Value first, cost later: Total Value Contribution as a new approach to sourcing decisions

Teaching Version

Adapted from:


Introduction

Imagine you are a manager at a firm located in a high-wage country tasked with sourcing a major component or service. You have quotes from an offshore supplier, and from a nearby supplier with a higher per-unit price. Which supplier should you choose? If motivated only by the siren song of low per-unit price, you may choose the offshore supplier. Such an approach has been a driver of the nearly 40-year slide in manufacturing in high-wage countries.

If you are sourcing a physical good and have a sophisticated understanding of logistics and international trade compliance costs, you may build a detailed “Total Landed Cost” (TLC) model that adds those costs to the offshore supplier’s quote. As the resulting TLC model involves several interconnected sheets in a huge Excel workbook, you could be rightly proud of your thoroughness.

If you recognize that these decisions can also affect hard-to-measure factors important to your company, you may perform a “Total Cost of Ownership” (TCO) analysis (Ellram and Siferd 1993). The best of TCO analyses include dozens of factors, such as increased disruption risk as supply chains get longer (Siegfried 2013; Reshoring Initiative 2020).

We suggest an alternative to TCO that we call “Total Value Contribution” (TVC). TVC is a structured approach to sourcing decisions designed to maximize the firm’s long-term value. Our approach provides a process designed to counter firms’ entrenched tendency to focus on easily-measurable costs. TVC starts with the question, “what do our customers, current and future, value about our products?” The TVC approach is designed to counteract common biases through careful incorporation of the individual and group decision-making literature; we believe that these biases have
worked against the widespread adoption of earlier efforts to combat purchasing’s focus on simple cost measures alone. In addition to our improved process, we argue that the term “TVC” improves upon “TCO” in two ways. First, by replacing “cost” with “value”, TVC anchors decision makers on value, not cost. This is important because cost is the factor to which decision makers in global sourcing typically gravitate due to its easy measurability and internal incentives that reward managers for cost reductions. In addition, TVC replaces “ownership” with the more appropriate “contribution;” thus avoiding any narrowing of consideration of when during its life cycle the activity being sourced may affect value.¹

We are not the first to argue that sourcing decision-makers should place value at the center of their buying decisions (e.g., Hinterhuber and Snelgrove 2017, Vitasek et al. 2012; Wouters et al. 2005; Ellram and Feitzinger 1997). TVC differs from these solutions by explicitly addressing the behavioral issues (including cognitive biases and piece-price-based incentives) that, we believe, have made excessive cost-focus so persistent in practice.

Decision factors considered in sourcing

There are many factors to consider in supplier selection, and many are difficult to quantify. Dickson’s (1966) seminal article lists 23 factors that managers reported considering in their supplier selection decisions. Modern lists are no less extensive; the Reshoring Initiative’s Total Cost of Ownership Estimator currently lists 36 factors. The meaning and importance of each decision factor is context

¹ The term TCO originated in the context of equipment procurement, notably information technology (Mieritz and Kirwin 2005), where the “ownership” term made sense. A TCO analysis of a capital purchase would capture (for example) on-going maintenance and downtime, operating costs, and material and energy use (Johnson et al. 2011, p. 297), as well as salvage costs. But, when the decision involves a direct material, the buying firm may only own the part for a short period of time, while its circle of concern includes many aspects from the product’s or service’s life—from its creation by the provider (including actions by the provider’s providers) to its use by customers, and everything in between. Impacts that occur before and after the buying firm owns the product, such as lifetime CO₂ emissions, are relevant in many of today’s transactions, regardless of product category.
dependent (e.g., a buyer might be interested in capacity to meet fluctuations in current demands, or in capacity for future growth), further adding to the complexity of the sourcing decision. Many of these factors are interconnected, such as cycle time (Sharland et al. 2003) which affects logistics and inventory costs as well as the pace of innovation. Softer factors, such as reputation (Lienland et al. 2013), and relationship characteristics such as openness of communication (Choi and Hartley 1996), can arguably connect to every dimension of supplier performance.

Further, the linkages among production, markets, supply sources, and product development can be critical. Ketokivi et al. (2017) studied 35 production location decisions. For each decision, they examined how production was linked to supply, product development, and the market. For each linkage, they considered coupling, formalization, and specificity (respectively: the extent of the interdependence, the codifiability of activities, and how easily a node in the dyad could be replaced). They observed that locating production in a high-cost country was always associated with at least one of: a high level of coupling or specificity, or a low level of formalization (Ketokivi et al. 2017). As firms outsource more strategic activities, firms’ abilities to consider multi-dimensional objectives through sourcing has become even more important to firm value, but also more complex.

A common omission from lists of factors to be considered in sourcing decisions is the impact of suppliers on revenues. TCO models can theoretically include any factor, but few, if any, give as much attention to revenues as costs. If one thinks of revenues as negative costs, the lack of attention to revenues might seem unimportant. However, considering revenues explicitly ensures they are given

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2 The Reshoring Initiative’s (2020) Total Cost of Ownership Estimator, a particularly complete list of factors, offers the following that pertain to supplier impact on revenues: “impact on product differentiation/mass customization, % of price”, “innovation loss, expected % of price”, and “opportunity cost due to delivery and quality: lost orders, slow response, lost customers, % of price”. Each addresses a very broad issue, in contrast to the detailed breakdown of potential costs (including items such as prototype costs and travel expenses for site visits). By focusing attention on what customers value, the TVC process can help guide firms to focus on those aspects of product differentiation and innovation that would have the most impact in a particular application.
full consideration beyond simply, for example, lost sales due to disruptions. Excellent suppliers allow the firm to increase its prices and/or the quantity it sells; the sourcing decision process should explicitly elicit these impacts. Thus, it is often useful to include a buyer's marketing and product design experts in sourcing decisions to understand these revenue-side implications; such inclusion is far more likely in a TVC process than in cost-based processes.

**Decision-making approaches used in sourcing**

We can see from the prior section that sourcing has long involved multi-dimensional decision making. Below, we briefly discuss some common purchasing methods and describe how each one handles this complexity, before introducing the TVC process. Table 1, which can be found after the references, offers a summary.

**Unit-price-based procurement**

Rather than disregarding non-price factors entirely, firms often combine the unit-price-based approach with some form of pre-qualification, however, potential suppliers do not gain any advantage by exceeding the minimum standards on non-price dimensions. One incarnation of unit-price-based procurement is the price-only online reverse auction, in which suppliers bid for the right to supply a customer’s needs and the winner is chosen based on low price (Jap 2002), even in cases where a slightly higher-priced supplier might offer greater quality or reliability (Helper and MacDuffie 2003).

**Total Landed Costs**

Total Landed Cost (TLC) models add measurable transportation, packaging, and storage costs to the unit prices. This distinction is most relevant when buyers are considering options in distant locations as sources for physical goods. TLC analyses can be very extensive and complex (e.g., Erhun and Tayur, 2003; Young et al., 2009). Thorough analyses require not only a deep understanding of transportation costs, but also customs, duties, tariffs, and trade compliance costs if global sources are under consideration.
Total Cost of Ownership

The most widely recommended sourcing decision framework today is “total cost of ownership” (TCO). TCO “implies that all costs associated with the acquisition, use and maintenance of an item be considered in evaluating that item and not just the purchase price” (Ellram and Siferd 1993). Under the guise of TCO, managers can (and some do) consider a very broad set of factors in strategic sourcing decisions. Attesting to TCO’s credibility, the U.S. Department of Commerce included a referral to the Reshoring Initiative’s “Total Cost of Ownership Estimator” in the “toolbox” on its “Assess Costs Everywhere” website.

As highlighted, sourcing approaches have evolved to use an expanding pool of information. More extensive information search and analysis are characteristics of rational procedures, which are associated with better performance outcomes of supplier selection decisions (e.g., in terms of costs, defects, and delivery, Riedl et al. 2013).

The Total Value Contribution (TVC) Approach

Our hope is that TVC will make it easier for forward-thinking managers to make sourcing decisions based on value. We also hope TVC will spur managers who would otherwise have relied on cost-centered heuristics (Gray et al. 2017) to source based on value instead. Below, we outline our proposed TVC approach. As shown in Table 2 (after the references), the features of this approach have a theoretical basis in the individual and group decision-making literature.

Setting the objectives

The first step of TVC-based sourcing, and arguably any sourcing decision, is to clearly define which activity is under consideration. As Figure 1 shows, the TVC approach then starts with two key questions

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3 Referring to sourcing decisions as choices about an activity is common in the make-buy literature (see Tsay et al. 2018, Section 2 for a review of that literature). The term activity allows consideration of the sourcing of goods and
about the goods or services affected by the activities under consideration: “What do our customers, current or future, value about our products? How can this sourcing decision affect those values?”

This question requires decision makers to listen: to gather information from customers and those who work with them on what customers value in the product or service, and link the sourcing decision to those value drivers. Answering the question well requires cross-functional expertise, because information about customers and how sourcing decisions affect what they value is distributed across the organization. Generally, the decision should involve people with a strong understanding of customer requirements, technical requirements, and supplier capabilities (e.g., in a manufacturing context, at least marketing, engineering, operations, and procurement). In some cases, value creation could be almost entirely based on obtaining the item for a low price, making the TVC choice the same as that obtained by employing TCO, TLC, or even piece price. In other cases, the answers could include factors such as consistent quality, protection of intellectual property, fast delivery, social responsibility, or a specific technological capability. A customer may value having a partner with the capability to participate in co-developing new products; considerations such as this one requires evaluation of alternatives at the supplier or relationship level, as well as at the product level.

**Determining the alternatives**

The second step in the TVC approach is to identify alternative sources. We do not prescribe how a firm should go about identifying alternatives: Potential supply bases are typically quite activity-specific. It is possible that, as decision-makers refocus on what customers value, they will identify a need to

services. It also can be defined narrowly (providing the manufacture of a single part number) or broadly (providing design, manufacturing, and logistics for a whole class of related products and services). The definition of the activity under consideration is itself a key strategic choice; see “Implementation Issues” later in this article.
search for new alternatives that are more closely aligned with these priorities. Figure 1 shows feedback loops for these reasons. For example, recognizing customers’ need for responsiveness may lead buyers to seek sources capable of implementing _seru_, a manufacturing approach using reconfigurable cells that allows fast product changeovers (Yin et al. 2017). Further, after thinking through these issues for a specific activity under consideration, the firm may find it useful to bring related activities into consideration, or the firm may find unexpected performance differences between alternative suppliers. For example, when two separate components work together to provide an attribute that customers value, it may make sense to use a single provider for both products. Using a single provider for both time sensitive and insensitive products can also be profitable, as it can allow better use of capacity buffers (de Treville et al. 2017).

It will sometimes be appropriate to pre-qualify potential suppliers, so that only viable options are considered in the next step in TVC analysis. This decision, too, should be driven by customer values. Some factors may be non-compensatory: a failure to achieve a certain level of performance in one factor (e.g., provision of a safe workplace) may disqualify a supplier from further consideration, regardless of how well it performs on other factors.

**Evaluating the differences**

The hardest part of TVC comes next: assigning a rough monetary value to the differences between the alternatives on the identified values. This may be even more challenging for those sourcing components or backend services, rather than finished goods. To simplify this step, we recommend focusing only on value drivers with significant differences in customer value between options under consideration (as in Wouters et al. 2009 and Wynstra et al. 2012). TVC allows for any method of calculating value differences: No functional form is prescribed. It is acceptable to have a wide range for some values, if necessary.
As value differences are uncovered, the TVC approach may lead decision-makers to identify safeguards that the firm can implement to reduce differences between options. For example, the team may see that one potential source has higher disruption risk, and that a disruption at a peak time may result in millions of dollars of lost revenue and goodwill. One option is to roughly quantify that lost value (e.g., an x-y\% higher likelihood of complete disruption, which would result in $X-$Y lost sales, and lost goodwill valued at $W-$Z). But, a better option may be to implement safeguards such as higher inventory or flexible capacity buffers during the peak season. The TVC team should note the need for these safeguards, which must then be included as adjustments to the cost model associated with the suppliers for which they are required. Often, estimating the costs of implementing these safeguards requires knowing the supplier’s unit costs: Such calculations should not be performed until the value differences have been fully determined\(^4\) so that knowledge of unit costs cannot unduly influence value estimates (DeKay et al. 2014). Dekel and Schurr (2014) provide evidence in favor of this “value first” approach.\(^5\) They performed an experiment with government procurement managers. They found that when managers knew the lower bidder, they inflated non-cost values in favor of that bidder, relative to when they did not know bids. Dekel and Schurr (2014) labelled this “lower-bid bias.”

So how does a TVC team come up with value differences? It is often impossible to be very accurate. As a preliminary step, the team should agree on the categories of revenue and profit that the sourcing decision may affect. After this, the goal is to get some agreement as to the rough magnitude

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\(^4\) Note that the value of the safeguard depends in part on what the customer wants. If a key part of the customer’s value comes from an ability to quickly make changes in the product, carrying extra inventory may not be a good option. This example illustrates how the TVC method allows a firm to consider interdependent costs. It is arguably more difficult to consider interdependence when using methods such as TCO, which often depend on working through long checklists where costs are presented as independent of each other.

\(^5\) See Table 2 for additional evidence.
and likelihood of value differences between sources. In some cases, the decision makers may have the in-depth knowledge needed to define a distribution of potential value differences for each value driver, allowing a formal assessment of risk differences using Monte Carlo or similar. More often, they will not. In this case, one shortcut is to consider best-case, worst-case and most-likely scenarios (as is common in risk management; e.g., Barreras 2011). As risk managers do, the team can benefit from paying special attention to the inter-relatedness of potential outcomes and trigger events (Kleindorfer and Saad 2005; Kern et al. 2012). For example, the probability distribution for increased sales associated with greener production is likely not independent of that for decreased brand risk associated with ethical labor practices. In some cases, decision-makers may find it helpful to think about the value generated by one of the alternatives, but with and without a particular feature (e.g., an option for future expansion), in order to arrive at an estimated value for that value driver. Beyond value drivers that affect revenue or risk, this discussion also forces the firm to decide how much, if at all, they truly value social issues, such as supplier pollution levels and compliance with rigorous safety or worker-protection programs.

**Revealing the costs**

Measurable cost differences finally enter the equation only after hard-to-measure value differences between options have been articulated. These cost differences are, roughly, the same as those captured in a TLC model. The person in charge of the cost model should add the costs of any safeguards identified during the estimation of value differences (e.g., carrying additional inventory for a distant option to offset increased disruption risk). The participation on the TVC team of the person responsible for creating the cost model is critical to be sure that the same factors are not double-counted through inclusion in both the value model and the cost model. Only when both the value differences and the cost differences are revealed will the decision-makers finally see the full picture.
We expect that, in general, cost differences revealed in this step will not seem as large as they would have if introduced at the beginning, leading to decisions based more on value.\(^6\)

**Learning from experience**

Adhering to this process, and documenting the values articulated, will lead to learning and refinement of what the firm values. After a decision has been made and implemented, one final step remains. Just as forecasters should assess the accuracy and bias of their forecasts, decision makers using TVC should document the values they quantified and attempt to compare the outcomes of their decisions to their original expectations. In so doing, they will learn to improve their estimates of value differences in future decisions. This will clearly be difficult, not only because realized value will be hard to measure, but also because information on the performance of discarded options will not be available. Nonetheless, we encourage purchasing staff to ask: “Did we identify the most important hidden costs and risks? Did we realize the expected revenue? Were our estimates reasonable? Why did we miss the things we missed?” Better sourcing decisions, and better firm performance, will result.

**Implementation Issues**

We recognize that focusing on value in sourcing is easier said than done. Earlier attempts to foster value-driven sourcing have faced resistance in organizations. We believe that estimating value differences before analyzing costs is one key to success. Forcing consensus on subjective value differences \textit{before} the team knows easy-to-measure costs makes estimates more credible and harder to attribute to biased preferences, such as Dekel and Schurr’s (2014) lower-bid bias. Experiments show that purchasing managers do not treat value and price as equivalent, even when value is monetarily

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\(6\) Table 2 provides a variety of evidence for this claim. For example, experiments show that managers tend to insufficiently adjust from the first number introduced into their analysis; this number serves as an “anchor” for the rest of their analysis (Epley and Gilovich 2006).
quantified (Anderson et al. 2000). Instead, managers doubt whether the benefits of higher value, higher-cost purchases that their suppliers promise will truly be realized. TVC partially addresses this potential bias because the values analyzed come not from suppliers, but rather from an internal assessment of what the firm’s customers value. Anderson and Wynstra (2010) showed that confirmatory data from reference customers and pilot programs can be effective for reducing ambiguity about superior value. We encourage TVC adopters to incorporate these techniques to improve the precision of their estimates when appropriate.

For TVC to be successful, firms also need to align purchasing agents’ incentives with adherence to the TVC approach, and downplay incentives based on piece price. Kerr (1975) vividly describes “the folly of rewarding A, while hoping for B”. In our setting, A is often negotiating price cuts, while B is increasing long-term profits. Of course, measuring B directly is generally not a realistic alternative. The “informativeness principle” (Holmstrom 1979, Milgrom and Roberts 1992) says that the cost of providing incentives increases as the error in measuring performance increases. Although TVC complicates the measurement of purchasing managers’ performance (due to consideration of value instead of cost), it also makes accurate monitoring of behaviors more feasible, due, for example, to observation of efforts to follow TVC by the cross-functional team (Helper et al. 2000). Subjective performance measures can improve upon, or complement, distortionary objective measures (Baker et al. 1994). This focus on rewarding adherence to procedures avoids the difficulties of trying to measure value-added by individual employees in a collaborative workplace. Although TVC is a cross-functional process, the purchasing agent’s incentives are especially relevant if she is responsible for initiating it and ensuring appropriate functional representatives are involved. Executive-level performance metrics should also recognize the potential for broad contributions from purchasing departments. Ericksen (2020) suggested that including customer fill rate as a metric for executives in several departments would build shared goals and cross-functional agreement to not choose a supplier that offers a low
piece price but that may have difficulty with on-time delivery. We, of course, agree. TVC teams may identify factors other than on-time fill rate as an appropriate metric to build shared goals.

Our suggestion that managers should clearly define the activity under consideration before beginning their analysis can be challenging to implement. The appropriate unit of analysis for TVC will depend on circumstances. It may be a single component, or an entire product category and its support services. During the first steps of TVC, when decision-makers consider how their sourcing decision may affect things valued by the customers, we recommend that firms be open to reconsidering how the activity being analyzed relates to other activities (which may be performed internally or externally), and how this division of labor affects customer value. We believe that the TVC approach can encourage a highly valuable expansion (or contraction) of the activities under consideration, due to its facilitation of cross-functional discussion.

Limitations

While different decision-making processes tend to be vulnerable to different biases, none are immune. By anchoring on value, TVC may underemphasize cost reduction. By putting customers first, TVC may underemphasize the concerns of other stakeholders, e.g., employees. TVC does not guarantee a globally optimal solution. Instead, it uses a conceptually simple procedural heuristic of starting with what customers value. Human use of simple heuristics to make decisions can be a successful strategy (Gigerenzer and Goldstein 1996; Marewski et al. 2010) as well as a source of systematic errors and biases (Tversky and Kahneman, 1974, 1981).

Conclusion

The simplest argument that TVC is superior to TCO is that firms do not compete on cost — they compete on value. Increased outsourcing and offshoring of more strategic activities means that sourcing decisions have a greater effect on all dimensions of value than they did in the past. Firms that focus on increasing shareholder value have three options: cutting cost, increasing revenue, or lowering risk in ways that
shareholders themselves cannot by diversifying. TCO encourages a focus on just the first one of these. Any values beyond shareholder value—such as sustainability—are even further removed from a cost-first decision-making process. A majority of costs for most companies comes from purchased inputs (Mahoney and Helper 2017): It is time that the purchasing function be managed like the strategic function that it is. We believe that TVC is powerful enough that simply changing the language of sourcing will provide some benefit. But, the most benefits will result from implementing the TVC process, which anchors managers on what matters—what customers value.

References


Milgrom, P. R., & Roberts, J. D. (1992). Economics, organization and management.


Siegfried, M. (2013). “Supply management organizations are moving from a low-cost-country strategy to a best sourcing plan that focuses on value, total cost of ownership and a changing world.” *Inside Supply Management*.


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<tr>
<th>Approach</th>
<th>Factors Considered</th>
<th>Advantages</th>
<th>Disadvantages</th>
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<tr>
<td>Piece-price/lowest quote</td>
<td>Unit price</td>
<td>Very easy to understand</td>
<td>Requires little data</td>
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<td>Very easy to implement</td>
<td>Objective; clear incentives for decision makers</td>
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<td>Does not consider non-price cost elements?</td>
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<td>Does not consider revenue-generating factors</td>
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<td>Does not consider risks</td>
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<tr>
<td>Total landed cost (TLC)</td>
<td>As above, plus: Shipping and handling costs; trade compliance costs; inventory costs</td>
<td>Easy to understand</td>
<td>Conceptually easy to implement (can be tedious)</td>
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<td>Considers more cost elements than piece-price</td>
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<td>Objective; clear incentives for decision makers</td>
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<td>Does not consider all non-price cost elements</td>
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<td>Does not consider revenue-generating factors</td>
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<td>Does not consider risks</td>
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<tr>
<td>Total cost of ownership (TCO)</td>
<td>As above, plus: Design and development costs; startup/switching costs; training costs; operating costs; software costs; governance costs (e.g., monitoring); supply chain support costs; retirement/disposal costs</td>
<td>Provides a framework for identifying relevant factors</td>
<td>Anchors decision makers on cost</td>
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<td>Tends to result in lower total costs than piece-price, TLC</td>
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<td>Information gathered has secondary uses</td>
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<td>Does not explicitly consider revenue-generating factors or factors related to risk</td>
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<td>Difficult and time-consuming to fully implement</td>
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<tr>
<td>Total Value Contribution (TVC)</td>
<td>As above, plus risk: Costs of shortages, disruptions, and downtime; risk of brand damage; risk of loss of IP As above, plus revenue: Social/environmental performance; product and service quality; other factors affecting demand/willingness-to-pay As above, plus the value of options: Capacity for future growth; innovation capabilities; the potential to learn from suppliers; factors that affect the firm’s social license to operate As above, plus to the potential to identify factors not listed here through a cross-functional process</td>
<td>Conceptually correct TVC process anchors on customer value, not cost</td>
<td>Subjectivity in the decision factors considered</td>
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<td>Provides a framework for identifying relevant factors, and an implementation process</td>
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<td>Difficult to quantify differences between options</td>
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<td>Difficult and time-consuming to fully implement</td>
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7 Any factors not included in the selection stage may be included in a pre-qualification stage on a pass/fail basis; this applies to all factors and all approaches.

8 We acknowledge that best-in-class TCO models can include some risk and value factors, as well as the cost categories listed here.
Table 2 - Theoretical grounding of TVC

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<tr>
<th>Feature of TVC</th>
<th>Explanation</th>
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<tr>
<td>Value first</td>
<td>Anchoring and insufficient adjustment can lead to undue influence of quoted prices on other estimates when decision-makers start with costs (Tversky and Kahneman 1974; Epley and Gilovich 2006; DeKay et al. 2014; Dekel and Schurr 2014). Dekel and Schurr (2014) show that government procurement officers give biased assessments of non-cost value to favor the low-cost bid when both types of information are available at once; assessing value first avoids this. Separating cost analysis from value analysis is a way of decomposing the decision, which is an effective debiasing strategy for sourcing decisions (Kaufmann et al. 2009; Kaufmann et al. 2010). When faced with multiple variables, managers tend to focus more on the most easily measurable factors (Holmstrom and Milgrom 1991); since cost is typically the most easily measurable, beginning with value instead may counteract this bias.</td>
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<td>Customer-driven objectives</td>
<td>Value has many meanings, even within supply management (Lindgreen and Wynstra 2005); beginning with a search for objectives ensures focus on what matters in context (Das and Teng 1999). This search also encourages adoption of another viewpoint (i.e., the customer’s) which is an effective debiasing strategy (Kaufmann et al. 2009; Kaufmann et al. 2010). Starting with a seemingly-complete list instead may make it harder to see what is missing (Fischhoff et al. 1978) and weight attributes consistently (Morssinkhof et al. 2011). Buyers are skeptical of suppliers’ claims of better value (Anderson et al. 2000; Anderson and Wynstra 2010); internally generated comparisons are likely to be viewed as more credible.</td>
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<td>Shared goals</td>
<td>Managers need to do more than merely make high-quality decisions—they must also build consensus to facilitate decision implementation (Roberto 2004). Having shared goals is associated with more cross-functional cooperation and better task and psychosocial outcomes in cross-functional group decision-making (Pinto et al. 1993), and with less negative influence of functional politics in sourcing decisions (Stanczyk et al. 2015). More broadly, consensus on strategic priorities is associated with better organizational performance (Kellermanns et al. 2011). TVC requires managers to “establish well-defined and stable decision criteria prior to analyzing and debating alternative courses of action” in terms of customer values, a process associated with higher efficiency and consensus (Roberto 2004) that still encourages goal discovery (Anderson 1983) regarding the factors that affect these values.</td>
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<td>Rational procedure</td>
<td>Procedural rationality is “the effectiveness, in light of human cognitive powers and limitations, of the procedures used to choose actions” (Simon 1978, p. 9). Extensive search for information and quantitative analysis are characteristics of rational procedures (Dean and Sharfman 1993); studies have shown financial and non-financial performance benefits from using such procedures in sourcing (Riedl et al. 2013; Kaufmann et al. 2014; Kaufmann et al. 2017).</td>
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<td>Monetary quantification of differences</td>
<td>Quantifying differences and adding them up, as opposed to quantifying totals (total enumeration) then comparing them, is associated with lower uncertainty and other performance benefits (Wouters et al. 2009; Wynstra et al. 2012).</td>
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<td>Cross-functional process</td>
<td>Combining multiple pools of relevant information and encouraging attention to non-shared information makes it likely for group decision quality to exceed individual decision quality (Brodbeck et al. 2007). Rules and procedures are associated with more cooperation and better task outcomes in cross-functional decision-making (Pinto et al. 1993). Processes characterized by high information quality, procedural quality, alignment quality, and constructive engagement across functions can perform well even when functional incentives diverge (Oliva and Watson 2011).</td>
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Figure 1: Depiction of the TVC approach