit of the improved information before the project gets stuck in any one area.

Software

Again, it is extremely important that the initial step in a managerial costing project should not be the selection of software; neither should the software's capability dictate the conceptual design. An organization's managerial costing conceptual design must always precede an evaluation of software alternatives. This is true even if you already have an enterprise resource planning (ERP) suite in place.

Many managerial costing projects have suffered from being focused too much on software. This has inhibited the conceptual design phase of managerial costing because the tendency has been to focus on software implementation and making the organization's needs "ft" the selected software capability. First, evaluate the principles, concepts, and constraints outlined in this framework and consider how they may apply to your organization's strategy and for your optimization needs. Build a conceptual design, and then start to examine software alternatives to support your conceptual design, whether you own software or must acquire it.

There are three major types of software used to support managerial costing:

1. Enterprise Resource Planning (ERP) Software: Large-scale software with integrated modules. For managerial costing, an ERP system used in both logistics and finance may serve as an effective foundation for cost information. An ERP system used only for financial accounting and reporting may not have the resource and logistical information this framework considers indispensable for managerial costing. Operational systems such as manufacturing enterprise solutions may be a rich source of the necessary operational data.
2. Best-of-Breed Managerial Costing Software: A number of specialized software solutions exist for specific managerial costing approaches. Most integrate with ERP, financial, logistics, and operational systems. Over the years, many of the large ERP software vendors have purchased one or more of these solution providers, and they may be usable as independent modules.
3. Business Intelligence Software: This software focuses on integrating data across the enterprise and typically requires creating calculation engines to support managerial costing. This class of software works well for organizations that are small with simple needs or are large with unique needs and the expertise to develop solutions.

Data

This framework places a great deal of emphasis on operational data—information about an organization's processes and resources. Implementing a managerial costing approach based on this framework requires extensive familiarity with the operational and logistics data and supporting systems. A benefit is that employees in the operational and logistics areas will be more accepting when they know you have listened and learned about their work environments and challenges. The types of systems and data vary widely depending on the nature, size, and sophistication of the organization. This means the implementation team must discover what data, operational and financial, is being used as managers throughout the organization make decisions.

Source data quality is often an issue in managerial costing implementations. The real test is for the model to build its own credibility by providing information that accurately reflects operational resources and their monetary value and that allows for quicker, more accurate, and more profitable decisions throughout the organization.

Leadership and Change Management

A key to success effort is to recognize that a managerial costing implementation is not a technical accounting exercise. It is an undertaking to change the decision support and the performance information throughout the organization. It is common that a great amount of effort will involve overcoming resistance—making people feel comfortable and confident about the changing information and the practices to produce the information.

An effective way to look at resistance is to consider a relationship between three factors that affect resistance:

Strive to create a situation where
(D x V x F) > R

In this relationship:

- R is Resistance
- D is Dissatisfaction with the current state. Unless people have discomfort, they will rarely be interested in changing anything. People tend to prefer the status quo.
- V is a Vision of what "better" looks like. When people see a different view of their circumstances or a solution that can lead to an improved condition, they will consider changing.
- F stands for First practical steps, and it is often neglected. Some may think that having a lot of dissatisfaction (D) and a solid vision (V) is sufficient to overcome a large resistance (R). But large amounts of D and V are not enough. If people think the vision is overly theoretical, complicated, costly, or impractical, they will be reluctant to pursue changes to realize that vision. You need F to make the vision attainable.

Do not underestimate how large the R is; it can be enormous, even if it is relatively passive. If any of D, V, or F in the equation is zero or small, their combination will not exceed R. You will need appropriate considerations for all three factors.

People are not likely to want change if they are comfortable with the current situation. Can discomfort be introduced appropriately? An effective method might be applying a critical thinking method of questioning. For example, you could ask your executive team and colleagues questions like: Does our costing method result in more complex products with high technical support being subsidized by the simple products that use relatively little indirect and shared expenses? Are our largest customers our most profitable ones? Are any customers so demanding that the extra effort erodes our profits—but we don't measure those costs? How do we know? How do we know which types of customers to retain, to grow, to acquire as new, or to win back? How much is optimal to spend on each customer type with deals, offers, and promotions to retain, grow, acquire, and win back those customers? Won't any spending amount above or below the optimal for each customer type lead to destroying shareholder wealth?

In many cases, good answers can't be provided, and if the response is "I don't know," the follow up should be, "Is that a good thing? How long can we keep making decisions without knowing these answers?" If these types of thought-provoking and deliberately disturbing questions are presented in the right way, there will be no need to spend much time on promoting the vision (V), the variable that many project champions typically prefer to emphasize. By converting and exposing latent problems into ones that are evident to your executives and colleagues, the need for change becomes more obvious.

An Organization's Acceptance of Managerial Costing

Using the framework to produce a well-designed, causal, and accurate managerial costing system generates informed users who understand and trust the information the cost system gives them. But be aware that those users must be nurtured and developed by the organization. Invariably, the success of a managerial costing initiative depends on how the organization responds to and uses the new cost information.

What is different for organizations with high-quality managerial costing in place? How is management different? What difference does it make for operations and nonfinancial personnel throughout the organization? Clearly, the availability of high-quality, trusted cost information will change organizational communications, particularly communications pertaining to economic decision making. The impacts of having highly usable cost information on analysis, decision making, communications, and managerial alignment throughout the organization are important factors in the ultimate success of a managerial costing initiative.

Organizations that achieve highly effective managerial costing are able to focus on business issues much quicker because they spend less time debating managerial costing practices, the quality of cost information, and efficacy of the underlying systems. They also have a wider range of employees empowered to use cost information to make decisions because the information will be widely understood and trusted.

To achieve this state requires the constant availability of cost information and the related operational and resource capacity information. This information must be in continuous use and under constant observation and evaluation.

Usable Cost Information

The effective application of the principle of causality and its supporting concepts will improve the usability of cost information within an organization. The key elements of usable cost information are the **transparency** of the information, its **defensibility,** and its **timeliness**.

Transparency means that users understand how the cost figures were calculated and whether the information reflects the cause-and-effect relationships within operations. A lack of transparency will cause most managers to ignore, to the extent possible, such cost information. The relevance and reliability of a costing system's information must be clear and demonstrable.

Managers will tend to second-guess opaque cost information. This distracts from critical analysis of other important decision factors. Debates about costing systems undercut efforts to improve decision-making processes within organizations. Transparent and causal cost information addresses the challenge of managers demanding evidence while quickly supplying accurate costs.

Defensibility means that the cost information can be used by both financial and nonfinancial personnel to build and evaluate business cases, explain results, support and explain decisions, and advocate ideas. Transparency will make cost information defensible to challenges about its accuracy for any given purpose. But this type of defense is most often mounted by the Finance department since it is the creator of cost information. Defensibility is truly achieved when managers and employees outside Finance can readily apply cost information when investigating operational problems or evaluating operational solutions without worrying that Finance will find fault with the cost figures used in the analysis. At that point, managerial costing becomes an enabling tool for a wide range of managers seeking to make better decisions about the employment of the resources under their control and investments that will improve the organization's performance. The key to making costing information defensible throughout the organization is applying the principle of causality and its supporting concepts when designing the processes and systems to create the information.

Timeliness refers to cost information that is recent and consistently available. First, the cost information must be recent. Depending on the situation, this may be minutes, hours, or days to reflect current and ongoing operations. In this regard, the concept of real time should be the default objective.

Second, cost information must be consistently available. Usability requires an effective managerial costing system be in place to generate the information for managers and employees. A cost study—no matter how effectively done, no matter how quickly completed, no matter how well guided with policy and procedures —is never as useful as having information available for day-in, day-out measurement and evaluation. Only through continuous observation and evaluation will cost information be understood to a degree that allows managers to gain confidence that the model reflects the cause-and-effect relationships of the resources, processes, and operations they manage.

Decision Making and Managerial Alignment

The most significant benefit of highly usable cost information is that it provides the ability for managers at all levels to align with the organization's objectives for enterprise optimization. A well-designed managerial costing system eliminates any mismatch between cost information and operations by causally connecting them at the resource level to managerial objectives. This clarity will allow the cost information to be used more effectively and more widely for planning, investing, risk management, performance evaluation, profitability analysis, and other management decisions requiring marginal/incremental information.

评估成本核算方法

There are many managerial costing approaches—traditional standard costing, activity-based costing, lean accounting, throughput accounting, variable costing, time-driven activity-based costing, resource consumption accounting, and many others. The Conceptual Framework for Managerial Costing provides foundational concepts that can be used to (1) evaluate your organization's managerial costing needs, and (2) identify the strengths and weaknesses of specific approaches. Consider the evaluation of the appropriateness of managerial costing approaches for your organization by reviewing these questions and creating others relevant to your organization:

1. What are your organization's managerial costing needs to support the range of decisions (strategic to tactical) that the managers will be making?
2. Apply the Modeling Concepts according to how important each is to your organization:
    - Resource. Do you need to understand resources and groups of resources specifically or are broad monetary groupings and representations adequate?
    - Managerial Objective. Does your organization need insight into the cost of achieving all the objectives it requires of managers throughout the organization?
    - Cost. How deep in your organization is the need to understand the relationship between its resources, their capacity, and their actual output in monetary value?
    - Responsiveness. Does your organization need to understand its fixed and proportional cost at all levels of its processes for marginal decisions to invest in improvements, special order pricing, make or buy, and other decisions?
    - Traceability. How easy will it be to find verifiable transaction records of the data needed to provide managers with the decision support information needed?
    - Capacity. How important is it for your organization to understand when capacity limits are being challenged and the options to remedy them? Is it important to understand productive, nonproductive, and idle/excess resource capacity costs?
    - Work. Does your organization need the ability to model its processes and connect the work activities directly to the resources doing the work and the intermediate and final products/services the work produces?
    - Attributability. How significantly does the allocation of costs without clear causal relationships impair decision making?
    - Homogeneity. Does your organization have resources producing the same managerial objective that differ in age, technology, quality, and other aspects of performance?
    - Integrated Data Orientation. How well does the financial and cost information in your organization's financial and operational systems reflect the resources, processes, product/services, and related decisions of managers and employees?
3. Consider the impact on your organization of the framework's constraints—objectivity, accuracy, verifiability, measurability, and materiality. Which of these constraints are most important, and how do you effectively and efficiently balance them to minimize the negative impact of each constraint?

4. How well does the managerial costing approach provide information on each concept? One key concern is whether important information is readily available in routine calculations available for analysis, or if it requires more extensive time and research, such as special studies due to limited causal relationships inherent in the approach.
5. How well does the managerial costing approach inform on the most significant constraints for your organization?

Conclusion

Guided by the principles of causality and analogy, managerial costing examines the utilization of business resources and related causes to provide a monetary reflection of an organization's operations. An effective causal model applies a thorough understanding of the resources and operations to determine how they support managerial objectives and the execution of an organization's strategy. Once the model provides an operational understanding, cost information based on the principle of causality will provide a very robust representation of the operation in monetary terms. The combination of the operational understanding and the corresponding financial translation provide strong support for management decision making.

Appendix

Strength of Causality

The proper modeling of causality in managerial costing necessitates a distinction between the strong and weak forms of applying the principle.

The Strong Form refers to instances where the relationship can be explicitly quantified. That is, a requisite dependency exists between an output (e.g., 250 simulator hours) and an input (e.g., 50,000 kilowatt hours (kWh) required to run the simulator for 250 hours).

The Weak Form exists when the input-output relationship can't be quantified but an association nevertheless clearly exists. For example, a machine is dedicated to making products A and B (two products composing a product group). What is the relationship of the machine's excess/idle capacity costs to products A and B? The cost for the machine had to be incurred to make products A and B, but the relationship between the products produced and the machine's idle time can't be quantified. **The proper treatment of the principle of causality—in both its strong and weak forms—is important to enterprise optimization and managers'**

Modeling Capacity

Capacity is a key characteristic of all resources. Two types of capacity inputs are recognized:

1. **Capacity provision** inputs are required to enable output commitment even if no output is generated in the end. A resource's capacity provision costs are the costs of the fixed input quantities it must consume to meet its committed capacity. Once a commitment has been made to provide a certain level of output, the associated capacity provision costs can't be avoided until a decision is made and action is taken to eliminate the capacity.
2. **Capacity usage** inputs are those additional inputs—over and above capacity provision inputs—incurred to produce actual output. Capacity usage costs are the costs of proportional inputs consumed in producing output.

Assignment of all capacity costs, from both the provision and usage inputs, is a function of the denominator volume used to calculate the resource's output cost rates. Actual capacity usage inputs consumed will reflect actual output generated. The assignment of capacity provision inputs (and their costs) is more challenging because the causal relationship is not typically as strong. They require a denominator volume that will appropriately reflect both the strong and the weak forms of causality.

If planned output is used as the denominator for rate determination, all capacity provision costs are assigned to products consuming the output. In this case, common fixed costs (costs that have a very weak or no consumption relationship with a specific output, such as excess/idle capacity) are assigned to products in a manner inconsistent with the principle of causality. This arbitrarily spreads some capacity provision costs and compromises managers' cause-and-effect insights.

Therefore, the denominator used to assign capacity provision costs must reflect the following:

- When resource capacity is applied to produce a product or service as well as when the resource remains unapplied.
- Capacity provision inputs and their costs as relating to both applied and unapplied capacity.

Applied capacity is defined as productive capacity (time spent making product) and nonproductive capacity (time for setups, planned and unplanned maintenance, rework, etc.) that can be causally related to a specific output with a consumption relationship. Unapplied capacity includes all idle/excess time and nonproductive capacity that does not have a strong causal relationship to a specific consuming objective. Capacity resource's costs in a causal manner to support managers' analogous activities. It is clear that capacity provision costs should be assigned to a resource's entire period of availability. Therefore, capacity provision costs for idle/excess resource time should not be assigned to productive output but should instead be handled in accordance with the concept of attributability. For optimization purposes, theoretical capacity is the appropriate denominator for assigning capacity provision costs to the consumers of capacity. Any other denominator, including practical, budgeted, or normal capacity, will assign some unapplied capacity and its provision costs arbitrarily to the outputs produced.

CAPACITY DEFINITIONS

Idle/Excess Capacity: Capacity not currently scheduled for use. Idle capacity has three forms: not marketable (no exists or management made a strategic decision to exit the market), off limits (capacity unavailable for use), and marketable (a market exists but capacity is idle).

Nonproductive Capacity: Capacity not in a productive state or not in one of the defined idle states. Nonproductive capacity includes setups, maintenance, standby, scheduled downtime, unscheduled downtime, rework, and scrap. Nonproductive capacity should be minimized.

Productive Capacity: Capacity that provides value to the customer and is the reason an organization acquired the resource. Productive capacity is used to change a product or provide a service, results in the delivery of good products or services, and is used for process or product development.

Theoretical Capacity: The full period a resource is available based on ownership rights or contract agreements. Buildings and equipment are typically available 24 hours a day, 365 days a year. Human resources are typically available for an agreed upon number of hours per week. Overtime is an additional resource when used.

Source: Thomas Klammer, ed., *Capacity Measurement and Improvement: A Manager's Guide to Evaluating and Optimizing Capacity Productivity, 1996*.

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