No. 40
June 2021

The Mitchell Forum

A "Check Engine" Light to Accelerate Change

21st Century Approaches for Assessing Cost-Effectiveness

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About the Forum

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Abstract

The Air Force and Space Force are aggressively striving to be more agile and affordable. This is a tough feat, since "agility" and "affordability" are not usually synonymous, and it is nearly impossible to tinker with one without affecting the other. The concept of "cost-per-effect" analysis is a big step in pursuing affordability within force development decisions, and—if done correctly—it can also render a more agile force. While the USAF & USSF have a grasp on describing effects, the "costs-per" are usually a tally of physical resources like buildings, fuel, and materials. Currently, cost analytics do not connect the full extent of indirect costs (think overhead) of support-like functions that make operations possible. Herein lies a great opportunity to turbo-charge the engine for accelerating change by diagnosing where hidden indirect costs are eroding both affordability and agility.

The extent to which support activities and their resources contribute to any effects or outputs is unknown but calculable with the help of 21st century cost-analysis methods. In order to fully implement cost-per-effect analysis in this manner, the Department of the Air Force (DAF) will need to update costing methods to reflect 21st century standards. Activity-based costing concepts are one approach have helped industry completely rethink value and how to prioritize choices. This paper examines industry's experience with one method, time-driven activity-based costing (TD-ABC), and proposes how this can be the DAF's path in assessing cost-per-effect. This method will help decision makers with:

1. Comparing a capability's expense relative to similar capabilities, organizations, and industry;
2. Identifying sub-activities needing improvement in order to bring costs down.

TD-ABC can help accelerate change where it is needed most.

The Problem—Our Rate of Change is Too Slow and Expensive

The mantra "accelerate change or lose" calls Airmen to action, but it also raises the question about what we need to do differently in order to accelerate change. There are worthwhile changes taking place all around us every day, and yet most strategic assessments warn of an eroding competitive advantage—the Department of Defense (DOD) and Department of the Air Force (DAF) are not changing fast enough. Moreover, post-9/11 national defense spending on contingency operations have totaled trillions of dollars while imposing an opportunity cost on future Air Force readiness and development. DAF weapon systems are older and more weathered than ever before.

As the DAF and joint services recapitalize their forces, DOD leaders and the Chief of Staff of the Air Force (CSAF) emphasize "affordability" as a renewed decision driver due to the sustained nature of great power competition and tightening fiscal constraints. CSAF Gen Brown states we should anticipate the "most difficult force structure decisions in generations."[1] Changing faster with less resourcing seems counter-intuitive, but they do not need to be opposing forces. To get after these two distinct but linked issues, Gen Brown's vision begins with introspection to diagnose why change is not fast enough. This baseline will then catalyze rethinking and help us navigate very hard conversations to precipitate the changes we need.[2]

Figure 1: Air Force Chief of Staff Gen. Charles Q. Brown Jr. has called on the U.S. Air Force to find ways to "accelerate change or lose." Source: U.S. Air Force

There are certainly many impediments to change, and this paper does not survey a long list. Instead, it focuses on just one—cost analytics—because the National Defense Authorization Act of FY21 requires the DOD to conduct "studies on measures to assess cost-per-effect for key mission areas."[3] This echoes a recent proposal from the Air Force Association's Mitchell Institute to implement "cost-per-effect" analysis across all weapon systems within a portfolio capable of delivering a type of effect.[4] The next question is "how?" One possible answer is the modern cost-analysis method of Time-Driven Activity-Based Costing (TD-ABC), which may also be a powerful accelerant to CSAF's call for change.

Rethinking Cost Analytics

A variety of factors shape force development decisions such as how much of a capability is necessary and how to utilize those forces. Costs have always been one variable in that calculus and always will be. However, force planners appear to have a form of fiscal myopia because no one considers the costs of indirect functions like communications or home garrison medical support. These costs come into play every time a combatant commander uses a given capability to exact an effect—whether it be a kinetic strike, launching or utilizing an orbital asset, executing an information operation, or anything in between. Cost analysis typically counts tangible items like fuel and distills them into generalized and misleading metrics like cost-per-

flight-hour. However, indirect as they are, support expenses and their feedback loops are very real. Cost-per-effect analysis must not ignore the impact of these costs and perpetuate the fallacy of free indirect support.

Calculating cost values for relationships between primary activities and their support functions will be challenging, but it also presents great opportunity. Investigating indirect costs could serve as a "check engine" light, revealing which functions are unnecessarily expensive or slow, and possibly why. Adopting this practice could develop a more holistic approach necessary for true cost-per-effect analysis across all capabilities and the support they require. Additionally, pursuing this level of analysis would enable decision makers to scrutinize costs for the value they present and opportunities to bring costs down further. Valuing those linkages captures a more complete cost-per-effect total that will inform the tough conversations the Chief of Staff of the Air Force anticipates and offer two beneficial talking points:

Understanding a capability's true cost is an essential baseline when determining which ones should be obtained, scaled, and utilized in a cost-sensible manner

Affordability: The National Defense Strategy calls for the Department of Defense to reform and "understand, manage, and improve cost" in order to attain greater affordability.[5] When the next conflict ensues, national resolve to respond and endure until victory will partly depend on budgetary constraints—$200 billion versus $250 billion for a contingency could change the decisions our nation's leaders make. Understanding a capability's true cost is an essential baseline when determining which ones should be obtained, scaled, and utilized in a cost-sensible manner, or, if need be, which options Air Force leadership should eliminate.

Agility: There is a maxim that the more established a team is, the less agile and responsive to change. The leadership of the new Space Force recognizes this, and it has structured the force for adaptability by "valuing organizational agility, innovation, and boldness."[6] Holistic cost-effectiveness, as a means of self-assessment, could enable this agility by identifying where manpower utilization can be reduced or a process can be streamlined. This would enable a more agile force in the longer term. Properly costing effects and capabilities by connecting enabling activities could behave like an immune system actively identifying and addressing the trues costs of force design and strategy execution across the entire Department of the Air Force or even all of DOD.

The Mitchell Institute outlines one way to approach cost-per-effect by deriving a financial value along the dimensions of precision, survivability, Fifth Generation attributes, range, and payload.[7] These are appropriate but leave out two important factors. First, this formula fails to measure and include the costs of indirect support that partially contribute to capabilities and their effects. Second, this recipe focuses entirely on aircraft and armaments and ignores intangible effects and capabilities made possible through space-based capabilities, command and control, cyber operations, information warfare, or any other non-kinetic capabilities important to competing in the 21st century.

To complement the Mitchell Institute's recommendations, the Department of the Air Force should experiment with TD-ABC, as this methodology is flourishing in the private sector. Adapting TD-ABC to evaluate DAF activities will allow decision makers to understand the full scope of how Airmen and

Guardians spend their time contributing to effects and highlight where investments can have the greatest impact. TD-ABC will not prescribe answers, but can flash the "check-engine light" where and why acceleration is not happening fast enough.

Time is Money: The Concept of Time-Driven Activity-Based Costing

TD-ABC is the offspring of a slightly older concept called activity-based costing (ABC). These two methods are unique but have similar intent, so it is helpful to discuss ABC first as a foundation. ABC was introduced in 1988 as a way to calculate how much a product or service costs to create by pooling communal resources and proportionally allocating them to everything they make possible. As a quick example, a restaurant may use a refrigerator to house all of the ingredients for everything on its menu, but only a few meals may require refrigerated ingredients. Traditional costing methods simply reflect the costs of refrigeration uniformly across the menu, but ABC methods assign the costs of those resources only to the outputs they make possible. You may be wondering why it matters how we recover the cost of the refrigerator since it will be paid for regardless. ABC provides information that 20th century's costing approaches could not, namely:

- more accurate cost allocations for operations and maintenance, for more accurate budgeting
- Key Performance Indicators (KPIs), for operational scorecards, akin to "return on investment" ratios
- process cost information to drive re-engineering and continuous improvement measurement[8]

ABC greatly improved many processes, so why is every business and government organization not already using it? There are a few reasons, but because the main one is that ABC methods are useful for only two situations: organizations with large indirect support costs enabling operations, and organizations with a large variety in products, customers, and processes.[9] ABC experienced a boom in

Source: U.S. Air Force

Figure 2: The Spartan Warrior 21-1 exercise at Einsiedlerhof Air Station, Germany, in January of 2021 provides important training that builds strong partnerships in support of U.S. European Command and U.S. Africa Command campaign objectives. Introducting TD-ABC during training exercises could also help find improved ways of operating.

the 2000s as industries experimented with cost analytics, partly due to the expansion of information technology that underpins ABC's structure in the pooling of resources. Since then, ABC has stagnated and, while widely perceived as effective, it is viewed as a cumbersome bureaucracy to implement and sustain. The U.S. Air Force explored the merits of ABC in the 2000s timeframe and seemingly concluded it was not preferable when compared to traditional costing methods, as it was never adopted.

Because of ABC's mixed results in the 2000s, researchers simplified ABC by creating TD-ABC. Time-Driven ABC enabled a rebirth of ABC principles among industries pursuing affordability and agility. TD-ABC is less onerous than its predecessor by putting the adage "time is money" into action. It estimates time required by an activity instead of measuring all resources involved in all activities all the time. To quote the conceivers of TD-ABC, "Managers directly estimate the resource demands imposed by each transaction, product, or customer rather than assign resource costs first to activities and then to products or customers".[10] Whereas ABC is a metrics-intensive science, TD-ABC is a faster-moving methodical art in order to accommodate the dynamic and complex resource sharing within an organization's varied functions and outputs. The fundamental differences between ABC and TD-ABC distill down to two principles:

- ABC intends to answer the question of "what percentage of a person's or resource's time contributes to an output?" in a relative sense. TD-ABC intends to answer "how much of a person's or resource's time does the output require?" in an absolute sense. Naturally, the more time a process or operation requires, the more expensive the output or effect.
- ABC applies for either strategic planning or for operational performance management, but not both, because the data required for either does not support the other. The evolution that culminated in TD-ABC "is showing that these two different approaches can—and in fact should—be incorporated in the same model."[11]

What TD-ABC is Not

Like a tool set, it is best to use a variety of metrics for identifying problems and shaping decisions since no single tool can serve all purposes. A few methods in particular are common for identifying where investment is necessary and for assessing the gains of past investments, but they are not always the best tools. Nor are other metrics an output of TD-ABC, but they are complementary. Therefore, it is important to clarify what TD-ABC is not and how other metrics can still be relevant.

First and foremost, TD-ABC does not elevate cost-effectiveness over mission-effectiveness. Whether or not a weapon system or other capability can accomplish a purpose—or how well—is a separate conversation. Ideally, assessing mission effectiveness should precede cost analysis. Cost-analysis should be about evaluating comparable capabilities and activities within the DAF or between services. The same analysis can be used to compare against pace setters in the private sector to discern if an activity or capability needs investment in order to bring costs down, which cost-effective capabilities should scale larger across the joint force, or if out-sourcing to a more cost-sensible partner is appropriate.

Costing methods, to include TD-ABC, also do not place cost efficiency or cost-effectiveness over the other, and these terms are often wrongly interchanged.

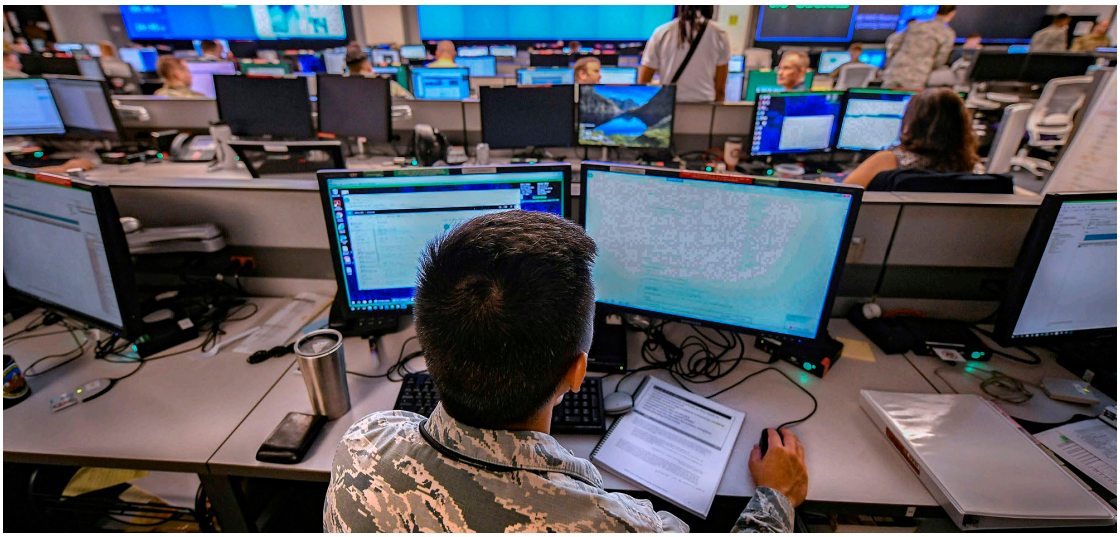

Figure 3: Airmen in the 33rd Network Warfare Squadron conduct cyber operations. Non-kinetic operations involving cyber and space-based assets can often be manpower intensive and might be a mission that could benefit by applying TD-ABC methodology.

Source: U.S. Air Force

If you have a store that sells one elephant and ten dogs every month, then which is the better product to sell? The elephants are harder to sell but come with a greater markup, and both have unique expenses and resources required. The elephants may be more cost-effective while the dogs are more cost-efficient, or both. The answer to the question is "it depends," and TD-ABC can shed light on those dependencies to help decision makers balance cost efficiency and cost-effectiveness against mission effectiveness.

TD-ABC is not synonymous with return-on-investment (ROI). In short, ROI is typically a financial ratio and is rarely used in the public sector since the term depends on known profits. For example, you loan a friend $100 and charge $10 interest rendering an ROI of 10/100, or 10 percent. For any government organization, ROI is difficult to financially quantify given the absence of profits to weigh against costs. In lieu of quantifying ROI, the public sector leverages the concept of ROI by describing a change from before-to-after other than profits: for example, a 10 percent increase in payload, range, survivability, or user satisfaction. This information is still valuable in determining if an investment was or will be worthwhile, but it does not answer the question of how much a process costs in the first place, or if it needs investment to bring costs down. TD-ABC provides the baseline or denominator necessary to drive conversations about a past or expected ROI, quantitative and qualitative alike.

Lastly, TD-ABC also does not intend to scrutinize niche capabilities or processes at lower echelons. Nor does the sustainment of TD-ABC place a stopwatch over every employee's shoulder. Instead, TD-ABC focuses on major weapon systems, major infrastructure, enabling capabilities, force-wide support functions, and how they feed back into each other to eventually accomplish the core missions. Although industry uses costing methods in order to determine how much they should sell a product for, the DAF and any public organization can use this same information for assessing the costs relative to the value they present to the force.

An Example of TD-ABC in Use Today

TD-ABC is neither a panacea for all inefficiencies, nor is it suitable for all types of organizations. However, since 2015 TD-ABC has taken root as a robust, nimble, and effective way to perform cost analytics. One example to follow is how

TD-ABC is flourishing in the world of healthcare—a phenomenon of the past 10 years. The decision of healthcare providers to convert to TD-ABC was not driven by the pursuit of profits, but instead on how to put maximum downward pressure on costs given the nationwide crisis of double-digit cost inflation year after year. Like the DAF and DOD, healthcare providers face fiscal constraints, and scaling cost-sensible operations is possible only after understanding the costs of comparable capabilities in the first place.

So how is TD-ABC implemented in the healthcare industry? The first step is to acknowledge that an easy general medical procedure requires different resources than a complex surgery. However, they share some common resources and processes. Common resources should not be expensed independent of outputs, nor should they be captured as a flat rate and billed to services provided. The costs should instead be dependent upon the amount of time those resources are utilized to achieve the given "effect." Once a system of hospitals understands how much a type of service costs across providers—regardless of the techniques and resources used—the healthcare manager can then begin to ask questions about why certain approaches are more expensive, or how to scale more affordable operations more broadly.

One healthcare provider in Cleveland leveraged TD-ABC to precipitate change by comparing two methods of performing heart surgery. The primary goal of their analysis was to evaluate the efficacy of TD-ABC for broader use in their hospital system, with secondary goals of accurately costing both procedures and identifying ways to bring costs down while improving service. To begin, the study built process maps that captured the activities required through the life-cycles of the two distinct ways of performing a surgery. When looking at all the activity required before operation, the study leveraged existing data to link 43 previously disconnected processes in order to ensure their costing formulas were comprehensive, and to enable proportionality when allocating the costs of shared resources. The study culminated with three sets of findings. First, TD-ABC methods concluded the methods' costs were 10 percent off than previously thought, and insurers needed to be billed accordingly. While 10 percent is not a radical departure from prior costing methods, 10 percent is significant enough to change decisions. Second, the study identified five major process improvements to bring costs down before surgery even began, and more across the entire life-cycle of patient care. Third, the study was effective at sensing under-utilized human resources ripe for reallocation to other functions. The study concluded that wholesale adoption of TD-ABC was not necessary for the limited scope of the single hospital. However, the methodology does make sense for case study assessments of emerging capabilities against legacy ones. Moreover, TD-ABC remains applicable when looking at capabilities across a wider enterprise of hospitals to identify the most cost-effective care providers.[12]

The example above is not an isolated success story. A meta-study of 54 analyses of TD-ABC's use in the medical community from 2013–2017 found several key improvements to include an ability to "accurately capture the cost of care at the level of the care process, and manage the complexity inherent to cost accounting in health care. TD-ABC was also reported as more efficient and simple than traditional ABC."[13] A similar study by the Harvard Business Review finds that not only does the TD-ABC costing process render more

Figure 4: MQ-9 Reaper operators and pilots might be another group whose mission could benefit from TD-ABC methodology.

Source: U.S. Air Force

accurate costs for processes and the value they offer, but "TD-ABC builds a common information platform that will unleash innovation based on a shared understanding of the actual processes."[14] The process of costing this way revealed where processes were unacceptably expensive, coincidentally because they were unacceptably slow or manpower-intensive. In other words, TD-ABC works to accelerate change where it is needed most to deliver more affordable healthcare within a system, eventually pressuring costs downward nationwide. Fresh examples demonstrating the usefulness of TD-ABC are abounding in literature, to include the logistics industries, the auto industry, marketing departments, the public sector, and more. The only non-applicable organizations are simple ones with homogenous operations, which the DAF and DOD are not.

Applying TD-ABC Concepts to the Department of the Air Force

Principle activities (think battlespace "effects") rely upon other support systems and architectures. As mission needs grow, secondary supporting systems must also grow in personnel, resources, and time. These overhead supporting systems include facilities, headquarters processes, basic services, IT, medical care, retirement benefits, and more—all of which have reinforcing feedback loops placing even greater demands on each other. These feedback loops cause an expensive "slippery slope" with an insatiable appetite for those same support functions.

Organizations using TD-ABC aim to connect the dots of indirect overhead support to intended effects with tailored techniques that accommodate a unique industries' needs. The following approach builds upon a RAND case study at Columbus AFB in 2014, which explored a type of Activity-Based Costing that focuses on tangible resources.[15] TD-ABC differs by looking first at data about worker utilization within a process and then the tangible resources they need to function. Since 2011, there have been dozens if not hundreds of "roadmaps" developed to facilitate implementation; the following approach generalizes consensus but parallels Harvard Business Review's TD-ABC recipe for bringing down healthcare costs nationally:[16]

1. **State the "Why."** Identify primary operational functions for why the organization exists: in other words, the well-established core USAF and USSF missions and their intended effects.

2. **Map-out the "What."** Subordinate major enabling activities:
   - **Operations:** Break primary missions or types of effects down vertically into operational sub-activities, and delineate their sub-activities until all operational activities are accounted for. This process depicts forces required and what they do to execute operations. Analysis culminates once every weapon system, program of record, and equivalent operational capability is identified and associated to effects they can accomplish. Much of this analysis already exists within the Department of the Air Force.
   - **Major support functions:** Identify "overhead" support processes and resources involved to include infrastructure, computer systems, personnel management, medical, security, and all activities that contribute to managing and driving readiness. Operations can perceive these as "free" because they are communal and there are no direct expenses. Industry realized not linking them is wrong because it hides costs to be forgotten. ABC and then TD-ABC were born to associate these indirect yet not free processes to the primary operations they make possible.
3. **Connect the "How."** Correlate how activities relate and support each other to reveal feedback loops. This process ties enabling and support processes to operational activities to reveal where feedback loops exist and their magnitude. Today, the DAF understands primary feedback loops, but their magnitude and secondary or tertiary loops that remain disconnected from precise calculation of cost-per-effect. The three steps above are about mapping processes and how they enable a capability to become effective, or as an effect with costs needing measurement. With the formula now in hand, the following steps focus on quantifying the variables to provide the "cost-per" piece of cost-per-effect.
4. **Estimate force-wide capacity as a baseline.** Establish estimated cost-drivers to represent the process across the relevant force in a variety of circumstances and operational tempos. These drivers are the key to the rules used by algorithms calculating the costs of a capability and all associated support. Much of this knowledge is already available within the DAF.
5. **Estimate the "Who, When, & Which" Resources.** Estimate how much of Airmen's time is required to accomplish an activity, using specified resources, as they relate to an end effect or output. This variable is how to make possible a sense of proportionality when allocating indirect costs. For example, a cyber activity may dominate use of a specific IT system even though a wider pool uses those systems too. Those costs should associate with those processes that utilize them proportional to their level of use. To be clear, this is not to enable a "fee-for-service" model or to complicate budgeting at lower echelons. TD-ABC is intended to be implemented at higher echelons and should be transparent below the squadron level. Thankfully, the DAF has much of this data compiled already, to include number of minutes Airmen require to do a wide range of processes.
6. **Calculate the "How Much."** Calculate and add the costs of direct resources utilized plus time-based costs of shared indirect resources. This latter variable is

Source: U.S. Air Force

Figure 5: A 82nd Aerial Target Squadron airborne mission systems operator monitors the sea surveillance radar on the E-9A Widget. The ISR mission shares certain qualities with areas in the private and commerial business sector that could make it a prime testbed for applying TD-ABC in military operations.

currently overlooked in cost analytics as someone else's problem or accepted as an unavoidable cost. The feedback loops identified in Step #4 will render a more complete value for costs-per-activity and cost-per-capability. Their aggregation will begin to paint a holistic picture of cost-per-effect.

7. **Evaluate the results.** The method above will render costs for activities, capabilities required, weapon systems, and ultimately cost-per-effect. There will and should be tough discussion about subtle differences between similar capabilities. When deciding which capabilities should be pursued, and to what degree, holistic costs to include feedback loops is just one variable and needs to be weighed in context with precision, survivability, fifth-generation attributes, range, payload, and other characteristics. However, TD-ABC can address questions that currently are not fully being answered, to include:

   - As a comparable means of achieving an effect, which are the most cost-sensible to operate?
   - For all capabilities and activities, how do their costs compare to other services and industry?
   - What activities should be improved, out-sourced, scaled to a new scope, or, potentially, outright eliminated?

What If? Applying TD-ABC to the USAF Core Mission of ISR

Per the intent of the National Defense Authorization Act (NDAA), DOD CAPE staff will oversee the NDAA-directed cost-per-effect study across all USAF and USSF core missions. When studying the costs of ISR and cyber effects, CAPE can lean on Headquarters Air Force, the air staff of the Deputy Chief of Staff for Intelligence, Surveillance and Reconnaissance, and Cyber Effects Operations (A2/6), and Air Forces Cyber (the 16th Air Force) to apply TD-ABC methods. They should do so within the construct of the concepts outlined in the USAF's Next Generation ISR Dominance Flight Plan, specifically, by adding granularity to already-defined ISR activities of sensing, identifying, attributing, and sharing (SIAS). This construct moves the ISR and cyber community forward a few steps in the TD-ABC methodology, and it is conducive to learning from industry's experiences with TD-ABC.

Advertising and marketing activities have proven to be fertile ground for TD-ABC and are worthy of comparison to an application on ISR activities. Advertising companies and marketing departments are surprisingly similar to ISR and cyber operations for a few reasons:

- **Purpose:** Generally speaking, marketing's purpose is to get the right information and products to the right place, right people, and right time to develop and deliver effects, much like ISR. Internal to their organization, this

includes advising teams and leadership about the world in which they operate. External to the organization, this includes affecting hopeful customers or partners, all the way through delivery of the intended effect.

- **Scope:** Over the past few decades, marketing has grown from a minor expense to now upwards of 50 percent of many companies' operating budgets. These burgeoning budgets are ripe with complex information-related processes worth studying in order to bring costs down.[17] While the DAF does not have an explicit or oversized marketing department, the 16th Air Force focuses on information warfare and totals almost 10 percent of all U.S. Air Force manpower.
- **Major functions:** Analogous to the Next-Generation ISR Dominance Flight Plan and information operations writ large, industry's marketing functions involve sensing the environment to discern market needs, identifying target customers, attributing any number of solutions to customer needs, and sharing their services as prolifically as possible across their relevant market in as targeted a manner as possible.
- **Tactical activities:** The human resources, tools, and processes of marketing departments are not radically different from the world of ISR and Cyber operations, although industry relies predominantly on publically available information instead of airborne or space-based sensors.

Some marketing organizations use TD-ABC to properly price their services and to accelerate change. One existing roadmap for a large marketing operation recommends beginning by organizing all marketing functions into four bins: advertising (sensing and analysis), selling (influence operations), warehousing (attributing and preparing solutions), and shipping (sharing). These four broad functions should then be subdivided into enabling activities: "if they (1) have different economics (i.e., cost behavior), (2) have a high potential impact on differentiation, or (3) represent a significant proportion of cost." In other words, the activities are equivalent to the weapon system for marketing. Thereafter, the administration runs through the how-to steps identified above.[18]

Next Steps: Recommendations for Putting TD-ABC in Motion

The first step the Department of the Air Force should take in evaluating the efficacy of TD-ABC is to build a multi-disciplinary team who understands the breadth and depth of activities required to create operational effects within one or two core mission areas (such as Global Strike and ISR), and adapt industry practices to suit the DAF. TD-ABC implementation is a headquarters-level process and will likely pull in representatives down to Numbered Air Forces as implementers. This team of implementers should define the breadth of operations by focusing on the "why" and the "what" as defined above. This will enable the team to begin connecting the dots to the "who." When addressing the questions of "who, when, which resources, and how much," the implementers will need to consult with subject matter experts in order to understand the depth of how much of a force's time and materiel is required to execute a certain activity. It is reaching this understanding of the depth or degree of resource expenditure that is at the heart of TD-ABC. This broader team could include:

Figure 6: Secretary of Defense Lloyd J. Austin III and USAF Chief of Staff Gen Brown have a difficult job of stearing the DOD and the U.S. Air Force through necessary change in the next administration and beyond. Here they are pictured participating in hearings on the 2022 NDAA.

Source: C-Span

- Organic DOD entities: the DOD Cost Analysis & Program Evaluation office (CAPE), Air Force Cost Analysis Agency, the Air Force Manpower Analysis Agency, Air Force Warfighting Integration Capability (AFWIC), Headquarters Air Force manpower analysts, operations researchers within Headquarters Air Force, the staff of Studies, Analysis and Assessments (A/9), financial managers from the staff of the Secretary of the Air Force and from Major Commands, the Air Force Life Cycle Management Center, and existing mission-specific cost analysis functions (e.g., for ISR, the 21st Intelligence Squadron at Wright-Patterson AFB).
- The Government Accountability Office, which has studied various ways departments and agencies conduct financial analysis to drive change. Overall, their findings over the years reveal a serious need for improvement.
- At least one university accounting department or industry partner, since TD-ABC is relatively foreign to government organizations. Researchers who have studied TD-ABC applications over the past several years have the expertise for value-chain assessment currently lacking in the service. One area of emerging research is how TD-ABC can be valuable throughout the public sector to precipitate more responsive governance. The Department of the Air Force could be the witting subject that academia is yearning for, lending to a win-win relationship.

Instead of implementing TD-ABC across the department, the DAF should first experiment with TD-ABC within one core mission area, such as ISR. To learn from industry's past experiences, the ISR and Cyber Air Staff should launch a case-study comparison of select advertising companies and marketing departments for how they apply TD-ABC to assess the breadth of sensing, identifying, attributing, and sharing activities. For learning about ways to understand depth of resource and manpower utilization, this same case study should compare how industry leaders' human resources and accounting departments connect support-like and administrative processes to the outputs they indirectly enable.

To remain current with industry's future best practices as cost analytics evolve, the Department of the Air Force should expand existing Education-with-Industry (EWI) partnerships. EWI should grow to integrate finance and operations personnel with industry leaders who utilize cost analytics as an engine for driving change.

One example is the already established partner of Deloitte and their relatively new subsidiary of Deloitte Digital. Their story began with using operations to assess value, and today they are a global top-five marketing analysis juggernaut, only ten years since inception. They are sensing, identifying, attributing, and sharing information to create effects for their customers with exceptional effectiveness via efficiency.

What Could Cause TD-ABC to Fail?

Overhauling cost analytics will be a major bureaucratic change regardless of which methods are used. If TD-ABC is employed, DAF leaders will need to address a few obstacles that could complicate an otherwise smooth transition. The DAF explored traditional ABC 15 years ago with fanfare but did not embrace ABC as the institutional method of choice. Rationale at the time probably echoes some industries' experiences, whose mixed-results were reason for pause—a very detailed, cumbersome process with strenuous change management. If the DAF experiments with TD-ABC, there are still a few old habits within our current system that put a successful evolution at risk:

- If change is accelerated, requiring 1-for-1 offsets in driving new initiatives could occasionally be analogous to hitting the brakes. However, TD-ABC is a tool for finding which capabilities are providing the least value for their cost and manpower required, which are then suitable for becoming an offset necessary for initiating a future initiative.
- Portfolios, weapon systems, and resources remain stove-piped within MAJCOMs, but rarely across them. Transparency across combatant commands and fluidity will need to be increased.
- The staff roles, authorities, rhythm, and relationships within the current cost analysis system will need to be refreshed. For example, Program Element Managers face incentives for increasing the scale of the systems or capability, but hardly any incentive for becoming more efficient.
- Decision makers will need to rethink how they value people's time. When an Airman or Guardian complains that something takes too long, but change is denied because time is "free," then everyone needs to pause and think again.
- TD-ABC is possible only if robust and connected information technology exists within the system. Databases need to exist, and they need to talk to each other. Under-investment in information technology could lead TD-ABC to become more onerous than intended, or it could render faulty conclusions.
- Lastly, accelerating change in general will always lead to friction with political pressures as manpower is realigned to support future capabilities. TD-ABC aims to accelerate change and friction will likely intensify. TD-ABC will help inform service leaders and political decisions about resource and capability realignment by making cost-based arguments as objective as possible.

Conclusion

It is time for the DAF and DOD to modernize cost analytics to 21st century standards. Industry and academia have learned to leverage cost analytics as a catalyst and have developed a variety of methods to delineate, aggregate, and evaluate the real costs of doing business. Organizations leveraging cost analytics find this type of self-assessment to be not just any competitive advantage, but the competitive advantage—it accelerates change where

change is needed most. Like companies using TD-ABC today, the DAF will enjoy a faster pace of change as choices re-prioritize to address the most expensive and slowest of processes. TD-ABC could be a keystone structural change that CSAF Gen Brown calls for, and, over time, it could help to field more agile forces. Failing to modernize cost analytics will sustain the status quo in many ways—undermining the readiness of forces at home and deployed, operational and support alike—counter to Gen Brown's call for speed.

Discomfort is arguably the best indicator for how the pace of change is accelerating exactly as intended. This pain is the good kind.

Make no mistake, there is nothing easy about measuring seemingly free processes or resources and building a chain that connects these costs to intended effects. Implementation will be a multi-year effort with growing pains. Moreover, adopting modern cost analytic methods will require a cultural shift that must overcome resistance—a natural phenomenon for change anywhere. First, TD-ABC will cause discomfort by precipitating more hard conversations to be had as the metaphorical "check engine" light. TD-ABC will also require decision makers to update how they perceive the financial value of Airmen's time and how those hours meaningfully contribute to missions. Gen Brown predicts looming "hard conversations," and when a choice must be made, the perceived resource losers may be uncomfortable with new emphasis on cost-effectiveness. Investment priorities will reshuffle, and there will be new pressures on manpower management. Such discomfort is arguably the best indicator for how the pace of change is accelerating exactly as intended. This pain is the good kind.

Endnotes

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The author would also like to thank his wife, Emily, for her help with writing.