What is Square Root Costing?

A dairy food factory manufactures two major products: salted butter and olive-oil butter. The sales volume of the olive-oil butter is one-tenth that of the salted butter. The traditional methods to allocate factory overhead costs, for instance the plant manager's salary, to the two products would be to either: 1) allocate by sales volume (one-to-ten ratio) or 2) allocate by item (one-to-one ratio). Intuitively, most people would understand this to be incorrect. The right way to allocate the plant manager's salary in our example is actually is by the square root of volume of the two products, or a roughly one-to-three ratio. This basis – expanded to a unique methodology by WP&C – is known as Square Root Costing. It is a mathematically proven way to more accurately allocate complexity costs (see Complexity Costs Spotlight).

Why is SQRTC important?

In short, Square Root Costing is a faster, more dynamic alternative to methodologies such as Activity-Based Costing for organizations looking to quantify the impact of complexity on cost and operations. Derived from WP&C batch size equations, it uses the square root of a variable such as volume instead of the more common linear relationship to allocate complexity-related costs. It is a key input for price setting, asset rationalization, customer and product profitability analysis, sales force alignment, and portfolio optimization. Given that complexity costs are the biggest determinant of cost competitiveness, Square Root Costing is a new imperative for

today's corporations. Too often, companies assume economies of scale as more volume is pushed through their operations, but volume often generates complexity, the opposite of scale. Square Root Costing allows a company to determine where the business has truly achieved scalability and where complexity costs are eroding profitability. Square Root Costing also has the advantage of being more dynamic than more time-consuming costing models such as Activity-Based Costing. Since Square Root Costing can predict cost changes based on variables such as volume, it aids not only in understanding true costs, but also how those costs change pending shifts in volume, or the supposition of scale. It answers the question: at what volume would Product A achieve profitability, if at all? And it does so, incorporating the impact of complexity.

The WP&C approach to SQRTC

WP&C has used Square Root Costing to help a number of businesses identify where their businesses were saddled with non-value added costs related to complexity. This methodology has been used in a number of industries to identify unprofitable products, customers, or activities that are dragging down a company's bottom line. For example, looking at two similar shades of lipstick where one sells sixteen times the volume of the other one, Square Root Costing shows that the inventory holding cost was not 16:1 as had been originally estimated, but rather only 4:1. This meant that the per unit inventory cost of the smaller volume item was actually four times that of the larger volume item! This accurate cost picture allowed the lipstick manufacturer to make the highly profitable decision to eliminate the lower-volume SKU. The dynamic nature of the process, which shows

how costs change pending shifts in volume, takes a matter of weeks versus activity-based models which may take six months to a year. This allowed the company to quickly apply the thinking to other products in its portfolio.

Standard Cost View

	A	B	C	D	E	F
Volume:	1500	1000	600	200	100	50
Profit:	8%	11%	7%	7%	6%	6%

Complexity-Adjusted View

NVA costs typically shift toward lower vol. products

Profits shifts toward higher vol. products

|	A	B	C	D	E	F
Volume:	1500	1000	600	200	100	50
Profit:	27%	19%	3%	-27%	-39%	-54%
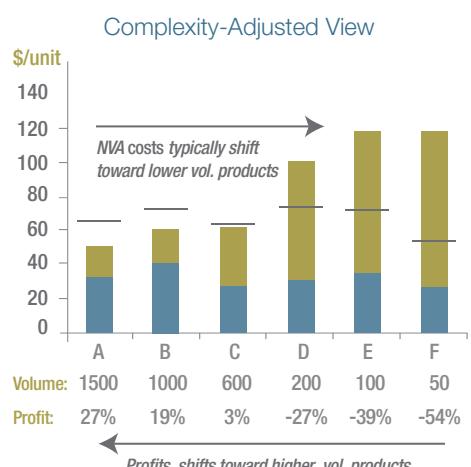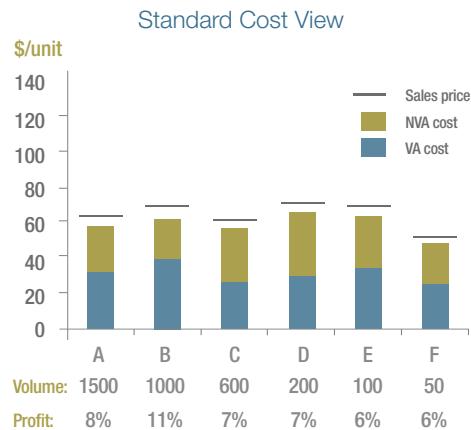
Figure 1. Square Root Costing Provides More Accurate Views of Costs and Profitability