Soldiers from the 143rd Sustainment Command (Expeditionary) analyze logistics data during a command post exercise–sustainment at Fort Hood, Texas. (Photo by Sgt. John L. Carkeet IV)

Leveraging Information for a Competitive Advantage

The Army must implement a strategy for effectively analyzing its data and providing key decision-makers with the information needed to make well-informed decisions in a rapidly changing environment.

■ By Col. Jeffrey C. Powell

On Feb. 24, 2014, the secretary of defense unveiled the Department of Defense's (DOD's) fiscal year 2015 budget request. This document made one thing perfectly clear: the Army has officially entered an indefinite period of declining resources.

Given anticipated fiscal constraints, the Army must find a way to make the sustainment warfighting function more effective and efficient if it is to remain the world's dominant land power. Seeking constant improvement is vital since most of the Army's budget is spent recruiting, retaining, paying, and equipping our Soldiers and keeping them healthy.

Beginning with the adoption of linear programming during World War II, the value of data analytics to military logistics has been significant. Integrated data from logistics, maintenance, and financial systems have the potential to help logisticians optimize supply chains. The data allows logisticians to identify the most cost effective ground, air, and shipping options and improve warehousing strategies and inventory levels at depots and unit locations.

Lessons From the Private Sector

In the private sector, some of the world's most successful companies have used data analytics to shorten decision cycles, make decisions with the best available information, and improve the success rate of implemented decisions. We must apply lessons learned from industry-leading companies in the private sector, such

as the United Parcel Service (logistics), Bell Laboratories and Chase Manhattan Bank (financial services), the Oakland Athletics (personnel), and Wellpoint (health services), to gain insights into effectively analyzing data and leveraging the results to achieve a competitive advantage.

The following examples demonstrate how data analytics have been successfully applied by the public sector to improve sustainment operations.

Logistics. The United Parcel Service's On-Road Integrated Optimization and Navigation (ORION) system combines delivery, order, and current route information to provide drivers with point-to-point driving directions updated in real time based on current driving conditions.

ORION optimizes directions in order to reduce fuel consumption and wear and tear on vehicles. In 2013, ORION saved the United Parcel Service approximately 1.5 million gallons of gasoline while improving customer service.

Financial services. Financial management companies were among the first to successfully integrate data analytics into daily operations. Chase Manhattan Bank and other credit card companies have successfully used the buying, spending, and billing patterns of their customers to detect potential fraud.

Bell Laboratories used advanced analytics to pioneer the field of continuous auditing, which leverages information technology to identify processing errors and potential fraud in near-real time.

By successfully applying similar methods, the Army could speed the processing of routine transactions while focusing extremely limited auditing and internal control assets on those transactions most likely to prove either inaccurate or fraudulent.

Ensuring accurate financial data is critical because it is so often combined with other data to help predict spending patterns and demand, thus helping logisticians predict the demand for goods and services.

Human resources. Private sector companies on the cutting edge of human resources management are using data analysis to identify effective employee incentives and accurately predict the likelihood of a prospective employee to succeed. One particularly high-profile instance of human resources analytics in action is how Billy Bean, the general manager of the Oakland Athletics baseball team, used predictive analytics to make informed personnel decisions.

By taking a unique analytical approach to personnel decisions, Billy Bean was able to identify a player's true market worth to the team. He did this by using often overlooked statistics, such as the number of times a player walked and the average number of pitches per at bat. This analysis helped him identify which players were undervalued or overvalued.

Billy Bean's analytical approach to human resources management allowed the 2002 Oakland Athletics to compile one of the best regular season records in history with the second lowest payroll in Major League Baseball. Similar analytics techniques could have a profound impact on how the Army manages its human capital. By combining the information from various data sources, such information could help shape how and who the Army recruits.

Analytics could also help shape retention offers by identifying not only whether a Soldier is likely to succeed but also for which career field he is best suited. Being able to answer these questions could potentially save the Army millions of dollars annually in recruiting, retention, and training costs while ensuring it has the right people filling the right jobs.

Health services. While still in its infancy, the field of health services analytics is showing tremendous potential for lowering costs and improving patient outcomes. Wellpoint, one of the largest health benefits companies in the United States, and IBM have partnered for just this purpose.

Together they are using the Watson supercomputer to help doctors identify the most effective treatment options for their patients. By effectively leveraging advanced analytics techniques, Wellpoint and IBM are finding ways to avoid unnecessary tests, which will drive down costs and reduce repeat visits caused by misdiagnosed conditions.

Using the vast amount of data collected in the Army Medical Department's Medical Protection System, which tracks personnel immunization, medical readiness, and deployability data, it may be possible to develop predictive models to help physicians identify that a patient is likely to develop a health condition in the future.

With such a prediction, the physician could then institute a preventive course of treatment before a chronic condition manifests. If the Army could successfully integrate advanced data analytics to improve diagnosis accuracy and avert potential illness, it could greatly improve medical readiness and reduce healthcare costs.

If the Army is to emulate these successes from the private sector, it must incorporate data analytics into the operations process. Doing this requires an enterprisewide strategy for converting the vast amounts of data at the department's disposal into actionable information. The three following recommendations should result in the effective integration of data analytics into the operations process.

Chief Analytical Officer

First, the Army should establish the position of chief analytical officer (CAO). Establishing a CAO is necessary because the sustainment warfighting function is fragmented. As documented in U.S. Code Title 10, separate assistant secretaries of the Army are charged with oversight of financial management and comptroller, manpower and reserve affairs, and acquisition, logistics, and technology.

This segregation of duties has led to the creation of stove-piped deci-

Brig. Gen. Bryan W. Wampler, center, commanding general of the 143rd Sustainment Command, conducts a battle update assessment during a command post exercise–sustainment with observers Maj. Gen. Jimmie Jaye Wells, left, commanding general of the 75th Training Command, and Maj. Gen. Peter S. Lennon, commander of the 377th Theater Sustainment Command. (Photo by Spc. Aaron Ellerman)

sion support systems for each individual Title 10 function but no comprehensive system to optimize the sustainment warfighting function as an enterprise. A CAO would have the responsibility for establishing an enterprisewide perspective.

The CAO would also be responsible for ensuring the data required by command analysts is accurate, integrated, and stored so that it is readily accessible and that data analysts are properly trained and organized to have the greatest operational impact.

Access to Data

Second, the Army must ensure that data analysts have reliable access to relevant, accurate data. The ability to capture and store accurate data is simple in concept but exceedingly difficult in practice. This point is illustrated by the DOD's inability to produce auditable financial statements.

Fortunately, Congress mandated that the secretary of defense establish the Financial Improvement and Audit Readiness Plan. The plan serves as a road map for ensuring the DOD's financial statements are validated as ready for audit no later than Sept. 30, 2017.

Adhering to this mandate, the Army has spent more than $10 billion in the development and implementation of four key enterprise resource planning (ERP) systems: the Global Combat Support System–Army (GCSS–Army), the Logistics Modernization Program, the General Fund Enterprise Business System (GFEBS), and the Integrated Personnel and Pay Systems–Army.

The successful implementation of these ERP systems coupled with improved, standardized business processes should result in the Army's ability to produce auditable financial statements by the 2017 deadline. Producing auditable financial statements is significant since this will verify the validity of the Army's vast trove of financial, logistics, and human resources information.

Simply collecting data is not enough, however. Leaders within

the sustainment community must develop a plan for using this data to achieve a competitive advantage.

Creating a competitive advantage through the use of data analytics requires integrating and normalizing the data captured by the Army. The Army created the Army Enterprise Systems Integration Program (AESIP) to accomplish this task.

AESIP integrates data by linking business processes and data across existing information technology systems. Through AESIP, the Army compiles and maintains the Army enterprise materiel master, which provides a single authoritative source for materiel data supporting all Army (modernized and legacy) systems.

In order to incorporate data analytics into the sustainment warfighting function, the CAO must work with the key stakeholders, data analysts, and the AESIP project manager to ensure the data collected and archived by AESIP is relevant and readily accessible.

A recent analysis of the world's 400 largest companies illustrates the potential importance of data compiled by AESIP. This analysis indicates that companies that effectively analyze available data have a quicker decision cycle, are more likely to execute decisions as intended, and are twice as likely to perform in the top 25 percent of their industry as their peers who do not routinely employ data analytics.

Recruiting and Training

Third, the Army must recruit, hire, and train technically competent analysts. Recruiting and hiring technically competent analysts is exceedingly difficult. For one thing, good analysts are hard to find.

Since the duties of data analysts require them to routinely use statistics, information modeling, and quantitative or qualitative analysis techniques to provide information for decision-making, they must have a thorough knowledge of both sustainment operations (logistics, personnel services, and health service support) and statistics.

Since very few sustainment professionals currently have both the mathematical skills and knowledge of sustainment operations needed to develop complex predictive models, an effective training or professional development strategy is imperative.

In order to improve the skill sets of current GFEBS and GCSS–Army users, the Army Logistics University and Army Financial Management School have partnered with Virginia State University and the University of South Carolina to provide logisticians and financial managers with an opportunity to be certified in Integrated Business Processes with SAP [Systems, Applications, and Products in Data Processing] ERP (also known as TERP10).

These programs are designed to provide students with an overall understanding and a working knowledge of the function, design, control, and use of ERP systems implemented by the federal government. They are an important initial step in providing sustainers with the skills necessary to apply data analytics. The Army should build on this by developing a comprehensive training and leader development strategy to maintain and enhance the skills of its analysts.

The skills, knowledge and attributes of professional analysts make them extremely rare and valuable assets. For this reason, careful consideration must be given to how they will be organized and distributed throughout the sustainment community.

To provide commanders with the best possible support, I recommend that analysts be managed in a semicentralized manner, with analytical centers of excellence located within the Office of the Surgeon General of the Army and the Offices of the Assistant Secretaries of the Army for Financial Management and Comptroller, Manpower and Reserve Affairs, and Acquisition, Logistics, and Technology. Affiliated subordinate analytical cells should be located at the Combined Arms Support Command and Sustainment Center of Excellence, the Soldier Support Institute, and the Army Medical Department Center and School.

The analysts at the centers and schools would then serve as consultants to commanders as needed. This semicentralized construct would allow analysts to support senior leaders when making decisions concerning requirements generation, validation, and budget preparation, defense, and execution.

During the past decade, the Army has invested billions of dollars in developing and implementing information technology and ERP systems in order to streamline business processes and produce auditable financial statements.

If the department is to turn this investment into an enduring competitive advantage, it must implement a strategy for effectively analyzing the Army's vast treasure trove of data and providing key decision-makers with the information they need to make well-informed decisions in a rapidly changing environment.

The most effective way to do this is to establish a CAO to lead analytical efforts. The Army must collect relevant data and ensure that it is organized and stored so that it can be accessed when and where it is needed.

Lastly and most importantly, the Army must hire, train, and organize a professional cadre of analysts who will be charged with providing decision-makers with timely and relevant information. The Army will then have the ability to turn its vast amounts of raw data into information routinely used by leaders to make better decisions that can be executed effectively.

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