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Research in defense logistics: where are we and where are we going?

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Abstract

Purpose – The purpose of this paper is to provide insight on high-interest areas of research in defense-related logistics and supply chain management and opportunities for advancing theory and practice in this domain.

Design/methodology/approach – A panel of experts provided their insight to several questions oriented toward examining research opportunities and gaps in defense logistics research at the 2018 Academic Research Symposium of the Council of Supply Chain Management Professionals annual conference on September 30, 2018.

Findings – Three overarching themes emerged from the panel discussion for advancing theory and practice in defense logistics and supply chain management, which are developing a central repository, creating publication opportunities and integrating research practice and knowledge with the greater academic community.

Originality/value – Logistics and supply chain research is critical for advancing knowledge and practice in the military, as well as industrial settings. The intention in this manuscript is to provide scholars and practitioners in both settings greater awareness and potential avenues for developing synergies and processes for advancing logistics and supply chain research.

Keywords Supply chain management, Procurement, Acquisition, Defense research, Military logistics

Paper type Viewpoint

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Introduction

There has been exponential growth in the interest, practice and research associated with logistics and supply chain management (L/SCM) in the past quarter-century. However, although much of the initial interest and research in L/SCM (using the current vernacular) emerged in defense logistics, the great majority of published research is now done at civilian universities investigating supply chain practices in industry and business. Further, it appears there is minimal integration of the literature streams, at least in terms of defense-oriented research being published in established supply chain and logistics journals. This can be due to a host of reasons, such as a lack of reviewers and editors familiar with the impact and nuances of defense logistics problems or processes, bias toward commercial supply chains, lack of readership interest and potential to be "highly cited," published research in both the military and traditional academic communities not being centralized or easy to access, the propensity of government to restrict or hinder dissemination of defense research, the perception that military and commercial functions and practices are not comparable or translatable, the interdisciplinary nature of military logistics, and being viewed as a field of practice and not theory [see, for example, Shaffer and Snider (2014), pp. 477-479].

The purpose of this paper is to provide insight on high-interest areas of research in defense-related supply chain management and logistics and opportunities for advancing theory and practice in this domain. The genesis of this manuscript comes from the 2018 Academic Research Symposium at the Council of Supply Chain Management Professionals Conference, held on September 30, 2018, in Nashville, TN. During the conference, a panel session was held, titled "Research Streams in Defense Logistics." The panelists (Amanda Bresler, Ben Hazen, Keith Snider and Taylor Wilkerson) come from a diverse background of military logistics research experience and expertise, as highlighted from the answers to the first question and summarized in their bios.

The next section of this paper will provide individual panelist responses from each of the questions asked during the panel session. This is followed by a discussion of themes emerging from the panel of experts. Conclusions are then provided.

Panel session questions and responses

A series of four questions were posed to the panel of experts to better understand the current state of military logistics and supply chain research and opportunities for advancing knowledge in this domain. Each of the questions and responses from the panelists, in alphabetical order, are provided below.

Q1. Briefly describe your activities and expertise in military logistics/supply chain management research.

Amanda Bresler: My expertise in military logistics/supply chain management stems in part from my role as Chief Strategy Officer at PW Communications, a firm with more than 22 years of experience supporting federal and commercial clients – including many of the world's largest Department of Defense (DoD) contractors; and in part from extensive research I undertook in 2018, evaluating the efficacy of DoD-backed innovation programs as a means of enhancing the adoption of new technologies force-wide. It became apparent to me through my research that the DoD's innovation challenges are, in large part, logistics and supply chain management challenges. Specifically, my research evaluated the distribution of more than 1.29 million DoD contract awards over seven years, across a data set of more than 8,000 recipients of DoD-sponsored Small Business Innovation Research (SBIR) and Rapid Innovation Fund (RIF) awards. The analyses sought to determine how program

participants performed in the broader defense market, in the years following their innovation program award. The research results produced several critical findings, including the fact that the majority of small, innovative companies that participate in DoD-backed innovation programs achieve no meaningful growth in their direct DoD business after program completion; and participants' capabilities rarely diffuse to DoD stakeholders outside of their initial branch sponsor. To better understand the reasons for these issues, I conducted qualitative research in the form of surveys and interviews of individuals from three stakeholder groups: participants in DoD-backed innovation programs; program managers from DoD-backed innovation programs; and general members of the DoD community. Based on these research findings, I make a series of recommendations for how to improve innovation programs to enable the military to better leverage its broad "innovation portfolio," and to improve the DoD's ability to identify, engage and retain the best and brightest innovative suppliers.

One of my primary research recommendations argues for the creation of a centralized repository of information about the companies that participate in DoD-backed innovation programs so that DoD stakeholders can more easily access this information and engage with mission-tested, innovative suppliers. I used my research to promote important policy changes with leaders from Capitol Hill and across the DoD, and in the process, I have gained an even greater understanding of the DoD's current supply chain and logistics environment.

Ben Hazen: I served 20 years in the Air Force in both enlisted and officer roles. As a military member, I worked many L/SCM – related jobs both deployed and in the States. I also served as an Associate Professor of Logistics and Supply Chain Management at the Air Force Institute of Technology (AFIT), which is the graduate school for the Air Force, conferring masters and doctorate degrees in L/SCM.

I am the current editor of *International Journal of Physical Distribution and Logistics Management*, a past-editor of *International Journal of Logistics Management*, and a founding co-editor of *Journal of Defense Analytics and Logistics*. As a researcher, advisor, reviewer and editor I have served a role in the writing, advising and editing of well over a thousand L/SCM research studies across topics germane to defense, government, commercial and non-profit interests.

Outside of defense, SCM is defined by the Council of Supply Chain Management Professionals (CSCMP, 2019) as:

> [. . .] the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies.

In short, L/SCM is the function of an organization that plans and manages the transformation of inputs (resources, tax-payer dollars, labor) into outputs (delivery and sustainment of final products and capabilities to the end-user). Interestingly, this definition is very similar to the definition of defense acquisition as noted by Dr. Snider, below. I feel that one of the shortcomings in the extant defense L/SCM knowledge base is the preponderance of overlapping and ill-defined terms that make it difficult to discuss major issues across commands, services, and potential partners outside the gate.

Keith Snider: My teaching and research interest areas are in defense acquisition, a specialized area of military supply and logistics.[1] I teach courses in defense acquisition in the Graduate School of Defense Management at the Naval Postgraduate School, Monterey, CA. Before joining the NPS faculty, I served for twenty years in the US Army and several of those years in the management of Army defense acquisition programs. I also served as

Principal Investigator for the NPS Acquisition Research Program (described below) for 15 years.

In the defense context, acquisition is defined as:

> The conceptualization, initiation, design, development, test, contracting, production, deployment, logistics support, modification, and disposal of weapons and other systems, supplies, or services (including construction) to satisfy [Department of Defense][2] needs, intended for use in, or in support of, military missions (Defense Acquisition University, 2012).

This definition suggests aspects of rationality in acquisition; that is, it translates, through the application of resources, stated needs and requirements into products and services for national defense. Further, it depicts a "birth-to-death" life-cycle beginning with need determination, design, development, production, sustainment and disposal. Finally, it reflects a variety of functions necessary to accomplish these activities, including engineering, testing, production, contracting, logistics[3] and, importantly, project management as an integrating function.

Taylor Wilkerson: Since 2001, I have worked with the Department of Defense and other Federal agencies to improve supply chain performance. This work includes conducting research on both a consulting and academic level. In this role, I have worked with military logistics leaders across multiple organizations, including Defense Logistics Agency, Office of the Secretary of Defense, US Army, US Navy, US Marine Corps, US Air Force and US Coast Guard, as well as military logisticians from Sweden, South Korea, UK and Australia. During my time at Logistics Management Institute (LMI), I managed LMI's Research Institute for two years, which included sponsoring academic research with LMI's academic partners. Academic research I have managed or participated in has included researching supply chain practices for process optimization and advanced analytics, as well as research into specialized topics such as sustainability and risk management. Some of the projects included direct interaction between DoD personnel and the research team, including sharing data and other DoD resources.

Q2. How is military logistics/supply chain management research similar to that of research focused on private industry? Different? Why?

Amanda Bresler: Military logistics/supply chain management research differs from research focused on private industry in several ways. First, because the government is required to report spending and contracting information, there are vast publicly available data sets with which to conduct military-related research. By comparison, in the private sector, it can be challenging and costly to acquire large data sets. However, both military logistics/supply chain management research and research focused on private industry have the potential to influence policy changes – for military, policy-making stakeholders may be DoD leadership or elected officials; for the private sector, those stakeholders may be board members, investors and/or management. Both categories of research have the potential to influence investment decisions as well – for the private sector, research can demonstrate to a company that it may need to invest in new technologies, retrain its workforce, pivot its marketing strategy, etc. For military logistics research, as my 2018 research demonstrated, the research can support efforts to advocate for investments in new processes and systems.

Ben Hazen: At the end of the day, L/SCM processes, practices and principles are very much similar whether we are talking defense applications or any other application. While the desired outcomes can differ (lowest cost vs most "mission effective"), the mechanisms to achieve "success" are very much the same.

I have heard people outside of the military context comment about how processes in military logistics cannot possibly generalize to the private sector. I have also heard military leaders balk at the idea of bringing in private sector best practices to the military paradigm because the military is "too different." I believe both of these perceptions constitute dangerous fallacies. Context is always a consideration – but that does not mean that what can be learned in one area is irrelevant in the other. Although differences do indeed exist (as explained further below), the problems and solutions are very much alike. The sooner we can realize this, the better for both communities.

Keith Snider: The "publicness" (Pesch, 2008) of defense acquisition sets it apart from private sector acquisition activities; thus also its research. One public administration scholar has written, "public and private management are fundamentally alike in all unimportant respects" (Sayre, 1958). Important differences between management in the public and private sectors include (Liu, 2002):

- Private discretion vs public authority – Private industry has great discretion in dealing with customers and clients, while relationships between citizens and governments are subject to legal, regulatory and coercive structures.
- Profit vs public value – Private industry pursues bottom-line profitability as a generally accepted performance measure, but there is no similarly agreed-upon measure in the public sector by which to measure success.
- Political and organizational constraints – In the public sector, leadership and oversight by elected officials inevitably inject political considerations into agency management, thereby shaping and constraining performance. Further, public agencies must provide some essential services when private firms are unwilling or unable to do so. Finally, due to political vagaries, public agencies and their programs may have duplicative or incompatible objectives. Such challenges are much smaller in private firms that have a common goal of profitability.

Taylor Wilkerson: Across the projects I have worked on, I have found a number of similarities between military and private industry supply chain research. The military wrestles with many of the same problems that vex industry: evaluation and adoption of new technologies, continuously improving efficiency and effectiveness of logistics processes, reducing risk in an ever-increasingly complex logistics environment and sustaining a highly skilled supply chain workforce. While DoD has some unique constraints due to federal and international laws and regulations, many of the fundamental research questions are the same, and, indeed, many private industry research findings can easily be adapted to a military environment.

However, there are DoD supply chain topics that are unique or have few analogies in the private sector. For example, DoD needs innovative solutions for deploying tens of thousands of people, their equipment, and their support staff into an austere, hostile environment in a matter of days. DoD then also needs to securely sustain deployed forces, including secure transportation pipelines, communications infrastructure, and support services (food, shelter, medical, etc.). These problems become complex variants of a traditional supply chain that require a different research approach for better understanding these caveats.

Another key difference in DoD supply chain research is the national security objectives of the DoD. Rather than optimizing around cost and profit, DoD is optimized around achieving a mission objective at the lowest cost. For DoD, the mission comes first, cost efficiency second. For the private sector, the tradeoffs between meeting a customer objective and cost savings can often be easily modeled since both have financial implications. Models

that trade dollars against dollars have a common unit of measure; however, for DoD, the tradeoff is between achieving an objective (e.g. troops deployed in 10 days) against the cost. This makes models more complex and raises more subjective tradeoff questions. If you can make the supply chain cost 10 per cent less if the troops will be deployed in 11 days instead of 10, is that worth it? For this reason, researchers have to be careful when applying private sector economic or process optimization models to a DoD environment. The assumptions used to build a private sector model may not hold for a DoD supply chain environment.

Perhaps one of the biggest advantages of DoD supply chain research is the stability of the military supply chain environment. In cases when researchers have access to DoD data, there can be a wealth of long-term trends to evaluate. In one case, we were able to access data that covered almost 20 years of supply chain transactions for a weapons platform that had largely used the same maintenance locations, had fairly stable support needs, and stable usage patterns. With this data, we were able to see the long term impact of management decisions and technology changes. When private sector product lifecycles can be a few years at the most, this type of long term data can provide significant insight into supply chain trends. Of course, getting access to this type of data can be difficult, even requiring security clearances.

Q3. Discuss the importance of funding organizations in financially supporting research in military logistics. What are some successes and challenges you have experienced in funded research?

Amanda Bresler: I work for a private sector company (PW Communications), and PW Communications funded my research. I know I speak for the Company's CEO when I say that it was incredibly strategic and worthwhile to fund this research. The research allowed me to interact with our customers and stakeholders in a new and different way; it built tremendous brand equity; and it ultimately laid the foundation for us to establish a new, strategic line extension of the business that has the potential to deliver high-value results.

By supporting military logistics research, funding organizations enable researchers to identify and illuminate critical insights that had not initially factored into the research questions; in other words, funding research has the potential to make an impact more far-reaching than researchers or funding organizations initially anticipated. For instance, when I initiated my research I was interested in understanding if and how the DoD ensures that mission-tested innovations are diffused to as many relevant military stakeholders as possible. My research not only exposed critical findings related to that question but also led to several other important discoveries. For instance, my research exposed the fact that DoD-backed innovation programs such as Small Business Technology Transfer (STTR), SBIR and RIF are rampant with serial users: my data set contained 8261 SBIR and RIF award recipients, which equated to only 1,140 unique companies. Some SBIR participants won 100+ SBIRs over just 3-5 years. This finding begs concerns and establishes the need for significant follow-on research to better understand why a small number of companies win such a significant percentage of innovation program awards. It indicates that some companies may not possess innovative capabilities but in fact serve as clearing-houses, skilled in the process of bidding on an innovation program award. From a supply chain perspective, it indicates both a lack of transparency, as well as excessive friction (cost) in how innovation funds are distributed. By funding my research, PW Communications enabled me to uncover this important finding.

Additionally, the funding also allowed me to address my core research questions and draw significant conclusions. For instance, my research demonstrated that 48 per cent of companies that participate in a DoD-backed innovation program won 0-1 DoD contracts in

the years following program completion. In other words, program participation leads to little or no growth in the direct contracting business for nearly half of the participants. Of the 1.29 million DoD contract awards in our data set, 13,449 of them were awarded to the 1,140 companies in our participant data set. However, another significant finding was the fact that only 40 participant companies – or a mere 3.5 per cent of the total participant company data set – were awarded 10,785 of these 13,449 contract awards. In other words, 3.5 per cent of companies won a striking 80 per cent of all contract awards. Upon further analysis, one finds that these 40 companies include names like 3M, Raytheon, General Dynamics and other major tier-one contractors. Despite the fact that these programs market themselves as gateways for small businesses, these findings indicate that they have in some ways become another channel for legacy contractors to gain additional market share.

These and other findings not only establish a need to reform these programs but also elucidate in general the need for additional funding for military supply chain research. Supply chain issues rest at the center of the military's broader struggle to identify, engage, retain and leverage innovative solutions providers. It is essential to fund research that agnostically evaluates the existing frameworks and processes that define DoD logistics, to improve them effectively.

Funding the research was a challenge, however, in that it diverted corporate resources (time and capital) away from our core business. It was also a new process for us and required us to learn the ins and outs of preparing and submitting academic research. Ultimately, the successes we have enjoyed as a result of the investment in funded research have far outweighed any challenges, and we hope to continue conducting impactful research moving forward.

Ben Hazen: Research and experience tell us that the military is no longer the driving force behind logistics innovation. This is troubling to me. The military has spent a great deal of time and treasure figuring out other warfighting best practices, while L/SCM has been on the back burner.

L/SCM is and always has been a significant battlespace dimension, whether we consider it so or not. We talk about cyber being the "fifth domain" of warfighting (after land, sea, air and space) and I completely agree. However, there is an additional domain of warfare that has existed for quite some time with a minimal contemporary treatment. The sixth domain (well, really the one enduring domain) is the supply chain. Most military professionals will concede to Napoleon Bonaparte's assertion that an army marches on its stomach. Success also entails the employment best-in-class means to assert kinetic and non-kinetic effects, maneuver, and communicate in the battlespace. However, I fear that we often get too wrapped up in specific technologies (aircraft, intercontinental ballistic missiles, directed energy, etc.) and do not pay proper attention to how they are acquired, employed and sustained.

In today's capitalist industry, we no longer have companies competing with companies but supply chains competing with supply chains. This is a global truth from the industry that we seem to be ignoring in the military. How are we competing on our supply chain? We could do better. We do not have many of our supply chains clearly mapped and we certainly do not have an office devoted to supply chain execution. How are we going to win in this new domain if we are not even able to describe what it is, and who is in charge of it?

The good news is that there are some brilliant folks across the total force US military who are making serious commitments to re-energize key L/SCM initiatives. The military is becoming more tech-savvy, too. For instance, the US military is employing advanced track and trace systems, creating best practices in three-dimensional printing, is well abreast of current uses and limitations of immersive technology, and has access to hands-down the best technologies in the world. The military is also making strides to ensure that we keep the

number one resource, the tech-savvy Airman/Soldier/Sailor/Marine/Guardsman, properly trained and equipped. We are getting there, but still have room for improvement.

From this perspective, the military and those in the industry have the money and mechanisms in place to fund research on a multitude of supply chain problems. The problems range across the spectrum of science, to include social science issues such as, "who should be in charge of certain supply chain functions?" and "what is the best way to organize, train and equip tech-savvy personnel?" as well as decision science questions, such as "what is the most resilient supply network structure?" In the Air Force, we have folks at AFWERX, AF Research Labs, and others that have research resources ready to support the most pressing research needs. Unlike other fields like engineering, mastering supply chain problems does not take as much spend to get solid results. Supply chain management is just that – smart management from a systems perspective. *We have the resources and access to the right brainpower – we just need the right structure in place to ask the right questions and implement the best solutions.*

Keith Snider: Over the past half-century, the DoD has undertaken numerous research initiatives (Table 1) to address the seemingly perennial problems in defense acquisition, particularly in large and expensive weapons programs [cost overruns, schedule delays, performance shortfalls; see, for example, GAO (2017)]. However, these efforts have had little if any apparent effect on acquisition program outcomes.

There is something here of the proverbial "chicken and egg" dilemma: we need acquisition scholars to conduct research, but we do not yet have a sufficiently robust research environment that can produce many acquisition scholars. Such an environment must encompass a broad swath of civilian universities, rather than only a few government-run institutions such as AFIT and NPS (Roback, 1975; Strayer and Lockwood, 1976). In addition, it depends on resources; research requires funding. At least two funding models exist for acquisition research – the program model and the entrepreneurial faculty model.

First, the program model. Due mainly to the initiatives of the late Jacques S. (Jack) Gansler, former Under Secretary of Defense for Acquisition, efforts have been made to attract civilian university scholars by offering grants for acquisition research. Gansler sponsored a short-lived grants program at NPS, and subsequently at Defense Acquisition University (DAU), in the late 1990s (Nissen, Snider and Lewis, 2002). Finally, in 2005, he made a compelling argument for DoD to fund a "disciplined basic and applied for research program [as] the only proven way to develop new theories and then use them to solve specific, practical questions within [the defense acquisition] knowledge domain" (Gansler and Lucyshyn, 2005). Gansler's former office responded by establishing a grants program at NPS in 2007, and it continues today. NPS also conducts an annual Acquisition Research Symposium at which grant recipients and other acquisition researchers present their findings.

Table 1.
US Defense acquisition research initiatives

Organization/event	Year established
Army Procurement Research Office	1969
Procurement Research Coordinating Committee	1971
Annual Federal Acquisition Research Symposium	1972
Air Force Business Research Management Center	1973
Federal Acquisition Institute	1977
Naval Center for Acquisition Research	1977

Source: Nissen *et al.* (1998, p. 95)

These efforts have produced mixed results. Gansler's first sponsored program funded only 15 research projects until its termination due to budget cuts.

The on-going research program bears additional description and discussion. Each year, the program publishes an open solicitation, the objective of which is to attract outstanding researchers and scholars to investigate topics of interest to the defense acquisition community. It requests proposals for projects of a year's duration with current cost ceilings of $125,000. An inter-organizational committee then reviews and prioritizes proposals for the award.

The number of proposals received has averaged about 75 per year, with about 20 per year accepted for the award. Analysis of the proposals (Shaffer and Snider, 2014) indicated that acquisition is still largely atheoretical and practice-oriented:

- A large proportion of proposals from civilian schools came from only a few schools, with several from NPS and the other government-run institutions, which suggests that defense acquisition is a niche topic of interest in only a few institutions.
- Proposals reflected a distinctly pragmatic, practitioner-oriented bias in the relative frequency of research proposal types (Elder, 2005).
- Proposals reflected a general paucity of data and scholarly literature in defense acquisition.

Second is the entrepreneurial model. Apart from the grants program, NPS faculty may actively seek to develop relationships with DoD sponsor-clients who have budgets to fund particular research projects. Because few clients are willing to fund projects that are not relevant to their needs, these projects often take the form of consulting efforts, with the final product not well-suited for publication in a scholarly journal or conference proceedings.

To compare and contrast these two models, the program model may provide a researcher with the freedom to propose and conduct research with publishable results, but with perhaps more uncertainty as to grant award. Once received, though, a grant award is an asset on a faculty member's vitae. The entrepreneurial model may increase the likelihood of receiving funding, but with perhaps less freedom in selecting and conducting the project. The success of the program model also depends on having first, a "rainmaker" to ensure sufficient funding, and its continuity, to sustain the program, and second, dedicated staff to administer the program.

Taylor Wilkerson: When I was managing LMI's Research Institute, we funded several military supply chain research projects. These projects were important because they address issues that could improve the effectiveness and efficiency of military operations in a way that private sector research cannot. In addition, DoD is often at the leading edge of technology adoption to solve difficult problems. By funding the research with DoD, sponsors may find willing research participants where the private sector is not ready to address bleeding-edge solutions.

DoD research projects can be difficult. The military is understandably very security conscious and can be wary of participating in research that is not directly DoD sponsored. For this reason, funded research is most effective when it is built around a DoD sponsor who will support military personnel participating with and releasing data to the research team. Finding the right sponsor requires, in many cases, an established network of DoD personnel who can serve as project sponsors, with the right level of authority to ensure participation. In some cases, security clearances and an ability to handle classified data may be needed to access the information needed.

Q4. Please describe the importance of publishing funded military logistics research findings. Are there conflicts of interests or challenges? Please explain.

Amanda Bresler: It is critically important to publish military research findings. Publishing the research lends credibility to the authors and lends credibility to policy recommendations and "arguments." For instance, I knew anecdotally that DoD-backed innovation programs were not delivering the marketed/intended benefits to program participants. By using vast data sets to evaluate this problem at scale and by publishing my results, the points I had been arguing became unequivocally clear. In turn, my conversations with stakeholders and lawmakers need not focus on convincing them that the problem exists (the research already proves that); instead, I can focus on advocating for solutions. In short, by publishing research one allows he/she findings to drive actionable decisions and change. By publishing research, stakeholders across the military logistics and supply chain ecosystems are also able to share and learn best practices, enhancing overall literacy on these issues.

Publishing research findings does have risks, however. Specifically, published research may also include recommendations and ideas, and these ideas may lay the foundation for compelling business opportunities (particularly in a field like logistics). As a private company, by publishing research we run the risk of alerting our competition about business decisions we may be making and/or giving them the opportunity to execute on our ideas.

Ben Hazen: As scholars of military logistics and L/SCM, we need to share our collective thoughts. War is not a desirable experience, yet war has been an enduring human condition since the dawn of time. How might we improve L/SCM in such a way that maximizes effectiveness and minimizes suffering? How can militaries across the globe serve their warfighters better such that their experience in the field and in-garrison is socially sustainable; that is, how can the state sustain a healthy fighting force? Most importantly, how can a nation compete with its supply chain to become even more lethal, and ready for any emerging future situation?

Global supply chain management is an art and science. As such, we need to publish our advancements in the proper forum to share results and build the body of knowledge. This does not mean that everything should be open-access. Indeed, classification levels must be minded. However, there is a dearth of cumulated and manicured defense L/SCM knowledge available today. If we do not publish our research in some way (meaning that it is made available to stakeholders and of adequate rigor and relevance), how can we remain relevant as a field? Moreover, how can we compete against state rivals by leveraging our supply chain?

Keith Snider: Few scholarly outlets focus specifically on acquisition research. The DoD's Defense Acquisition University (DAU) has since 1996 published a refereed journal, *Acquisition Review Quarterly* (now *Defense Acquisition Research Journal*). The *International Journal of Defense Acquisition Management* operated between 2008 and 2014 as a joint effort of Cranfield University and the Naval Postgraduate School. Considering the "publish or perish" incentives faced by scholars, such a low number of acquisition journals indicates the dearth of acquisition scholars.

In 1997, faculty members at NPS issued a call for papers for a special issue of *Acquisition Review Quarterly*. The call targeted scholars in universities and other research institutions "to engage their interest in defense acquisition as a primary area of research" (Nissen *et al.*, 1998, p. 89). Response to the call was, however, "underwhelming" (p. 102), generating only one of the seven accepted articles. (The others were generated from personal solicitations from the special issue guest editors.) The guest editors concluded that, if there exists an untapped pool of potential defense acquisition researchers, there is "no effective formalized mechanism for bringing their work to bear" on acquisition matters (p. 103).

In 2013, NPS faculty members again attempted to organize a special journal issue on defense acquisition, this time for the *Journal of Public Procurement*. Again, the results were disappointing, with only six manuscripts submitted in response to the call. After peer review, only two manuscripts were accepted for publication. Since this was insufficient for a special issue, those two appeared in regular issues.

Defense acquisition research occasionally appears in other disciplinary outlets such as this journal, *Project Management Journal*, *Journal of Contract Management*, *Journal of Purchasing and Supply Management* and *Journal of Public Procurement*. Naturally, in such cases, editors and reviewers may insist that authors present their work in ways that will appeal to the disciplinary audience; however, this framing may limit the appeal to a broader acquisition audience.

Taylor Wilkerson: Like any other research effort, publishing allows the research team to expose their methods and findings to a wider academic community for review and validation. By gaining validation, the research team can provide more robust findings and solutions. However, DoD security concerns can prevent publication of the research in public journals. Articles that can expose DoD operations methods and data can receive the most scrutiny before publication. As it is rare to have data from multiple militaries, anonymizing data is typically not a solution to alleviate security concerns. Researchers must work with the DoD to get articles approved for publication, which can be a significant process.

Common themes and insights

Three primary themes emerge from the insights provided by the panel of experts, as well as the additional questions, responses and discussions between the panelists and audience during the question and answer session. Opportunities for advancing research in defense-related logistics and supply chain management involve:

(1) Developing a central repository.

(2) Creating publication opportunities.

(3) Integrating research practice and knowledge with the greater academic community.

Developing a Central repository

One common theme identified by the panelists is a lack of a central repository or clearing house for published research studies in the DoD. Each of the military branches conducts extensive research on various logistics processes and technologies, such as through their respective schools including the NPS, AFIT, and the Army Logistics University (ALU). Beyond these schools, other organizations conduct research, such as RAND, MITRE, LMI, Deloitte and others listed by the panelists. However, many of these studies are not readily available for other scholars to access. Some of this is due, in part, to the need for ensuring knowledge of competitive advantages is kept within the state. The challenge is that there is a lot of redundancy in working toward answering research questions in which solutions have already been developed, as well as the inability to build and advance from the initial work of other scholars. One reason for this challenge concerns the amount of turnover in the DoD. Many individuals are in their respective positions for only three to four years, then move to another position. Further, there appear to be several "camps" with interest in acquisition and logistics research (i.e. engineering, political science and business), but no one central authority within the DoD. There may also be the limited distribution of published research findings due to security or confidentiality issues, as discussed earlier. The absence

of a central repository can also be due, in part, from the challenges of publishing military logistics research.

Creating publication opportunities

As highlighted during the panel session, there are limited publication opportunities for DoD research. However, all panelists agreed that publishing research in refereed academic journals is critical for many reasons, such as for evaluating the research productivity of junior faculty, building the knowledge domain of L/SCM, and providing validity and justification for future research projects and grants. Part of the challenge in publishing DoD oriented research deals with the ability to translate findings for application beyond the military context. As discussed by all of the panel participants, there are similarities and differences between military and civilian L/SCM. At the operational level, there are many similarities – however, it is generally regarded that the desired outcomes and measurement of those outcomes differ. Many academic L/SCM journals seek to publish papers that address the "so what" of the research findings from a business perspective – usually implying how a specific practice or process improves business performance, which is often measured as some form of cost savings or contribution to profitability. Many research studies in the DoD do not have the same focus on improving the financial "bottom line," and therefore, it can be difficult to translate for publishing in many academic journals.

A second challenge in publishing military logistics and supply chain research concerns the number of scholars and universities with this focus. Although the military has traditionally been the leader in creating new knowledge in L/SCM, the shift to civilian universities serving as the leader of this domain changed in the 1960s. This shift has limited the number of scholars, departments and universities who focus on defense acquisition, logistics, supply chain management and other related disciplines. Publishing challenges, therefore appear to stem from both the supply (number of scholars) and demand (by peer-reviewed academic journals) perspectives.

There are several other constraints limiting publication opportunities. These include challenges associated with using confidential and proprietary information, having additional bureaucratic "gatekeepers" limiting what is allowed to be published, and having a frequent turnover of military personnel who may have different viewpoints in supporting and funding research projects.

Although challenges exist in publishing DoD research in L/SCM, there are also opportunities. One significant advantage concerns databases. The DoD has vast records of historical data. With current advancements in data analytics, the DoD's rich data sets provide great opportunities for scholars to delve into data and derive insights into supply chain practices and performance. Another opportunity for publishing DoD research in logistics and supply chain management concerns obtaining the resources necessary for conducting the research itself – specifically research grant opportunities. As discussed by all of the panel participants, there are many existing opportunities for obtaining research grants from various DoD sponsors. The challenge, as alluded to previously, is the lack of a central repository of grant providers and matching grant topics with those aligning with journal publication priorities. With the emergence of journals such as JDAL, and the continuation of other journals such as *Naval Logistics Research, Military Operations Research* and *Journal of Public Procurement*, we hope to see growth in publication opportunities. For this growth to occur, there also needs to be more assimilation with the greater logistics/supply chain academic community.

A final reason may be culture. Historically, the DoD has not fostered a culture of collaboration across services. As a result, despite the fact that stakeholders across all

branches share many of the same capabilities gaps, they have not been sufficiently motivated to pursue cross-services collaboration.

Integrating research practice and knowledge with the greater academic community

The challenges of publishing L/SCM DoD research in refereed academic journals highlight how the lack of a central repository limits the integration of research practice and knowledge with the greater community. Although there are similarities and differences in L/SCM practice, outcomes and research in civilian/private sector as compared with military settings, we believe the following recommendations can help create synergies in advancing overall L/SCM knowledge:

- Defining L/SCM in clear terms that encompass all contexts, within and outside of defense. Standardize usage of key terms that describe major components of L/SCM, to include: logistics management (differentiating from "Big L" military logistics), acquisitions, procurement, supply management, operations management, maintenance/repair/overhaul, distribution management, transportation management, sustainment, reverse logistics/reconstitution/redeployment of assets and others.
- Creating an L/SCM center of excellence in the DoD that can study, manage and support timely and relevant L/SCM research and maintain DoD SCM knowledge.
- Conferring with and encouraging civilian academic researchers to devote time to studying defense-related problems.
- Engaging with senior military logistics leaders to discuss the use of academic research and publication to support their mission and develop solutions to their most pressing problems that can balance the value of the research against the need for operational security.
- Encouraging the academic community to develop approaches for translating supply chain and logistics findings between commercial and military perspectives, and encouraging the academic community to consider both perspectives in publishing research.
- Building collaborative forums between traditional academic communities and the military academic communities to support the identification and conduct of joint research efforts.
- Promoting select articles to major news publications such as Bloomberg and the Wall Street Journal to increase areas of general interest applicable to the private sector community, such as supply chain security, to add a unique context and perspective to traditional reporting.

Conclusions

L/SCM is a critical enabler of organization success, both in industrial, for-profit enterprises, as well as for military operations. Research is a critical mechanism for advancing knowledge in this field to continually improve practice. Although there is arguably a gap existing between civilian and military research, there is also an opportunity to leverage our knowledge and skills to advance our understanding of L/SCM in both settings. We hope this paper provides some direction in how we can successfully advance our discipline.

Notes

1. Some distinguish acquisition from supply and logistics in that acquisition entails bringing military capabilities into service use, while supply and logistics involve maintaining and sustaining those capabilities once acquired.
2. While this section is written mainly from the US perspective, other countries view defense acquisition and its challenges similarly. See, for example, UK Ministry of Defense, 2008.
3. This definition includes logistics as a function supporting acquisition; it is likely, however, that some logisticians see acquisition as a function supporting logistics.

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